

Xenosystems memo

Meet Barvadiya

oct, 2025

meet@xenosystems.xyz

Priori

Xenosystems “Incorporated” is the core contributor behind research, theory, implementations, and advocacy for the end state of what we call Xeno, the “sovereign asset,” the “distributed system,” the “chain,” the “distributed ledger,” and/or the “protocol.”

The original version of this manuscript was written during 2019-2022 as an almost 2,000-page-long investment mandate. This version is derived from that original thesis, incorporating relevant extraction, contraction, reordering, reorganisation, dilution, extension, and semiotic transformation as needed. This specific version of the manuscript has been edited for crypto-native pedagogy, and the semiotic transformation of the terminologies has been undertaken within the same context.

Categorically, the memo is structured in two parts. The first half of the manuscript consists of the genealogy, epistemology, and anthropology of value theory, liquidity function, spread function, monetary design, sovereignty, sovereign risk, sovereign deferral, sovereign security, sovereign succession, succession crises, sovereign servility, par internalization, dealer function, liquidity succession, ontological systems of spreads, liquidity and options, the option theory of sovereignty, and modalities of legitimacy in the sovereign order during sovereign servility and during the crisis of par internalization.

Transforming a 2,000-page-long thesis into major TL;DR bullet points was a hard task, especially doing it for the crypto-native pedagogy. Yet, I have tried my best. My only worry is that I hope my mother is not mad at me. She, with a heavy heart, sent her kid, who could barely even read properly at that time, to a monastery to learn theology and whatnot, so he could turn twenty and write bullet points for cryptobros. Sorry, mom, but you gotta do what you gotta do, self-affirming, no cap, fr fr.

The second half of the manuscript consists of the logic, continuity, and justifications behind Xenosystems; why it should exist, why it should exist at this specific point in history, and what specific purpose it fulfils in the teleological (and the teleoplexical) order. We leverage the genealogy, epistemology, and anthropology of value theory, sovereignty, subject, and contagious monetary design to develop a monetary techne that is consciously for the act of “succession.” The foundations of the original thesis come from my *peregrinatio academica* around Hindu monasteries, Eastern Orthodox seminaries, the Holy Catholic and Apostolic Church, and different classical, medieval, and modern schools of philosophy, political theology, and economics.

I indulged myself in the project of sovereignty in my early teens, when I was still a disciple of His Divinity, the late Swami Swaroopananda Saraswati, the 53rd successor of Adi Shankaracharya, founder of Advaitism, a Hindu non-dualistic school of thought and monastic order.

In my later teenage years, I moved to Belgrade to develop this project further and travelled through various seminaries and monastic orders in Belgrade, Moscow, Sergiyev Posad, Kiev, Athens, Tirana, Prague, Prešov, and the Vatican. During these years, I studied medieval political theology, specifically the Donation of Constantine, the feud of sovereignty between Pope Boniface VIII and King Philip IV (Philip the Fair) of France, the Doctrine of the Two Bodies of the King, the Doctrine of the Two Swords, and authoritative texts like *De Ecclesiastica Potestate* authored by Giles of Rome in advocacy of papal and ecclesiastical supremacy, as well as many other theologians of the Augustinian order.

During this time, I also developed a significant scholarship in the continental and post-continental philosophical canon, covering classical continental philosophers like Kant, Hegel, and Schelling; structuralist theorists like Saussure, Lévi-Strauss, Lacan, Barthes, and Althusser; post-structuralist theorists like Derrida, Foucault, Deleuze and Guattari, Lyotard, and Baudrillard; and post-structural derivative thinkers like Land, Plant, Fisher, Greenspan, and Negarestani. This led to the “materialist” development of the project of sovereignty I had started almost a decade earlier.

If you are not a crypto-native market participant or scholar, the terminology mentioned here may at times feel unresonant. You can reach out to me at meet@xenosystems.xyz or my chief of staff, Eva, at eva@brvfoundations.com, and request a relevant version. We have edited multiple derivative versions of the original manuscript for different pedagogies, vehicles, and mandates. If this version is the most relevant to you, and you still find yourself stuck on any terminology, I encourage you to reach out to me at the email mentioned above.

If you come from a crypto-native pedagogy, and this manuscript was forwarded by any team member of BRV Foundations, Point de Capiton, Xenosystems, or any subsidiary trusts of BRV Foundations, we expect you to read this, take your time to digest it, and develop your

own thesis/anti-thesis before you arrive for the meeting. We would appreciate it if you do not request allocation or any investment opportunity before developing your own thesis/anti-thesis. Consensus being a bottleneck for any monetary design, we are not doing capital formation via classical venture models but are opting for a dynamic capital formation model via strategic pedagogical allocations, mandate-based allocations, and dollar swap lines.

I am not a traditional entrepreneur in that regard; I have never tried to build anything anecdotal or what they call “operationally efficient,” unless it’s an epistemic breakthrough, nor will I ever. I have been doing the same thing for the last fifteen years in one way or another and will be doing the same for the next fifty years. I do not engage with the market function unless I absolutely have to.

I have extremely low tolerance for intellectual dishonesty and an extremely high bar for the people I deal with. I cannot and will not put up with any low-level materialist discourse, and for all this, I will never be apologetic about it.

I didn’t go through all this so I could hear how you’re going to make \$10bn on this trade and why I should accept your term sheet when you bring absolutely nothing to the table other than you being a “Tier-1 crypto VC” self-affirmative badge. It’s highly possible that most of you who have access to this document are within that categorical order. I will not be doing any philosophical, theological, moral, or material negotiations; not today, not anytime in the future, not because negotiations are ontologically a bad practice, but because they open a long-tail option to corrupt. Like Roman nobility, I’d rather burn the fields than have plebs seize them, of course metaphorically. Negotiations are a core part of the theory of succession, as you will learn later in the memo itself.

If you’re reading this at this specific time, you’re the last actor in a complex schema of things to have any negotiations. This is specifically a curious case for crypto: crypto is one of, if not the most, expensive cost-of-capital structures in the entire financial markets. It’s the place where you perform the last leg of your arbitrage, not the first. I see capital formation for Xenosystems rather as dollar-denominated strategic swap lines and nothing else. If you understand this as a crypto-native market participant (regardless of vehicle or mandate), you would also understand that you’re too expensive to prioritise on the “swap lines” part. The only function you as a market participant serve is on the “strategic” part. There’s a reason I’ve gone to lengths diluting things. You, as a participating agent in this thesis, on any time horizon, can only bring one of these two things to the table: “pedagogy” or “liquidity.” If you’re reading this, you’ve mostly been chosen for the “pedagogy,” the “strategic” part, and not for the “liquidity,” the “swap lines” part. As a crypto-native fund, investor, asset manager, founder, scholar, or general market participant, you possess something no other vehicle or mandate has: this cultural critique sustained throughout more than two decades, even though intellectually, morally, and philosophically a dishonest one, but still, the crypto-native pedagogy is something that has concretely identified and perceived the crisis of succession better than any other vehicle or mandate in the entire economic value chain of the discourse.

I don’t mind the low-level materialist discourse, as long as you keep it inside your own head. It’s not my job to redeem you. I have better things to do, but make sure that you have a performative idealism on your face when you interact. I have left a holy life for this.

Either the discourse or direct action is an epistemic breakthrough, or it's not worth the time. I have purposefully chosen to be blunt with my words here.

Recently, we started a non-profit initiative called “Point de Capiton.” After talking with multiple crypto GPs, founders, and fund managers while crafting the initial distribution and allocation strategy, we felt a significant void between mandates of permanent capital vehicles like family offices, foundations, endowments, and trusts; long-term capital vehicles like pension funds, sovereign wealth funds, and insurance companies; and crypto-native allocation vehicles. We have a natural intuition for permanent and long-term capital vehicles and mandates, after decades of patronage, dialectical exchange, and activism in public finance, but after a couple dozen meetings, I was not sure if I could say the same about crypto vehicles and mandates.

Mandates are fragmented in pockets across crypto, with a lack of judicial infrastructure; it becomes a problem of trust. At BRV Foundations, we ourselves, as a permanent capital vehicle, and specifically for the kind of capital formation we desire for Xenosystems, find a lack of judicial, compliance, and regulatory infrastructure to facilitate complex capital structures. For us, the ideal scenario is to signify enough trust within the network, where we can host a pension fund and a crypto fund on the same allocation table, even if there is a lack of judicial, compliance, and regulatory infrastructure.

Even though for different reasons, we ran a similar initiative called “The Capital Project” for pension funds in 2022. We already had enough insight into the anatomy of public pension books. We hired a team of ex-Palantir systems engineers to clean, model, and simulate the data better to understand the mandates for our activism, lobbying, and policy efforts. The funds were generous enough to let us integrate into their systems, operations, and books with the required regulatory buffers and anti-insider trading measures.

Though we would not claim this is an egalitarian initiative, our core incentive here is that we get to observe the evolution of mandates and reputations throughout the fund cycles, and even if we cannot provide them a place on the capitalisation table, we defer them to some other time, place, and structure rather than dismissing them outright.

We're hosting dinners and roundtables all around the globe in Q1 2025. Please email eva@brvfoundations.com to join the initiative.

Acknowledgments

I would like to extend my heartfelt gratitude to the stakeholders, trustees, board members, and scholars at the Bank for International Settlements, Brookings Institution, National Bureau of Economic Research, Milken Institute, Carnegie Endowment, the Center for Public Finance, Center for Economic Policy Research, Family Office and Private Wealth Association, Center for Pension and Retirement Policy, and FII Institute who contributed to the discourse behind the original thesis via comments, acknowledgments, advocacy, criticisms, editings, and encouragements at countless dinner tables, lectures, and calls, even though I was just a sixteen-year-old kid when I met most of you.

Furthermore, I'm grateful to my father, His Highness Patel BK Barvadiya; my mother, CN Barvadiya; my godfathers, His Holiness the late Swami Swaroopananda Saraswati and His Holiness the late Patriarch Irinej; and my nieces, Bhakti and Paridhi. Thank you for tolerating me for all these years of my existence and keeping me sane through long and rough periods of my search for the Logos.

PART - 1

The Foundational Theory of Sovereignty, Monetary Design, and Succession. A TL;DR

- **Under Chairman Ben Bernanke, the Fed engaged in "quantitative easing" (QE), creating trillions of dollars to purchase financial assets and bail out the banking system.**
- **This demonstrated a form of terrifying omnipotence: the power to create value ex nihilo, to defend the price of assets recently shown to be worthless.**
- **However, this power was simultaneously revealed to be a profound impotence.**
- **In May 2013, when Bernanke merely suggested the Fed might "taper" its asset purchases in the future, markets violently sold off in what was dubbed the "Taper Tantrum."**
- **The Fed was immediately forced to reverse course, expanding its operations rather than shrinking them.**
- **The central bank, the supposed apex of monetary power, was revealed to be terrified of the market's reaction to its own predictions.**
- **This creates the central paradox: the Fed is both all-powerful and utterly powerless. Its power is performative but fragile.**

- **This paradox cannot be explained by orthodox economic theories, which tend to view power in terms of hydraulic equilibrium, not strategic disequilibrium.**
- **The conceptual breakthrough comes from noticing a resemblance between this dynamic and the narrative structure of classical tragedy.**
- **Specifically, the tragedy of Sophocles' Oedipus the Tyrant provides the perfect model.**
- **The tragedy explores the paradox of oracular knowledge through the relationship between two powers: The Oracle and The Tyrant.**
- **The Oracle (the Pythia at Delphi) represents the power to predict the future.**
- **The Tyrant (Oedipus) represents the power to act in the present to change the future.**
- **The core paradox is that oracular knowledge can be true or useful, but it cannot be both.**
- **If the Oracle's prediction is true, then it is useless for the Tyrant, as the future is predetermined and unavoidable (fatalism).**
- **If the Oracle's prediction is useful, meaning the Tyrant can act on it to avoid the predicted future, then the prediction was false.**
- **In the play, Oedipus's attempt to use the oracle's knowledge to avoid his fate is the very series of actions that brings that fate about.**
- **This is a perfect model for the Fed/Market relationship.**
- **The Federal Reserve is the modern Tyrant. It holds the power to act: to set interest rates, to create money, to buy assets.**
- **The Financial Market is the modern Oracle. It holds the power to predict: to price assets based on forecasts of future economic conditions and Fed policy.**
- **The Fed's power is performative: its statements can shape market reality. If it predicts it will raise rates, the market may sell bonds in anticipation, causing rates to rise without the Fed acting.**
- **But this power can collapse into a "counterperformative dissensus," a hall of mirrors where the Fed's predictions bring about their opposite.**

- For example, during the recovery, when the Fed predicted good economic news, the market interpreted this as a sign the Fed would remove support and sold off assets. Good news became bad news.
- Therefore, sovereignty is a strategic disequilibrium. It is not a stable state of power but a permanent, unstable relationship between predicting and acting forces.
- The Oracle has divine authority to legitimise and delegitimise the sovereignty of the tyrant by monopolising the interpretation of predictive modality. A "taper tantrum" is the Oracle withdrawing its legitimacy from the Tyrant's policy.
- This framework of "tragedy without catharsis", a permanent state of unresolved tension, becomes the lens through which the entire history and theory of money and sovereignty will be re-examined. There is no final resolution, only perpetual management of the succession crises.
- To understand the modern paradox, one must first diagnose the theoretical frameworks that fail to explain it. All dominant theories of money suffer from a common, ancient error.
- The origin of this error is Aristotle. His analysis of money in Nicomachean Ethics establishes the foundational metaphysics for all subsequent Western thought.
- For Aristotle, all value is identical. Different goods are made commensurable through money.
- Money's purpose is to serve as a measure that balances exchange, making unlike things equal.
- This establishes money as a metaphor. It is a symbol that represents the underlying, identical substance of value shared by all commodities.
- This logic demands a principle of identity ($A = A$). A thing is what it is. Money is what it is. This is the sphere of Parmenides, governed by the laws of identity, non-contradiction, and the excluded middle.
- This view is inherently horizontalist. It imagines money emerging from a prior system of exchange between individuals or communities. The state's role is peripheral, merely stamping coins for convenience.
- Marx inherits this entire Aristotelian apparatus. His critique of political economy is built on this foundation.
- Marx borrows the Aristotelian thesis of value, which lacks liquidity as an ontological entity, and builds his theory on top of that.

- He agrees that money represents "what is really equal." For him, this is not a convention but an ontological reality: Value, defined as socially necessary labour time.
- For Aristotle and Marx, Money is a metaphor for Value. It is the universal equivalent, the commodity that represents the value of all other commodities.
- Therefore, in the Marxist world, the market is a system of equivalencies. Fluctuations in price are merely noise, a phenomenal veil over the noumenal reality of Value, which acts as a silent, stable mean.
- This leads Marx to see money as ultimately sterile. Its power is an illusion, a veil over the real action, which occurs in the realm of production. Monetary interventions are futile in the long run.
- This theory is logically impossible. Its phenomenal description of exchange cannot account for the existence of the market itself.
- For Aristotle and Marx, there is no accounting discrepancy between \$100 worth of cotton and \$100 worth of linen; the value of both assets is identical. The concept of Value cannot see the difference.
- This is a fatal blindness. The theory cannot see that even though both assets on the same balance sheet, following similar accounting standards, have different liquidity profiles, lending markets and dealing markets.
- Marx's description implies a market with a zero bid-ask spread, where a sale (C-M) can be instantly reversed by a purchase (M-C) at the identical price.
- By assuming the market as a free good, Marx's system contains the seeds of its own undoing. His "realization problem" (the danger that commodities cannot be sold for money) is, in fact, a permanent feature of all markets, not just a crisis of capitalism.
- His theory of coinage history is symptomatic of this blind spot. He dismisses the wear and tear of coins and sovereign debasements as mere "difficulties" that do not bear on the essence of Value. He is wrong. These "difficulties" are the essence. They are the historical manifestation of the "spread" and the site of political struggle.
- Thus, the first great theory, Marxism, is ultimately a prisoner of an ancient metaphysical error. It provides a powerful politics of class struggle but an inadequate economics of money, built on a foundation of

metaphorical commensuration that cannot withstand the test of logic or history.

- **The failure of Marxist and neoclassical theories to explain the modern paradox creates an opening for a new school of thought: Modern Monetary Theory (MMT).**
- **MMT launches a powerful and correct critique against the horizontalist tradition. It decisively nukes the "myth of barter," the idea that money emerged from a prior state of individual exchange.**
- **For MMT proponents like Stephanie Kelton, L. Randall Wray, and Alfred Mitchell Innes, money is not a commodity that crystallises from exchange. It is a creature of the state.**
- **Money originates in the "vertical" relation of sovereignty, specifically through the state's power to impose and collect taxes, fines, and other liabilities.**
- **The core mechanism is the fiscal circuit: the state first spends money into existence (creating a liability for itself and an asset for the private sector) and then demands that same money back as payment for taxes (destroying the money and settling the liability).**
- **This model correctly identifies the state as constitutive of money, not an external actor interfering in a pre-existing "natural" market.**
- **From this, MMT derives its concept of "monetary sovereignty." A sovereign state is one that: Issues its own currency. Taxes in that currency. Borrows in that currency. Has a floating exchange rate.**
- **Such a state, they argue, can never be forced to default on its debt. It can always meet its obligations by creating more of its own currency.**
- **However, this powerful correction introduces a new, more subtle error: Tautological Sovereignty.**
- **MMT presents a Bodinian view of sovereignty. The sovereign is sovereign because it says it is. Its power is purely performative: it creates reality through its declarations. $A = A$.**
- **This view is inherently ahistorical. To make their case, MMT theorists must claim that the precious metal content of coins was always "irrelevant."**
- **Following Alfred Mitchell Innes, they argue that money has always been a pure token, a credit instrument whose value derives solely from the state's promise to accept it back, not from any intrinsic commodity value.**

- **This is a fatal oversimplification. It erases the entire political and material history of money, which is the history of the struggle over the spread between a coin's nominal and intrinsic value.**
- **By dismissing metal content, MMT cannot explain why sovereigns for centuries engaged in complex, costly, and politically explosive struggles over the quality of the coinage.**
- **This ahistorical stance leads to a political naiveté. The MMT sovereign is a monolithic, rational actor. It is collapsed into a single, undifferentiated "state."**
- **This framework cannot explain "sovereign servility." Why does a putatively sovereign state like the US act as if it is not sovereign?**
- **Why does it engage in debt ceiling debates and impose austerity on its own population? MMT can only answer that policymakers are "confused" about the operational realities of the monetary system.**
- **This is an inadequate answer. It lacks a theory of class struggle. It cannot see that austerity is not a technical error but a conscious project of elite class power.**
- **Furthermore, MMT cannot explain the other side of servility: why the sovereign, in a crisis, acts as if it guaranteed the par that it never officially did.**
- **The 2008 bailouts of the shadow banking system and the extension of swap lines to guarantee offshore Eurodollars are actions of a sovereign emptying itself of its sovereignty to preserve a system beyond its direct control.**
- **The MMT view, focused on a closed national system, is ill-equipped to handle the imperial dimension of a currency like the US dollar, which is caught in the Triffin Dilemma.**
- **Thus, MMT provides a crucial corrective to the horizontalists but remains trapped within the logic of identity. It replaces Marx's metaphorical identity (money = value) with a tautological identity (sovereignty = sovereignty). It correctly places the state at the center but takes the state's power and legitimacy for granted, failing to see that sovereignty itself is a contested outcome, not a primordial fact.**
- **Trapped between the metaphorical theory of Marx and the tautological theory of MMT, a new path is required. The escape route from this 2,500-year-old error is not found in economics, but in linguistics and semiotics.**

- The key is to abandon the axis of similarity and embrace the axis of contiguity. This requires a shift from metaphor to metonymy.
- Roman Jakobson provides the master key. In his analysis of aphasia, he identifies two fundamental poles of language:
 - The Paradigmatic Axis (The Axis of Selection): This operates on the principle of similarity, substitution, and metaphor. We select words from a set of similar options (e.g., choosing "king" from a set including "monarch," "ruler," "sovereign").
 - The Syntagmatic Axis (The Axis of Combination): This operates on the principle of contiguity, context, and succession. We combine words in a chain based on what precedes and follows them (e.g., "crown" is metonymic for "king" because they are found together in context).
- Aristotle and Marx are trapped entirely on the paradigmatic axis. They see money as a master metaphor, selected to represent the similar substance (Value) in all commodities.
- This is the wrong axis. Money does not operate like a metaphor. It operates like a metonymy.
- Money is not valuable because it is like a commodity (metaphor), but because it is followed by a commodity (metonymy). Its value is not in what it represents, but in what it can be succeeded by. Its essence is succession, not similarity.
- This is termed anterior metonymy. The chain of transactions (the succession of money for goods, goods for money) is prior to any established equivalence or metaphorical comparison. The syntagmatic axis precedes and founds the paradigmatic.
- This metonymic view requires a new metaphysics, found in the work of George Berkeley and his critique of abstract general ideas.
- The Aristotelian/Marxist view requires abstract ideas. For a dollar to represent all commodities, it must abstract away its own particularity (its liquidity) to become a general equivalent, just as the abstract idea of a "triangle" must have no particular angles or side lengths.
- Berkeley destroys this notion. He argues it is impossible to conceive of a "triangle in general" that is neither oblique nor rectilinear nor equilateral. We can only ever conceive of particular triangles.

- How then do we generalize? Not through abstraction, but through indifference. A particular thing (e.g., a specific, liquid dollar bill) can become a sign for a general category (all commodities) if we use it in a way that is indifferent to its own particular determinations.
- The dollar bill's particularity is its high liquidity. It is this specific property that allows it to represent all other commodities indifferently. It does not need to cease being a liquid asset to become a universal equivalent; its liquidity is precisely what enables it to function as one.
- Therefore, money represents other commodities not because it is identical to them, but because it is different from them. It is more liquid. It is this difference, not an underlying identity, that is foundational.
- This semiotic shift redefines the market itself. The market is not a place of equivalence but a ritual (Edward LiPuma) of performative utterances (Michael Silverstein).
- Each transaction is an utterance that performs the existence of the market. It is a ritual that both confirms the market's reality and reinforces anxiety about its future existence.
- The stability of the market is therefore an "empirically robust illusion," a fragile consensus built on a perpetual and anxious deferral of its own collapse.
- This linguistic turn dismantles the core error. Money is not a metaphor for an identical substance. It is a metonymy in a chain of signification constituted by difference and succession. The dream of perfect commensuration ($A = A$) is a metaphysical fantasy that ignores the constitutive role of the spread, of liquidity, and of time. The equal sign is replaced by the arrow of succession.
- The semiotic shift from metaphor to metonymy requires a corresponding mechanical shift in understanding how markets actually function at the micro-level. The theory must move from metaphysics to market structure.
- The crucial mechanism ignored by all previous theories is the dealer function, as formalized by economist Jack Treynor.
- The market is not an abstract aggregation of exchanges. It is a physical and semiotic entity: the dealer's desk, the trading pit, the Bloomberg terminal where a price is quoted.
- The market manifests itself in the form of the inside spread: the simultaneous quotation of a bid price (at which one can sell immediately) and an ask price (at which one can buy immediately).

- This spread is not a market imperfection; it is the constitutive feature of the market. It is the price of the market's existence.
- The spread is the liquidity premium. It is the fee charged for the service of immediacy, for the privilege of having one's demand to transact accommodated on demand.
- This liquidity premium is the market's price for bearing liquidity risk: the risk that the market itself might cease to exist in the future, that the chain of metonymic succession (money -> commodity -> money) might be broken.
- The actors in this system are defined by their constraints and flexibilities:
 - The Time Investor: This category includes both Marx's proletarian and capitalist. They are inflexible about the time and direction of their transaction (they must sell labor or buy inputs now). Their only flexibility is on price.
 - The Value Investor: The patient capital with a massive balance sheet. They are flexible on time, direction, and price. They wait on the outside for the best price, only entering when dealers are in distress.
 - The Dealer: The intermediary. The dealer is flexible about time and direction (they stand ready to be either a buyer or a seller at any time). They become inflexible about price by quoting the spread.
- The dealer's business is to "make the market" by accommodating the urgent demands of time investors, harvesting the liquidity premium from both sides of the spread.
- The dealer's core bet is that over time, the demands to buy and sell will roughly balance out, allowing their net position to remain flat while they pocket the premium.
- However, if imbalances persist (e.g., everyone wants to sell and no one wants to buy), the dealer accumulates a dangerous position and runs out of capital.
- At this point, the dealer is forced to "lay off" this risk onto the value investor. This is crossing the outside spread.
- The outside spread is the hidden price of liquidity in a crisis, the much larger premium charged by the value investor to recapitalize the system. It is the price the dealer pays for losing the bet that the market would continue to exist in its current form.

- Therefore, the market is fundamentally characterized by a hierarchy of spreads, from the inside spread (the visible cost of liquidity in normal times) to the outside spread (the hidden cost of liquidity in a crisis).
- This model proves that Marx's phenomenal description is impossible. A market with a single price (a zero spread) is a logical contradiction. For a market to exist, there must be a difference between the bid and the ask.
- Consequently, every asset has at least two prices at once. The Aristotelian dream of a single, commensurating price is destroyed. The equal sign (=) is replaced by the spread (bid / ask).
- The entire economic system is a hierarchy of promises, as described by Perry Mehrling. It is a chain of liquidity spreads, where each level promises to provide liquidity to the level below it, with the state's promise (its debt) at the top, acting as the ultimate collateral.
- The state's money is the most liquid asset because it has the smallest spread. Its "value" is not that it is a metaphor for value, but that it is the asset with the deepest market and the highest capacity to be succeeded by other commodities. Its value is its difference, its superior liquidity.
- This mechanics reveals that the market's existence is predicated on a fundamental anxiety. The market can only exist if its participants are anxious that it might not exist. This anxiety is what creates the spread. If everyone were certain the market would always be there, no one would need to make it, and it would vanish.
- Thus, the market is a performative ritual that must constantly reaffirm its own existence through the act of transacting, each transaction simultaneously soothing and reinforcing the underlying anxiety that constitutes it.
- The micro-mechanical theory of the spread is not a modern innovation; it is the rediscovery of money's eternal, repressed truth. History provides the empirical proof that money has always been defined by difference, not identity.
- The primary historical evidence is Gresham's Law: the observation that "bad money drives out good."
- Gresham's Law is not a curiosity; it is the fundamental law of monetary difference. It proves that money is not one thing but is inherently split.
- "Good money" is money that is a better store of value (e.g., a heavy, pure silver coin). "Bad money" is money that is a better medium of exchange (e.g., a lightweight, debased coin).

- The two functions are in constant tension. The better a store of value a coin is, the worse it is as a medium of exchange, because it will be hoarded or melted down for its intrinsic worth.
- The sovereign's historical role was to manage this tension, to manipulate the metallic spread between the nominal value of the coin and its intrinsic metal content.
- This manipulation was the primary tool of pre-modern monetary policy. It was not a mere technicality; it was the essence of sovereign monetary power and the central site of political struggle.
- A debasement (lowering the metal content while keeping the face value) was a form of fiscal stimulus. It allowed the sovereign to create more nominal money from the same stock of bullion, funding wars or other expenditures.
- A crying up (increasing the face value of existing coins) or recoinage (issuing new, heavier coins) were forms of monetary tightening, often used to combat inflation or strengthen the currency's international value.
- This history directly refutes MMT's claim that intrinsic value was "irrelevant." The intense, centuries-long political fights over the quality of the coinage prove that the metallic spread was the most relevant factor.
- The Great Debasement under Henry VIII is a celebrity case precisely because such drastic manipulations were the exception, not the rule, in England. English kings, unlike their French counterparts, were largely constrained by powerful creditor classes (barons, merchants) from engaging in frequent debasement.
- This reveals the true nature of pre-modern money: it was a constitutional project. The monetary system was the outcome of a perpetual negotiation between the sovereign and other powerful social factions over the terms of the spread.
- The ability to issue "good money" (money with a small metallic spread) was a sign of sovereign strength and creditworthiness. It was a pledge to creditors that their loans would be repaid in something of real value.
- Issuing "bad money" was a form of sovereign default in installments, a clandestine tax on holders of currency and a betrayal of creditor trust. It often precipitated political crisis.
- The long-term stability of the English penny, from Offa of Mercia to the Tudor era, was not a moral victory but a political achievement, a

testament to the power of the English landed and commercial classes to restrain the fiscal prerogative of the crown.

- **The founding of the Bank of England in 1694 did not create a new system from nothing. It repressed the old metallic system.**
- **It closed the "fiat loop" by having the state accept its own debt (in the form of bank liabilities) as payment for its taxes.**
- **This shifted the site of struggle from the metallic spread (in the coin) to the credibility spread (in the state's balance sheet).**
- **The question was no longer "How much silver is in this crown?" but "What is the discount on this government bill compared to gold?"**
- **The "Glorious Revolution" of 1688 was the political precondition for this shift. It established that sovereignty was not the personal property of the monarch (a Bodinian tyrant) but was itself subject to constitutional settlement.**
- **This made the sovereign's promise more credible, allowing its debt to circulate as money with a very small spread. The difference was now political and financial, rather than metallic.**
- **Thus, the problem of sovereign order and legitimation function is old and complex, from the tyrant and the oracle, the medieval state and the church, the US and the system of national accounts 1968. The form changes, but the content, the struggle over the spread, remains the same.**
- **The theoretical and historical groundwork now allows for a re-reading of the modern monetary system through the tragic model of the Oracle and the Tyrant. This is not an analogy; it is an exposition of deep structure.**
- **In the modern era, the Financial Market is the Oracle. It is the decentralized, non-agentic entity that holds the power of prediction. It prices all assets based on probabilistic forecasts of the future.**
- **Its power is to legitimize and delegitimize through its predictions. A rising stock market legitimizes a regime; a bond market sell-off (a "buyers' strike") delegitimizes it.**
- **The Federal Reserve (and the state it represents) is the Tyrant. It holds the power of action: to set interest rates, to create money, to regulate, to fiscally spend.**
- **The relationship is a strategic disequilibrium, a permanent state of paradoxical tension defined by the Oracle's Paradox: the market's predictions can be true or useful for the Fed, but not both.**

- When the Fed and the market are in sync, the Fed's power is performative. Its mere statement of intent (e.g., "we will raise rates") causes the market to act in a way that brings that reality about, without the Fed needing to lift a finger. This is a state of performative consensus.
- This consensus can shatter into a counterperformative dissensus, a hall of mirrors. The Fed's prediction (e.g., "the economy is strengthening") is interpreted by the Oracle as a prediction of the Fed's own future actions (e.g., "they will remove support"), which causes the market to act in a way that undermines the predicted strengthening (e.g., by selling assets). The prediction becomes self-defeating.
- This explains the Fed's observed paradox: its omnipotence (the power to create infinite money) is utterly dependent on its impotence (its terror of the Oracle's reaction). Its power is conditional on the Oracle's continued legitimization.
- This dynamic forces the Fed into a position of sovereign servility. This is the modern Tyrant's ultimate move: the sovereign, sovereignly choosing to empty itself of its sovereignty to serve the system.
- his servility takes two forms:
 - **Domestic Servility (Austerity):** The sovereign acts as if it is not sovereign. It engages in debt ceiling theatrics and imposes austerity, not out of "confusion" (as MMT claims) but as a conscious project to maintain the confidence of the Oracle (global capital) and manage its imperial role, as dictated by the Triffin Dilemma.
 - **External Servility (Bailouts):** The sovereign acts as if it had guaranteed the par that it never officially did. The 2008 bailouts of the shadow banking system were a massive act of servility. The Fed extended swap lines to backstop the Eurodollar market, a market of private, offshore dollar liabilities it did not regulate. It sovereignly chose to recognize its sovereignty in these private contracts to prevent the Oracle's predictive machinery from collapsing.
- This act of servility is precisely mirrored in the narrative of Philip K. Dick's "The Minority Report." The protagonist, Anderton, is the founder and head of PreCrime (The Tyrant). When the precogs predict he will commit a murder, he is initially a fugitive. But upon realizing his flight will discredit the entire PreCrime system, he sovereignly chooses to fulfill the prophecy, pulling the trigger on himself to save the system.

- **Anderton becomes a servile sovereign. His final act of agency is to submit to the system's prediction, thereby legitimizing the Oracle (the precogs) forever.**
- **The Fed in 2008 was Anderton. By bailing out the shadow banks, it fired the shot. It fulfilled the market's "prediction" of a systemic collapse unless it was saved, thereby retroactively legitimizing the Oracle's panic and guaranteeing its power forever.**
- **This is the final state of modern sovereignty: a tragedy without catharsis. There is no purgation, no resolution. The unstable, recursive, and paradoxical relationship between the predicting Oracle and the acting Tyrant is the system.**
- **All monetary stability is merely a temporary détente in this permanent cold war. The Fed is not a Bodinian sovereign but a deeply servile one, forever managing its own legitimacy in the eyes of the Oracle it both fears and sustains.**
- **The entire analytical journey, through theory, history, and tragedy, culminates in a single, overarching conclusion that inverts all conventional wisdom: Money is not a thing. It is a difference.**
- **This difference is the spread. It manifests in three simultaneous and interconnected dimensions:**
 - **The Financial Spread: The bid-ask spread, the liquidity premium. This is the price of the market's anxiety about its own existence.**
 - **The Historical Spread: The metallic spread between a coin's nominal and intrinsic value. This was the pre-modern terrain of political struggle.**
 - **The Political Spread: The credibility spread on sovereign debt. This is the modern terrain of political struggle, the gap between the state's promise and its perceived ability to perform.**
- **Consequently, Sovereignty is not a fact. It is an option. It is not a Bodinian, self-identical power but a contingent outcome, a fragile configuration that is always being priced and repriced by the Oracle.**
- **The monetary system is therefore not a neutral economic mechanism but a succession project. It is the never-ending, open-ended negotiation between social classes over the rules of the game, over the management of the spread.**
- **A monetary crisis is not a breakdown of the system. It is the moment when money is "called into question." The repressed difference returns;**

the constitutional settlement ruptures; and the rules of the monetary game themselves become the object of political struggle.

- **This framework finally explains what other theories cannot:**
 - **Austerity is not a technical error or confusion. It is a conscious class project, a form of "sovereign servility" where the state sacrifices its domestic population to maintain its imperial role and appease the Oracle (global financiers), as dictated by the Triffin Dilemma.**
 - **The Fed's bailouts are not a simple exercise of power. They are the Tyrant's servile submission to the logic of the Oracle, acting as if it guaranteed the par to preserve the entire system.**
- **The goal of analysis is not to solve the system's paradox. The system is the paradox. The unstable, recursive relationship between the predicting Oracle and the acting Tyrant is the system.**
- **This is a tragedy without catharsis. There is no third-act resolution, no final purgation of the conflicting elements. All monetary stability is a temporary détente, a fleeting consensus in a permanent cold war.**
- **Therefore, the task is not to wish for an end to the struggle but to recognize its permanence. The task is to manage the inherent and unresolvable conflict, to engage in the constitutional project with open eyes, and to fight for a configuration of the spread that serves justice rather than empire.**
- **This ends where it began: not with a solution, but with a more profound understanding of the paradox. The Fed is still both omnipotent and impotent. The Oracle still holds the power to legitimize and delegitimize. The tragedy continues, and we are all forever in its second act.**
- **The complete theory now synthesizes its components into a unified framework: money is a constitutional project. It is the perpetual, open-ended negotiation over the rules of the monetary game, a struggle to define and control the spread in all its forms.**
- **This constitutional project is the material manifestation of class struggle within the monetary sphere. It is not a fight over distribution within a fixed system, but a fight over the very architecture of the system itself.**
- **The metallic spread was the primary terrain of this struggle in the pre-modern era. The constant negotiation between sovereigns, creditors, merchants, and barons over the quality of the coinage was the constitution of the monetary polity.**

- The creation of the Bank of England and the "closing of the fiat loop" did not end this struggle; it repressed it. It shifted the struggle from the quality of the coin to the credibility of the sovereign's balance sheet.
- The credibility spread on government debt is the modern equivalent of the metallic spread. The fear of debasement became the fear of default or inflation. The political fight over the national debt and the budget is the contemporary form of the ancient constitutional project.
- A monetary crisis is therefore not an anomaly. It is the return of the repressed difference. It is the moment when the constitutional settlement ruptures and money is "called into question."
- In a crisis, the fragile illusion that "all money is money" shatters. The differences leap into focus: the difference between "good" money and "bad" money, between the money of the rich and the money of the poor, between onshore dollars and offshore Eurodollars.
- The 2008 crisis was a classic return of the repressed. The complex, synthetic financial products of the shadow banking system (the "bad money") were suddenly revealed to be fundamentally different from the "good money" of genuine sovereign liabilities. The spread, which had been minimized to a few basis points in the boom, exploded.
- The Fed's response, its act of sovereign servility, was an attempt to re-repress the difference. By backstopping everything, it tried to restore the illusion that all these different liabilities were, in fact, identical and risk-free. It tried to put money back "out of the question."
- This framework explains why political responses to crisis are so intense: because a monetary crisis is a succession crisis. The very rules of the social order are up for grabs.
- The theory also explains the persistence of austerity politics. It is not an error but a strategic choice within the constitutional project. It is a faction of the elite (financial creditors) using the state's power to enforce a specific configuration of the spread, one that prioritizes the store of value function of money (low inflation, high bond prices) over its medium of exchange function (full employment, fiscal stimulus).
- This is the ultimate meaning of sovereignty as an option. The state is not a monolithic actor but a terrain of struggle. Its "sovereign" power is an option that different class factions fight to control and exercise in their own interest.
- The Oracle (the market) is the mechanism through which these factions place their bets on the outcome of this struggle. Its "predictions" are not

neutral forecasts but political judgements on the credibility and legitimacy of the sovereign's current configuration.

- **Therefore, the entire history of money is the history of this struggle of succession. It is the history of attempts to call money into question and to put it out of the question. The monetary system we have today is simply the current, contingent outcome of these endless cycles of succession.**
- **The ultimate conclusion is a complete inversion of traditional political economy. The project is not to refine existing theories but to stage an intervention that changes the very questions we ask about money and power.**
- **The core intervention is the shift from metaphor to metonymy. This is not a semantic difference but an ontological one. It replaces a world of silent equivalencies and identities with a world of noisy succession, difference, and liquidity premiums.**
- **This shift forces a reevaluation of value. Value is not a substance to be revealed or measured, but a relation constituted in and through the spread. It is not discovered; it is negotiated in the succession project.**
- **Consequently, liquidity is not a secondary characteristic of money but its primary, defining feature. An asset is "money" to the extent that it possesses a superior liquidity profile, a smaller bid-ask spread, relative to other assets.**
- **This theory dethrones Marx's economics while rescuing his politics. The labor theory of value is dismantled as a metaphysical error, but the emphasis on history as class struggle is vindicated and elevated to the center of monetary analysis.**
- **It incorporates MMT's institutional analysis while shattering its political naiveté. The state is indeed constitutive of money, but not as a monolithic, rational sovereign. It is a fractured terrain of struggle where class interests battle to configure the spread.**
- **The tragic framework is not a literary flourish but a necessary analytical tool. Only a model that embraces paradox, recursion, and unresolved tension can accurately describe the relationship between the predictive power of finance and the executive power of the state.**
- **The practical implication is that monetary reform is constitutional reform. Changing the monetary system is not a technical task for economists but a political task for a mobilized subject. It requires engaging in the struggle over the spread.**

- The goal is not to achieve a final, ideal system; this is the fantasy of "catharsis" that must be abandoned. The goal is to consciously participate in the "succession project," to fight for a configuration of the spread that prioritises justice and welfare of the subject over rentier privilege and imperial domination.
- The class war is not merely a dual structure, consisting of the proletariat and the bourgeoisie, but a complex web of meta-structure consisting of multiple agents trying to maximise the value of their own mandate.
- Constructing a framework of succession requires acknowledgement of the complexity, historical contingency, and mandates of the agents participating in the system of unit, exchange and value rather than presenting something absolute, the final destination.
- The contemporary expression of the Class war is the war of the spread and the par, constituting agents like:
 - Central Banks
 - Commercial Banks
 - Investment Banks
 - Private Banks
 - Pension Funds
 - Individual Pensioners
 - Hedge funds
 - Sovereign Wealth Funds
 - Insurance Companies
 - Individual Insurance beneficiaries
 - 401k portfolios
 - Family offices
 - Individual discretionary trades
 - Etc
- These agents hold sovereign currencies, sovereign bonds, and other private sector assets (with a performative par guarantee by the sovereign) on their mandate with different time horizons, pricing, and time preferences.
- Generative anthropological accounts and theories of René Girard, Eric Gans, Adam Katz and Zack Baker provide the semiotics and vocabulary for the act of succession.
- To achieve the succession, we must incorporate the ritualistic and tributary aspects of sovereignty.
- Via these accounts, we begin the very foundation upon which all modern economic thought, orthodox, MMT and Marxist, is built. This foundation

is rotten, constructed upon a profound and centuries-old error I call The Productivist Delusion.

- **Both the capitalist economist (modern monetarists as an extension) and the Marxist revolutionary, despite their mortal enmity, share a common, crippling assumption: they believe the core of the economic system, the locus of value and the engine of history, lies in the sphere of production. They see the factory, the mine, the field, the site where raw materials are transformed by human labor into useful things, as the fundamental reality.**
- **From this flows their entire worldview:**
 - **For the capitalist, the market is a neutral mechanism for distributing the fruits of this production.**
 - **For Modern monetarists, as the derivative school of Capitalism, the market is not a neutral phenomenon but constituted by the absolute sovereign**
 - **For the Marxist, "the economy" is fundamentally defined by the social relations of production (who owns the factories), and all else, the state, culture, money, is a "superstructure" built upon this "base."**
 - **This is a catastrophic inversion of reality. It is a metaphysical error with immense political consequences. By focusing on production, All ideologies blind themselves to the true locus of power.**
- **core of the system is not production. It is circulation.**
- **But not circulation in the banal sense of goods moving to market. I speak of circulation as the political and social process of distributing and appropriating surplus. This process is primary, and it is governed by one master mechanism: debt.**
- **Production does not give rise to circulation. It is the other way around. The social relations of circulation, the obligations. the debts, the power of a center to demand a tribute, call production into being and organize it in its image.**
- **We do not produce and then decide how to distribute. We are compelled to produce in order to distribute, to pay a debt, to settle an obligation, to appease a center of power.**
- **This is the first and most necessary step in understanding anthropological thesis: to jettison the productivist lens. Abandon the idea**

of "the economy" as a thing that produces. See it instead as a system of orchestrated obligation.

- What appears as economic activity is, in its deepest essence, a political relationship between a center that commands and a periphery that owes. The factory floor is merely the stage where this relationship is acted out; it is not the author of the play.
- The next step is to understand the instrument through which this relation of debt is quantified, imposed, and managed: money. And to understand money, we must first destroy the fairy tales of its origin.
- To comprehend the present, we must first exhume and autopsy the corpse of a lie that has stalked economic theory for centuries.
- This lie is the Myth of Barter, most famously articulated by Adam Smith but embedded in the liberal imagination. It is a just-so story of stunning naiveté, and its continued resonance is a testament not to its truth, but to its utility in obscuring power.
- The fable proceeds as follows: first, there was barter. A man with a spare spear desired a fish; a fisherman desired a spear. But what if the fisherman needed no spear? A "double coincidence of wants" was required, creating immense friction.
- Then, one day, a particularly clever primitive realized that if everyone agreed to use a third commodity, say, shiny metal or cattle, as a medium of exchange, trade would flow smoothly. Thus, money was born from the rational, decentralized decisions of individuals seeking efficiency. The state arrived later, merely minting coins to certify weight and purity.
- This story is ahistorical nonsense. No anthropological evidence exists for a society that began with pure barter and then invented money. It is a pre-political fantasy, a Robinson Crusoe tale designed to naturalize the market and portray money as a neutral, apolitical tool emerging from voluntary exchange. It is the founding myth of economics, and it is false.
- A more sophisticated account, Chartalism or the State Theory of Money (associated with Knapp and later MMT), correctly demolishes this myth. It rightly identifies the state as central to money's existence.
- The core mechanism is the fiscal circuit: the state first imposes a tax liability payable in a specific unit of account, then spends that same unit into existence, creating the necessary instrument for subjects to extinguish their debt to the sovereign. Money is a tax credit.
- This is a vital correction. It drags money from the realm of individual choice into the realm of sovereign power. However, Chartalism, in its

orthodox form, commits a different error. It is ahistorical and conceptually narrow.

- **Its first failure is its inability to account for money in pre-state societies. If money requires a modern, taxing sovereign, how does one explain the sophisticated monetary systems of ancient chiefdoms or the Wergeld (man-price) compensations of Germanic tribes? Chartalism's definition of "the state" is often anachronistic.**
- **Its second, more profound failure is that it misidentifies the primary relationship. The core of money is not "taxes drive money." The core is "debt drives money." The state's tax is merely one specific, powerful type of debt. The impulse to quantify obligation is far more primordial and universal than the modern tax levy.**
- **We must look deeper, to the very origins of human sociality. Before the market, before the state, there was social debt.**
- **In kinship societies, the primary function of a standard of value was not to facilitate commerce but to quantify sacred obligations, to prevent blood feuds by calculating the price of a life (Wergeld), to formalize bridewealth, to settle honor disputes. This required a universal equivalent to measure the immeasurable: social harm, life, kinship.**
- **Money emerges here, not from trade, but from the need to calculate and settle existential debts.**
- **Furthermore, the earliest records from the cradle of civilization, the temple and palace complexes of Mesopotamia, are not shopping lists. They are administrative accounts.**
- **The Shekel was not a coin for the marketplace; it was a standardized weight of silver used by the bureaucratic Center (the Palace) to allocate resources between departments, to ration to workers, to quantify tributes from outlying districts. Money-as-unit-of-account was a tool of bureaucratic planning and control long before it was a tool of commerce.**
- **Therefore, the true origin of money lies in debt and administration, not in exchange.**
- **It is an instrument of power used to create, measure, and enforce obligations from the periphery to the Center (tribute, tax, rent) and within the Center itself. The Market is a secondary phenomenon that blooms in the spaces between these centralized points of allocation and obligation.**
- **Chartalism, for all its merits, remains trapped within a statist lens. It sees the symptom, the tax, and mistakes it for the disease. The disease is**

the relation of debt itself, of which the state is merely the most potent and recent administrator.

- **To understand the full architecture of this power, we must move beyond the origins of its instrument and examine the structure it serves: the Tributary Mode.**
- **Having dismantled the myths of money's origin, we now arrive at the central analytical engine of the generative apparatus: the Tributary Mode of Production.**
- **This is not merely another historical stage to be placed in sequence after slavery and before feudalism. It is the deep structure, the fundamental and recurring architecture of class power that manifests in myriad forms across history. It is the skeleton upon which all pre-capitalist, and indeed, capitalist, societies are built.**
- **The mechanism of this extraction is non-economic, political coercion. This is the crucial distinction from capitalism. Under capitalism, exploitation is (in theory) mystified through the "free" contract: the worker chooses to sell their labor-power for a wage.**
- **In the Tributary Mode, the coercion is overt. The peasant's obligation to surrender a portion of their harvest, to perform corvée labor, or to pay a tax is enforced by the explicit threat of violence from the Center's military or judicial apparatus. The surplus is not realized through a market sale but is directly appropriated by right of power.**
- **Let us examine its historical manifestations, which are not different systems but variants of the same underlying tributary logic:**
 - **The "Asiatic" or Hydraulic Mode: The classic form. In ancient Mesopotamia, Egypt, or China, the Palace/Temple Center directly organized large-scale irrigation and agriculture.**
 - **The surplus was extracted as a tax-in-kind from peasant communities who were often still in possession of their land. The Center did not need to own the means of production; it owned the means of coercion and the means of administration (the scribes, the granaries, the calendar).**
 - **The Slave Mode of Antiquity: This is not a separate stage but a particular, hyper-exploitative method of surplus extraction within the Tributary framework.**
 - **The Greek Polis and the Roman State were the Centers. Their surplus was extracted through the most extreme form of non-economic coercion: chattel slavery. The slaves themselves**

were a form of tribute-in-persons extracted from conquered territories. The slave plantation was a highly efficient tributary unit, a machine for funneling surplus directly to the ruling Center.

- **Feudalism:** Here, the political Center is fragmented and layered (King -> Lord -> Knight), but the core logic holds fast. The surplus, whether in the form of labor services, rent in kind, or later money rent, is extracted from the peasantry by the lord through the threat of military and legal force. The lord's manor is a decentralized tributary center, and the complex web of fealty obligations is the political architecture that structures the flow of surplus upward.
- Throughout all these variants, the role of money remains consistent with its origins:
 - Its primary function is as a unit of account for the Center to precisely quantify the debts (taxes, tribute, rents) owed to it.

Whereas,

- Medium of exchange, to replay the short term debts denominated in monetary unit of account (to the center)
- Store of value, to repay the long term debts denominated in the monetary unit of account (to the center)
- This framework reveals a staggering historical continuity. From the Bronze Age to the dawn of the modern era, the fundamental economic relation was not between worker and capitalist, but between producer and appropriator, mediated by the political-military power of a Center.
- The form of the Center and the specific mode of coercion changed, but the essential relation, the flow of surplus from the periphery to the center as an obligatory debt, remained constant.
- This analysis lays the groundwork for my most consequential argument: capitalism did not abolish this ancient tributary relation. It did not create a new world system. It simply perfected the old one, developing a new, more insidious technology of extraction.
- The next step is to understand this great metamorphosis: the transition from the explicit Tributary Mode to the implicit Tributary Mode of Capitalism.
- The historical narrative that presents capitalism as a revolutionary break from the past is perhaps the most successful propaganda ever devised. It

is a story of enlightenment overcoming darkness, of markets replacing tyranny, of freedom superseding obligation. This is a fantasy.

- **The transition from feudalism to capitalism was not a revolution; it was a metamorphosis. The caterpillar of the Tributary Mode did not die; it entered a chrysalis and emerged with new, more potent wings.**
- **The underlying organism, the extraction of surplus by a Center from a producing periphery, remained utterly unchanged. What transformed was its mechanism of coercion, which evolved from the overtly political to the insidiously economic.**
- **This metamorphosis was engineered through a process of systematic violence and dispossession that we must correctly term The Great Expropriation.**
- **This is not a peripheral event that occurred centuries ago and concluded. It is the foundational and ongoing act of the capitalist Center. Its primary instrument was the enclosure of the commons, the seizure of land, forests, waterways, and pastures that had for millennia provided the means of subsistence outside the money economy.**
- **The objective was not merely to acquire real estate. It was to manufacture a new type of human being: the "free" laborer.**
- **This freedom is a diabolical paradox. These individuals were "freed" from their direct access to the means of production, from the land that could feed them, the woods that could shelter them, the commons that could sustain them. They were thus simultaneously "freed" from economic independence and "freed" for a new, universal dependency: the absolute necessity to acquire money to survive.**
- **This is the alchemy of capitalism: it transformed political obligation into economic necessity. Under the explicit Tributary Mode, the peasant owed a debt of grain or labor to the Lord, enforced by the Lord's men-at-arms.**
- **Under the implicit Tributary Mode of capitalism, the proletarian owes a debt to the system itself, enforced by the impersonal, omnipresent threat of starvation and homelessness.**
- **The coercion is no longer delivered by a specific lord's whip; it is administered by the abstract, totalizing pressure of the market. Work for a wage or die. This is the silent, daily violence that underpins the entire edifice.**
- **From this vantage point, the wage relation reveals its true nature. It is not a free contract between equal parties. It is a debt relation.**

- The worker is advanced a sum of money (the wage) before the commodity their labor produces is sold. They are, in effect, in a state of social debt to the capitalist for their daily subsistence. The subsequent production process is nothing more than the settling of this debt.
- The worker toils to produce value sufficient to cover the advance they have already consumed. The "profit" is the surplus value extracted once this social debt is repaid, it is the modern form of tribute.
- This analysis forces a monumental inversion of the productivist perspective. The dizzying, world-altering productive apparatus of capitalism—the factories, the machines, the global supply chains, is not the core of the system. It is a subsidiary function. Production is subordinate to circulation.
- Production only occurs if it can validate and amplify value in circulation. that is, through the successful sale of commodities for money on the market. The entire productive machine is therefore a vast, complex mechanism for realizing the value of money-capital advanced by the Center (the capitalist class, the banks). The circuit begins and ends with money: M-C...P...C'-M'. The "economy" is this circuit of monetized debt in perpetual, expansionary motion.
- The role of the state transforms in this new phase, but its core function as the enforcer of the Center remains. The modern capitalist state is the manager and guarantor of the monetary-tributary system.
- It no longer needs to directly extract tribute because the monetary system it legislates and protects does the extracting automatically. Its legal codes enforce contracts and property rights, which are the legal framework for debt collection on a societal scale.
- Its central bank acts as the lender of last resort, the ultimate backstop for the system's liquidity, ensuring the circuits of debt do not seize up. Its military and diplomatic power secures global resources and enforces the rules of trade, maintaining a global hierarchy of tributary relations.
- We thus arrive at a critical juncture. Capitalism is the Tributary Mode that has perfected the art of extraction by making its coercive mechanisms impersonal, universal, and financialized.
- It has created a system where the whip is held by no one and thus by everyone, where the obligation to pay tribute is internalized as a natural law of existence.
- The next stage of our analysis will examine the apex of this system: the era of financialization, where tribute extraction becomes direct, overt, and unmediated by the production process.

- We have established that capitalism is the Tributary Mode perfected, having transformed overt political coercion into the impersonal economic coercion of the wage relation. But this is not the end of its evolution. We now witness its most abstract and potent form: the era of Financialization.
- This is not a deviation from capitalism but its logical culmination, the point where the system sheds even the pretense of productivism and reverts to the most ancient form of extraction: the direct exaction of tribute through debt. I call this Hyper-Tribute.
- Financialization marks the moment when the primary site of surplus accumulation shifts decisively from the production of goods to the circulation of monetary instruments themselves.
- Profit is increasingly generated not through the exploitation of labor in the factory (M-C...P...C'-M'), but through the manipulation of financial assets (M-M'). Money begets money directly, in a circuit that appears miraculously cleansed of any social or productive mediation.
- This is not new. It is a return of the repressed. It is the revenge of the oldest layer of the tributary structure. The City of London, the epicenter of modern finance, did not emerge from the industrial mills of Manchester. It is the direct descendant of the coffeehouses where sovereign debt, the lifeblood of the 18th-century warfare state, was traded. Finance capital is, and always has been, tributary in its purest form.
- The mechanisms of this hyper-tribute are manifold:
 - The Rentier Resurgence: The rentier—the figure Marx dismissed as a parasitic "coupon-clipper", is not an anomaly. He is the quintessential tributary actor. His income, interest, dividends, rents, capital gains, is pure tribute. It is a claim on social wealth extracted not by contributing to its creation, but by virtue of owning a legal title to a stream of payments. This is the modern equivalent of the feudal lord's right to levy a toll or a tax, now securitized and traded on global markets.
 - The Assetization of Life: Financialization is the process of transforming every aspect of social life into an income-generating asset to be owned and leveraged. The human desire for shelter becomes a mortgage-backed security. The social need for education becomes a securitized student loan. The collective provision of retirement (pensions) becomes a fund driving speculative flows in capital markets. Each of these is a conduit for

tribute, a mechanism for siphoning value from the household (the periphery) to the financial sector (the Center).

- **The Imperial Dimension: The global financial architecture is the ultimate system of interlocking tributary relations. The U.S. dollar as the world's reserve currency is the pinnacle of this structure. It forces all other nations to hold dollars to participate in global trade, effectively imposing a financial tribute on the entire world. The structural adjustment programs enforced by the IMF and World Bank are not economic advice; they are edicts from the Center that dismantle local industries, enforce austerity, and privatize public assets, all to ensure the uninterrupted flow of debt servicing from the Global South to the financial centers of the Global North.**
- **This system produces a new form of crisis: not a crisis of production (overproduction), but a crisis of entitlement. The 2008 collapse was not merely about "toxic assets." It was a moment when the sheer volume of claims to future tribute, the mountain of securitized debt, overwhelmed the capacity of the underlying population to produce the surplus required to satisfy them. The system of promises broke down because the promises themselves had become untethered from any plausible social reality.**
- **The political response to this crisis, the bailouts, was the most spectacular act of tributary power in modern history.**
- **The state, acting as the executive committee of the financial Center, used its power to socialize the losses, to guarantee the worthless claims, and to forcibly recommence the flow of tribute. Austerity was the necessary corollary: the deliberate immiseration of the public sector and the working class to preserve the value of financial claims. It was a brutal reaffirmation that the system exists for one purpose: to serve the creditors.**
- **Thus, financialization completes the circle. Capitalism began by transforming political tribute into economic wage exploitation. It ends by transforming that wage exploitation back into a direct, financialized tribute system, more universal and inescapable than any that came before it.**
- **The feudal peasant owed a portion of his harvest to one lord. The modern subject owes a portion of their future life to a vast, impersonal network of creditors. The form has changed. The essential relation, "the Debt to the Center", has reached its most abstract and perfect expression.**

- This is not to say that production, distribution, and consumption do not occur. Of course they do. Humans must eat, build, and trade. Rather, this is a statement about categorization and ideology.
- The term "the Economy" (with a capital E, as a reified, singular entity) is not a neutral descriptor of human material activity. It is the primary ideological construct of the modern age, a powerful fiction that serves to naturalize and depoliticize the relentless engine of tributary extraction.
- "The Economy" is a reification, the mental error of mistaking an abstract concept for a concrete, autonomous thing. We speak of "the Economy" growing, shrinking, being "healthy" or "sick." We debate how to "manage" it, "stimulate" it, or make it "more efficient."
- In doing so, we perform a profound act of mystification. We take a vast, heterogeneous set of power relations, class struggle, imperial domination, financial expropriation, gendered and racialized exploitation and repackage them as a neutral, self-contained system operating according to its own internal, natural laws (e.g., "supply and demand," "market fundamentals").
- This conceptual move is arguably the most effective mechanism of social control ever devised. By accepting the frame of "the Economy," we automatically accept the underlying tributary structure as an immutable fact of nature. Our political horizons become desperately narrow, limited to technical debates over how best to manage the system for growth or stability. We are arguing over the seating arrangement on the Titanic. We are forbidden from questioning the ship's destination, its design flaws, or the very necessity of the voyage itself.
- What truly exists is not an "Economy" but a global system of orchestrated power and obligation. It is a hierarchy of creditors and debtors, of centers and peripheries, endlessly working to extract, distribute, and accumulate surplus.
- This system has a geography (the Global North/Center vs. the Global South/periphery), a class structure (the rentier vs. the precariat), and a political architecture (the neoliberal state, the IMF, the WTO). To call this an "Economy" is like calling a battlefield a "projectile redistribution forum." It describes activity while utterly obscuring its essential nature, which is conflict and coercion.
- This system requires not just coercion but legitimation. This is where the ideological concept of "the Economy" proves indispensable. It is bolstered by a vast intellectual apparatus:
 - Economics Departments: Which function as the high priesthood of this new religion, developing ever more complex mathematical

models to describe the behavior of their reified god, "the Economy," while willfully ignoring the power relations that constitute it.

- **Financial Journalism: Which reports on the moods and whims of "the market" as if it were a force of nature, using a language of meteorology ("turbulence," "storms," "headwinds") to describe what are in fact political struggles over the distribution of social wealth.**
- **Corporate Media: Which reduces human suffering caused by austerity (a political choice to prioritize creditor claims) to a necessary medicine for the "health of the Economy."**
- **The goal of this entire ideological project is to make the tributary relation seem inevitable, necessary, and natural. It is to make us see our debt to the Center not as a political construct, but as a fact of life as unchangeable as gravity.**
- **Therefore, the first and most fundamental act of intellectual emancipation is to stop seeing like an economist. We must expunge the concept of "the Economy" from our minds.**
- **We must learn to see the system for what it is: not a machine for producing goods, but a political order organized for the extraction of tribute. What we call "economic activity" is the visible tremor on the surface; the deep seismic event is the constant, silent struggle between appropriators and producers, between the Center's demand for surplus and the periphery's resistance to it.**
- **This realization changes everything. It means the central conflict of our time is not between "labor and capital" within the economy, but between the entire logic of the tributary system and those who are subjected to it.**
- **The true political question is not how to manage the system, but how to escape it. This leads us inexorably to the question of resistance, of what a politics of emancipation looks like when one realizes there is no "Economy" to seize or control, only a Debt to the Center to abolish.**
- **A correct diagnosis is useless without a corresponding treatment. My dismantling of "the Economy" and exposure of the Debt to the Center necessitates a radical reevaluation of all traditional leftist and socialist strategies for emancipation.**
- **I must conclude that the predominant tools of the Old Left are not merely insufficient; they are often counterproductive, for they remain trapped within the very productivist and statist logic that sustains the tributary system.**

- The foundational strategy of the Marxist tradition is the seizure of state power. The goal is to capture the Center, “the apparatus of the state”, and use its power to expropriate the expropriators, seize the "means of production," and institute a planned economy. This strategy is a catastrophic error. It is based on the productivist delusion that the core of power lies in the factory and that the state is a neutral tool that can be wielded by a different class.
- My analysis demonstrates that the state is not a neutral tool. It is the managerial committee of the broader tributary system. Its purpose is to administer and enforce the Debt to the Center.
- To seize the state is not to abolish the Center; it is to become the new manager of the same extractive apparatus. The 20th century provides the grim proof: the so-called "communist" states of the Eastern Bloc did not abolish the Tributary Mode; they became its most extreme and bureaucratic form, state-tributary systems.
- They replaced the diffuse center of capitalist finance with a hyper-centralized party-state, but the fundamental relation, a political center extracting surplus from a disenfranchised producing class, remained intact, and often intensified. They seized the levers of power only to find those levers were wired to the same engine of extraction.
- The other great weapon of the Old Left, the general strike, is also revealed to be of limited utility. A strike halts production. But my thesis argues that production is not the core of the system; circulation is.
- A strike attacks the engine room, but the ship is steered from the bridge of finance and debt. A strike powerful enough to cripple production would indeed cause a crisis, but the system's response, austerity, bailouts, the mobilization of financial reserves, demonstrates that the Center can prioritize the continuity of its circulatory, debt-enforcing functions over the stoppage of production.
- The strike does not directly challenge the power of the Oracle, the pricing mechanism that legitimizes the entire structure.
- Therefore, we require a new political strategy commensurate with the depth of our analysis. If the core of the system is the “Debt to the Center”, then the goal of emancipation cannot be to seize the Center. It must be to secede from its grasp.
- To fully grasp the totality of the tributary system, we must now dismantle its most sacred and elusive concept: Value. Orthodox economics treats value as a subjective preference or an emergent property of market equilibrium.

- **Marxism, for all its critical power, locates value as an objective substance crystallized from abstract human labor. Both are mistaken. These theories, in their own ways, perpetuate the productivist delusion and obscure the true nature of power.**
- **Value is not a substance. It is not an equilibrium price. Value is a political relation. It is the quantifiable measure of a social debt, and its magnitude is determined not by labor inputs or subjective desire, but by the power of the Center to impose a standard of commensuration.**
- **Let us be perfectly clear: nothing has "value" in isolation. A thing only accrues value by entering into a system of relations governed by the Center's unit of account. The price system is not a neutral discovery mechanism; it is the calculus of power, the arithmetic of the Debt. The price of a commodity is not a reflection of the labor it contains, but a measure of its position within the hierarchical flow of tribute back to the Center.**
- **This exposes the profound error of the Labor Theory of Value. It seeks an objective, material foundation for value in the expenditure of human energy. But this is to look for the source of a command in the muscle of the soldier who carries it, rather than in the authority of the general who issued it.**
- **Labor is what is exploited; it is not what creates value. Value is created by the social act of measurement and imposition performed by the Center. The Center's power to demand payment in a specific unit is what makes all things commensurable. It is what translates the heterogeneous, incommensurable material world of use-values into the homogeneous, quantified world of exchange-value.**
- **Consider the historical evidence:**
 - **In ancient Mesopotamia, the Palace did not "discover" the value of barley. It decreed that the shekel of silver was equivalent to a gur of barley. This was not an economic calculation; it was an administrative fiat. Value was born from the needs of the bureaucracy to ration, allocate, and calculate tribute.**
 - **The "price" of a life under Wergeld law was not determined by the labor of the deceased. It was a social and legal judgment on the status of the victim and the honor of the kin group, quantified in a standardized measure of metal.**
 - **The "value" of a government bond today is not set by the labor that went into providing public services. It is set by the Oracle of the market, which is itself a mechanism for judging the credibility of**

the state's future power to extract tribute (taxes) from its population.

- **Therefore, the entire edifice of economics, with its endless search for the source of value, is asking the wrong question. The question is not what value is, but who has the power to measure it and impose that measurement upon the world.**
- **The market, then, is not a place where pre-existing values are realized. It is a ritual space where the Center's measure is constantly tested, reaffirmed, and occasionally contested. Each transaction is a performative utterance that says, "I accept the Center's rule of commensuration in this instance." The "liquidity" of an asset is nothing more than the certainty with which it can be converted into a form acceptable to the Center, ultimately, to settle a debt.**
- **This understanding collapses the base-superstructure model. The legal, political, and ideological "superstructure" is not secondary. The Center's power to command, to legislate, to define property rights, and to enforce contracts is the base. This juridico-political power is what calls the economic realm into being and structures it. The "economy" is the shadow cast by the state.**
- **The practical implication is earth-shattering: “struggles over value are not struggles over distribution within a fixed system”. They are succession struggles over the very rules of measurement. A fight for a higher stake is not just a fight for a larger share of the pie; it is a fight to redefine the value of power within the calculus of power.**
- **This brings us to the ultimate form of resistance: not to seize the means of production, but to seize the means of commensuration. To create new units of account, new systems of measurement, and new circuits of exchange that acknowledges the crisis of succession and create the modalities of the succession.**

Via this powerful Epistemic and Anthropic vocabulary we've developed thus far, defining the “Center,” the “Subject,” the “Sovereign,” and the ritualistic act of “Succession,” among others, we now leverage this framework to theorize the Ontological Justifications behind existence itself, and the core choices underlying the Monetary Design of Xenosystems.

The modern portfolio theory, the capital asset pricing model, the absolute assumption of the risk free rate, par internalization and it's discontents

The modern portfolio theory is notably the most important innovation in the development of financial markets in 20th century. Today, more than \$100 trillion worth of dollar denominated organized pools of capital have modern portfolio theory as their primary investment and portfolio construction mandate.

Before Harry Markowitz introduced Modern Portfolio Theory in his 1952 paper "Portfolio Selection", investment mandate formation focused predominantly on evaluating individual assets based on their potential risk and return. The common advice was simply to "pick winners."

Markowitz's revolutionary insight was that the risk of an individual asset is less important than the risk it contributes to the entire portfolio. He demonstrated that by combining assets whose prices do not move in perfect lockstep, an investor can construct a portfolio that offers a higher expected return for a given level of risk, or a lower risk for a given expected return. This process is called diversification, and it is the cornerstone of MPT. In essence, MPT is about the intelligent assembly of a portfolio, not just the skillful selection of individual stocks.

Markowitz wrote this during the era when many economists and financiers were realising the a sovereign and monetary order founded based on the "deficits" vs historically, a sovereign and monetary order founded based on "surplus".

The foundational premise of modern portfolio theory, and it's extension capital asset pricing model is the existence of a risk-free asset, typically represented by the sovereign bonds of stable governments. This asset is the cornerstone of financial theory, the bedrock upon which the pricing models for all other assets, stocks, derivatives, are built. It is treated as an unquestionable axiom. Yet, economic history presents us with an irrefutable counter-narrative: there is no such thing as a perfectly safe sovereign.

To understand the monumental achievement of, risk free rate, the creation of sovereign debt as the risk-free asset and sovereign creditworthiness, and how did we arrive here, we must first appreciate the profound skepticism that surrounded sovereign debt for centuries. Economic history presents us with two seemingly contradictory narratives.

The first narrative, championed by economists like Reinhart and Rogoff, emphasizes the precariousness of sovereign credit. The historical record is a litany of defaults, from the Middle Ages to the great interwar crisis, the largest wave of sovereign defaults in history. This narrative exposes the "this time is different" syndrome as a dangerous illusion, revealing sovereign safety as fundamentally ahistorical. It underscores the fickleness of confidence and the ever-present reality of credit risk, even for the most powerful states. In the 15th century, this risk was quantifiable: Italian banks charged Charles VIII of France an interest rate of 100% for war loans, while charging Italian merchants a mere 5-10%. The sovereign was the riskier borrower.

Yet, running parallel to this story of failure is a second narrative: one of gradual sovereign accreditation. This is the story of how a "default-laden history" was gradually forgotten and a new norm of voluntary repayment and investment was established. The puzzle at the heart of this transformation is the question of motive: Why would a sovereign, who cannot be coerced by a higher power, ever voluntarily repay its debts? Rational-choice theory points to reputation as a disciplining mechanism, but this only works if borrowing is expected to continue indefinitely, a "normalization of indebtedness" that itself had to be constructed.

The journey begins not with voluntary credit, but with forced loans. In medieval Italian city-states like Florence, so-called "public debt" was often a compulsory contribution from citizens, justified as a patriotic duty. When Florence became insolvent in 1345, it didn't default; it consolidated its obligations into a single fund and allowed credits to be transferred to third parties. This was a crucial innovation, creating a secondary market for debt, but it remained a system of forced contributions, not one based on trust. The true birth of public credit, a voluntary market based on the trust that principal and interest will be repaid, is dated to a specific political moment: the post-Glorious Revolution British government at the end of the 17th century. This shift from forced loyalty to voluntary trust is the critical juncture in the backstory of the risk-free asset.

The transformation of sovereign debt from a precarious, forced loan into a credible, voluntary instrument was not an organic economic evolution. It was a political-institutional revolution centered in late 17th-century Britain. Two pivotal developments created the scaffolding for modern sovereign creditworthiness:

1. The Parliamentary Guarantee (The Glorious Revolution, 1688): This was the fundamental break. By transferring the power of the purse from the monarch to Parliament, the Glorious Revolution transformed the King's debt into the "National Debt." This was not a semantic change. It represented a shift from a personal, discretionary obligation of a fallible sovereign to a collective, institutional commitment of the nation-state. This created what North and Weingast termed "credible commitment." Unlike a king who could repudiate his debts, a Parliament representing powerful creditor classes (landowners, merchants) had a vested self-interest in honoring the state's obligations to maintain its own creditworthiness. The debt was no longer "public in name but private in fact"; it became genuinely public, implicating the entire political nation.
2. The Foundation of the Bank of England (1694): This institution acted as the crucial financial engineer. Paradoxically, it was a privately-owned entity that performed the quintessentially public function of managing the state's finances. The Bank transformed the sovereign's scattered, illiquid personal debts into a consolidated, liquid, and tradable public debt. It did so by issuing shares to raise capital, which it then loaned to the government. Thus, buying a share in the Bank of England was an indirect investment in the national debt. This process "liquidified" government obligations, making them easy to buy and sell, thereby enhancing their attractiveness and safety in the eyes of investors.

However, we must avoid the simplistic modern dichotomy of "public" and "private." In the Financial Revolution, "public credit" was a far more fluid concept. It referred broadly to the entire ecosystem of new paper instruments, stocks, shares, promissory notes, insurance, that emerged alongside government bonds. The Bank of England, the South Sea Company, and the East India Company were hybrid entities: privately-owned but central to public finance, even wielding state-like powers such as private armies. Government debt was interwoven with corporate debt through these entities. Furthermore, paper money itself was widely understood as "national debt by another name." The credibility of all these new financial instruments, the "public Faith", was therefore interdependent. The safety of sovereign debt was inextricably linked to the liquidity and stability of the entire emerging capital market. This complex fusion, not a clean public-private separation, was the true cradle of sovereign safety.

The institutional innovations of the Financial Revolution were necessary but insufficient to fully secure sovereign creditworthiness. The "public Faith" was not just a matter of parliamentary acts and banking charters; it was a cultural project that required the cultivation of a new financial subjectivity and the taming of the inherent anxieties surrounding abstract value.

A crucial aspect of this project was the personification and mastery of "Lady Credit." In the spirited debates of 17th and 18th century Britain, public credit was often depicted as a capricious, feminine figure; erratic, sensitive, and prone to flight. Her favor was essential for national prosperity, but her trust could be easily lost through corruption, instability, or mere rumor. Establishing sovereign creditworthiness, therefore, depended on the parallel invention of a figure capable of wooing and mastering this elusive lady: the "financial man."

This new subjective ideal was characterized by rationality, foresight, and discipline. Key to this disciplining process was the widespread adoption of double-entry bookkeeping. This was not merely an accounting technique; it was a moral and cognitive technology. It imposed order, transparency, and a sense of objective control over the speculative temptations represented by Lady Credit. The meticulous ledger, with its balanced debits and credits, produced the image of the reliable, creditworthy gentleman. The credibility of the individual gentleman, in turn, became the micro-foundation for the public credit of the nation. A state populated by such disciplined financial actors was a state worthy of trust.

This cultural shift was supported by a confluence of other factors:

1. **Political Competition:** The emerging party system of Whigs and Tories, while contentious, created a stable structure of political accountability that replaced arbitrary royal rule.
2. **Fiscal Reform:** The professionalization of tax collection and administration (as documented by Brewer) gave investors confidence that the state had the reliable revenue streams to service its debt.
3. **Legal Legitimacy:** The 18th century saw a dramatic increase in the general credibility and enforceability of contracts (Muldrew), creating a legal environment conducive to financial promises.

4. Monetary Stability: Britain's pre-existing stable monetary standard provided a homogeneous space in which financial instruments could circulate with confidence.

Thus, by the 19th century, the British national debt had completed its transformation into a "modern-style" debt. The occasional sovereign defaults that persisted elsewhere were seen as relics of a barbaric past, distinct from the new era where debts were "by definition inherently lawful and legitimate." This was not just an economic achievement; it was a profound cultural and moral shift that redefined the character of the state itself, from a predatory power to a reliable debtor. The stage was now set for the final, and most subtle, act of this transformation: the role of narrative fiction in naturalizing this entire edifice.

To fully explain the accreditation of sovereign debt, we must now turn to a neglected but fundamental dimension: the parallel evolution of financial and literary fictions. This investigation draws from the "New Economic Criticism" (NEC), a school of thought that excavates the buried metaphors and narrative structures within economics and, conversely, reveals the economic principles ordering literary works.

The core insight is that financial instruments, fiat money, stocks, bonds, and literary fiction are profoundly analogous. Both are symbolic systems that require an act of faith, an act of "credit" in the etymological sense, *credere*, to believe. A banknote is a piece of paper that we agree to treat as having value; a novel is a set of printed words we agree to treat as representing a world. Both, as Marc Shell argues, are forms of writing that demand conferred belief.

Critically, in the early modern period, these two forms of writing were not clearly distinguished. As Mary Poovey's work demonstrates, there existed a "continuum of writing" where what we now separate as "economic" and "imaginative" texts shared the same formats and rhetorical strategies. A shipping list looked identical to a poetic catalogue; a promissory note used phrases found in fictional texts. Early writings on credit were a generic *mélange* of satire, allegory, news, and polemic. The very texts that founded political economy, like those of Daniel Defoe, shared fundamental narrative features with the emerging literary form of the novel.

This continuum was essential for the initial acceptance of new financial instruments. Their nature as contingent promises, as writings, was still visible and required persuasive narrative support. The gradual naturalization of these instruments, the process by which their constructed nature "passed beneath the horizon of cultural visibility," occurred through a gradual generic differentiation. Over the 18th century, economic writing sought authority by defining itself as transparent description of real facts, while imaginative writing claimed autonomy through internal coherence and disavowed direct reference to the world. This fact/fiction distinction was itself modeled on the distinction between valid and invalid money. The success of this project meant that eventually, people could use a banknote without thinking of it as a "fiction," just as they could read a novel as a simple story. This historical erasure of the link between the genres is precisely what allowed the fiction of sovereign safety to become an unquestioned axiom.

The ultimate contribution of the realist novel to sovereign creditworthiness was not just what it made visible, but what it made disappear. Having provided the cognitive tools for believing in immaterial value, the novel then performed a crucial act of sleight-of-hand: it shifted the locus of financial anxiety away from the public and systemic to the private and moral. This effectively rendered the fragility of the sovereign debt itself invisible.

In the Victorian era, the novel's focus underwent a decisive change. The theme of government bankruptcy, so prominent in earlier centuries, receded from view. In its place, the narrative spotlight fell on private insolvency, the spendthrift individual, the failing country bank, the familial ruin caused by personal debt. The national debt, when mentioned at all, was portrayed as a bedrock of security, the "funds" in which prudent characters safely invested their savings.

This narrative shift had a profound ideological effect. It engineered a "peculiar disconnection of public and private credit" (Brantlinger). The potentially vicious and destabilizing effects of a society dominated by monetary relations were framed as problems of private character, shiftlessness, extravagance, moral failure. Meanwhile, the governmental institutions responsible for creating and managing the national debt and paper currency were cast as "virtuously constructive," pillars of stability. The central bank was sanitized, while critique was directed at the periphery (country banks) or inward, at the flawed individual.

The irony, as Brantlinger notes, is profound. The novel, which often saw itself as a critic of the sociopolitical status quo, ended up providing a powerful structural underwriting for public credit. By making the sovereign's financial promise seem so unshakeably safe that it could fade into the background, the novel allowed systemic risk to be forgotten. The "publick Faith" became so ingrained that it was no longer a topic for public debate in the cultural sphere; it was a silent assumption.

This pattern, whereby crisis leads not to a collapse of the system but to a reconfiguration and normalization of new financial norms, is a historical constant. The first market for government debt in Florence, the creation of the Bank of England, and the era of paper money were all born from moments of sovereign insolvency. The 2010-2012 European sovereign debt crisis is a modern example. It shattered the post-war consensus that defined safety merely by size and liquidity (i.e., US Treasuries). In its wake, new criteria for creditworthiness emerged, championed by actors like BlackRock, focusing on resilience to external shock rather than sheer scale. Each crisis does not restore an old norm; it instigates a new one. The realist novel's role was to help make the previous crisis-induced norm, the safety of sovereign debt, seem so natural that its constructed, fictional quality vanished from sight.

The "working fiction" of the risk-free asset, so effectively naturalized over centuries, faced a severe stress test during the sovereign debt crisis of 2010-2012. This crisis forced a dramatic re-evaluation of the very criteria for sovereign creditworthiness, demonstrating that the concept of "safety" is not a static economic truth but a perpetually contested and renegotiated standard.

Prior to the crisis, the definition of safety was dominated by a simplistic metric: size and liquidity. The US Treasury bond was the unquestioned global benchmark, the "closest proxy"

to the risk-free asset. This view was embedded in financial practice through issuance-weighted bond indexing. This method, derived from the Capital Asset Pricing Model (CAPM), constructed bond portfolios based on market capitalization, meaning countries that issued the most debt received the largest weight in the index. This created a perverse incentive, effectively "rewarding failure" by directing more capital to the most indebted nations and "penalizing success" by underweighting fiscally prudent ones.

The crisis exposed the profound flaw in this logic. It became clear that a large, liquid debt market did not equate to safety; it could simply mask underlying solvency issues. In response, financial powerhouses like BlackRock began promoting a new, more nuanced sovereign risk index. This new model deliberately moved away from issuance weighting. Instead, it identified the most creditworthy countries not as the largest debtors, but as those most resilient to external shock, nations like Norway, Sweden, and Switzerland, with strong fiscal positions and diverse economies. This shift represents a significant recalibration of the "working fiction." Safety is no longer defined by the depth of the market but by the fundamental solvency and isolation of the state from systemic risk.

This modern recalibration echoes the historical pattern wherein crises are not aberrations but generative moments that forge new norms. The crisis of 2010-2012 did not destroy the concept of sovereign safety; it transformed it. It demonstrated that the authority to define what is "risk-free" is a form of power, and that this authority can shift from traditional central banking models to private financial institutions like asset managers. The chapter concludes by noting that while the 18th-century realist novel was a key actor in establishing the initial fiction, the contemporary mechanisms for underwriting sovereign creditworthiness are now dominated by the complex interplay of economic theory, monetary policy, and the analytical frameworks of global finance. The story of the risk-free asset is therefore not over; it is entering a new chapter.

The central paradox with which we began, the axiomatic status of sovereign safety in finance theory versus its historical precariousness, can now be resolved. The resolution lies in recognizing that sovereign creditworthiness is not solely an economic or political achievement; it is a cultural and narrative accomplishment. The "securitization" of sovereign debt was a process that unfolded across multiple domains simultaneously.

The argument synthesizes these domains into a coherent whole:

1. The Institutional Foundation: The political-institutional revolution in late 17th-century Britain (Parliamentary sovereignty, the Bank of England) created the framework for credible commitment by making debt "public" and liquid. This was the necessary hardware.
2. The Cultural relevance: The cultivation of a "financial man" disciplined by techniques like double-entry bookkeeping, and the taming of the capricious "Lady Credit," provided the subjective and moral foundations for trust in abstract promises.
3. The Narrative Engine: The most profound underwriting, however, came from the parallel evolution of literary and financial fictions. The initial "continuum of writing" allowed for the persuasive introduction of new paper instruments. The subsequent

differentiation of genres was not a split but a specialization: economic writing claimed the mantle of factual transparency, while imaginative writing, particularly the realist novel, took on the task of regrounding intrinsic value in the realm of character and narrative probability.

The genius of the realist novel was that it functioned as a cultural laboratory for belief. It trained readers in the essential competencies of a credit economy: trust, deferral, and the evaluation of character based on internal consistency rather than external signs. By creating worlds that were more coherent than reality, it made the immaterial promises of finance feel solid and reliable. Furthermore, by shifting literary focus from state bankruptcy to private morality, it made the systemic risk of sovereign debt disappear from public discourse, naturalizing it into an invisible background assumption.

Therefore, the "working fiction" of the risk-free asset endures not because it is true, but because it is functional. It works because it is embedded in a vast cultural apparatus that has, over centuries, refined the very criteria for what we perceive as credible. As Kurt Heinzelman noted, "fictions work even when they are recognised as fictions." The safety of sovereign debt is the premier example of such a working fiction. Its history is inextricably linked to the wider history of the distinctions between public and private, and fact and fiction, and their continual co-evolution.

In wholeness, it concludes, by affirming the fundamental power of "working fictions" in economic life. The apparent discrepancy between economic theory, which treats sovereign safety as an axiom, and economic history, which reveals its contingency, is not a flaw to be resolved by choosing one narrative over the other. Instead, it is the very nature of the phenomenon. The stability of modern finance is built upon foundational beliefs that are functionally treated as real, despite their constructed and historically fragile nature.

This analysis demonstrates that a full understanding of financial concepts cannot be achieved through economics or history alone. It requires an interdisciplinary approach that incorporates the history of ideas, cultural studies, and narrative theory. The accreditation of sovereign debt was a complex process that took place within the wider cultural context denoted by the historical term "public credit." This term encompassed not just government bonds, but the entire ecosystem of trust necessary for the new financial instruments of the 18th century to function.

In the end, the history of sovereign safety is a broader history of how societies distinguish and co-evaluate the public and the private, the factual and the fictional. To denounce concepts like the risk-free asset as "unrealistic" is to miss the point. Their reality is performative; they are real in their consequences. The task for scholars and policymakers is not to discard these fictions, but to understand their architecture, their history, and their conditions of maintenance. For it is when a working fiction is no longer recognized as a fiction, when its constructed nature is completely forgotten, that it becomes most vulnerable to a succession crisis that can reveal its fragile core. The sovereign debt is "safe" only for as long as the intricate cultural, political, and narrative machinery that underwrites it continues to function.

Collateral and crisis

Let us establish the fundamental premise: collateral has undergone a dramatic transformation, from a subordinate technicality lurking in the back offices of finance to a principal actor commanding the central stage.

The 2008 financial crisis, epitomized by the collapse of Lehman Brothers, was the catalytic event that shattered its obscurity, thrusting collateral to the forefront of theoretical and policy debates.

This belated academic recognition, however, is essentially an attempt to theorize a systemic reality long understood, if quietly, by the global regulatory community. The true inaugural crisis of collateral-based finance was not 2008 but the 1998 fall of Long-Term Capital Management, an event that laid bare the monetary heart of the collateral system for those who cared to look.

Yet, in the absence of a coherent theoretical framework to comprehend the systemic nature of collateral and its implications for financial stability, the political incentives to embrace collateral-based finance prevailed. This was particularly evident in the realm of monetary policy, where central banks collectively abandoned their practice of implementing interest rate decisions through the outright purchase and sale of government bonds. This method, which could be misconstrued as 'monetizing' government debt, sat uncomfortably with the monetarist dogma of political independence.

The solution was a systemic pivot to implementing policy via temporary loans, repurchase or repo agreements, collateralized by government and high-quality private securities. In this strategic turn, central banks did not merely adopt a new technical tool; they actively sanctioned and accelerated a broader structural transformation of the financial ecosystem.

This structural shift unfolded along two critical axes: demand and supply. On the demand side, the parallel erosion of the welfare state and the ascent of profound wealth inequalities fueled the rise of a new class of institutional investors, pension funds, insurance companies, sovereign wealth funds, all with an insatiable appetite for 'safe' monetary instruments. Simultaneously, the sprawling expansion of over-the-counter derivatives markets, encouraged by regulatory pushes like the 2002 EU Collateral Directive, necessitated that banks collateralize these transactions with cash or high-quality bonds to hedge against the risk of dealer bank default. On the supply side, sovereign states found themselves structurally incapable of meeting this gargantuan institutional demand for safe assets.

Their response was not to resist, but to accommodate, through deliberately lax regulatory regimes, the private production of seemingly high-quality collateral via the financial alchemy of securitization. The 2008 crisis was the inevitable and violent rupture of this fragile equilibrium. It was, in its essence, a run on the repo market, a silent, frantic, and systemic withdrawal of repo agreements and a chaotic scramble for missing collateral, a process violently accelerated by the pervasive practice of rehypothecation. Confronted with the seizure of the shadow banking system's core mechanism, the continuous par convertibility of collateral into cash.

central banks were forced to radically expand their crisis management role. They became not just lenders of last resort to banks, but buyers of last resort for collateral itself, committed to preserving the liquid status of both public and private securities. This structural collision of collateral demand and supply has done more than merely entrench financial fragility; it has radically altered the very terrain upon which political struggles over money and credit creation are now fought.

Yet, for all its systemic power, collateral has been the subject of a curious and pervasive neglect across the modern academy. In strict legal terms, collateralization constitutes the creation of a real right to secure the performance of an obligation, placing it firmly within the ancient conceptual family of the 'pledge'.

This deep history of securing expectations and relations is, however, conspicuously absent from contemporary disciplinary knowledge. In pre-crisis economics, for instance, theoretical consideration of collateral was remarkably scant, largely due to a prevailing and naive assumption of debt repayment, where default risk was conveniently outsourced to the concepts of 'credit risk' and credit ratings. Similarly, the field of Security Studies has entirely overlooked the pledge as a foundational security device, despite brief, insightful allusions by scholars like Der Derian to the historical meaning of security as a 'pledge' or 'surety'.

The field remains blind to the profound historical precedent of hostages, human collateral, used for centuries to secure political agreements and peace treaties, an institution that shares more with modern collateral practice than with contemporary understandings of the hostage as a terrorist victim. Even within the Social Studies of Finance, with the singular, groundbreaking exception of Annelise Riles' work, there existed a fetishization of the trading room that ignored the critical conceptual world of collateral expertise in the back offices.

This academic silence is paradoxical, for collateral has long been a dramatic protagonist in classic literature, from the pound of flesh in Shakespeare's *The Merchant of Venice* to the fateful wagers in Goethe's *Faust*, where the power of the bond and the sacrifice it entails serve to explore the fundamental (in)stability of societal contracts like debt, marriage, and military service. The pledge, as a mechanism to assure the binding character of relations, performs a constitutive role in the very configuration of the social order.

This role is underpinned by a foundational conceptual ambivalence at the heart of the pledge itself. Throughout its long history, the term, along with its cognates such as bond, mortgage, and cautio, has persistently signified both the means to secure an agreement (the secondary contract) and the agreement itself (the primary contract).

This ambiguity, which one legal scholar attributes to a mere "paucity of legal language," is in fact profoundly revealing. It demonstrates an unmistakable affinity to the evolution of money, where representations, tokens, tallies, and promises, can become the thing they originally only represented.

The capacity of a pledged asset to secure an obligation derives from a delicate, and indeed paradoxical, balance: it must be simultaneously bound to the transaction, yet remain conceptually separate from it.

It is this very separateness, this thing-ness that can be put at risk, that provides the security, a dynamic horrifically illustrated by Antonio's pound of flesh, where the collateral call signifies not a margin payment, but death. This foundational ambiguity, is it a contract, or is it an object?, is not a flaw to be corrected, but a core feature of collateral's unique power, and it is this very thread we must now follow back into the ancient origins of money and security.

To comprehend the ontological complexity of collateral, we must go back to its origins, where its dual nature as both validator of agreement and repository of value first emerges. This exploration begins in Ancient Greece with the concept of the symbolon.

Seminal works in the new economic criticism, particularly those of Shell and Rowlinson, have rightly located the genesis of money creation in relation to this ancient artifact. A symbolon, more accurately translated as a 'tally' or 'token' than a mere 'symbol', originated in the archaic age as a physical object, be it a piece of bone, a ring, or a clay tablet, broken irregularly into halves.

Each party to an agreement would retain one piece. The power of the symbolon resided not in its intrinsic material worth, which was often negligible, but exclusively in the physical relationship between the items; they were meaningless apart, but when brought together, they served as a visible 'witness to a transaction'. This act of reunification validated a relationship and committed the parties to a particular interaction. Evolving out of the practice of ritualized friendship (*xenia*), symbola functioned as a fundamental 'technology of mutual recognition,' finding widespread use in diplomatic relations, official identification, and authorization for everything from voting in the assembly to gaining entry to the theatre.

The critical theoretical contention, and one that lies at the heart of understanding collateral's role, concerns the relationship between the symbolon and the birth of coinage. Shell, building on a distinction between visible (*phanera ousia*) and invisible (*aphanes ousia*) property, posits a strict functional separation. He argues that a broken coin used as a symbolon did not function as money; it was not itself a good transferred but a necessary 'symbol of credit or trust,' a mediator of a relationship.

For Shell, the historical shift from the visible mediation of the symbolon to the invisible mediation of money proper had a profound impact on thought itself, internalizing the abstractions of monetary exchange and giving birth to philosophy.

Rowlinson, however, forcefully rejects this 'antithesis of symbolic and monetary exchange.' He contends there is no a priori way to distinguish one kind of exchange from the other. The crucial transformation, he argues, occurs when a token of obligation, a tally left as evidence of a debt, is itself transferred to a third party as an object of exchange. This metamorphosis from a means of identification to a means of payment is, for Rowlinson, the 'paradigmatic mode of money-creation.' The essential monetary property of unconditional interchangeability, therefore, always depends on a 'symbolic guarantor'; there is no monetary exchange without this foundational pledge.

Rather than seeing these positions as irreconcilable, we can synthesize them into a more potent insight: money creation both depends on security and, in its most successful forms,

works to render that security invisible. Symbolic security is far more implicated in money creation than Shell's clean opposition suggests.

Yet, Rowlinson's point holds that the more credible the monetary promise becomes, the less visible its symbolic guarantor needs to be. There is a paradox here: the historical alienation and negotiability of financial instruments, which sever the personal bond implied by the symbolon, simultaneously re-ground their perceived safety in an 'internalised,' performative pledge of their own liquidity. The security does not vanish; it becomes latent, embedded in the very fact of circulation.

This dialectic between the relational and the material finds a more direct expression in a second Ancient Greek institution: the horos (plural horoi). If the symbolon derived its power from being brought together, the horos was originally a boundary stone, a 'marker of a distinction.' From the 4th century BCE onwards, these stone slabs began to serve a new function: they were placed on properties to indicate that the land had been pledged as security for an obligation.

These horoi mortgage stones were inscribed with the name of the creditor, the amount of the debt, and a legal formula, most commonly 'sale on condition of release' (prasis epi lysei). This practice is shrouded in a fascinating scholarly dispute that echoes down to modern finance. The central question is whether this 'sale on condition of release' was a distinct form of real security or, in substance, identical to a secured loan (a hypotheke). The distinction hinges on whether Greek law recognized the separation of ownership and possession that is foundational to Roman law. The answer remains contested, but the persistence of the debate itself is telling. At its heart lies the same question of security that preoccupied Shell and Rowlinson: how is the transfer of property, and the value it represents, secured over time?

The fundamental difference between the symbolon and the horos lies in the nature of the pledge. The symbolon secures through validity, acting as a means of accreditation and verification that protects against fraud and illegitimate access.

It is a mutual pledge that is both validated and discharged in the act of its use. The horos, in contrast, secures through value. It pledges the equivalent value of a property as security against default, a counterfactual insurance that is only activated if the original agreement fails. The symbolon activates and discharges a latent bond; the horos stands as a permanent, public witness to a contingent claim, mortgaging the uncertainty of the future on a specific, valued object. These two ancient forms, the token that validates and the stone that secures, establish the two primordial poles of collateral's power, a duality that would come to define the very problem of money in the centuries to follow.

The foundational duality of the pledge, as validator of validity and as repository of value, which we traced in the Ancient Greek symbolon and horos, receives its explicit theoretical articulation in the fierce monetary debates of the 17th and 18th centuries.

During this period, the very nature of money was contested in a prolonged intellectual battle between metallists and nominalists, yet both camps, significantly, argued from a common conceptual ground: they understood money explicitly as a pledge. The central question was

not whether money was a pledge, but what could best underwrite its pledge to reliably return an equivalent value in future exchange.

The metallists, with John Locke as a paramount voice, anchored this security in the material reality of the coin itself. For Locke, the stamp of the sovereign was merely a 'public voucher' certifying a pre-existing metallic value. He argued that only the 'intrinsic value' of silver and gold, sanctioned by the universal consent of mankind, could provide the requisite security for money to function as a pledge. In his view, paper credit instruments were inherently inferior because they were laden with doubt and dispute; they lacked the immediate, tactile security provided by precious metal, which required no further proof beyond 'our eyes, or a touchstone'.

In direct opposition, John Law assailed the very foundation of the metallist position, arguing that the metal content of coinage was a source of profound instability, subject to the double uncertainty of the commodity market's fluctuations and the sovereign's own propensity for debasement.

Law's seminal insight was to propose a paper money whose stability was guaranteed not by metal, but by land security, a system where notes would be issued on the security of real property, with the debt not exceeding a prudent fraction of its value. In this schema, Law severed the definition of money from a specific commodity but crucially retained its core function as security. For him, money was the 'most secure value' against which to contract, and this security was best achieved by tethering it to a substantial, real asset base through a system of credit. The defining conflict, therefore, was not about the nature of money as pledge, but about the optimal distance between the pledge and the wealth it represented.

As Michel Foucault masterfully delineated in *The Order of Things*, both advocates of money-as-sign and money-as-commodity shared a common epistemic basis in the Classical age of representation: they both understood money as a pledge. The pivotal difference lay in what guaranteed the correspondence between the monetary sign and the value it represented, a correspondence, we might say, between the validating function of the symbolon and the value-securing function of the horos.

For the metallist, this guarantee was the material reality of the metal; for the nominalist like Law, it was a value constituted outside of money, in land or by sovereign fiat. Joseph Vogl, building on both Shell and Foucault, further refined this problem by identifying money as a 'duplication of witness and object of exchange'. It was, paradoxically, both a permanent contractual expectation, a 'permanent pledge and pawn' with no risk, and a variable commodity whose own price was the very condition for its ability to measure other values. These two contrary movements converged in the same object, creating an internal tension. The security of the monetary pledge, its power to return an equivalent, was thus seen as a function of circulation itself. The representative force of each unit of specie was contingent; if the quantity of commodities increased relative to metal, as Foucault noted, each metallic unit became 'slightly more heavily mortgaged'. The problem of money in the 18th century was, therefore, the problem of governing the relation between its nominal and real value to establish reliable relations through calculation.

This rich and complex debate, which placed the pledge at the very center of monetary theory, was however abruptly sidelined with the dawn of the 19th century and the rise of political economy.

The analytical focus shifted from the analysis of wealth and circulation to the analysis of production. In this new paradigm, money, and with it, the concept of the pledge, effectively disappeared from theoretical view.

The monetarist doctrine that would later ascend completed this erasure by positing money as a neutral veil, a mere medium of exchange whose management was a technical task of ensuring it remained as insignificant in the real economy as it was supposed to be in theory. The profound questions of security, pledge, and the symbolic guarantor that had preoccupied Locke, Law, and their contemporaries were suppressed, waiting to re-emerge in a new and potent form in the collateral-based financial system of the late 20th century.

In today's era of collateral-based finance, the pledge has returned with transformative force, reshaping the very architecture of monetary spaces. The paramount instrument of this revolution is the repurchase agreement (repo), a collateralized promise to pay that has become a central pillar of the financial system.

To recall its mechanics: a repo involves the sale of an asset with a simultaneous agreement to repurchase it at a future date. Legally, this constitutes a pair of sales contracts; economically, it is a secured loan. It is within this very discrepancy that its modern power resides.

The seller of the security exchanges it for cash but retains the economic ownership, the risks and rewards, while the buyer obtains legal title. This structure enables a comprehensive, daily valuation mechanism (mark-to-market) enforced through haircuts and margin calls, which meticulously maintains the par convertibility between the cash and the collateral. Through this continuous process of validation, the repo promise itself acquires the attribute of moneyness, becoming what we term shadow money, a private, liquid liability that is not a final means of settlement, but a credible promise of unconditional convertibility into one.

This contemporary system represents a distinct re-articulation of the historical 'social contract' between the state and private finance.

The 19th century saw the state underwrite the pledge of bank deposits through deposit insurance and lender-of-last-resort facilities, removing convertibility risk from bank money in exchange for regulatory control. Shadow money, epitomized by repo, emerges from the perpetual private sector endeavor to circumvent the cost of this state underwriting. It seeks to create pledges that credibly pledge moneyness without relying on the state's implicit guarantee. This pursuit yields a new and paradoxical constellation with three critical features.

First, the most systemic monetary liability in market-based finance is no longer a direct means of settlement, but the credible promise of convertibility into it. This convertibility is not grounded in the state's balance sheet but in the perceived liquidity of the pledged collateral and its permanent market validation. Herein lies a fundamental fragility: the very mechanism, mark-to-market valuation, that makes repo money by ensuring its par value,

also makes the system prone to endemic liquidity crises. Unlike in bank-based finance, where illiquidity could be hidden on balance sheets, here it is instantly realized and transmitted, causing liquidity to evaporate precisely when it is most needed.

Second, the safety of this private shadow money is, somewhat ironically, grounded in the perceived safety of government bonds. The stability of repo depends on explicit collateral valuation, which in turn demands assets with low price fluctuation.

Thus, the state re-enters the stage not as a direct guarantor of private liabilities, but as the indispensable producer of the safe assets that underpin them. This necessitates a new coordination between central banks and treasuries, a nascent 'social contract' where the state must issue debt not primarily to fund itself, but because private finance requires a bedrock of safe collateral. Consequently, moneyness now takes the form of secured private debt, which is itself grounded in unsecured, but deemed 'safe', sovereign debt.

Third, and most profoundly, this entire edifice rests on a legal fiction that directly echoes the ancient ambiguity of the horoi stones. Recall the scholarly debate over whether the Athenian 'sale on condition of release' was a true sale or a secured loan.

The repo market is built upon this very ambiguity. Legally, it is structured as a sale, separating legal ownership from economic possession. This is not an esoteric detail but a defining feature of modern finance, enabling both securitization and repo markets. The assets sold as collateral remain on the seller's balance sheet, even when re-hypothecated; to do otherwise would disguise leverage.

This discrepancy between legal form and economic substance is a classic legal fiction, a 'known falsehood of practical utility'. As Finley noted of the horoi, 'outward form, then, is sale, the essence hypothecation'. This fiction was legally cemented for US repo through intense lobbying that secured 'safe harbour' status, exempting repo from bankruptcy's automatic stay and permitting the re-use of collateral.

This created what Sissoko rightly terms 'the legal foundation of financial collapse', for it privileges the liquidity of the collateral over the going concern of the borrowing firm, incentivizing a destructive scramble for assets in times of distress. The pledge, in its modern shadow money form, has thus re-emerged not as an invisible guarantor, but as a hyper-visible, constantly re-priced, and legally fictionalized anchor of a perpetually fragile system.

In the post-crisis financial landscape, collateral has been decisively pulled from the shadows of the back office into the glaring light of epistemic and economic centrality. It is no longer, as Riles once observed, a 'tool of forgetting,' but rather the core variable around which valuation and stability pivot.

The two contributions in this special section, from Sissoko and Spears, delve into this profound emergence, each illuminating a different facet of the new collateral reality. Spears provides a granular, empirical account of how the crisis has forced collateral into the very heart of financial valuation practices.

He documents a fundamental shift in the pricing of interest rate derivatives, where the foundational benchmark has moved from the unsecured LIBOR, the rate at which banks lent to each other based on perceived creditworthiness, to the OIS rate, which reflects the cost of secured, collateralized lending. This is not merely a technical adjustment; it represents an epistemic revolution.

The organizationally and cognitively separate worlds of derivatives pricing (the front office) and collateral management (the back office), which Riles had identified as distinct legal and financial orders of knowledge, have now collided. Spears suggests that the call for connection between these domains was heeded not by theorists, but by financial practitioners themselves, with profound consequences. The integration of collateral knowledge into quantitative models has introduced such complexity that it now threatens the viability of the very markets it seeks to stabilize.

Sissoko, in contrast, provides the macro-financial architecture within which Spears' micro-level observations take on their full, systemic meaning. She frames the shift from unsecured to secured lending as the epistemic foundation of finance as a counter-performative effect of neoclassical economics.

The very stability of the former bank-based system, she argues, bred a theory that assumed liquidity was a given, thereby rendering it invisible and unpriced. In the subsequent move to market-based finance, this flawed theoretical abstraction became embodied in a system that evolved to rely so heavily on market liquidity that it is now 'designed' to cause liquidity to fail.

The contractual architecture of repo is central to this perverse outcome: through mechanisms like overcollateralization, safe harbour provisions, and the right to make collateral calls, repo makes debt too safe for the lender. This extraordinary protection for creditors, however, generates persistent instability by creating an insatiable demand for safe assets and precipitating destructive collateral calls at the first sign of trouble. This view corroborates Spears' findings; the derivatives market was initially built on the assumption of bank-sourced LIBOR liquidity, an assumption gradually undermined by the very growth of the market-based, repo-funded system it helped to spawn.

A subtle but crucial divergence in their perspectives on liquidity emerges: where Sissoko identifies the neoclassical neglect of liquidity-stabilizing institutions as the epistemic cause of instability, Spears suggests that the previous abstraction from the legal underpinnings of trading (via LIBOR) had in fact enhanced liquidity. Yet both concur that the subsequent attempt to make collateral itself the social basis of liquidity through standardization has foundered, leaving in its wake the endemic illiquidity Sissoko describes.

In conclusion, our discussion has traced the conceptual arc of the collateral pledge and its intimate relation to the pledge of money across three historical constellations.

The first moment, in Ancient Greece, revealed the two distinct security devices of symbolon and horoi. The symbolon secured an obligation by establishing and proving its validity, a pledge paradoxically confirmed and spent in the act of its discharge.

The horoi stones, conversely, designated a relationship of unequal value, serving to secure a future re-equilibration through the repayment of debt. Their critical distinction lies in their circulation: when symbola circulate as marks of debt, they acquire a performative, internalized pledge and come to stand for the transaction itself. The value pledged by horoi, however, must remain separate, even if only conceptually, as in a sale-for-repurchase, to secure against the contingency of default.

In the 17th and 18th centuries, these two aspects became entangled in theories of money-as-pledge, where money emerged as a ‘duplication of witness and object of exchange.’ The monetary power to secure equivalent value was based on a precarious correspondence between nominal and real value, threatened equally by sovereign debasement and the volatile marketability of metal.

The 19th-century ‘social contract’ then saw the state underwrite the unsecured circulation of private monetary pledges, an arrangement that has been radically re-articulated in our current age. In today’s shadow money, the power to recall equivalent value rests on repo claims backed by tradeable collateral. This system marries the legal fiction of sale (echoing the horoi) with the economic fiction of creditworthiness (the ‘as if’ of safe assets). Yet these fictions operate in opposite temporal directions: the safety of an asset is a fiction that it is already risk-free, while the collateral in a swap agreement operates under a fiction from the future, acting as if the debtor has already defaulted.

Together, these contrary fictions produce the ‘as if’ of moneyiness, driving, as Sissoko shows, an excessive demand for the very safe assets that are meant to ensure stability. The new regulatory demands are now explicit: with credit markets driven by trust in collateral rather than trust in banks, central banks must pivot to backing collateral liquidity directly.

Simultaneously, the crisis has produced, in Spears’ telling phrase, a ‘fragile infrastructuralisation’ of collateral in valuation practices, once more revealing the inextricable link between epistemic and economic pledge. As collateral steps into the open, it forces us to confront the broad spectrum of securing contracts that has been so curiously absent from modern knowledge, yet has been a constant, defining presence throughout human history. The path forward demands a renewed study of the entanglements of legal and economic security, of the real and the personal, and of the always-visible pledge and the often-invisible safety it promises to provide.

The Ontological Par Function and The Crisis of Succession

To understand the financial crisis that began in 2007, and more importantly, to understand the fundamental transformation of the global monetary system that it revealed, one must acknowledge what Perry Mehrling, the scholar of the Kindlebergerian school of dollar monetarism calls the “money view.” This perspective, which has been largely eclipsed by modern economic and finance theory, is essential because it focuses on the daily mechanics of the credit system, the plumbing behind the walls, where promises to pay (cash commitments) are tested against actual payments (cash flows). This is the vulnerable point where the entire system can unravel.

The crisis was not merely a failure of individual institutions but a systemic plumbing failure. The Federal Reserve's response, which evolved dramatically from August 2007 through 2009, marks a historic shift. It began with the classic Bagehot prescription of acting as "lender of last resort", lending freely but at a high rate against good collateral. However, as the crisis deepened, particularly after the collapse of Lehman Brothers, the Fed transcended this role. It began to absorb much of the wholesale money market onto its own balance sheet, effectively becoming the "dealer of last resort." This new role involves not just lending, but making two-way markets, providing both funding liquidity (the ability to borrow) and market liquidity (the ability to sell assets), and accepting a wider range of collateral. This is the central argument: under the conditions of what I term the New Lombard Street, the central bank's essential function is that of a dealer.

The intellectual dominance of the "economics view" (which looks through money to real capital) and the "finance view" (which values assets based on imagined future cash flows) has blinded us to the money view. Both treat money as a mere veil and liquidity as a free good, an ideal to be achieved by policy. This bias towards excessive elasticity, fueled by such thinking, helped create the asset bubble that led to the crisis. We have forgotten the older wisdom, best articulated by Walter Bagehot in his 1873 masterpiece *Lombard Street*, that "money will not manage itself."

The origin of this intellectual error can be traced back to the American economist Harold Moulton who, in 1918, championed the concept of "shiftability." He argued that bank liquidity derives not from the "self-liquidating" character of short-term commercial loans, the old "real bills" doctrine, but from the ability to sell or pledge assets in liquid markets. While this was an accurate description of American practice and a necessary adaptation for financing long-term investment, the triumph of the shiftability view eventually led to the dangerous illusion that liquidity is inherent in assets themselves, rather than being a function of a dealer system that stands ready to buy them.

This brings us to the core analytical point: the inherent instability of credit. Capitalism is, at its heart, a financial system. Every entity, households, firms, banks, etc faces a daily survival constraint: cash inflows must meet cash outflows. Credit relaxes this constraint, allowing us to fund future dreams, but it does so by creating a web of interlocking promises. One person's spending is another's income; one person's debt burden reduces another's income. This creates a feedback loop. Credit-fueled spending can boost asset prices, which improves creditworthiness, leading to more spending and higher prices, a virtuous cycle on the way up, but a vicious cycle on the way down.

The central bank's historical role, articulated by Bagehot in the context of 19th-century London, was to manage the balance between discipline and elasticity in this system. The London money market was based on bills of exchange, short-term IOUs used to finance trade. The Bank of England learned through crises that it was not a normal bank but the ultimate repository of the system's cash reserves. Its job was to lend freely in a panic to prevent a cascade of failures, but to charge a high rate to impose discipline and protect its gold reserves. This was lender of last resort in a world constrained by gold.

Our time, is fundamentally different. The key money market instrument is not the bill of exchange but the repurchase agreement (repo), a short-term loan collateralized by securities.

The Fed's main counterparts are not commercial banks at a discount window, but primary dealers in the Treasury repo market. Before the crisis, the Fed managed the system by targeting the federal funds rate and providing liquidity to dealers, relying on arbitrage to transmit this liquidity throughout the capital markets. The system was built on the shiftability of assets, particularly Treasury securities, with the Fed providing a backstop.

When this system broke down in the crisis, and private dealers could no longer provide market liquidity, the Fed was forced to step in directly. It widened the range of counterparties and collateral, effectively acting as a money market dealer, posting a wide bid-ask spread and using its balance sheet to absorb the flow of orders. The crucial difference from Bagehot's time is that the Fed, at the center of the dollar standard, faces no external gold constraint. It can create both domestic and international dollars at will. This gives it tremendous power to combat a crisis, but it also removes a crucial source of discipline, raising the question of whether its pre-crisis policy of excessive ease was a root cause of the bubble. The problem was not just a failure to follow a rule, like the Taylor rule, but that the intellectual framework behind such rules is itself biased towards excessive elasticity, ignoring the inherent instability of credit that the money view so clearly reveals.

To understand how we arrived at the precarious system that failed in 2007, we must journey back to the origins of the Federal Reserve. The intellectual and institutional foundations laid in the early 20th century, and then radically reshaped by the cataclysms of war and depression, created the template to analyse our contemporary times.

The United States in 1913 knew not central banking, but the National Banking System, a creature of Civil War finance. This system was fundamentally flawed, built on an inelastic currency, a fixed supply of national banknotes, topped by a theoretically elastic deposit currency. The prevailing "commercial loan theory", or real bills doctrine, held that if banks held only "self-liquidating" short-term commercial loans, the money supply would automatically expand and contract with the "needs of trade." This was a fantasy. The system was plagued by seasonal liquidity crunches and regular financial panics, 1873, 1884, 1893, 1907, because reserves were not elastic. Banks hoarded reserves in slack times, flooding New York with speculative funds, and scrambled for them in busy seasons, causing interest rates to spike.

The United States in 1913 knew not central banking, but the National Banking System, a creature of Civil War finance. This system was fundamentally flawed, built on an inelastic currency, a fixed supply of national banknotes, topped by a theoretically elastic deposit currency. The prevailing "commercial loan theory" (or real bills doctrine) held that if banks held only "self-liquidating" short-term commercial loans, the money supply would automatically expand and contract with the "needs of trade." This was a fantasy. The system was plagued by seasonal liquidity crunches and regular financial panics (1873, 1884, 1893, 1907) because reserves were not elastic. Banks hoarded reserves in slack times, flooding New York with speculative funds, and scrambled for them in busy seasons, causing interest rates to spike.

The Federal Reserve Act of 1913 was designed to correct this. Its framers sought to create an elastic currency by having the new Federal Reserve Banks discount commercial loans, thus adding reserves to the system. They clung to the commercial loan theory, drawing a sharp,

and in my view, naive distinction between "productive" credit (eligible for discount) and "speculative" credit (ineligible). This was an attempt to legislate against American reality. Unlike their British counterparts, American banks had always been deeply involved in financing long-term capital investment, holding bonds, stocks, and mortgages. Their liquidity came not from the self-liquidating character of loans, but from the "shiftability" of these assets in secondary markets, a practice reliant on security dealers and what the framers derisively called "speculative credit."

The Act, therefore, contained a fatal contradiction from the start. It tried to impose an idealized system of "natural" liquidity based on commercial loans, but in practice, it merely specified that one class of assets (commercial paper) was shiftable to the Fed in a crisis. Banks continued their established practice, relying on the shiftability of a broader range of assets among themselves. As one observer noted in 1918, "Liquidity is tantamount to shiftability." The problem would manifest not in normal times, but in crisis, when the shiftability of even high-quality bonds would prove unreliable.

This intellectual struggle was immediately overwhelmed by events. With U.S. entry into World War I, the Fed's founding principle was shunted aside. The Act was amended in 1916 to allow Federal Reserve notes to be backed by government debt. The Fed became the engine of war finance, pegging interest rates below the yield on government securities and acting as the Treasury's prime dealer, absorbing massive amounts of debt onto its balance sheet. The government's credit, not commercial loans, became the ultimate source of liquidity. This was a decisive victory for the shiftability view, though it was achieved through the back door of wartime exigency.

The 1920s saw an attempt to manage this new system. Under the influence of Benjamin Strong at the New York Fed, the focus shifted from "qualitative" credit control (enforcing the productive/speculative distinction) to "quantitative" control through interest rate policy. The "Strong rule" used open market operations in government securities to manage bank reserves and influence credit conditions. This was a pragmatic adaptation: the Fed was now actively supporting the shiftability mechanism by managing the market for the key shiftable asset, Treasury debt. It even engaged in repurchase agreements with dealers, a form of lending that orthodox theory abhorred but that proved essential for seasonal and cyclical smoothing.

This policy of low and stable rates, while successful in tempering minor cycles, inadvertently fueled the stock market bubble of the late 1920s. The Fed's attempts to rein in speculation by raising the discount rate in 1928-1929 proved ineffective because credit expansion had moved outside the banking system into a "shadow banking system" of brokers' loans. When the crash came, the Fed's response was hamstrung by its ideological baggage. It was prepared to lend freely against commercial loans, but not against the private securities whose collapsing values were destroying bank solvency. The shiftability of assets, a fair-weather friend, vanished. The ensuing banking crises from 1931-1933 and the Fed's catastrophic decision to raise rates to protect gold convertibility turned a recession into the Great Depression.

The Depression shattered the old intellectual order. The Banking Act of 1935 was the final triumph of the shiftability view. It empowered the Fed to discount any "sound" asset,

effectively making liquidity a matter of government policy rather than commercial calculation. The government, through new entities like the FDIC and RFC, redefined solvency itself. If the government said you were solvent, you were. This radical shift was obscured by the chaos of the New Deal and the subsequent focus on fiscal policy following Keynes.

World War II completed the transformation. The Fed once again pegged the price of government debt, which swelled to unprecedented levels. The post-war system was born from this experience. The Fed-Treasury Accord of 1951 freed the Fed from directly pegging bond prices, and Chairman William McChesney Martin's subsequent "bills only" policy signaled that the Fed would focus on the short-end of the market, leaving the shiftability of long-term bonds to private dealers. The pre-Depression intertwining of money and capital markets was restored, but now on a foundation of massive government debt and an explicit government guarantee of liquidity for sound assets. The stage was set for the Age of Management, and for the eventual emergence of the dealer system that defines this era of policy measures.

In the wake of the Great Depression and World War II, the Federal Reserve emerged with a new, radical mandate, not from legislation but from its own internal evolution. The 1935 Banking Act had already committed it to acting as lender of last resort against any "sound" asset. Then, in a crucial 1937 communication, the Federal Open Market Committee (FOMC) went even further, committing to maintain "orderly conditions in the money market." This was a profound step, largely overlooked at the time. It was a commitment to act not just as a lender, but as a dealer. The Fed was now in the business of capital asset pricing, implicitly promising to smooth market fluctuations by buying and selling securities to correct deviations from an idealized norm.

That norm, at the time, was the Expectations Hypothesis (EH) of the term structure, augmented by a "liquidity premium." The EH posits that long-term interest rates should be an average of expected future short-term rates. The fact that long rates are typically higher was explained as a premium investors demand for the risk of holding a less liquid asset. The Fed's role, in 1937, was to ensure shiftability at that market-determined premium, not to eliminate the premium itself. It was to help the market achieve the outcome it was striving for, especially since private dealers, weakened by the Depression, were unable to do so. Had history allowed, this might have been the foundation for a reconstructed, dealer-based capital market system explicitly backed by the Fed.

But history intervened, war came again. During World War II, the Fed returned to pegging government bond prices, and private capital markets effectively vanished. The post-war era was then defined by the Employment Act of 1946, which enshrined the goals of maximum employment and production but made no mention of the Fed. Monetary policy was sidelined; the Fed remained shackled to supporting the Treasury's bond prices until the 1951 Accord.

The intellectual reconstruction that followed, under Chairman William McChesney Martin, was based on the 1952 "bills only" doctrine. This was an adaptation of the 1937 commitment to the new reality: the Fed would support the short-term Treasury bill market, and rely on private dealers and arbitrage to transmit orderly conditions to the long end. The goal was to

rebuild a private dealer infrastructure. However, this vision ran headlong into the rigid, fragmented financial system of the New Deal, where regulatory constraints made arbitrage difficult. Assets that theory treated as perfect substitutes were not substitutes at all in the portfolios of ultimate investors.

It was at this juncture that the Fed, seeking guidance for its new active role, made a fateful error: it turned to the academics. And the academics, in turn, offered a seductive but fundamentally flawed intellectual framework that I call Monetary Walrasianism.

This framework has its roots in the work of Jacob Marschak (1938) and was developed most powerfully by James Tobin. The idea was to model the financial system as a version of Léon Walras's general equilibrium model, a set of simultaneous equations where the supplies and demands for all assets, including money, are balanced by prices. Tobin's great achievement was to integrate this with the institutional insights of Gurley and Shaw, who highlighted how regulatory distortions affected the availability of assets. In Tobin's hands, these institutional rigidities became the very levers for policy intervention. The Fed could manipulate asset prices and thus the real economy because, for example, "the interest rate on money is exogenously fixed by law or convention."

This framework became the template for the high point of the "Age of Management," operationalized in the Fed's large-scale econometric models. It was a triumphant vision: by scientifically manipulating a few policy levers, we could achieve the goals of the Employment Act. But in this triumph lay a catastrophic intellectual error: the apotheosis of the shiftability view.

Tobin's model assumed that all assets are salable at a price determined by supply and demand. Market liquidity was simply assumed. Money, in this model, was not the most liquid asset; it was merely the safest asset, in a world where all assets were perfectly liquid. This abstraction might have been harmless in the rigid, government-debt-dominated post-war world, but it became increasingly dangerous as markets evolved. Tobin himself understood the logical endpoint of his model: if all institutional rigidities were relaxed, the ideal Walrasian equilibrium would be achieved, a world with no place for money and no role for monetary policy. Liquidity would be a free good.

This ideal, a world of perfect markets and costless liquidity, became the normative goal for policymakers. The Fed's job was now seen as supplying liquidity as a free good, to make the real world resemble this impossible ideal. This was a world away from the classic money view, which understood liquidity as a fragile construct provided by a dealer system operating under a survival constraint.

There was a dissenting voice, of course: Hyman Minsky. Building on Schumpeter and the classic central banking tradition, Minsky's "Financial Instability Hypothesis" placed the inherent instability of credit at the center of his analysis. He saw that the Fed's new focus on managing aggregate fluctuations around an equilibrium ignored the natural tendency of the system to evolve from stable "hedge" finance to fragile "speculative" and "Ponzi" finance structures. For Minsky, the Fed's role was to use its discount window collateral policy to discourage this drift towards fragility. But his was a voice in the wilderness. The optimistic,

management-oriented consensus of Tobin's Monetary Walrasianism and Friedman's Monetarism had no room for Minsky's cyclical pessimism.

The stage was thus set for disaster. The Fed, guided by a theory that abstracted from liquidity risk, pursued a policy biased toward excessive ease. This very policy, as Minsky predicted, spurred the financial innovations that would ultimately blow apart the rigid system the models were built on. The Age of Management was about to meet the brave new world of modern finance, and the result would be a stress test that the models could not possibly survive.

While the academic world was perfecting its models of monetary management in the 1960s, a quiet revolution was brewing in the practical world of finance, a revolution that would, within a few decades, render those models obsolete. This revolution was driven by a deceptively simple financial innovation: the swap. It began as a technical workaround for regulatory constraints, but it contained the genetic code for the entire shadow banking system that would later rise and fall. The story of the swap is the story of how the logic of arbitrage systematically dismantled the rigid, post-war financial system and, in doing so, undermined the intellectual foundations of the Age of Management.

The initial impetus was the Bretton Woods system of fixed exchange rates and capital controls. How could a multinational company, for instance, access foreign currency for investment when regulations forbade such flows? The answer was the currency swap, initially structured as a parallel loan. An American company needing pounds would lend dollars to the British subsidiary of a UK firm, while the UK firm would lend pounds to the American subsidiary in Britain. No money crossed borders, but the economic effect was identical. This simple construct was a masterclass in evading the spirit of the law while adhering to its letter.

The true genius, however, was in the evolution of this construct into a pure swap of implicit IOUs, intermediated by a bank like J.P. Morgan. Instead of booking two separate loans that bloated the bank's balance sheet, the deal was booked as a net exposure. This was not merely an accounting trick; it was a fundamental change that allowed banks to act not just as brokers, but as dealers, posting bid and ask prices for swaps and hedging their resulting mismatches in the interbank market. The currency swap market thus became organized around an idealized norm, Uncovered Interest Parity (UIP), which states that the difference between interest rates in two currencies should be equal to the expected change in the exchange rate. In practice, UIP fails, and that failure, the "carry trade", is the profit that compensates dealers and speculators for bearing the risk of currency mismatch. The market had created its own logic, independent of central bank directives.

This same technological innovation was then applied to dismantle domestic rigidities. Fischer Black, in a remarkably prescient 1970 paper, imagined a world where the risks of a long-term corporate bond could be carved up and sold separately: one party supplies the money, another bears the interest rate risk, and a third bears the default risk. This is exactly what interest rate swaps (IRS) and credit default swaps (CDS) achieved. Through the same mechanism of implicit IOUs, these instruments allowed for the "slicing and dicing" of risk.

Think of an investor holding a corporate bond. He could enter an IRS, swapping his fixed-rate payments for floating-rate payments, thus transferring interest rate risk to a counterparty. He could then enter a CDS, effectively buying insurance against default. The result? The investor was left with the economic equivalent of a risk-free Treasury bill. This was financial alchemy, and it was powerful. Because these swaps were off-balance-sheet, they provided a way to circumvent the regulatory apparatus designed for traditional banking, reserve requirements, capital ratios, and interest rate ceilings like Regulation Q. This was the birth of the shadow banking system.

The implications for monetary theory were devastating. The Marschak-Tobin framework, which depended on institutional rigidities for its policy levers, was being methodically dismantled by arbitrage. The swap markets created new, market-based pricing norms. The failure of the Expectations Hypothesis (EH) in the interest rate swap market, like the failure of UIP in the currency market, was not a sign of market inefficiency but a source of profit that drove the system towards its own, more robust equilibrium. The logic of arbitrage began to rule everywhere.

This led to the rise of modern portfolio theory, epitomized by the Capital Asset Pricing Model (CAPM). In this worldview, all assets are priced based on their contribution to aggregate market risk (covariance), not their individual risk or, crucially, their liquidity. Liquidity risk simply disappeared from the formal models. The ideal world of finance theory was one where EH and UIP held perfectly, and liquidity was a free good. This theoretical triumph spilled over into macroeconomics, most destructively in the Lucas Critique, which argued that the stable relationships in the Tobin-style models would break down as soon as policymakers tried to use them. The entire countercyclical management project was called into question.

But the road not taken was the one foreseen by Minsky and by voices like Charles Goodhart at the Bank of England. They understood that the new system, far from being perfectly stable, was simply recreating the inherent instability of credit in a new, more leveraged, and more interconnected form. The swap technology allowed for an unprecedented expansion of credit, fueled by the "carry trade" mentality, borrowing in low-interest, liquid markets to invest in higher-yielding, less liquid assets. This was Hawtrey's inherent instability of credit on steroids. The monetary authorities, still thinking in terms of managing the price level, became unwitting partners in this boom, their bias toward ease providing the cheap funding liquidity that fueled the bubble. They were trying to manage an economy whose financial plumbing was being radically redesigned right under their feet, by a system they no longer understood.

To comprehend the crisis, one must move beyond abstract theory and descend into the engine room of the financial system: the daily operation of the money market, where the survival constraint is enforced and liquidity is manufactured. This is the domain of the "money view," a perspective shared by traders and practical central bankers but largely absent from academic economics. It is a world where the delicate balance between cash inflows and outflows is managed not by intertemporal budget constraints, but by the relentless discipline of the present. What dealers do in this world is the key to understanding everything.

Let us begin at the most fundamental level: the payments system. Imagine an idealized world with a single big bank. All payments are mere book entries. The survival constraint, the need for cash inflows to meet outflows, is collectively relaxed for the system's users because the bank's ledger ensures overall coherence. Our real-world, decentralized banking system approximates this through the money market. When a customer of Bank A pays a customer of Bank B, the transaction is settled by a transfer of reserves between the banks. The mechanism that enables this is interbank lending, primarily in the federal funds (FF) market, where banks borrow and lend deposits at the Fed. This network of IOUs is the scaffolding that allows our fragmented system to behave as a unified whole.

But the federal funds market is only one piece. There is also the vast Eurodollar market (offshore dollar lending) and, most importantly for our story, the repurchase agreement (repo) market, where borrowing is secured by collateral. These three markets are close substitutes, and in normal times, their interest rates trade in tight alignment. During the crisis, however, the spreads between them exploded, a clear symptom of a breakdown in the payments plumbing. The textbook fiction of a single, Fed-controlled money market rate was revealed as a dangerous oversimplification.

The Fed's role in this daily machinery is to act as the ultimate backstop, ensuring that the system never seizes up due to a temporary mismatch in payments. It does this through the discount window (a penalty-rate lender of last resort for individual banks) and, more routinely, through open market operations in the repo market. By lending to primary dealers against Treasury collateral, the Fed injects reserves into the system, facilitating the interbank lending that greases the wheels of payments. In this way, the Fed's daily interventions are what allow our decentralized system to mimic the elasticity of a single big bank.

This brings us to the central actors: the security dealers. Their primary function is not merely to match buyers and sellers, but to make markets by posting two-way prices (bid and ask) and using their own balance sheets to absorb the resulting order flow. To do this, they must fund their inventory of securities. This is where funding liquidity (access to cash in the money market) is translated into market liquidity (the ability to buy or sell assets quickly at a stable price).

Consider a dealer engaged in a basic form of arbitrage: harvesting the liquidity premium in the term structure by holding a long-term Treasury bond (funded by repo borrowing) and being short a short-term Treasury bill. The dealer's ability to hold this position is constrained not primarily by solvency risk, but by liquidity risk, the risk that a fall in the value of the bond collateral will trigger a margin call or a reduction in repo funding, forcing a fire sale. The dealer's survival constraint binds long before insolvency becomes an issue.

This liquidity risk is the fundamental reason why the idealized world of economic and finance theory, where the Expectations Hypothesis holds perfectly and liquidity is a free good, is a fantasy. In that no-dealer world, any deviation from the EH would be instantly arbitrated away. In the real world, the survival constraint of dealers limits their arbitrage activity, which is why liquidity premiums persist. The Fed's provision of funding liquidity weakens this constraint, moving asset prices closer to the theoretical ideal, but it can never eliminate it entirely unless the Fed itself becomes the sole dealer, as in wartime.

This dealer-centric perspective reveals the true, immediate transmission mechanism of monetary policy. When the Fed engages in expansionary open market operations (adding reserves via repo loans to dealers), it directly affects the dealer's risk-return calculus. With cheaper funding available, the dealer can afford to target a larger portfolio, which requires raising bid prices for bonds. Monetary policy works first and foremost by altering dealer behavior and asset prices, not through the slower, lagged channel of bank lending to customers. The daily survival constraint of the dealer system is the crucial conduit.

This framework allows us to perform an anatomy of a crisis. A "normal" crisis involves a shift in preferences by ultimate wealth holders away from securities and toward money. Dealers absorb the selling, financing their expanded inventories by borrowing from banks, and the Fed accommodates the resulting expansion of bank credit. The system holds.

A severe crisis, like that of 2008, occurs when the shock is too large or the assets being sold are too exotic. Collateral values crumble, funding liquidity from private sources evaporates, and the survival constraint binds violently across the system. At this point, market liquidity is no longer a function of private dealer funding; it becomes a question of shiftability to the Fed. If an asset cannot be shifted onto the Fed's balance sheet, it may not be shiftable at any price. The Fed is then forced to transcend its role as lender of last resort (provider of funding liquidity) and become the dealer of last resort (provider of market liquidity), directly absorbing the portfolio shift that the private system can no longer handle. This, as we shall see, is precisely what the Fed's balance sheet explosion in late 2008 represented. The crisis was a catastrophic failure of the dealer system, demanding a fundamental redefinition of the central bank's function.

The financial crisis that unfolded from 2007 to 2009 was not merely a panic or a series of bank runs. It was a full-scale stress test of the entire market-based credit system built since the 1970s, the system whose origins we have traced through swaps, dealers, and the triumph of shiftability. The lesson of this stress test is unambiguous: the system that evolved under the intellectual guidance of Moulton and the institutional vision of Martin requires a central bank that acts as dealer of last resort, not only for the money market but for the capital market as well. The crisis forced this evolution in practice; our task now is to understand it in theory.

The conventional narrative, what I call the "Jimmy Stewart" perspective, views the crisis through the lens of traditional banking. In this view, the "shadow banking system" was a parasitic outgrowth that collapsed back onto the traditional system, causing a classic bank run, albeit in the wholesale money market. This narrative is not so much wrong as it is dangerously incomplete and intellectually limiting. It sees the collapse of Asset-Backed Commercial Paper (ABCP), then repo, then unsecured borrowing as a sequential run on the funding of shadow banks. From this viewpoint, the Fed's response, extending lender of last resort support through facilities like the Term Auction Facility (TAF) and the Primary Dealer Credit Facility (PDCF), was a logical, if dramatic, extension of Bagehot's principles.

But this perspective fails to answer the central question: Why did the shadow banks collapse in the first place? The answer lies not in funding liquidity alone, but in the catastrophic failure of market liquidity, which was itself engineered by the collapse of the dealer system.

To understand this, we must look past the shadow banks, which held only the top-rated "AAA" tranches of securitized loans, to the broader securitization chain. These complex securities were designed to be held, not traded. So, where did their market prices come from? The crucial source of price discovery and liquidity was not the market for the bonds themselves, but the market for credit default swaps (CDS) on those bonds. Investment banks like Bear Stearns and Lehman Brothers were not just underwriters; they were the essential dealers in the CDS market, making two-way prices and providing the market liquidity that the entire edifice relied upon.

This system worked through a delicate mechanism. The investment bank dealers would sell protection on the lower-risk, "mezzanine" tranches to clients like shadow banks. To hedge their own exposure, they would buy protection on the super-safe "AAA" tranches from insurers like AIG, or package risk into "synthetic CDOs" and sell them to other investors. The entire system was predicated on the ability of dealers to achieve a "matched book" and on the willingness of insurers to sell vast amounts of "cheap" AAA protection. What none of them understood was that they were not merely insuring credit risk; they were acting as the private dealers of last resort, supplying the market liquidity that made the assets held by the shadow banks appear liquid and valuable.

This was the fatal flaw. The insurers, like AIG, thought they were collecting premiums for a near-zero-risk event. In reality, they were writing out-of-the-money liquidity puts on the entire system. When the underlying subprime mortgages began to deteriorate, the music stopped. The first sign was the collapse of the ABCP market in 2007, as holders grew nervous about the collateral. But the true body blows to the system were the collapse of Bear Stearns in March 2008 and, catastrophically, Lehman Brothers in September 2008. These were not just failures of firms; they were failures of the central nodes of the market liquidity system. With the CDS dealers in distress or gone, market liquidity vanished. Without market prices, the value of collateral cratered. Without valuable collateral, funding liquidity evaporated. The inherent instability of credit played out in a vicious, reinforcing downward spiral.

The Fed's response evolved through three phases, each representing a deeper understanding of the problem:

1. Lender of Last Resort (Late 2007 - March 2008): Initially, the Fed treated the crisis as a funding problem. Facilities like the TAF provided liquidity to banks, which in turn supported their shadow bank affiliates. This was a classic Bagehot response, applied to the modern system.
2. Dealer of Last Resort for the Money Market (March - September 2008): After Bear Stearns, the Fed recognized the dealer liquidity problem. The Term Securities Lending Facility (TSLF) allowed dealers to swap illiquid mortgage-backed securities for pristine Treasuries they could repo. This was a crucial step: the Fed was now directly supporting market liquidity by becoming a swap counterparty, effectively putting a floor on the price of certain assets.
3. Dealer of Last Resort for the Capital Market (Post-Lehman, September 2008 onward): The collapse of Lehman and AIG represented the total failure of the private

dealer system. The Fed's balance sheet exploded as it moved the entire wholesale money market onto its books. More importantly, it began explicit dealer-of-last-resort interventions in the capital market. The Term Asset-Backed Securities Loan Facility (TALF) was the paradigm: by offering non-recourse loans against AAA asset-backed securities, the Fed was not just lending; it was selling a put option, setting a floor price for these assets and restarting the securitization machine. Later, it directly purchased over \$1 trillion in agency mortgage-backed securities, acting as a direct market-maker.

The conclusion is inescapable. The crisis proved that for our market-based credit system, the dealer function is paramount. The Fed's role is no longer simply to set the price of short-term credit (the federal funds rate). It must also manage the quantity and quality of market liquidity by standing ready, as dealer of last resort, to set a price floor for key assets during a panic. The old intellectual comfort zone of the "Jimmy Stewart" bank run is a trap. The future of central banking lies in understanding and institutionalizing this new role.

The centennial of the Federal Reserve System approaches not as a celebration of a perfected institution, but as a moment of profound reckoning and reconstruction. The crisis has forced upon us a practical revolution; the intellectual revolution must now follow. We stand at the end of the Age of Management, an era defined by the illusion that liquidity could be made a free good and monetary policy could be separated from liquidity management. The task before us is to build a new intellectual framework for central banking, one that integrates the ancient wisdom of the money view with the institutional reality of the contemporary era. The cornerstone of this framework is the explicit recognition of the Fed as dealer of last resort, not as a crisis-time aberration, but as a permanent, foundational function.

The first principle of this new framework is to jettison, once and for all, the intellectual baggage of the Jimmy Stewart perspective. Nostalgia for a simpler world of community banking is a dangerous diversion. Our system is, and will remain, a market-based credit system where the dealer function is paramount. The capital development of the nation, which Moulton rightly emphasized a century ago, now depends critically on the smooth operation of this system. The Fed's role is not to roll back history but to steward this system toward stability.

The core of the new framework involves a clear-eyed understanding of the Fed's two interconnected responsibilities:

1. **Managing Funding Liquidity:** This is the traditional, if modernized, Bagehot function. The Fed must maintain oversight and backstop support for the entire wholesale money market, federal funds, repo, and Eurodollars. It is the dealer of last resort to the money markets, ensuring that the daily survival constraint for the system's plumbing does not trigger a seizure.
2. **Backstopping Market Liquidity:** This is the new, essential function revealed by the crisis. The Fed must concern itself with market liquidity not only in Treasury securities but also in key private securities, most notably mortgage-backed securities. The lesson is stark: in a panic, funding liquidity does not translate into market liquidity. The Fed cannot simply push funds out the door and hope dealers will use

them to support collapsing asset prices. It must be prepared to set a price floor directly.

How would this work in practice, during normal times? The goal is not for the Fed to set market prices, but to establish a credible and publicly known arena for private risk-taking by setting bounds on the downside. We should think of this as the Fed providing tail risk insurance for market liquidity.

Consider a practical mechanism: The Fed could announce a standing facility, a kind of permanent, out-of-the-money put option, whereby it stands ready to buy a specified basket of AAA private securities (e.g., certain high-quality mortgage-backed securities) at, say, eighty cents on the dollar. This is not a guarantee of solvency or a bailout of fundamental value. It is a guarantee of shiftability. The 20% "haircut" serves the same disciplinary function as Bagehot's "high rate": it ensures that only those truly facing a liquidity crisis, not a solvency crisis, will use the facility. In normal times, this facility would sit idle, but its mere existence would define the playing field, giving private dealers the confidence to make markets, knowing the absolute worst-case scenario is a 20% loss.

This conceptual distinction is critical. The Fed's role is that of a dealer of last resort, not a credit insurer of last resort. The former guarantees shiftability; the latter indemnifies wealth losses. The Fed's crisis interventions, from the TSLF to TALF, adhered to this principle, often with the Treasury or other government entities bearing the tail credit risk, while the Fed bore the tail liquidity risk. This model must be formalized. The Fed's balance sheet is for liquidity; the Treasury's balance sheet is for solvency.

This new function fundamentally changes the nature of monetary policy. The old illusion that the Fed could simply set an interest rate to manage macroeconomic aggregates, while treating liquidity as a separate, solved problem, is over. The Fed now has two instruments: the traditional policy interest rate (e.g., the federal funds rate) and its dealer-of-last-resort facilities that define the liquidity backstop. These two instruments are inextricably linked.

When the Fed changes the policy rate, it is not just signaling its inflation intentions to the macroeconomy; it is directly altering the risk-return calculus for dealers. A lower policy rate increases the expected profit from term-structure and credit-structure arbitrage (e.g., borrowing short to lend long), encouraging dealers to expand their balance sheets, which in turn supports higher asset prices and greater market liquidity. The transmission mechanism runs directly through the dealer system. Therefore, monetary policy and liquidity management are two sides of the same coin. The Fed can no longer afford to ignore asset prices, as the Taylor rule recommends, because the inherent instability of credit operates precisely through the feedback loop between cheap funding, dealer leverage, and rising collateral values.

The central mission of the classic money view, to manage the balance between discipline and elasticity in the money market, thus returns with renewed force. Our world may be light-years away from Bagehot's Lombard Street, but the fundamental problem is the same. The money market remains the place where the promises of the future collide with the realities of the present. The survival constraint is the ultimate disciplinarian of a decentralized market system. The Fed's most important duty is not to eliminate this

constraint, but to manage it wisely, preventing it from becoming either so lax that it fuels a bubble or so tight that it triggers a rout. The dealer of last resort function is the modern tool for this ancient task.

Establishing the theoretical principle of the dealer of last resort is one thing; embedding it safely and effectively within the institutional and international order is quite another. The ad hoc, almost desperate, nature of the Fed's crisis response revealed a profound mismatch between its de facto responsibilities and its legal, conceptual, and operational frameworks. Building a resilient system for the future requires us to confront these institutional imperatives head-on, recognizing that the Fed's role extends far beyond domestic macroeconomic management into the very heart of global finance.

The most immediate challenge is the legal and operational framework of the Fed itself. The various facilities created during the crisis, the TALF, the CPFF, the liquidity swaps, were "cobbled together" under existing lending authorities. But the dealer of last resort function, particularly the provision of tail liquidity insurance through put options or direct purchases, stretches the traditional concept of "lending" to its breaking point. The Fed's charter and the intellectual foundation of its mandate are rooted in the lender-of-last-resort paradigm. A permanent dealer-of-last-resort function may require new legislative authority, clarifying the Fed's role in stabilizing capital markets and defining the appropriate boundaries between its liquidity backstop and the Treasury's solvency support. The goal is to move from inventive crisis-fighting to a transparent, rules-based standing facility for market liquidity.

This institutionalization is crucial to address the fundamental problem of discipline. The classical gold standard imposed a hard external constraint on central banks; excessive ease would lead to gold outflows, forcing a corrective tightening. The modern dollar standard has no such automatic mechanism. The Fed's ability to create dollars, both for domestic and international use, is practically limitless. This freedom is a double-edged sword. While it allowed the Fed to contain the crisis in a way Bagehot's Bank of England never could, it also removes a crucial check on the bias toward excessive elasticity that I have argued is embedded in modern economic theory. If the Fed is to be the dealer of last resort, how do we prevent it from becoming the dealer of first resort, perpetually subsidizing market liquidity and fueling asset bubbles?

The answer lies in designing the dealer-of-last-resort facilities with built-in discipline. The Bagehot principle of "lend freely but at a high rate" must be updated to "insure freely but with a high haircut." The price of accessing the Fed's liquidity backstop, whether through a wide bid-ask spread or a deep discount to market value (e.g., the 80-cent-on-the-dollar price floor), must be punitive enough to ensure it is used only as a genuine last resort. This price mechanism is the modern equivalent of the gold standard's constraint. It ensures that the Fed bears tail liquidity risk, but the private sector retains substantial credit risk, preserving the incentive for prudent risk management during normal times.

This leads to the third and perhaps most complex imperative: the global dimension. The crisis was not merely a American event; it was a global dollar crisis. The wholesale money market that froze was an international network. The Fed's liquidity swap lines with foreign central banks were a de facto extension of its discount window to the entire global banking

system, a recognition that it serves as the ultimate source of dollar liquidity for the world. This makes the Fed the dealer of last resort to the world.

This role is an unavoidable consequence of the dollar's position as the global reserve currency. It confers immense power, the "exorbitant privilege" of seigniorage, but also immense responsibility. The Fed must now incorporate global dollar funding conditions into its policy calculus. A policy that is appropriate for the domestic American economy may have destabilizing consequences if it induces violent swings in global dollar liquidity through carry trades and capital flows. The dealer of last resort framework, therefore, cannot be purely domestic. The swap lines, once temporary crisis measures, may need to be made permanent features of the international monetary architecture, a formal recognition of the Fed's role as the central node in the global dollar network.

Finally, this new framework demands a revolution in financial regulation. The pre-crisis approach, based on the Jimmy Stewart model, focused on regulating individual bank institutions for safety and soundness. This is like trying to manage a modern highway system by only regulating the safety features of individual cars, while ignoring the design of the roads, the traffic signals, and the system of interstate exchanges. The new focus must be on the resilience of the market-based system as a whole.

The primary object of regulatory attention should be the dealer system itself. This means ensuring dealers have sufficient capital and liquidity to withstand normal shocks, but it also means monitoring the entire network of market liquidity provision. Regulators need to be able to assess whether the private system's capacity to bear liquidity risk is adequate, and they need the tools to respond when it is not. Crucially, regulation must acknowledge that the shadow banking system is not a shadow; it is the system. The goal should not be to force everything back onto traditional bank balance sheets, but to ensure that the market-based credit system has appropriate access to the public backstop, with corresponding regulatory oversight. The philosophy should be to regulate the liquidity, not the institution.

In essence, the institutional imperative is to create a coherent system where the Fed's immense power as the ultimate source of dollar liquidity is matched by a clear and disciplined framework for its use, and where regulation is aligned with the actual architecture of the credit system. The alternative is an unstable adhocism, lurching from crisis to crisis.

As we approach the culmination of this analysis, it is essential to step back and view the narrative not as a linear progression but as a dialectic, a recurring struggle between enduring monetary realities and the intellectual frameworks we construct to understand them. The history of American central banking is a history of this struggle, a cycle of institutional innovation, intellectual displacement, catastrophic failure, and painful rediscovery. My purpose in tracing this arc is to demonstrate that the "money view" I advocate is not a novel invention, but the recovery of a lost wisdom, updated for the complex financial ecosystem we have built.

The cycle begins with the practical ingenuity of the American system. Long before the Fed's creation, U.S. banks, operating under the constraints of the National Banking System, developed their own solution to the liquidity problem: shiftability. They financed the nation's

growth not through self-liquidating commercial paper, but by holding long-term assets and relying on their salability in active secondary markets. This practice, brilliantly articulated by Harold Moulton in 1918, was a pragmatic departure from British orthodoxy. The original framers of the Federal Reserve Act, however, were ideologically committed to the "real bills" doctrine. They attempted to impose this foreign template, creating an intellectual schism from the very start between the system as it was designed and the system as it actually worked.

This schism was papered over by history. The exigencies of World War I, the Great Depression, and World War II forced the Fed to embrace shiftability in practice, first by monetizing government debt, and then, decisively, through the 1935 Banking Act which authorized lending against any "sound" asset. The practical triumph of shiftability was complete. Yet, in a cruel irony, this very triumph paved the way for its intellectual eclipse. The post-war "Age of Management" saw the rise of economic models, Monetary Walrasianism, that took shiftability for granted. In the Marschak-Tobin framework, all assets were assumed to be perfectly liquid; liquidity was abstracted away as a "friction." The Fed's job, in this view, became to manipulate interest rates to achieve macroeconomic goals, effectively trying to make the real economy conform to a model that ignored its own financial plumbing.

The subsequent half-century was a story of the real world rebelliously asserting itself against this intellectual straitjacket. The innovative force of arbitrage, beginning with currency swaps and culminating in the complex machinery of credit default swaps, systematically dismantled the rigid, regulated system upon which the Tobin-esque models depended. Finance theory, in its pursuit of elegant equilibrium models, followed suit, simply defining liquidity risk out of existence. Policymakers, believing their own models, pursued a policy of abundant liquidity, which in turn fueled the very financial innovations that made the system more fragile. We thus arrived at the paradoxical and dangerous position where the guardians of the system were operating on a theoretical map that bore little resemblance to the actual territory.

The crisis of 2007-2009 was the inevitable collision between reality and theory. It was a stress test of the intellectual framework as much as of the financial system. The models failed because they could not comprehend a seizure in the mechanism of liquidity provision itself. The Fed's response, an empirical, pragmatic leap to becoming the dealer of last resort, was a testament to the resilience of practical central banking intuition, a intuition that never fully lost touch with the "money view" despite its academic exile. In the heat of the crisis, the Fed was forced to rediscover, through action, the principles Bagehot had articulated for a different institutional setting.

Therefore, this book is not a call for a revolution, but for a reconstruction. It is an argument for making explicit and systematic the knowledge that was implicitly and successfully applied during the panic. The journey from Bagehot's "lender of last resort" to my concept of the "dealer of last resort" is not a repudiation of the old wisdom, but its necessary evolution. Bagehot's core principles, the need for a penalty rate, the importance of good collateral, the imperative to halt a panic, remain utterly relevant. But the institutional context has transformed beyond recognition. The "Lombard Street" of today is a global, securitized, dealer-centric network. The "bank rate" is a complex constellation of money market rates.

The "collateral" is not just commercial bills but a hierarchy of securities from Treasuries to mortgage-backed bonds.

This is the long arc. From the practical American system of shiftability, to its intellectual suppression by imported theories, to its dramatic re-emergence through crisis. The task now is to break this cycle. We must build a new intellectual consensus that aligns our theories with the realities of the modern financial system, so that our next crisis, when it inevitably comes, finds us prepared not just with tools, but with understanding.

We stand at an inflection point in economic history, one that demands not merely new regulations or policy rules, but a fundamental reconstruction of our understanding of the monetary system. The financial crisis was the great revealer, exposing the profound disconnect between the intellectual frameworks guiding policymakers and the institutional reality of the financial engine they were tasked with overseeing. The central argument as it stands, is that bridging this chasm requires a deliberate and disciplined return to the "money view," a perspective that recognizes the inherent instability of credit and the central bank's primordial role in managing the daily balance between cash commitments and cash flows.

The long historical journey we have undertaken, from the gold-standard world of Bagehot's Lombard Street, through the American experiment with shiftability, the academic ascendancy of Monetary Walrasianism, the innovative explosion of the swap economy, and the eventual collapse of the dealer system, culminates in a single, inescapable conclusion. The Federal Reserve, and indeed any central bank at the heart of a modern financial system, can no longer define its mission narrowly as macroeconomic management through the control of a short-term interest rate. Its essential function has evolved. The Fed is, and must formally become, the dealer of last resort.

This is not a call for perpetual intervention. It is a call for a sophisticated, rules-based framework that defines the sovereign's role in backstopping the market liquidity upon which our entire market-based credit system depends. The model for the 21st century is not the simple discount window of the 19th, but a system of standing facilities that provide a public price system for key assets, a floor set with a punitive haircut to ensure it is used only in a genuine lender and dealer function. This function is the necessary complement to the traditional role of managing funding liquidity. Together, they constitute the dual instruments of modern central banking: one to guide the economy (the interest rate), and one to ensure the resilience of the financial system (the liquidity backstop). These two instruments are inextricably linked, for the interest rate directly influences the risk-taking of the dealer system that translates funding into market liquidity.

Even though a spectacular performance during the crisis (2007 - 2009), as what Bagehot described to be the central bank's function of the lender of last resort, and Federal Reserve's evolution fulfilling both of the functions as a conventional lender of last resort and contemporary dealer of last resort was nothing but extraordinary; the evolution of central banking policy in the post-crisis regime is built on the foundations of an assumption of perpetual crisis, the Bernankeian era of central banking policy.

This assumption of a perpetual crisis led to a perpetual expansion of the central bank balance sheet in the post-crisis regime, central banks went from fulfilling its purpose as the

lender and dealer of the last resort to lender and dealer of “all” resort. The result was that it became the de facto lender and dealer for the private sector. In the post-crisis regime, central banking policy provides not just the floor for the asset pricings but also a constant and active interference and recalibration in the pricings.

For all the models for that’re being generated for liquidity succession must incorporate this fundamental assumption of a perpetual crisis in order to reach at a sublime conclusion. As we derived from the genealogical, anthropological and epistemic theories of sovereignty and monetary order; a sovereignty is the ontology of spreads which is mediated by the act of succession, so i would hesitate here to characterize this foundational assumption of a perpetual crisis in central banking policy as a necessary evil.

The long tail effects of this status quo have been tremendously disastrous for different classes of monetary participants. Different classes of monetary participants have their own native mandates and liabilities denominated in the universal denominator.

The question of money: par, interest, forex and Price level

In order to understand what the modalities of Succession are, one must thoroughly investigate what it is succeeding from. Here, I would like to break down what the current hierarchies of the Global Dollar Monetary Order look like, building on top of the Theory of Par Function.

Mainstream economics often starts with a simplified concept of "money" as a static stock, an aggregate like M1 or M2, that sits in the system. The primary analytical tool is the supply and demand for this stock, which determines a single, dominant price: the interest rate. Central banks, in this view, control the money supply to set interest rates, which then influence economic activity (investment, consumption) through a transmission mechanism.

Via the contemporary critique we covered in part-2, we identify several critical shortcomings in this approach:

1. **The Primacy of Credit over Money:** In the real world, most economic activity is financed not by pre-existing money but by credit, the creation of promises to pay. A corporation issues commercial paper, a bank extends a loan, a government sells a bond. These credit instruments are themselves a form of money-like asset. The system is a complex, hierarchical network of IOUs, not a simple pool of cash.
2. **Ignoring the Plumbing:** Conventional models often abstract away from the institutional "plumbing" of the financial system: the interbank market, repo (repurchase agreement) markets, collateral swaps, and dealer balance sheets. Yet, as the 2008 financial crisis brutally demonstrated, it is precisely in this plumbing where

systemic vulnerabilities lie. A freeze in the repo market is far more consequential than a shift in the M2 aggregate.

3. A Single Price is Insufficient: The idea of a single "interest rate" is a gross oversimplification. At any moment, many different interest rates coexist, the Fed Funds rate, the LIBOR/SOFR, the Treasury yield, the corporate bond yield, the mortgage rate. These rates are interconnected but distinct. Their relationships, or spreads, are often the most important indicators of financial stress.

Leveraging the Intellectual Heritage of Knapp, Keynes, and Minsky;

In Georg Friedrich Knapp's "State Theory of Money", the Chartalism, Knapp argued that money is not a commodity but a "creature of law." It is a token whose value is derived from the state's willingness to accept it for tax payments. This establishes the fundamental hierarchy: the state's money is the ultimate means of final payment. This idea is crucial for understanding the first price of money: par.

John Maynard Keynes's "Treatise on Money", While Keynes's General Theory is more famous, we draw heavily on the earlier Treatise. Here, Keynes developed a sophisticated analysis of the term structure of interest rates and the role of bankers as "market makers" who balance the flows of deposits and loans. This highlights the importance of the second price: the interest rate.

Hyman Minsky's "Financial Instability Hypothesis", Minsky is perhaps the most direct influence. His core insight was that financial crises are endogenous to a capitalist system. Periods of stability breed complacency, leading to a shift from conservative (hedge) finance to speculative and finally Ponzi finance, where cash flows are insufficient to service debt. Minsky focused on the dynamics of balance sheets, assets, liabilities, and cash flow commitments. The Money View is essentially an operationalization of Minsky's insights, providing the detailed analytics of how these balance sheets are funded in money markets.

We see the financial system as a hierarchy of promises (IOUs). Your bank deposit is an IOU from your bank. A Treasury bond is an IOU from the government. A dollar bill is an IOU from the Federal Reserve (literally, it's a "Federal Reserve Note").

The key question for any IOU is: How easily can it be converted into a higher-ranking IOU, ultimately into the base monetary unit of account of the central bank? This convertibility is liquidity.

The agents that ensure this convertibility are market makers, most importantly the large banks and dealers. They stand ready to buy and sell assets, thereby "making a market." They provide liquidity by warehousing assets on their balance sheets and funding them in the wholesale money market. The stability of the entire system rests on the ability of these key dealers to fund their positions. Their funding cost is the nexus of the system.

Leveraging mehrling's thesis of the four prices of money;

Within this hierarchical system of market makers and IOUs, there are not one but four crucial margins where the terms of convertibility are determined. These are the Four Prices of Money. They represent the exchange rate between different layers of the monetary hierarchy.

1. Par: The price of converting one form of inside money (e.g., a bank deposit) into another form of inside money (e.g., cash) or into outside money (central bank reserves) at a 1:1 ratio. This is the foundation of the payments system.
2. Interest Rate: The price of converting money today into money tomorrow. It is the fee for time. This is the price of credit, balancing the supply and demand for liquidity across time.
3. Exchange Rate: The price of converting one currency into another. It is the fee for space (across currency zones).
4. Price Level: The price of converting money into goods, services and investable assets. It is the final conversion of the monetary system into the real economy.

These four prices are not independent. They are inextricably linked through the arbitrage activities of market makers. A shock to one price will necessarily ripple through to the others. The hierarchy, however, is critical. A breakdown at the first price (par), a loss of confidence in the equivalence of bank deposits and cash, is a catastrophic banking panic, which immediately disrupts all other prices.

Having established the foundational concept of Par and the hierarchical nature of the monetary system, we now turn to the price that governs the flow of liquidity through time. This is the most familiar price of money, but we provide a distinct and powerful perspective on it.

In conventional economics, "the interest rate" is often discussed as a singular entity. The Money View immediately rejects this simplification. The second price of money is not one

rate but a spectrum of rates, a term structure, that defines the cost of borrowing for different durations. This includes:

1. **Overnight Rates:** The price of money for a single day (e.g., Fed Funds Rate, SOFR). This is the purest price of liquidity, the "grease" for the daily settlement of payments.
2. **Short-Term Rates:** The price for money for weeks or months (e.g., 3-month Treasury bill yield, commercial paper rates).
3. **Long-Term Rates:** The price for money for years or decades (e.g., 10-year Treasury bond yield, mortgage rates).

The relationship between these rates, the shape of the yield curve, is a critical barometer of financial conditions and expectations. A "normal" upward-sloping curve (where long-term rates are higher than short-term rates) suggests a healthy, growing economy. An "inverted" curve (short-term rates higher than long-term rates) is a classic warning sign of expected economic contraction.

The interest rate is determined in the money market, which is the core "plumbing" of the financial system. This is not a market for stocks or long-term bonds, but for short-term credit instruments (maturities of one year or less). Key instruments include:

1. **Treasury Bills:** Short-term government debt, considered risk-free, in terms of credit.
2. **Repurchase Agreements (Repo):** Short-term, collateralized loans. A dealer sells a security, like a Treasury bond, to a lender with an agreement to buy it back the next day or in the near future at a slightly higher price. The difference is the repo rate. This is the primary way dealers fund their inventory of securities.
3. **Commercial Paper:** Short-term, unsecured corporate IOUs.
4. **Certificates of Deposit:** Time deposits at banks.
5. **Bankers' Acceptances:** Short-term debt guaranteed by a bank.

The money market is where the daily liquidity management of the entire economy occurs. Corporations with temporary cash surpluses lend to corporations or banks with temporary deficits. The interest rate is the price of liquidity itself, the fee for bridging a timing mismatch between cash inflows and outflows.

Here, we focus on dealers as market makers becomes essential. A dealer bank, like Goldman Sachs or JPMorgan, sits at the center of the money market. Its trading desk operates on a simple principle: it stands ready to buy at a bid price and sell at an ask price.

This market-making activity has profound implications for the interest rate. Consider a dealer who makes a market in 2-year Treasury notes:

1. **The Inventory:** The dealer holds an inventory of these notes on its balance sheet (an asset).
2. **The Funding:** The dealer does not use its own equity to buy these notes; it funds the inventory by borrowing in the repo market. It sells the notes overnight for cash (the repo loan) and agrees to buy them back the next day. The cost of this funding is the repo rate.
3. **The Spread:** The dealer's profit comes from the difference (the spread) between the yield it earns on the 2-year note and the repo rate it pays to fund it. This is a carry trade.

The dealer's willingness to hold inventory and make markets depends crucially on the stability and predictability of this funding. If the repo rate suddenly spikes above the yield on the 2-year note, the carry trade becomes negative, and the dealer faces daily losses. It will be forced to sell its inventory, driving down the price of the 2-year note, which means driving up its yield, until the spread is restored. Thus, the short-term repo rate is a fundamental determinant of all other interest rates because it sets the marginal cost of funding for the market makers who set prices.

The interest rate on any instrument is not a single number but a benchmark rate plus a spread. This spread reflects the instrument's position in the hierarchy of credit.

- **Risk-Free Benchmark:** The U.S. Treasury yield for a given maturity is considered the benchmark "risk-free" rate (neglecting inflation risk).
- **LIBOR/SOFR:** This is an interbank rate, representing the cost of unsecured borrowing for high-quality banks. The spread between LIBOR/SOFR and the T-bill rate (the TED Spread) is a key measure of perceived credit risk in the banking system. A widening TED Spread indicates stress.
- **Commercial Paper:** The rate for corporate borrowing. The spread between commercial paper and T-bills reflects the credit risk of the corporate sector.

We emphasise that these spreads are not just about default risk. They are primarily about liquidity risk, the risk that you might not be able to sell the asset quickly and without price concession in a stressed market. A less liquid asset requires a higher yield, a wider spread, to compensate the holder for this risk.

While the central bank does not control the entire yield curve, it powerfully influences it by setting the marginal price of liquidity in the system: the overnight interest rate.

- The Policy Rate: The Federal Reserve sets a target for the Fed Funds Rate (the rate at which banks lend reserves to each other overnight).
- Open Market Operations: To enforce this target, the Fed acts as the ultimate market maker. If the effective rate is above target, the Fed injects reserves by buying Treasury securities (increasing the supply of reserves and lowering their price). If the rate is below target, it drains reserves by selling securities.
- The New Framework: Since the 2008 crisis, with a system flush with reserves, the Fed uses a different mechanism: it pays interest on reserves (IORB) and uses reverse repo (RRP) facilities. These rates act as a floor system, putting a firm bottom on the overnight rate.

By controlling the shortest-term, safest interest rate, the Fed anchors the entire term structure. However, it does not control the spreads. As the 2008 crisis showed, the Fed can have the Fed Funds rate at 2%, but if the TED Spread explodes and the repo market freezes, the effective cost of funding for dealers and corporations can skyrocket. The central bank must then shift from setting the price of money to providing liquidity directly as a lender of last resort, a function we will explore in Part 5.

In our view, the interest rate is the price that balances the supply and demand for liquidity across time. It is the mechanism that ensures the flow of payments can continue smoothly day-to-day. A low, stable interest rate environment indicates that the market-making system is functioning well; liquidity is readily available. A volatile or spiking interest rate, particularly in the overnight and repo markets, is a signal that the plumbing is clogged, market makers are struggling to fund themselves, and the hierarchy of credit is under stress.

The stability of the first price (Par) depends on the stability of the second price (Interest Rate). If the cost of overnight funding becomes prohibitively high or unavailable, a bank or dealer cannot meet its settlement obligations, and par breaks.

The first two prices, Par and the Interest Rate, operate within a single currency system, like the dollar. The exchange rate emerges when we introduce a second currency, such as the euro. From the Money View, the global monetary system is not a flat plane of equal currencies but a hierarchy of international currencies.

- Top Currency (The Dollar): The U.S. dollar acts as the world's dominant currency. It is the primary vehicle for international trade, the primary denomination for global financial assets, like corporate bonds and loans, and the primary reserve asset held by central banks. This makes the dollar the key currency at the apex of the global system.
- Patrician Currencies (Euro, Yen, Pound): These are currencies of other developed economies with deep financial markets. They exist in a peer relationship with the dollar but are still subordinate to it in the global hierarchy. They are often used regionally.
- Plebeian Currencies (Emerging Market Currencies): These currencies have limited international use. Their governments and corporations often borrow in dollars (a phenomenon known as "original sin"), making them acutely vulnerable to shifts in the dollar's value and availability.

The exchange rate is the price of converting one currency into another. But crucially, it is not a symmetric price. It is the price of a subordinate currency in terms of the key currency. The price of euros in dollars (EUR/USD) is more consequential than the price of dollars in euros (USD/EUR).

Just as the repo market is the plumbing for domestic liquidity, the foreign exchange (FX) swap market is the plumbing for cross-border liquidity. This is where the true price of crossing currency space is determined.

An FX swap is a simultaneous spot and forward transaction. A European bank that needs dollars for three months to fund its holdings of U.S. assets will:

1. Spot Transaction: Sell euros and buy dollars today.
2. Forward Transaction: Simultaneously agree to sell dollars and buy euros back in three months' time.

The difference between the spot rate and the forward rate is the swap points. This difference effectively represents an implied interest rate differential. The cost of obtaining dollars via

the swap market is a combination of the prevailing interest rates in the two currencies plus a critical additional component: a cross-currency basis spread.

In a perfect, frictionless world, Covered Interest Rate Parity (CIP) should hold. CIP states that the cost of borrowing dollars directly should equal the cost of borrowing euros and swapping them into dollars. The forward exchange rate should precisely reflect the interest rate difference between the two currencies.

In reality, CIP fails persistently. The deviation from CIP is the cross-currency basis swap spread.

A Negative Dollar Basis: If the cost of obtaining dollars via the swap market is higher than the domestic dollar interest rate, the basis is negative. This means there is a premium for accessing dollar funding. It indicates a shortage of dollar liquidity outside the United States.

The Role of Market Makers and Global Dealers: Global dealer banks are the market makers in the FX swap market. They intermediate between those who need dollars and those who have them. Their ability to do this depends on their balance sheet capacity and their own access to dollar funding.

The Funding Shock: When these global dealers become constrained, e.g., during the 2008 crisis or the March 2020 COVID shock, they are less willing to warehouse the currency risk. The price of accessing dollars via the swap market spikes. The basis turns deeply negative. This is the equivalent of a "run" on the dollar funding market for non-U.S. entities. The price of converting euros into dollars breaks away from the theoretical interest rate parity.

The global system is characterized by a structural dollar shortage. This is because the rest of the world (ROW) has a fundamental demand for dollar-denominated assets (for trade, investment, and reserves) that exceeds its natural supply of dollar income. This shortage is structurally funded by the global dealer banking system through the FX swap market.

When this funding market freezes, the hierarchy of international balances becomes starkly visible:

1. Onshore Dollar, The Cheapest: Dollars held within the U.S. banking system.
2. Offshore Dollar, More Expensive: Dollars held outside the U.S., but accessible via the swap market. The price is the basis spread.

3. **Plebeian Currency, Most Expensive/Unavailable:** In a crisis, the ability to convert a local currency into dollars at any price can vanish. The exchange rate can gap downward (a currency crash).

This is why, during a global crisis, the U.S. dollar appreciates sharply, even if the crisis originated in the United States. The world is scrambling for the top-level money to meet its dollar-denominated obligations. The price of dollar liquidity in terms of other currencies skyrockets.

The exchange rate is not isolated; it is deeply integrated with par and the interest rate.

1. **Exchange Rate and Par:** A fixed exchange rate regime is an attempt to enforce par between currencies. A country that pegs its currency to the dollar is making a promise analogous to a bank's promise to convert deposits to cash at 1:1. The central bank must stand ready to buy and sell its currency for dollars at the fixed rate. This requires large dollar reserves. A speculative attack on the peg is the international equivalent of a bank run, testing the central bank's "par" conversion promise. If it fails, the peg breaks.
2. **Exchange Rate and Interest Rate, The Unholy Trinity:** The famous "Impossible Trinity" or "Trilemma" states that a country cannot simultaneously have:
 - A fixed exchange rate
 - Free capital movement
 - Independent monetary policy

We reframe this: if you have free capital flows and a fixed peg, your domestic interest rate is determined by the center country's (e.g., the Fed's) interest rate. To defend the peg, you must match the center's interest rate, sacrificing your domestic policy autonomy. The price of maintaining "par" across currencies is the surrender of your independent "price of time."

In a severe dollar funding crisis, the Federal Reserve can act as the international lender of last resort. It does this through central bank swap lines.

The Fed provides dollars to, say, the European Central Bank (ECB) in exchange for euros. The ECB then lends these dollars to European banks that are desperate for dollar funding. This action directly addresses the dollar shortage by providing the top-level money. The Price of the Swap Line is The interest rate the Fed charges on these swaps (e.g., OIS + 50 basis points) effectively puts a cap on the cross-currency basis spread. It tells the market that

no one needs to pay more than that rate for dollars. This is a profound intervention: the Fed is making a market and setting a price for the conversion of its currency, stabilizing the global hierarchy.

the exchange rate and more specifically, the cross-currency basis is the price that measures the ease or difficulty of converting a peripheral currency into the key currency. A stable basis indicates smooth functioning of the global monetary plumbing. A widening negative basis is a clear signal of acute dollar funding stress, revealing the underlying hierarchy and the fragility of the shadowy structures that support cross-border finance. It is the price of space, but it is determined by the same forces that determine the price of time: the balance sheet capacity of market makers and the availability of liquidity at the top of the pyramid.

The first three prices are relative prices of money against other financial claims. They are determined within the financial system's plumbing by the interactions of dealers, arbitrageurs, and central banks.

1. Par: The price of bank deposits in terms of central bank money.
2. Interest Rate: The price of future money in terms of present money.
3. Exchange Rate: The price of foreign money in terms of domestic money.

The fourth price, the Price Level, is fundamentally different. It is not a price but an index or an average, the inverse of the price of money in terms of a broad basket of goods and services. If the first three prices are about the internal consistency of the financial system, the fourth price is about the external value of the entire monetary system relative to the real economy it serves.

Mainstream economics often presents a direct, mechanistic relationship between the money supply and the price level (e.g., the Quantity Theory of Money: $MV=PY$). The Money View offers a more nuanced and sophisticated causal chain. The transmission mechanism from finance to the price level operates through systemic liquidity and its effect on effective demand.

The process can be broken down as follows:

1. Central Bank Sets the Marginal Price of Liquidity: As established in the entire Part 2 till now, the central bank targets a short-term risk-free interest rate (e.g., Fed Funds).

2. **Dealers Arbitrage the Term Structure:** Market-making dealers, funding themselves at the short-term rate, arbitrage across the yield curve. Their actions transmit the central bank's policy stance to the entire spectrum of interest rates, including those for mortgages, corporate bonds, and commercial paper.
3. **Liquidity Conditions Affect Spending and Investment:** The overall level of interest rates and, more importantly, the spreads (TED spread, corporate bond spreads) influence the marginal decision to spend or invest.
 - **Tight Money (High Rates/Wide Spreads):** Increases the cost of funding for households, corporations, and the government. This discourages investment in new houses, factories, and equipment. It encourages saving over consumption. Effective demand in the economy contracts.
 - **Easy Money (Low Rates/Narrow Spreads):** Lowers the cost of funding, encouraging borrowing and spending. It makes it easier to finance a car, a house, or a corporate expansion. Effective demand expands.
4. **Demand Meets Supply, Determining the Price Level:** The final step is classic supply and demand. If effective demand (fueled by easy liquidity conditions) grows faster than the economy's productive capacity (aggregate supply), producers will find they can raise prices. Conversely, if demand contracts relative to supply, price pressures will ease. The outcome is a change in the general Price Level.

Crucially, this chain is not instantaneous or guaranteed. It can be broken or muted by other factors, such as:

- **Debt Overhang:** If households or corporations are over-indebted, low rates may not stimulate new borrowing; they may simply be used to service existing debt (a "balance sheet recession").
- **Globalization:** The integration of global supply chains and labor markets can suppress the price level for traded goods, regardless of domestic liquidity conditions.
- **Inflation Expectations:** If economic actors believe the central bank is committed to low inflation, they may not adjust their price- and wage-setting behavior in response to temporary demand spikes.

Conclusion

For all the theory we have covered in Part-2, the key conclusion is that we're in a Crisis of Succession.

Most public, formal, organized, and structured portfolios today, accounting for more than \$100tn in notional value, follow Modern Portfolio Theory, theorized by Markowitz, and its derivative pricing model, the Capital Asset Pricing Model, theorized by Sharpe, as their core canonical Investment Mandate.

Modern Portfolio Theory and the Capital Asset Pricing Model were indeed major breakthroughs in 20th-century Finance Theory, but they assume an "absolute" Risk-Free Rate, a divine, unchallengeable mandate.

All the valuation models and pricing theories of assets in the portfolio, be it Public Equities, Fixed Income, or Private Equities and Private Credit Notes/Commitments and Derivative Contracts, are based on the assumption of an Absolute Risk-Free Rate. While genealogically, epistemically, and historically, the assumption is indeed challengeable, especially in contemporary Portfolio Techne.

The Federal Reserve's policy in the post-crisis regime has been built on the fundamental assumption of a Perpetual Crisis, which led policymakers to develop perpetual asset purchasing, monetisation, and par-maintenance windows.

It's now not merely a Lender and Dealer of the Last Resort but a Lender and Dealer of All Resorts.

As we saw in Part-1, High-Quality (legally sound) collateral being centrally cleared 1:1 is a very recent phenomenon, post-17th century, after King Stuart started the ritual of permanent peacetime deficits, a noble succession from "money (with metal inside) as a pledge" to "sovereign credit as a pledge," the epistemic movement from Horoi and Symbola to a secret third Xeno-thing.

Until the GFC, you'd even be able to clear Subprime MBS and other not-so-sound collateral 1:1. The Sovereign has gradually expanded its territorial optionality (one could say, internalizing the options) to violate and forgive since the emergence of the Bank of England and modern Financial Capitalism.

The Aristotelian-Marxist-Landian dream will be manifested through absolute accumulation of Capital via the Sovereign internalizing the par and risk, starting from Money Markets to Hedge Fund Deposit Notes and High-Yield Collateral Alchemy. Here the Sovereign is not a Nation-State but rather a unified ontological agency that signifies the indifference between Sovereign and Central Bank.

“Everything will be Risk-Free and you’ll be happy. Sovereign Security will not be the last but the only line of defence,” is the only right prose for the moment we’re in.

It’s not to say that these fundamental assumptions are straight-up right or wrong, but these assumptions are being interpreted in an intellectually dishonest manner, lacking the acknowledgement of responsibility of the Sovereign towards its subjects. That’s why it’s fundamentally a problem of Sovereignty and not just Cryptocurrency.

Anxiety about the Market’s forward existence creates a spread for the Dealer, but anxiety about the Market’s forward existence creates a risk event for the Sovereign. It’s a sublime balance between how much spread the Dealer function can capture without posing Succession risk on the Sovereign.

For the past three or so decades, this equilibrium has been imbalanced. The primary process of imbalance started around the Randian movement and its overlap with people governing the Federal, the Greenspan era. A fifteen-year-long period of production of unsound private collateral being cleared at par, MBS, CDOs, etc., which got “corrected” in 2008 (not technically a correction, but the Sovereign internalized the par by acting as the Lender of Last Resort). Post-2008, balance sheet expansion on the assumption of a perpetual crisis, leveraged carry period, and overblown cash-basis.

It’s an epistemic movement of the Sovereign internalizing the outside spread, which we even believe to be done so on purpose. You can’t resist the epistemological movement that’s already occurred; you can only make the Succession more just, open, and transparent by acknowledging the responsibilities of the Sovereign towards the Subjects.

Any public or private portfolios following Modern Portfolio Theory and the Capital Asset Pricing Model have lost their purchasing power due to the Fed’s assumption of a Perpetual Crisis, resulting in perpetual expansion of the balance sheet, leading to the collapse of absolute returns and uncorrelated alpha for these portfolios.

So the new trade to sustain some of the purchasing power became over-allocation to Leveraged Beta Assets, portfolios, and sectors, which led to over-allocation to Private Equities and uncharted vehicle structures to access leverage with next to no exit paths.

Assets jump from one portfolio to another, from one mandate to another, and from one vehicle to another, with end and ultimate deferral to the Sovereign, the issuer of the Universal Denominator.

Even when the private balance sheets defer to the Sovereign balance sheet, it generates a cybernetic noumenon. Assets become even more expensive via newly minted liquidity, and the same cycle repeats.

When the Sovereign internalizes the par in perpetuity, Sovereign Security becomes the most important thing to price. In fact, one could argue that it's the only thing to price.

Given the historical moment we're in, it's not merely a crisis of an asset type, a bucket of assets, or portfolio theory at large, but it's a Crisis of Sovereignty. Of course, giving a Succession modality to Modern Portfolio Theory and its relevant consequences is the lower-hanging fruit, but the discourse must not stop there. In this memo, we went through more than two millennia worth of dialectics on Monetarism and Sovereignty for a reason.

It's a bigger crisis, and therefore, the discourse should resonate with the Crisis of Sovereignty itself rather than a crisis of portfolio theory. The crisis of portfolio theory is a part of the problem in the larger and more complex Crisis of Sovereignty.

Before offering a solution, first comes acknowledgement, acknowledgement that in the contemporary Techne, the Sovereign will internalize the par at the cost of its subjects, and might even act arbitrarily for different classes of subjects holding different instruments and assets on their balance sheets.

Genealogically, all major monetary crises have been Crises of Succession and not crises of Monetarism themselves. We stand at a delicate moment in history, where we must redefine what a Monetary Sovereign is, in order to define what the modalities of Succession are.

As derived via Genealogical Dialectics in Part-1 and Part-2 of the memo, Sovereignty is a system of spreads, spread on the par, an option, an option to have a perpetual succession of liquidity, a modality of perpetual negotiations between different classes of stakeholders inside the common accounting standard.

If the Federal Reserve employs an assumption of the Perpetual Crisis as the foundation for policy choices, we must acknowledge its consequences, even if we have giant stacks at the table which might be in a privileged position due to this assumption or individual mandates.

As Perry Mehrling states, the Federal Reserve should acknowledge its responsibility as a global imperialist bank to fulfil its responsibility towards its different classes of subjects on the similar accounting standard, which it has failed to do.

What we propose here is a system that acknowledges its responsibility towards its subjects to make the rules of the system more open, decentralized, transparent, and fair, in order to fulfil its function as a Monetary Sovereign, in the perpetual maintenance of the par, interest, foreign exchange, and price levels, by acknowledging its responsibility as the Lender and Dealer of All Resorts.

We must incorporate a deep Theology constituting the Subject and the Object of Power, the Sacred Center.

Due to the foundational assumption of a Perpetual Crisis, the Sovereign's role is now not merely to fulfil its mandate as the Lender and Dealer of Last Resort but the Lender and Dealer of All Resorts. If that's the system we're succeeding from, the successor must truly think to fulfil this purpose in the most sublime manner possible.

The divine unification of the Risk-Free Rate and the Risk-Adjusted Deposit Rate, as well as the hierarchy of Monetary Par, into a single centrally cleared account, it's a \$500tn worth of hard question to be solved. It's a hard but worthy problem to spend a decade and more on.

XENOSYSTEMS

Monetary Specifications

\$XENO and \$stXENO

\$XENO and \$stXENO are the core Units of Account for Xenosystems. The pair represents the ultimate price of the Spread, Sovereignty, and Monetary Order, as concluded in the first part of this memo. If you have jumped directly to this section, I highly recommend going through the Theory in Part-1 and the initial sections of Part-2 of the memo first, to understand the Dialectics, Synthesis, and Justifications behind the core Architectural Choices. In the sections ahead, terms such as "Internalization" carry a specific nuance, translatable to "Enshrinement" in Crypto-Native vocabulary.

\$XENO:

\$XENO acts as the native monetary unit of account account for the chain, distributed ledger and/or the distributed system.

It's represents native unit for account for;

- The systemic par function

- The core instrument for the monetary design
- The core instrument for monetary expansion
- In which, The base protocol fees are denominated
- In which, The priority (including the economic scenarios of blockspace congestion and hotspot access) fees are denominated
- In which, the all pairs on the internalized exchange function are denominated
- In which, The lendable and liquidable pairs on the internalized lender function are denominated in
- In which, The dealable and liquidable pairs on the internalized dealer function are denominated in
- In which, Any pairs in internalizable function for future roadmap will be denominated
- The base staking/governance token for delegated proof of stake governance of xenoBFT consensus
- The base voting token for any changes or the upgradations to the core protocol

\$stXENO

\$stXENO acts as the native bonding or staking unit of account for the chain, distributed ledger and/or the distributed system

It represents,

- The spread and par of the totalogical system, the \$stXENO/\$XENO pair.
- The \$XENO denominated risk-free asset
- The liquid representation and principal for The \$XENO denominated risk-free Yields
- The core tool for monetary policy
- The core tool for monetary elasticity controls and contractions
- The signifying unit of account for yields or surpluses accrued through intenralized exchange, lender and dealer function
- The base cost to borrow on internalized lender function attached of origination fees, systemic fees, and/or any misc fees

- The liquid representative token for delegated proof of stake governance of xenoBFT consensus.
- The liquid representative token for voting regarding any changes or upgradations to the core protocol.

Internalized/Enshrined Liquid Bonding/Staking Function

If one desires to truly build a Risk-Free Asset representing a Risk-Free Rate of Return, the Sovereign and/or the Monetary Issuer must issue the liquid, dealable, and lendable Bonding Instrument itself, rather than outsourcing that function to the non-sovereign private sector, as most major Blockchains currently do. It should be a Sovereign Liability for it to be leveraged and dealt within the larger Sovereign and non-sovereign Balance Sheets.

When \$XENO holders delegate \$XENO to a Validator, they receive a natively minted, liquid representation of that Stake Delegation, \$stXENO.

Delegated Proof of Stake itself is a prototypical enshrined Liquid Staking Function. What we are attempting here is a derivative form of Delegated Proof of Stake by making the Stake Delegation liquid, which introduces its own set of privileges and complexities within the broader schema of systemic design choices.

The liquid representation of that Stake Delegation, \$stXENO, can be leveraged in the Internalized Lender Function with the lowest possible collateral haircut, as it constitutes a Sovereign Liability.

Think of it as analogous to how one can borrow at the cheapest Cost of Capital, with up to 99% LTV, when pledging a Treasury as collateral in a Repo transaction.

Who issues the base Bonding Asset becomes increasingly significant as systemically important trades develop on top of that Bonding Asset.

A mock work flow for an example:

- A participating actor acquires \$XENO from the open market.
- They delegate and stake that \$XENO to a permissionless set of validators
- They receive \$stXENO as liquid representation of stake delegation
- Assuming The current risk-free rate to stake \$XENO is 5%
- They pledge \$stXENO as collateral to the internalized lender function
- They borrow at a risk-free rate + origination fees (to disincentivize unproductive arbitrages) at upto 90% LTV.
- The LTV is set by the decentralised validator governance and a supermajority quorum
- Now they could build follow on legs on this strategy to develop a systemic trade (cash/basis trade, leveraged arbitrage, etc)

Internalized/Enshrined Exchange Function

An Internalized Exchange Function lets the Sovereign decide the “Exchange Standard,” in which the ontological “Xeno,” the Other, is denominated.

It is important to make sure that there is a singular, unified standard for different classes of Monetary Participants.

Every pair on the Internalized Exchange Function is denominated in the base Monetary Unit of Account, \$XENO.

Any “Otherness,” which is a non-“Par” asset denominated in the base Monetary Unit of Account, \$XENO, can economically sustain itself as long as it expresses volatility to the base Monetary Unit of Account, \$XENO.

What we aim to achieve via the Internalized Exchange Function is to capture the global volatility denominated in which the Internalized Dealer Function, the Internalized Lender Function, and non-sovereign Par Products can capture, structure, monetize, and distribute in the form of \$XENO-denominated Risk-Free and Risk-Adjusted Yields.

Even though the throughput of the underlying distributed architecture is less relevant if the primary Price Discovery happens on the Internalized Exchange Function in totality, the Price Signals derived on the Internalized Exchange Function should not have any dependencies on any off-ledger or off-chain Price Signals, Oracles, Packets, or Jitters.

By internalizing the Oracle from the Price Signals derived on the Internalized Exchange Function, and integrating that Oracle Function into the Internalized Lender and Dealer Functions, we incentivize the Capital Markets heavily to keep their primary Price Discovery on the Internalized Exchange Function itself, as the primary Risk and Interest Premium formulas on the Internalized Lender and Dealer Functions will be derived from the Price Signals expressed by the Internalized Oracle.

This rewards Volatility and Par Asset Producers heavily to develop network effects. By keeping their primary Price Discovery inside the Internalized Exchange Function, it de facto integrates them into the broader Monetary Functions of the Xenosystems used for dealing and lending. It lets them capture, structure, and monetize volatility and leverage in a better way.

Still, it is the job of any Exchange System Architecture to work to the best of its ability within the larger distributed systems trade-offs. So, a high-throughput CLOB Architecture, where the Price Discovery of Volatility and Par Products can happen in the most efficient manner without any systemic information asymmetry, is not just a mere design choice but a structural necessity. I will be covering more about this in the Technical Specifications part below.

Enshrined Oracle

The price signals derived from the internalized exchange function can be formalized and utilized as the primary source of price feed for the internalized lender function, the internalized dealer function, and the non-sovereign private protocols.

As all the protocols and modules are governed by the validator quorum, they leverage the base protocol-level security guarantees by virtue of decentralized, permissionless execution, governed by a decentralized set of permissionless validators.

This makes attacks like oracle manipulations impossible compared to other architectural counterparts governed by multisig architecture.

Internalized/Enshrined Lender Function

The internalized lender function is an endogenous credit issuance and monetary expansion protocol. It issues \$XENO-denominated credit against, initially, any collateral whitelisted (with monetary expansion specifications, e.g., \$stXENO) into the core protocol by the supermajority validator quorum.

Net debt issuance is bounded by the total amount of \$XENO staked as well as a hard-coded expansion ceiling voted by the supermajority validator quorum.

Once there's enough liquidity, volatility, and asset issuance on top of the internalized exchange function above a threshold, the network could adopt a meta-framework where the supermajority validator quorum does not independently set the monetary expansion specifications (LTVs, risk premiums, etc.). As the internalized exchange function expresses all the price signals required to calculate the LTVs and risk premiums, the supermajority validator quorum does not independently need to calculate these via their proprietary frameworks.

The meta-framework makes credit issuance and monetary expansion even more decentralized and permissionless; as price discovery itself is decentralized, the long-tail manipulation risk of price discovery becomes impossible because of the native internalization and enshrinement of the exchange function into the core protocol itself.

The meta-framework makes any asset above a certain volume on the internalized exchange function eligible to pledge itself as collateral for \$XENO-denominated debt positions.

The same mock workflow mentioned in the internalized bonding function could be interpreted here, but for any asset issued on the internalized exchange function with adjusted LTV and risk premium.

Every accounting function in the internalized lender function is denominated in \$XENO: credit issuance, credit clearing, interest rates, and liquidation of collateral.

Internalized/Enshrined Dealer Function

The internalized dealer function is a dealer protocol built on top of the internalized exchange function, dealing initially with whitelisted assets and, once bootstrapped, with any asset permissionlessly deployed on the internalized exchange function.

The dealer function holds a \$XENO-denominated balance sheet, which will initially be allocated via the foundation budget and, once bootstrapped, strategically allocated via the validator quorum. As our future roadmap includes validator/staker independent economics (VIE), the allocation to the internalized dealer function can be dynamically adjusted based on the cost of capital, making allocation to different lender and dealer markets within the internalized expansionary monetary function more efficient, decentralized, and permissionless.

Once matured, the dealer function will deal in all contract structures deployed on the internalized exchange function: spot, perps, dated futures, etc.

Even though we use cutting-edge market microstructure infrastructure to run the dealer function on material grounds, we utilize Jack Treynor's *The Economics of the Dealer Function* as a foundation for the economic design.

Core products are trades built on top of \$XENO

It's a long list to cover every type of asset, product, contract, systematic trading module, and financial design that could be permissionlessly deployed on top of \$XENO as the core asset. Therefore, initially, we categorize products into two broader categories:

1. Volatility products: Products that express volatility in relation to the core denominator, \$XENO.
2. Par products: Products that capture, structure, and monetize this volatility and distribute yields generated in \$XENO-denominated coupons with a \$XENO-denominated par asset representing the deposited principal.

These specifications only consist of non-sovereign, non-internalized, external, and private products that leverage the sovereign and internalized functions.

Volatility products

Any asset can be permissionlessly deployed on the internalized exchange function.

As the asset is denominated by \$XENO, it can economically sustain itself as long as it expresses volatility relative to the core asset it is denominated by, \$XENO, which most non-par assets deployed on top of the internalized exchange function de facto would, by virtue of lower notional size and dealer markets compared to the core asset \$XENO.

Par products

As discussed in the first part of the memo, market anxiety (volatility) is the dealer's spread. Any par asset can be permissionlessly deployed on the internalized exchange function.

These assets capture, structure, and monetize the volatility produced by the products specified in category one via multiple modalities, namely sovereign debt (\$stXENO) leveraged exposure, discretionary long/short, delta-neutral market making, statistical arbitrage, inter-function arbitrage, liquidation arbitrage, cash-basis/funding-rate arbitrage, multi-leg arbitrage, etc.

They can distribute yields generated in \$XENO-denominated coupons with a \$XENO-denominated par asset, which represents the deposited principal.

Key risk assumptions and mitigation measures

As Xenosystems does not break the continuity of the financial theory and speculative monetary designs practiced by monetary sovereigns to date, it faces similar risk assumptions as a sovereign currency would, namely, risks on interest rate, par, foreign exchange, and price level. Therefore, we borrow research and developments that our precursors did in the context of the US dollar regime or other G7 monetary sovereigns and address assurances for those risks by leveraging theories, practices, and literature built around these sovereign currencies.

Interest rate

The protocol will never radically raise or lower artificially induced net deficit rates or interest rates (leading to non-credit issuance inflation) unless there is an extremely strong monetary incentive to do so. The floor for non-credit issuance inflation will stay below 5% during the initial rollouts, which will go lower as the internalized functions produce distributable yields in the form of a risk-free rate.

The natural rate of interest for Xenosystems is the deficit floor plus yields acquired via internalized functions.

Par

The main sovereign par pair of the monetary system is $\$stXENO/\$XENO$; it represents the ultimate spread of sovereignty, in which the legitimacy of the sovereign order is denominated.

The pair represents the “absolute par,” with lender and dealer of all resorts guaranteed by virtue of core protocol policies.

Foreign exchange

Apart from \$XENO being the core asset of the system, to pay base fees, to pay priority fees, in which credit creation happens, in which interest payments accrue, in which liquidatable positions are denominated, in which all pairs on the internalized exchange function are denominated, in which the internalized and external lender and dealer functions lend and deal, and in which the par products built on top of \$XENO are denominated, \$XENO is also an instrument to access the risk-free yields provided by the $\$stXENO/\$XENO$ pair and risk-adjusted yields for public and private portfolios, similar to how one would need USD to purchase US Treasuries, fixed income, and equity products on any regulated venue.

One key concern one might have is credit issuance leading to capital outflows. Credit-driven issuance is not net issuance or deficit issuance, a debt position created in \$XENO must be closed by paying back \$XENO. The interest payments are also denominated in \$XENO, and in case of default, collateral auctions are also conducted in \$XENO.

Therefore, credit-driven monetary expansion brings net inflows to the sovereign currency by a large margin compared to other monetary policies and not net outflows.

As the internalized functions produce risk-free surpluses distributed via \$stXENO and external par products structure volatility, leverage, and arbitrage products on top of internalized functions, the net deficit inflation will be zero and contractionary due to interest payments occurring in \$XENO, without even counting all spreads made via other internalized functions. This brings net inflows to the sovereign currency and positions it as a store-of-value asset on top of its de facto role as unit of account and medium of exchange.

Price level

Overissuance of credit could lead to price level imbalances. \$XENO-denominated volatility and par products could face asset inflation in such scenarios, meaning \$XENO-denominated assets could become expensive purely by virtue of being \$XENO-denominated, a self-referential cycle.

To address this, we embedded a hard-coded debt ceiling and thorough credit issuance policies into the core protocol, voted on by the supermajority validator quorum.

Credit issuance is a function of market-driven profitability; in the context of a given universal investment mandate, if the cost to borrow is higher than the returns the market could provide, such scenarios act as functional insolvency for the mandate.

Therefore, market function itself acts as the natural credit issuance policy even in the absence of a hard-coded debt ceiling. The core monetary policies actively disincentivize unproductive arbitrages and monetizations on unworthy inefficiencies.

Even minute price level fluctuations are constantly monitored by internal and external committees and acted upon via proposal publications, reviews, and upgrades.

Technical specifications

xenoBFT and XVM:

XVM serves as the holistic runtime execution environment orchestrating data dissemination, consensus, ordering, and total order maintenance. it tightly couples the mempool, consensus, and execution layers, allowing them to operate on a shared, structured DAG. this integration eliminates serialization bottlenecks and enables state changes to be proposed the moment data availability is achieved, rather than waiting for a separate consensus outcome.

xenoBFT operates as the core consensus layer, built upon DAG-based principles for optimal byzantine fault tolerance. our BFT consensus is not a separate module bolted onto the DAG; it is a deterministic state machine that interprets the evolving topology of the DAG itself. by reading the patterns of block references across rounds, it reaches agreement on the total order of transactions without requiring a separate voting phase, inheriting the DAG's innate scalability and censorship resistance. the architecture leverages narwhal's foundational framework for efficient, scalable data dissemination across the network.

we utilize narwhal's proven data dissemination framework, which separates data availability from consensus. however, we extend it by operating on an uncertified DAG of blocks. this means we gain narwhal's guaranteed data propagation and recovery mechanisms without paying the latency tax of its explicit certification protocol.

bullshark's proven consensus and ordering mechanisms form the foundation of xvm's transaction finalization process. we adopt Bullshark's elegant concept of interpreting a structured DAG for consensus. our key advancement is in modifying its commit rule to function without the prerequisite of certified blocks. this allows us to bypass the "wave" structure, committing blocks every round instead of every other round, which directly halves the latency in the steady state.

XVM is specifically optimized for distributed system execution, with native support for sharded execution environments. the runtime is designed with a shared-nothing architecture for its core components, allowing parallel execution of non-conflicting transactions across multiple shards. The state is partitioned logically, and XVM manages cross-shard communication atomically, ensuring consistency without a single bottleneck.

we incorporate mysticeti's formalization approaches while significantly enhancing them for bare-metal performance.

while we build upon the theoretical groundwork of mysticeti's uncertified DAG and its safety proofs, our optimizations are for a lower-level stack. We bypass high-level OS schedulers and runtime environments, allowing the consensus logic to run on dedicated, bare-metal cores with direct hardware access for networking and storage.

the system employs a threshold logical clock DAG structure that eliminates explicit certification overhead. this structure mandates that each new block must reference a quorum ($2f+1$) of blocks from the previous round. This creates a temporally ordered graph where the "support" for past blocks can be measured by analyzing the references in subsequent rounds, forming the basis for our implicit certification.

XVM implements a novel commit rule enabling every block to commit independently within 3 message rounds. this rule allows any block to be committed as soon as a validator observes a "certificate pattern" for it, that is, $2f+1$ blocks in a decision round that implicitly vote for it. This happens within 3 network delays: the block's proposal, the supporting votes, and the certifying blocks that acknowledge the support. our architecture supports multiple proposer slots per round, dramatically increasing commitment throughput. unlike single-leader-per-round protocols, we instantiate multiple slots (e.g., n or $2f+1$), each with a dedicated validator.

This allows multiple blocks to be proposed and committed concurrently in the same round, maximizing throughput and ensuring the system's tail latency closely tracks the optimal 3-step commit latency. the execution environment features a pipelined block proposal system that operates continuously without wave-based delays. validators continuously propose blocks in every round without waiting for a "leader" signal or a wave to complete. This creates a continuous pipeline of block production, ensuring network bandwidth and

validator CPU are constantly saturated with useful work, eliminating the periodic stutter found in wave-based protocols.

we've engineered XVM for native execution on bare-metal cores, bypassing traditional virtualization overhead, this involves writing critical path code in a memory-safe subset of Rust and C++ that avoids kernel-level syscalls for I/O operations, using polling and userspace networking drivers (like DPDK) to achieve predictable, microsecond-level latency and bypass OS scheduler jitter. the network stack is custom-optimized for low-latency packet processing and efficient bandwidth utilization.

we use a protocol of compact, binary-encoded messages over persistent TCP connections. The stack employs vectored I/O (`writv/readv`) to batch multiple small messages into single syscalls, minimizing context switches and maximizing network card efficiency for small, high-frequency consensus messages. token standards are natively integrated into the consensus layer, eliminating abstraction penalties. xenoBFT implements implicit certification through DAG pattern recognition rather than explicit signature collection.

rather than collecting and aggregating $2f+1$ signatures into a certificate, a block is deemed certified when a validator observes that $2f+1$ blocks in the subsequent round include it in their causal history according to a depth-first search support rule. This replaces cryptographic verification with a graph topology check.

our CPU utilization is optimized through single signature generation/verification per block versus per certificate. in certified DAGs, CPU is dominated by verifying $O(n^2)$ signatures per round. We reduce this to $O(n)$ by having each validator produce only one signature per round (for their own block). The implicit certification requires no signature verification, freeing the CPU for transaction execution. the system maintains sub-second latency even under crash failures through rapid skip pattern detection.

This is achieved through the rapid detection of "skip patterns." If a validator crashes and fails to propose a block, the protocol quickly identifies $2f+1$ subsequent blocks that do not support it, formally marking that slot as "skipped" and allowing the commit sequence to advance without waiting for timeouts.

we achieve optimal steady-state performance of 3 message rounds, matching theoretical lower bounds The 3-message-delay lower bound is achieved because a block can be committed as soon as blocks in the "decision round" ($r+2$) are processed.

These blocks provide a full round of voting (from round $r+1$) and their own existence confirms that the votes were seen, forming a tight commit pipeline XVM incorporates vectored I/O operations and memory-mapped file handling for maximum throughput for the write-Ahead log (WAL), we batch multiple block writes into a single vectored write syscall. This ensures that even during high throughput, the log writes are sequential and minimal syscalls are made, preventing the I/O subsystem from becoming a bottleneck the protocol dynamically adjusts proposer slots based on network conditions and validator performance based on continuous monitoring of validator performance and network latency, the system can heuristically reduce the number of active proposer slots per round during periods of asynchrony.

This lowers the probability of undecided slots forming and maintains commit latency at the cost of some throughput.

we implement hammerhead-inspired leader reputation systems for optimal proposer selection a separate, low-frequency reputation protocol tracks the reliability and performance of validators.

The most reliable validators are assigned to the most critical proposer slots (like the primary slot of each round), minimizing the chance of delays caused by slow or flaky nodes XVM supports hybrid transaction processing with both consensus and consensusless paths the system maintains two distinct but integrated paths: a consensus path for transactions involving shared objects requiring total ordering, and a consensusless fast path for owned object transfers. Unlike layered approaches, both paths operate on the same DAG structure, allowing transactions to fluidly move between paths based on their conflict profile without protocol switching overhead. the system features embedded fast-path transactions woven directly into the DAG structure fast-path votes are not separate messages but are embedded directly within consensus blocks as explicit transaction votes.

This weaving eliminates the need for validators to generate individual signatures per fast-path transaction, instead amortizing the cryptographic cost across the entire block and leveraging the existing DAG dissemination mechanism.

our epoch change mechanism includes sophisticated equivocation tolerance and recovery protocols the protocol uses an epoch-change bit that, when set, pauses fast-path finalization while allowing consensus to continue.

This creates a clean boundary where equivocated transactions from previous epochs can be safely discarded while ensuring all properly finalized transactions are preserved through quorum intersection arguments in the epoch's final commit xenoBFT implements certificate and skip pattern detection for implicit byzantine fault detection, Validators continuously analyze the DAG topology to identify when $2f+1$ blocks either support (certificate pattern) or explicitly avoid supporting (skip pattern) a particular block.

This implicit certification replaces explicit voting rounds, allowing the system to make safety determinations through graph analysis rather than signature collection the architecture supports mixed-object transactions combining owned and shared object inputs transactions containing both owned and shared objects are processed through a two-phase approach: they first gather fast-path votes to "lock" the owned objects, then await consensus ordering for the shared objects. The consensus commit that includes the transaction serves as the finalization point, ensuring atomicity across both object types.

We utilize a domain-specific language, move, for comprehensive DAG scenario testing and validation. we have also prototyped an object-focused extension script on top of move for further programmability and improved devex of native product development environment.

this enables precise construction of complex failure scenarios; including partial network partitions, strategic equivocation, and crash-recovery sequences, allowing us to formally

verify protocol behavior under adversarial conditions that are difficult to reproduce in production networks. XVM includes production-grade checkpointing mechanisms compatible with existing node architectures checkpoints are derived automatically from the causal history of consensus commits rather than requiring a separate sub-protocol.

This integration ensures that fast-path state transitions are consistently captured without additional synchronization latency or complex coordination between consensus and execution layers. the system features bulk catchup and synchronization protocols for validator recovery, When a validator recovers from extended downtime.

when a validator recovers from extended downtime, it can efficiently reconstruct the DAG state by downloading block ranges and verifying the implicit certification chains, rather than processing individual certificates. This optimization dramatically reduces catch-up time from hours to minutes for severely lagging validators. implementation includes rigorous formal verification of safety and liveness properties.

we've mechanically verified the core safety and liveness properties using the same foundational proofs as Mysticeti but extended them to cover our modifications for bare-metal execution and token standard integration, ensuring no regression in Byzantine resilience despite performance optimizations. xenoBFT supports configurable wavelength parameters balancing latency and asynchrony tolerance The distance between proposal and decision rounds can be tuned based on network characteristics, shorter wavelengths for low-latency environments to minimize commit latency, longer wavelengths for high-variance networks to increase the probability of observing certificate patterns despite asynchrony.

Fairness in XVM

XVM's multiple concurrent proposer architecture inherently promotes fairness by design, Unlike traditional chain-based systems that concentrate block production power in a single leader, XVM's DAG-based structure ensures all validators contribute simultaneously to block creation at network speed. This fundamental design choice eliminates the single point of failure and censorship inherent in leader-based models, creating a system where no single entity can dictate transaction inclusion or ordering. The protocol's requirement for each block to reference a quorum of previous blocks ensures that even slower validators are naturally integrated into the DAG's growth, preventing any single participant from being systematically excluded from the consensus process.

The transition to an uncertified DAG represents a fundamental advancement in computational fairness, by eliminating the explicit certification process that required $O(n^2)$ signature operations per round, XVM dramatically reduces the CPU overhead for validators. This architectural shift lowers the barrier to entry for potential validators who might otherwise be excluded due to hardware constraints, fostering a more decentralized and permissionless validator set. The computational resources saved from signature verification are reallocated to transaction execution, creating a more efficient system that doesn't penalize participants with less powerful infrastructure.

XVM's quorum back-referencing mechanism ensures equitable participation for geographically distributed validators, the mandatory requirement for each block to reference

at least $2f+1$ blocks from the previous round creates a built-in synchronization mechanism that protects against the network marginalizing slower validators. This design forces faster validators to wait for their slower counterparts, ensuring that validators in higher-latency regions aren't systematically excluded from the DAG construction process. The protocol's partial synchrony assumption further reinforces this fairness by tolerating the network variance inherent in globally distributed systems.

Weak links provide a crucial fairness mechanism for recovering from temporary network partitions. Beyond the mandatory references to the immediate previous round, XVM blocks can include references to blocks from all prior rounds, creating multiple pathways for block inclusion.

This mechanism ensures that a validator whose block was temporarily delayed due to network issues can still have their work incorporated into the DAG in subsequent rounds. The weak link system effectively decouples immediate network performance from long-term participation fairness, creating a more robust and inclusive consensus environment.

The Universal Commit Rule with multiple leaders per round fundamentally enhances block-level fairness.

By enabling commitment of up to n blocks per round through a pipelined process, XVM ensures that more validators have their blocks directly committed within the optimal 3-message latency bound. This represents a significant advancement over previous wave-based protocols that only committed one leader every few rounds. The configurable number of leaders (s) allows the network to strike a balance between maximal fairness (higher s) and protection against Byzantine-induced delays (lower s).

XVM's economic model decouples rewards from pure performance metrics, which promotes geographic decentralization. Unlike proof-of-stake systems that directly tie rewards to block proposal frequency, XVM utilizes a Tallying Rule where validators subjectively score each other's performance. This mechanism allows validators to incorporate factors like geographic diversity into their scoring, reducing the incentive for validators to cluster in low-latency data centers. The economic design thus actively counteracts the centralizing forces that typically emerge in performance-based reward systems.

XVM's flexible transaction submission model allows clients to optimize for their specific fairness requirements.

Clients can choose to send transactions to any subset of validators from 1 to $2f+1$, creating a tunable fairness parameter based on their specific needs and network conditions. Users prioritizing rapid inclusion can broadcast to a supermajority, while those with unreliable connections can target geographically proximate validators. This flexibility represents a more nuanced approach to client fairness than one-size-fits-all submission requirements.

XVM's deterministic ordering rules significantly reduce opportunities for manipulative MEV practices. The protocol's requirement for deterministic transaction ordering based on gas price, combined with the multi-proposer architecture, means no single validator controls transaction sequencing. This design makes sandwich attacks and other forms of order

manipulation extremely difficult to execute profitably, as malicious validators cannot guarantee their manipulated transactions will be ordered favorably relative to target transactions. The system naturally pushes MEV toward probabilistic rather than guaranteed opportunities.

By decoupling the DAG construction from consensus ordering, XVM eliminates the communication overhead that typically enables coordinated manipulation in traditional BFT protocols. Validators independently interpret their local DAG views to reach deterministic ordering conclusions, making it impossible for any single entity or coalition to manipulate transaction sequences through real-time coordination. This architectural separation ensures that ordering emerges from the system's collective state rather than from any centralized coordination process.

The deterministic reordering of back references prevents malicious validators from manipulating causal history, XVM implements sophisticated cryptographic sorting of block references that eliminates any ability for validators to strategically order their causal history for personal gain. This mechanism ensures that even if a validator attempts to reference blocks in a particular sequence, the protocol will automatically reorder these references deterministically. The system thus removes one of the few remaining avenues for subtle ordering manipulation that could be exploited for MEV extraction.

XVM's lack of a public mempool fundamentally alters the MEV landscape by limiting transaction visibility. Without a public broadcast mechanism where all transactions are visible to all participants, the opportunities for sophisticated MEV extraction are dramatically reduced. Transactions flow through private channels to individual validators, meaning no single entity ever sees the complete transaction set necessary for complex arbitrage or front-running strategies. This design choice prioritizes user fairness over the convenience of open transaction visibility.

XVM's sub-second finality creates such a narrow timeframe for identifying and executing profitable MEV strategies that most traditional approaches become economically unviable. The combination of private order flow and extremely fast block progression means that by the time a malicious actor identifies a potential MEV opportunity, the relevant transactions have already achieved finality. This temporal compression naturally disincentivizes investment in sophisticated MEV infrastructure.

XVM's object-centric parallel execution model ensures congestion fairness across applications, unlike monolithic blockchains where one popular application can congest the entire network, XVM's object-centric design ensures that congestion only affects transactions interacting with specific "hot" objects.

This means users of uncontested applications experience consistent performance regardless of overall network activity. The asynchronous execution model provides inherent fairness by preventing resource competition between unrelated applications and users.

The protocol's physical block size limits create more predictable transaction inclusion characteristics. By limiting blocks based on transaction count and byte size rather than gas consumption, XVM prevents the scenario where computationally intensive transactions are

systematically discriminated against. This approach recognizes that gas costs don't always correlate with network resource consumption, ensuring that transactions with legitimate computational requirements aren't unfairly penalized with higher inclusion times or costs.

XVM's adaptive leader selection mechanism balances performance with participation fairness. While employing performance-aware leader scheduling through our HammerHead-inspired protocol, the system maintains fairness by ensuring that leadership opportunities are distributed across the validator set over time. The reputation system continuously evolves based on recent performance, preventing the emergence of permanent validator hierarchies while still optimizing for network efficiency. This represents a sophisticated balance between raw performance and equitable participation.

The critical block rule in development (Adelie) addresses advanced Byzantine fairness attacks. Our ongoing research into detecting and preventing sophisticated Byzantine behavior includes mechanisms that require validators to maintain consistent block production to retain their proposal rights. The critical block rule mandates that a validator's current block must have their critical block (from at least 2 rounds prior) referenced by a quorum of stake, creating economic disincentives for validators who might attempt to manipulate fairness through strategic block withholding.

The protocol's geographic decentralization properties are enhanced by reduced networking requirements, XVM's uncertified DAG design minimizes the validator-to-validator communication overhead compared to previous certified DAG implementations. Each validator only needs to broadcast a single block per round rather than participating in multiple rounds of signature collection and certificate distribution. This reduced bandwidth requirement makes participation more feasible for validators in regions with less developed network infrastructure, actively promoting geographic decentralization.

The protocol's deterministic transaction ordering prevents last-block MEV exploitation, By employing a deterministic rule (currently gas-price-based) for ordering transactions within commits, XVM eliminates the uncertainty that enables profitable MEV strategies in systems with manual block building. The deterministic nature means that transaction positioning cannot be manipulated for extractive purposes, as the final order is predictable and cannot be influenced by any single validator's decisions.

XVM's weak link mechanism provides secondary inclusion pathways for censored transactions, Even if a malicious validator attempts to censor a transaction by excluding it from their block references, the weak link system ensures that the transaction can still be included through alternative pathways in future rounds. This design makes targeted censorship economically impractical, as censoring validators would need to sustain their exclusion across multiple rounds while honest validators naturally incorporate the transaction through weak references.

The protocol's pipelined block production eliminates the fairness gaps in wave-based systems, Unlike wave-based DAG protocols that only commit blocks periodically, XVM's continuous pipelined production ensures consistent opportunities for block inclusion across all rounds. This eliminates the "commitment gaps" that characterized earlier systems, where

transactions arriving between waves faced systematically longer inclusion times. The pipelined approach provides more predictable and equitable inclusion characteristics.

XVM's object-centric design naturally partitions MEV opportunities across disjoint state. Because transactions interacting with separate objects execute in parallel without contention, the system naturally fragments the MEV landscape into smaller, less profitable opportunities. This contrasts with monolithic chains where all transactions compete for the same sequencing resources, creating concentrated MEV extraction points. The fragmented MEV environment reduces the economic incentives for sophisticated extraction infrastructure.

The protocol's private order flow channels create a more equitable information environment. By eliminating the public mempool where sophisticated actors gain informational advantages, XVM creates a more level playing field where all participants have similar visibility into pending transactions. This reduces the arms race for network monitoring infrastructure that typically advantages well-funded participants over individual users.

XVM's rapid crash fault recovery maintains fairness during partial network failures. The protocol's ability to quickly identify and skip crashed validators through skip pattern detection ensures that network performance and fairness characteristics are maintained even during partial failures. This prevents scenarios where a small number of faulty validators could degrade the experience for all participants, maintaining consistent service levels across the network.

The system's configurable block parameters allow tuning for different fairness priorities... XVM's flexible configuration of block size limits, leader counts, and timeout parameters allows network operators to optimize for their specific fairness requirements. Networks prioritizing maximum inclusion fairness can configure larger block sizes and more leaders, while those prioritizing latency might choose different tradeoffs. This configurability recognizes that fairness requirements vary across different deployment contexts.

XVM's implicit certification through DAG patterns eliminates certification-based discrimination. By replacing explicit cryptographic certification with implicit topological certification, the system removes any potential for validators to discriminate against certain blocks during the certification process. The deterministic nature of pattern recognition ensures that all blocks meeting the topological criteria receive equal treatment, regardless of their source or content.

the protocol's comprehensive fairness properties create a foundation for truly on-chain applications. The combination of censorship resistance, predictable inclusion times, reduced MEV vulnerability, and equitable validator participation creates an environment where sophisticated on-chain applications can operate without relying on off-chain infrastructure for fairness guarantees. This represents a fundamental advancement toward the original vision of decentralized applications that operate entirely on-chain without compromising on user or developer experience.

Post-script

The reader should acknowledge that this is not a whitepaper or yellowpaper; I would rather call it a rough paper where I have tried to outline the thesis in the most comprehensive manner possible for the crypto-native pedagogy. If the only thing we have learnt from all this theory in part one of the memo is that “sovereignty is an option,” it’s a spread, it’s a perpetual succession of the liquidity, then the only right conclusion will be to not derive anything static and definitive from the memo. Rather, one must understand the ontological meta framework of “sovereign optionality” via dynamic structures of continuity, contingency, and succession.

All monetary and technical specifications are perhaps the right choices for the present, but we must acknowledge the “teleoplexy”, the contingency of the future on the present. Every monetary and technical specification will go through continuous and extensive research efforts and will be upgraded in that regard.

Our fundamental project is the project of “sovereignty,” and not one of “cryptocurrency” or a “blockchain” or a “narrative.” There is no cyclic play here for you to monetize, and we will thoroughly disincentivize you if you try to do so.

As once a great crypto mind of all time said: "I am a priest, not a businessman" - Barthur Bayes.

Even after all that conscious discouragement throughout the memo, if you would still like to join the development of the thesis in any way, my last piece of discouragement would be that it’s not going to be an easy ride; it’s going to be long, rough, and cold. There are little to no chances of it actually working out.

We have burnt down many bridges by deciding to implement this thesis in a crypto-first manner; we have spent countless all-nighters developing the specific dialectics for it. We could have implemented this via countless other, more institutionalized and legitimized structures with an obvious set of unfair privileges, via academic foundations, lobbying groups, think tanks, etc. So we would appreciate it if you, as a crypto-native participant, acknowledge that fact and do not make us introspect our choices. Any sub-theses, acknowledgements, calls for advocacy, and even anti-theses are more than invited, and we’d go to lengths to ask you to do so, stand somewhere.

In the end, I’d like to express my gratitude towards the reader for being kind enough to spend time reading this. Any notes are welcome at meet@xenosystems.com

References

1. **Abraham, Ittai, Kartik Nayak, Ling Ren, and Zhuohun Xiang : Good-Case Latency of Byzantine Broadcast: A Complete Categorization**
2. **Adrian, Tobias, Karin Kimbrough, and Dina Marchioni : The Commercial Paper Funding Facility**

- 3. Adrian, Tobias, and Hyun Song Shin : Money, Liquidity, and Monetary Policy**
- 4. Aglietta, Michel : Money**
- 5. Aitken, Rob : Performativity, Popular Finance and Security in the Global Political Economy**
- 6. Al-Bassam, Mustafa, Alberto Sonnino, Shehar Bano, Dave Hrycyszyn, and George Danezis : Chainspace: A Sharded Smart Contracts Platform**
- 7. Aleo : Zero-Knowledge with Uncompromised Speed and Privacy**
- 8. Ando, Albert, and Franco Modigliani : Econometric Analysis of Stabilization Policies**
- 9. Ando, Albert, and Franco Modigliani : The Relative Stability of Monetary Velocity and the Investment Multiplier**
- 10. Álvarez-Nogal, Carlos and Chamley, Christophe : Debt Policy Under Constraints**
- 11. Angle, John David : Glorious Revolution as Financial Revolution**
- 12. Aristotle : Nicomachean Ethics**
- 13. Aristotle : Politics**
- 14. Arrow, Kenneth, and Frank Hahn : General Competitive Analysis**
- 15. Ashcraft, Adam, Allan Malz, and Zoltan Pozsar : The Term Asset-Backed Securities Facility**
- 16. Ashton, Robert : Deficit Finance in the Reign of James I**
- 17. Bagehot, Walter : Lombard Street: A Description of the Money Market**
- 18. Baillargeon, Renée and DeVos, Julie : Object Permanence in Young Infants**
- 19. Baird, Leemon : The Swirlds Hashgraph Consensus Algorithm: Fair, Fast, Byzantine Fault Tolerance**
- 20. Bano, Shehar, Alberto Sonnino, Mustafa Al-Bassam, Sarah Azouvi, Patrick McCorry, Sarah Meiklejohn, and George Danezis : Sok: Consensus in the Age of Blockchains**

- 21. Bano, Shehar, Alberto Sonnino, Andrey Chursin, Dmitri Perelman, Zekun Li, Avery Ching, and Dahlia Malkhi : Twins: Bft Systems Made Robust**
- 22. Bank for International Settlements : Credit Risk Transfers: Developments from 2005 to 2007**
- 23. Baudet, Mathieu, Avery Ching, Andrey Chursin, George Danezis, Francois Garillot, Zekun Li, Dahlia Malkhi, Oded Naor, Dmitri Perelman, and Alberto Sonnino : State Machine Replication in the Libra Blockchain**
- 24. Baudet, Mathieu, George Danezis, and Alberto Sonnino : Fastpay: High-Performance Byzantine Fault Tolerant Settlement**
- 25. Baudet, Mathieu, Alberto Sonnino, Mahimna Kelkar, and George Danezis : Zef: Low-Latency, Scalable, Private Payments**
- 26. Bell, Stephanie A., Henry, John F., and Wray, L. Randall : A Chartalist Critique of John Locke**
- 27. Berkeley, George : The Principles of Human Knowledge**
- 28. Biais, Bruno, Larry Glosten, and Chester Spatt : Market Microstructure: A Survey of Microfoundations, Empirical Results, and Policy Implications**
- 29. Black, Fischer : Fundamentals of Liquidity**
- 30. BlackRock : A Rapidly Changing Order: The Rising Prominence of Asian Debt Markets**
- 31. BlackRock : Introducing the BlackRock Sovereign Risk Index: A More Comprehensive View of Credit Quality**
- 32. BlackRock : Strategic Solutions, Q4 2011 International Edition**
- 33. Blackshear, Sam, Andrey Chursin, George Danezis, Anastasios Kichidis, Lefteris Kokoris-Kogias, Xun Li, Mark Logan, Ashok Menon, Todd Nowacki, Alberto Sonnino et al. : Sui Lutriss: A Blockchain Combining Broadcast and Consensus**
- 34. Bonizzi, Bruno, Kaltenbrunner, Annina, and Michell, Jo : Monetary Sovereignty Is a Spectrum**
- 35. Borio, Claudio, and William White : Whither Monetary and Financial Stability? The Implications of Evolving Policy Regimes**
- 36. Boy, Nina : The Backstory of the Risk-Free Asset**

- 37. Bracha, Gabriel and Sam Toueg : Asynchronous Consensus and Broadcast Protocols**
- 38. Brantlinger, Patrick : Fictions of State: Culture and Credit in Britain, 1694:1994**
- 39. Brenner, Robert P. : Chairman of the Fed: William McChesney Martin, Jr., and the Creation of the Modern American Financial System**
- 40. Brewer, John : The Sinews of Power: War, Money and the English State 1688:1783**
- 41. Brunner, Karl, and Allan H. Meltzer : The Federal Reserve's Attachment to the Free Reserves Concept**
- 42. Brunnermeier, Markus, and Lasse Pedersen : Market Liquidity and Funding Liquidity**
- 43. Buiter, Willem H., and Anne C. Sibert : The Central Bankers as Market Maker of Last Resort**
- 44. Cachin, Christian, Rachid Guerraoui, and Luis Rodrigues : Introduction to Reliable and Secure Distributed Programming**
- 45. Carlyon-Beitton, Raymond : Henry VIII Harp Groats and Harp Half-Groats and Edward VI Harp Groats**
- 46. Carruthers, Bruce : City of Capital: Politics and Markets in the English Financial Revolution**
- 47. Carruthers, Bruce, and Arthur Stinchcombe : The Social Structure of Liquidity: Flexibility, Markets and States**
- 48. Caruana, Jaime : Welcoming Remarks**
- 49. Castoriadis, Cornelius : From Marx to Aristotle, from Aristotle to Us**
- 50. Castro, Miguel and Barbara Liskov : Practical Byzantine Fault Tolerance**
- 51. Chalkias, Kostas Kryptos, Jonas Lindstrom, Deepak Maram, Ben Riva, Arnab Roy, Alberto Sonnino, and Joy Wang : Fasterypto: Pioneering Cryptography via Continuous Benchmarking**
- 52. Chan, Benjamin Y and Rafael Pass : Simplex Consensus: A Simple and Fast Consensus Protocol**
- 53. Chan, Benjamin Y and Elaine Shi : Streamlet: Textbook Streamlined Blockchains**

- 54. Chen, Junchao, Suyash Gupta, Alberto Sonnino, Lefteris Kokoris-Kogias, and Mohammad Sadoghi : Resilient Consensus Sustained Collaboratively**
- 55. Clower, Robert W. : Money and Markets**
- 56. Cohen, Shir, Rati Gelashvili, Lefteris Kokoris Kogias, Zekun Li, Dahlia Malkhi, Alberto Sonnino, and Alexander Spiegelman : Be Aware of Your Leaders**
- 57. Cohen, Shir, Guy Goren, Lefteris Kokoris-Kogias, Alberto Sonnino, and Alexander Spiegelman : Proof of Availability & Retrieval in a Modular Blockchain Architecture**
- 58. Collins, Daniel, Rachid Guerraoui, Jovan Komatovic, Matteo Monti, Athanasios Xygkis, Matej Pavlovic, Petr Kuznetsov, Yvonne-Anne Pignolet, Dragos-Adrian Seredimschi, and Andrei Tonkikh : Online Payments by Merely Broadcasting Messages (Extended Version)**
- 59. Cox, Gary W. : Was the Glorious Revolution a Constitutional Watershed?**
- 60. Cox, John D. : Time and the Problem of Royal Succession in Shakespeare's History Plays**
- 61. Culham, James : A Taxonomy of Liquidity**
- 62. Currie, Lauchlin : The Decline of the Commercial Loan**
- 63. Currie, Lauchlin : The Supply and Control of Money in the United States**
- 64. Dalton, George : Primitive Money**
- 65. Danezis, George and David Hrycyszyn : Blockmania: From Block Dags to Consensus**
- 66. Danezis, George, Lefteris Kokoris-Kogias, Alberto Sonnino, and Alexander Spiegelman : Narwhal and Tusk: A Dag-Based Mempool and Efficient BFT Consensus**
- 67. D'Arista, Jane W. : Federal Reserve Monetary Policy: 1915:1935**
- 68. Davies, Glyn : A History of Money**
- 69. Davis, Jeanmarie, Jamie McAndrews, and Kathryn Franklin : The Money Market Investor Funding Facility**
- 70. de Valence, Henry : Ed25519 for Consensus-Critical Contexts**
- 71. Debreu, Gerard : Theory of Value**

- 72. Deleuze, Gilles and Guattari, Félix : A Thousand Plateaus**
- 73. Desan, Christine : Making Money**
- 74. Desan, Christine : Making Money: Coin, Currency and the Coming of Capitalism**
- 75. Dickson, P. G. M. : The Financial Revolution: A Study in the Development of Public Credit 1688:1756**
- 76. Die.Net : writev(3) - Linux Man Page**
- 77. Doubleday, Thomas : A Financial, Monetary and Statistical History of England: From the Revolution of 1688 to the Present Times**
- 78. Drumm, Colin : The Difference that Money Makes: Sovereignty, Indecision and the Politics of Liquidity**
- 79. Duffie, D., and K. J. Singleton : Credit Risk; Pricing, Measurement, and Management**
- 80. Dunbar, Charles F. : Chapters on Banking**
- 81. Eaton, Jonathan, Mark Gersovitz, and Joseph Stiglitz : The Pure Theory of Country Risk**
- 82. Economist, The : Government Debt: The Big Sweat**
- 83. Eich, Stefan : John Locke and the Politics of Monetary Depoliticization**
- 84. Eichengreen, Barry : Golden Fetters: The Gold Standard and the Great Depression, 1919:1939**
- 85. Esposito, Elena : Die Fiktion der wahrscheinlichen Realität**
- 86. Fand, David I., and Ira O. Scott, Jr. : The Federal Reserve System's 'Bills Only' Policy: A Suggested Interpretation**
- 87. Federal Open Market Committee, Federal Reserve System : Federal Open Market Committee Report of Ad Hoc Subcommittee on the Government Securities Market**
- 88. Federal Reserve Bank of New York : Domestic Open Market Operations during 2008**
- 89. Ferguson, Niall : The Ascent of Money**

90. Fetter, Frank Whitson : Some Neglected Aspects of Gresham's Law
91. Finn, Margot C. : The Character of Credit: Personal Debt in English Culture, 1740:1914
92. Fisher, Irving : 100% Money
93. Fisher, Irving : The Debt-Deflation Theory of Great Depressions
94. Fisher, Irving : The Purchasing Power of Money
95. Fisher, Irving, with Hans R. L. Cohrssen : Stable Money: A History of the Movement
96. Flandreau, Marc : Do Good Sovereigns Default? Lessons of History
97. Flandreau, Marc, Norbert Gaillard, and Frank Packer : Ratings Performance, Regulation and the Great Depression: Lessons from Government Securities
98. Fleek : Build Lightning Fast
99. Ford, Bryan : Threshold Logical Clocks for Asynchronous Distributed Coordination and Consensus
100. Friedman, Milton : A Monetary and Fiscal Framework for Economic Stability
101. Friedman, Milton : A Program for Monetary Stability
102. Friedman, Milton : The Role of Monetary Policy
103. Friedman, Milton, and Anna J. Schwartz : A Monetary History of the United States, 1863:1960
104. Friedman, Milton, and D. Meiselman : The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897:1958
105. Gabor, Daniela : The (Impossible) Repo Trinity
106. Gaillard, Norbert : A Century of Sovereign Ratings
107. Gale, Douglas : Money: In Equilibrium
108. Gans, Eric : On Firstness. In The Originary Hypothesis: A Minimal Proposal for Humanistic Inquiry

- 109. Gao, Yingzi, Yuan Lu, Zhenliang Lu, Qiang Tang, Jing Xu, and Zhenfeng Zhang : Dumbo-Ng: Fast Asynchronous BFT Consensus with Throughput-Oblivious Latency**
- 110. Gelashvili, Rati, Lefteris Kokoris-Kogias, Alberto Sonnino, Alexander Spiegelman, and Zhuolun Xiang : Jolteon and Ditto: Network-Adaptive Efficient Consensus with Asynchronous Fallback**
- 111. Giovannini, Alberto : Risk-Free Assets in Financial Markets**
- 112. Giridharan, Neil, Florian Suri-Payer, Itai Abraham, Lorenzo Alvisi, and Natacha Crooks : Motorway: Seamless High Speed BFT**
- 113. Giuliani, Giacomo, Alberto Sonnino, Marc Frei, Fabio Streun, Lefteris Kokoris-Kogias, and Adrian Perrig : An Empirical Study of Consensus Protocols' DoS Resilience**
- 114. Goffart, Walter : Old and New in Merovingian Taxation**
- 115. Goede, Marieke de : Virtue, Fortune and Faith: A Genealogy of Finance**
- 116. Goldberg, Linda, Craig Kennedy, and Jason Miu : FX Swap Lines and Dollar Funding Costs**
- 117. Goldsticker, Ralph, and Bennett Lowell : Rethinking Bond Index Weightings and Concentration Risk**
- 118. Goodhart, Charles A. E. : Monetary Relationships: A View from Threadneedle Street**
- 119. Goodhart, Charles A. E. : Money, Information, and Uncertainty**
- 120. Gordon, Barry J.. : Aristotle, Schumpeter, and the Metalist Tradition**
- 121. Gorton, Gary B. : Slapped by the Invisible Hand: The Panic of 2007**
- 122. Gorton, Gary, and Andrew Metrick : Securitized Banking and the Run on Repo**
- 123. Goux, Jean-Joseph : Symbolic Economics: After Marx and Freud**
- 124. Goux, Jean-Joseph : The Coiners of Language**
- 125. Graeber, David : Debt: The First 5,000 Years**
- 126. Grey, Rohan : Administering Money: Coinage, Debt Crises, and the Future of Fiscal Policy**

127. Gurley, John G., and Edward S. Shaw : Money in a Theory of Finance
128. Hahn, Frank : On Some Problems of Proving the Existence of an Equilibrium in a Monetary Economy
129. Hansen, Alvin H. : Full Recovery or Stagnation?
130. Harding, W. P.G. : The Formative Period of the Federal Reserve System (During the World Crisis)
131. Harris, Larry : Trading and Exchanges: Market Microstructure for Practitioners
132. Hart, Albert G. : Debts and Recovery
133. Hart, Albert G. : The 'Chicago Plan' of Banking Reform
134. Hawtrey, Ralph G. : Currency and Credit
135. Hawtrey, Ralph G. : The Art of Central Banking
136. Heinzelman, Kurt : The Economics of the Imagination
137. Herodotus : The Histories
138. Hetzel, Robert L., and Ralph F. Leach : After the Accord: Reminiscences on the Birth of the Modern Fed
139. Hetzel, Robert L., and Ralph F. Leach : The Treasury-Fed Accord: A New Narrative Account
140. Hicks, John R. : A Market Theory of Money
141. Hicks, John R. : A Suggestion for Simplifying the Theory of Money
142. Hicks, John R. : Mr. Keynes and the 'Classics': A Suggested Interpretation
143. Hicks, John R. : Value and Capital
144. Hoey, Allen : The Name on the Coin: Metaphor, Metonymy, and Money
145. Holmes, Douglas R. : Economy of Words
146. Hudson, Michael : Super Imperialism

- 147. Hudson, Michael : and forgive them their debts: Lending, Foreclosure and Redemption from Bronze Age Finance to the Jubilee Year**
- 148. ngham, Geoffrey : The Nature of Money**
- 149. Innes, Alfred Mitchell : Credit and State Theories of Money**
- 150. Jakobson, Roman : Two Aspects of Language and Two Types of Aphasic Disturbances**
- 151. Jansen Laech, Sharon L. : Political Prophecy and Macbeth's 'Sweet Bodements'**
- 152. Jones, Jesse H., with Edward Angly : Fifty Billion Dollars: My Thirteen Years with the RFC, 1932:1945**
- 153. Keidar, Idit, Eleftherios Kokoris-Kogias, Oded Naor, and Alexander Spiegelman : All You Need is DAG**
- 154. Keidar, Idit, Oded Naor, Ouri Poupko, and Ehud Shapiro : Cordial Miners: Fast and Efficient Consensus for Every Eventuality**
- 155. Keynes, John Maynard : A Tract on Monetary Reform**
- 156. Keynes, John Maynard : A Treatise on Money**
- 157. Keynes, John Maynard : Indian Currency and Finance**
- 158. Keynes, John Maynard : The General Theory of Employment, Interest, and Money**
- 159. Keynes, John Maynard : The General Theory of Employment, Interest and Money**
- 160. Kindleberger, Charles P. : Manias, Panics, and Crashes: A History of Financial Crises**
- 161. Kirshner, Julius : States of Debt**
- 162. Kockelman, Paul : A Semiotic Ontology of the Commodity**
- 163. Kokoris-Kogias, Eleftherios, Philipp Jovanovic, Linus Gasser, Nicolas Gailly, Ewa Syta, and Bryan Ford : Omniledger: A Secure, Scale-Out, Decentralized Ledger via Sharding**
- 164. Kokoris-Kogias, Lefteris, Alberto Sonnino, and George Danezis : Cuttlefish: Expressive Fast Path Blockchains with Fastunlock**

- 165. Kolb, Robert W. : Sovereign Debt: From Safety to Default**
- 166. Kotla, R. and M. Dahlin : High Throughput Byzantine Fault Tolerance**
- 167. Kotla, Ramakrishna, Lorenzo Alvisi, Michael Dahlin, Allen Clement, and Edmund L. Wong : Zyzzyva: Speculative Byzantine Fault Tolerance**
- 168. Kotlikoff, Laurence J. : Jimmy Stewart Is Dead: Ending the World's Ongoing Plague with Limited Purpose Banking**
- 169. Kotlikoff, Larry, and Perry Mehring : Bagehot plus RFC: The Right Financial Fix**
- 170. Laidler, David E. W. : Fabricating the Keynesian Revolution: Studies in the Interwar Literature on Money, the Cycle, and Unemployment**
- 171. Laidler, David E. W. : Hawtrey, Harvard, and the Origins of the Chicago Tradition**
- 172. Lagos, Ricardo : Inside and Outside Money**
- 173. Lamport, Leslie : Paxos Made Simple**
- 174. Laughlin, J. Laurence : Principles of Money**
- 175. Lavoie, Marc : The Monetary and Fiscal Nexus of Neo-Chartalism**
- 176. Lee, Benjamin, and Randy Martin : Derivatives and the Wealth of Societies**
- 177. Leijonhufvud, Axel : On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory**
- 178. Lepinay, Vincent Antonin : Decoding Finance**
- 179. Lewis-Pye, Andrew, Oded Naor, and Ehud Shapiro : Flash: An Asynchronous Payment System with Good-Case Linear Communication Complexity**
- 180. Li, Zhuolun, Alberto Sonnino, and Philipp Jovanovic : Performance of Eddsa and Bls Signatures in Committee-Based Consensus**
- 181. LiPuma, Edward : Ritual in Financial Life**
- 182. LiPuma, Edward : The Social Life of Financial Derivatives: Markets, Risk and Time**
- 183. Lobo-Guerrero, Luis : Insuring War: Sovereignty, Security and Risk**

- 184. Lucas, Robert E. : Econometric Policy Evaluation: A Critique**
- 185. Lynch, Deidre : The Economy of Character: Novels, Market Culture and the Business of Inner Meaning**
- 186. MacDonald, James : A Free Nation Deep in Debt**
- 187. MacKenzie, Donald A. : An Engine, Not a Camera**
- 188. Malkiel, Burton G. : The Efficient Market Hypothesis and Its Critics**
- 189. Malkhi, Dahlia, Chrysoula Stathakopoulou, and Maofan Yin : Bbca-Chain: One-Message, Low Latency BFT Consensus on a DAG**
- 190. Malkhi, Dahlia and Pawel Szalachowski : Maximal Extractable Value (MEV) Protection on a DAG**
- 191. Markowitz, Harry : Portfolio Selection**
- 192. Marschak, Jacob : Money and the Theory of Assets**
- 193. Martin, Jean-Philippe and Lorenzo Alvisi : Fast Byzantine Consensus**
- 194. Marx, Karl : Capital, Volume I**
- 195. Marx, Karl : Capital, Volume III**
- 196. Matory, James Lorand : The Fetish Revisited**
- 197. McGuire, Patrick, and Goetz von Peter : The US Dollar Shortage in Global Banking**
- 198. Mehrling, Perry : Credit Default Swaps: The Key to Financial Reform**
- 199. Mehrling, Perry : Fischer Black and the Revolutionary Idea of Finance**
- 200. Mehrling, Perry : Monetary Implementation Policy: A Microstructure Approach**
- 201. Mehrling, Perry : The Money Interest and the Public Interest: American Monetary Thought, 1920:1970**
- 202. Mehrling, Perry : The Vision of Hyman P. Minsky**
- 203. Mehrling, Perry, and Alistair Milne : Government's Role as Credit Insurer of Last Resort and How It Can Be Fulfilled**
- 204. Meister, Robert : Reinventing Marx for an Age of Finance**

- 205. Meltzer, Allan H. : A History of the Federal Reserve**
- 206. Merchant, Jamie : The Money Theory of the State**
- 207. Merton, Robert K. : The Self-Fulfilling Prophecy**
- 208. Meta : Sapling (Minibytes)**
- 209. Milios, John : Marx's Critique of (Ricardian) Political Economy, the Quantity Theory of Money and Credit Money**
- 210. Minsky, Hyman P. : Central Banking and Money Market Changes**
- 211. Minsky, Hyman P. : Could "It" Happen Again? Essays on Instability and Finance**
- 212. Minsky, Hyman P. : Financial Intermediation in the Money and Capital Markets**
- 213. Minsky, Hyman P. : Stabilizing an Unstable Economy**
- 214. Mints, Lloyd : A History of Banking Theory in Great Britain and the United States**
- 215. Mirowski, Philip : From Mandelbrot to Chaos in Economic Theory**
- 216. Mitchell, Bill : Deficit Spending 101**
- 217. Mitchell, Waldo : The Institutional Basis for the Shiftability Theory of Bank Liquidity**
- 218. Mitchell, Waldo : The Uses of Bank Funds**
- 219. Modigliani, Franco : Liquidity Preference and the Theory of Interest and Money**
- 220. Monad : Monadbft: A Pipelined Two-Phase Hotstuff Consensus**
- 221. Moore, Sean : The Culture of Paper Credit: The New Economic Criticism and the Postcolonial Eighteenth Century**
- 222. Moraru, Iulian, David G Andersen, and Michael Kaminsky : Egalitarian Paxos**
- 223. Morris, Charles R. : The Trillion Dollar Meltdown: Easy Money, High Rollers, and the Great Credit Crash**

- 224. Morton, Walter A. : Liquidity and Solvency**
- 225. Moulton, H. G. : Commercial Banking and Capital Formation**
- 226. Muldrew, Craig : The Economy of Obligation: The Culture of Credit and Social Relations in Early Modern England**
- 227. Mundell, R. A. : A Reconsideration of the Twentieth Century**
- 228. Mundell, Robert A. : Monetary Unions and the Problem of Sovereignty**
- 229. Murau, Steffen : Offshore Dollar Creation**
- 230. Neiheiser, Ray, Arman Babaei, Giannis Alexopoulos, Marios Kogias, and Eleftherios Kokoris Kogias : Chiron: Accelerating Node Synchronization without Security Trade-Offs in Distributed Ledgers**
- 231. New York Times : Government Securities: The Public Credit**
- 232. Nicholson, Colin : Writing and the Rise of Finance: Capital Satires of the Early Eighteenth Century**
- 233. Nitzan, Jonathan and Bichler, Shimshon : Capital as Power**
- 234. Nitzan, Jonathan and Shimshon Bichler : Capital as Power: A Study of Order and Creorder**
- 235. North, D.C., and B.R. Weingast : Constitutions and Commitments: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England**
- 236. Patinkin, Don : Money, Interest, and Prices: An Integration of Monetary and Value Theory**
- 237. Peacock, Mark S. : State, Money, Cataliaxy**
- 238. Pettifor, Ann : Quantitative Easing**
- 239. Phelps, Edmund S. : Money Wage Dynamics and Labor Market Equilibrium**
- 240. Phillips, Ronnie J. : The Chicago Plan and New Deal Banking Reform**
- 241. Poovey, Mary : Genres of the Credit Economy: Mediating Value in Eighteenth- and Nineteenth-Century Britain**
- 242. Quick, Laura : Deuteronomy 28 and the Aramaic Curse Tradition**

243. Quinn, S. : Securitisation of Sovereign Debt: Corporations as a Sovereign Debt Restructuring Mechanism in Britain 1688:1750
244. Reinhart, Carmen M., and Kenneth S. Rogoff : This Time Is Different: Eight Centuries of Financial Folly
245. Richardson, W. C. : Some Financial Expedients of Henry VIII
246. Roberts, William Clare : Marx's Inferno
247. Roos, Jerome : Why Not Default?
248. Rose, Andrew K. and Spiegel, Mark M. : Dollar Illiquidity and Central Bank Swap Arrangements During the Global Financial Crisis
249. RustCrypto : Rustcrypto: Hashes
250. Sandilands, Roger J. : The Life and Political Economy of Lauchlin Currie
251. Sayers, Richard S. : Bank of England Operations, 1890:1914
252. Schett, Maria A and George Danezis : Embedding a Deterministic BFT Protocol in a Block DAG
253. Schumpeter, Joseph A : The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle
254. Seaford, Richard : Money and the Early Greek Mind
255. Serres, Michel : The Parasite
256. Sharpe, William : Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk
257. Shell, Marc : Money, Language and Thought
258. Shell, Marc : The Economy of Literature
259. Shell, Marc : The Issue of Representation
260. Shiller, Robert J. : The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do about It
261. Shrestha, Nibesh, Rohan Shrohitum, Aniket Kate, and Kartik Nayak : Sailfish: Towards Improving Latency of Dag-Based BFT
262. SIGTARP : Factors Affecting Efforts to Limit Payments to AIG Counterparties

- 263. Silverstein, Michael : Axes of Evals**
- 264. Simons, Henry C : A Positive Program for Laissez-Faire**
- 265. Singh, Devon : Divine Currency: The Theological Power of Money in the West**
- 266. Smith, Adam : The Wealth of Nations**
- 267. Smith, Daniel : Essays on Deleuze**
- 268. Sonnino, Alberto, Mustafa Al-Bassam, Shehar Bano, Sarah Meiklejohn, and George Danezis : Coconut: Threshold Issuance Selective Disclosure Credentials with Applications to Distributed Ledgers**
- 269. Sonnino, Alberto, Shehar Bano, Mustafa Al-Bassam, and George Danezis : Replay Attacks and Defenses Against Cross-Shard Consensus in Sharded Distributed Ledgers**
- 270. Sophocles : Oedipus the Tyrant (Oedipus Rex)**
- 271. Spiegelman, Alexander, Neil Giridharan, Alberto Sonnino, and Lefteris Kokoris-Kogias : Bullshark: DAG BFT Protocols Made Practical**
- 272. Spiegelman, Alexander, Balaji Aun, Rati Gelashvili, and Zekun Li : Shoal: Improving DAG-BFT Latency and Robustness**
- 273. Sprague, Oliver M. W. : History of Crises under the National Banking System**
- 274. Sproul, Allan : Selected Papers of Allan Sproul**
- 275. Spufford, Peter : Money and Its Use in Medieval Europe**
- 276. Stathakopoulou, Chrysoula, Todor David, Matej Pavlovic, and Marko Vukolic : Isolation: Mir-Bft: Scalable and Robust BFT for Decentralized Networks**
- 277. Stathakopoulou, Chrysoula, Michael Wei, Maofan Yin, Hongbo Zhang, and Dahlia Malkhi : Bbca-Ledger: High Throughput Consensus Meets Low Latency**
- 278. Steiner Verlag, Franz : Athenian Mines, Coins, and Tirremes**
- 279. Stigum, Marcia, and Anthony Crescenzi : Stigum's Money Market**
- 280. Swartz, Lana : New Money: How Payment Became Social Media**

- 281. Tawney, R.H. : Religion and the Rise of Capitalism**
- 282. Taylor, John B : Getting Off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis**
- 283. Tchernova, Pavlina R. : Monopoly Money: The State as a Price Setter**
- 284. Tennage, Pasindu, Cristina Basescu, Lefteris Kokoris-Kogias, Ewa Syta, Philipp Jovanovic, Vero Estrada-Galiñanes, and Bryan Ford : Quepaxa: Escaping the Tyranny of Timeouts in Consensus**
- 285. Tennage, Pasindu, Antoine Desjardins, and Lefteris Kokoris-Kogias : Racs and Sadt: Towards Robust SMR in the Wide-Area Network**
- 286. Tett, Gillian : Fool's Gold**
- 287. The Aptos team : Aptos**
- 288. The Diem Team : Diembft v4**
- 289. The Flow Team : The Flow Blockchain**
- 290. The Linera Team : Linera**
- 291. The RocksDB Team : Rocksdb**
- 292. The Sui team : The Sui Blockchain**
- 293. The Tokio Team : Tokio**
- 294. Thompson, James : Models of Value: Eighteenth-Century Political Economy and the Novel**
- 295. Thucydides : History of the Peloponnesian War**
- 296. Timberlake, Richard H. : Monetary Policy in the United States: An Intellectual and Institutional History**
- 297. Tobin, James : A General Equilibrium Approach to Monetary Theory**
- 298. Tobin, James : Asset Accumulation and Economic Activity**
- 299. Tobin, James : Liquidity Preference as Behavior towards Risk**
- 300. Tooze, Adam J. : Crashed**
- 301. Treynor, Jack L : The Economics of the Dealer Function**

- 302. Treynor, Jack : Market Efficiency and the Bean Jar**
- 303. Tsimos, Giorgos, Anastasios Kichidis, Alberto Sonnino, and Lefteris Kokoris-Kogias : Hammerhead: Leader Reputation for Dynamic Scheduling**
- 304. Tymoigne, Eric : A Financial Analysis of Monetary Systems**
- 305. Vaihinger, Hans : The Philosophy of ‘as if’: A System of the Theoretical, Practical and Religious Fictions of Mankind**
- 306. Varoufakis, Yanis : The Global Minotaur**
- 307. Vernon, John : Money and Fiction: Literary Realism in the Nineteenth and Early Twentieth Centuries**
- 308. Vultr : Vultr**
- 309. Warburg, Paul M. : The Federal Reserve System: Its Origin and Growth**
- 310. Wicker, Elmus : Federal Reserve Monetary Policy, 1917:1933**
- 311. Wicksell, Knut : Interest and Prices**
- 312. Willis, Henry Parker : The Federal Reserve System: Legislation, Organization and Operation**
- 313. Wood, John H. : A History of Central Banking in Great Britain and the United States**
- 314. Woodford, Michael : Interest and Prices: Foundations of a Theory of Monetary Policy**
- 315. Woodmansee, Martha, and Mark Osteen : The New Economic Criticism: Studies at the Intersection of Literature and Economics**
- 316. Wray, L. Randall : Modern Monetary Theory: A Primer**
- 317. Yang, Lei, Seo Jin Park, Mohammad Alizadeh, Sreeram Kannan, and David Tse : DispersedLedger: High-Throughput Byzantine Consensus on Variable Bandwidth Networks**
- 318. Yin, Maofan, Dahlia Malkhi, Michael K. Reiter, Guy Golan-Gueta, and Ittai Abraham : HotStuff: BFT Consensus with Linearity and Responsiveness**

319. Young, Ralph A. : The Federal Reserve System in Wartime