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**Bearer, Permission, Discovery:
Three Austrian Arguments Against
Programmable Money**

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I. Introduction

The architecture distinguishing a bearer monetary instrument from a permission-based one already operates in current financial infrastructure. When a commercial bank or cryptocurrency exchange freezes a customer account in response to a sanctions screening, a know-your-customer review, or a regulatory request, the customer's balance remains on the institution's ledger as nominal property; their access to it does not. The funds are owned and they cannot be moved. This separation of ownership from access is the defining feature of permission-based money.

Bearer instruments such as physical cash or Bitcoin collapse ownership and access into a single property of the holder. Permission instruments keep them separable, with the issuer or its licensed intermediaries controlling the link. Commercial banking, cryptocurrency exchange custody, and the sanctions and AML regimes built upon them already operate this way. A central bank digital currency does not introduce the architecture; it relocates it. What is distributed across banks, brokerages, and exchanges as a regulatory overlay on bearer-by-default units becomes, in the CBDC design, an intrinsic property of the unit itself. The intermediary disappears; the permission layer becomes the substrate. The question is not whether permission exists in monetary infrastructure but whether it is inseparable from the unit of currency.

In 1605, from the Jesuit house at Toledo, Juan de Mariana published *De monetae mutatione*, attacking Philip III's debasement of the *vellón* coinage on the ground that the king is not the owner of money circulating among his subjects. The argument was moral because it had to be. Seventeenth-century coinage made the deeper intervention technically impossible: a sovereign could reduce the silver content of a *real*, but he could not condition the transfer of a particular *real* between two specific persons. Four centuries later, the architectural constraint that silently disciplined Mariana's opponents dissolves. The conduct he could only oppose with moral argument becomes, in the CBDC design, the default operation of the unit.

This essay argues that the shift inverts the architectural baseline of monetary exchange: from a system in which transactions occur unless prohibited, to one in which they occur only if authorised. Three Austrian arguments converge against the inversion. Hayek addresses the knowledge problem, Mises' calculation, Kirzner's entrepreneurial discovery. The ethical tradition from the Spanish Scholastics through Hülsmann frames the inversion as a structural-ethical claim about monetary property. None of these is novel on its own. Their joint application to programmable money, anchored in Mariana and read through the intermediary permission architecture that CBDC proposes to

consolidate, is what this essay attempts.

II. Bearer and Permission Instruments

A bearer instrument is one in which possession constitutes ownership and the capacity to transact. Physical cash is the paradigm; Bitcoin preserves the same architectural logic in digital form. Once issued, the unit functions without further consent from the issuer; no transaction it mediates requires authorisation from any third party. Menger's 1892 essay grounds this property historically: money emerged from market exchange as the most marketable commodity, not from political design. The bearer character was constitutive of the institution.

A permission-based instrument is structurally different. The issuer retains an ongoing role in every transaction; the instrument does not function unless the issuing authority validates the specific transfer. A retail CBDC is a liability of the central bank, denominated in a unit the central bank controls, processed through infrastructure the central bank operates. Every transaction can be made subject to the issuer's continuing consent. At an IMF panel in October 2020, BIS General Manager Agustín Carstens stated that with CBDC the central bank will have "absolute control on the rules and the technology to enforce them."¹ The first half of the sentence describes a design choice; the second, a capability that follows from it.

Implementation varies: token-based or account-based, direct or two-tier, smart contracts or registry rules. The variation is technical; the shared architectural feature is that transactions require ongoing authorisation.

III. Menger, Mariana, and the Salamancan Inheritance

The Austrian School traces its prehistory to the Spanish Scholastics of the sixteenth and seventeenth centuries: theologians and jurists who taught at Salamanca, Toledo, Alcalá, and Coimbra. Huerta de Soto has documented how the school's foundational concepts originated there.² Subjective valuation appears in Covarrubias y Leyva, whose 1554 treatise argued that the worth of a thing arises from the common esteem in which it is held. The dispersed knowledge of the market is articulated in Juan de Salas, whose 1617 commentary holds that the practical knowledge of market conditions is so far beyond human capacity that only divine intelligence could compass it. Three centuries before Hayek, the Salamancan tradition had reached a recognisably similar insight.

Mariana extends this tradition into a normative argument about sovereign authority. The king, he wrote, is not the owner of the property of his subjects;

he is the steward of a realm whose terms he must respect. The *real* in a subject's purse is the subject's, not the crown's. Whatever denomination the crown stamps on the metal, the market value of the coin is fixed by what Mariana, following Covarrubias, called the common estimation of men. To override that estimation by decree is foolish, and where done without consent of the realm, unjust.³

Mariana's argument concerned the sovereign's claim to ongoing property in the unit of money itself. CBDC extends the same structure of claim to its use: not what the unit is, but whether it will function in a given transaction. The objects differ; the proprietary form does not. In both cases the sovereign asserts continuing authority over property whose ownership the subject already holds. What Mariana opposed morally becomes, in the CBDC architecture, operational design.

IV. The Knowledge–Discovery Spiral

The three arguments that follow rest on a praxeological footing. For Mises, monetary exchange is the meeting of two acting parties on a means available to both. Permission-based money inserts a third actor into the act as a precondition of its completion. Hayek, Mises, and Kirzner then address whether that third role can be filled with adequate knowledge, with rational calculation, and with compatibility with discovery.

Hayek's 1945 essay identified the central epistemological limit of central planning. The knowledge required to coordinate a complex economy cannot be assembled in any single mind; it is distributed across millions as "the particular circumstances of time and place," resistant to articulation and to transmission.⁴ Programmable money does not refute the argument; it forecloses the conditions under which dispersed knowledge could reveal itself. When the issuer embeds spending categories into the unit, the planner determines which valuations may express themselves rather than allocating among them. The European Data Protection Supervisor catalogued the design options: a government could "define a positive or negative interest rate to incentivize or disincentive the use of money for the purchase of a particular good; limit its use to a certain category of services; set an expiry date."⁵ Each substitutes central judgment for price-revealed knowledge. The architecture does not answer Hayek's problem; it avoids it.

Mises's calculation problem extends the difficulty. Without market-determined prices, the planner cannot rationally choose which transactions to authorise.⁶ In programmable money the permitted-transaction set is fixed in code before prices form; the choice of what to enable is upstream of the price signals it

would have required.

Kirzner supplies a third argument. In *Competition and Entrepreneurship*, he showed that the market is best understood not as an allocation of given resources among given ends, but as a discovery procedure for ends and means alike.⁷ Entrepreneurs identify unrecognised opportunities: niches no one had characterised as such, demands consumers had not articulated. This requires the structural possibility of transactions whose value is unknown until they occur. Programmable money makes a prior judgment about which categories are valuable enough to authorise. Categories at the margin of social acceptability, where entrepreneurial discovery operates because their value is contested, are the categories most likely to be restricted. The architecture preempts not particular transactions but the procedure by which the market would have established their value.

The three arguments compound. Even with knowledge and calculation, the planner preempts the process by which the market generates that knowledge in the first place. Programmable money is, on Austrian grounds, anti-discovery infrastructure; the surveillance capability that has dominated public debate is a secondary concern. The political dynamic that follows is the interventionist spiral of *Human Action*: each restriction produces distortions the next is invoked to correct.⁸ CBDC supplies the architecture for this spiral to operate at the level of individual transactions. Section V traces two.

V. The Adoption Failure of Imposed CBDC

If monetary value emerges from convergence of dispersed individual choice, a permission-based instrument imposed by central authority should be rejected by distributed market action where alternatives remain. CBDC pilots of 2020 to 2026 provide the test.

The Bahamas launched the Sand Dollar in October 2020, designed for inclusion of remote-island residents. By December 2023, the Central Bank reported \$1.7 million in circulation; by late 2024, \$2.1 million.⁹ The digital currency consistently represented under half of one per cent of cash in circulation, despite years of central-bank promotion in a small economy built for adoption.

Nigeria launched the eNaira in October 2021, the first African CBDC, designed for inclusion of a large unbanked population. Central Bank of Nigeria bulletins reported ₦13.98 billion in eNaira against ₦3.87 trillion total currency in circulation as of March 2024, a 0.36 per cent share. By February 2025, circulation had risen to ₦18.31 billion but the share remained at 0.37 per cent: a structural ceiling, not a growth trajectory. Initial adoption was stuck at 0.5

per cent in 2022 despite removed bank-account requirements and introduced discounts.¹⁰

The Eastern Caribbean Currency Union launched DCash in March 2021. A two-month outage in early 2022 damaged confidence; the Eastern Caribbean Central Bank closed the pilot in January 2024. In May 2026, the ECCB Monetary Council suspended development of the planned replacement (DCash 2.0) and pivoted toward a Fast Payment System operating on existing Eastern Caribbean dollars.¹¹ This too is an interventionist sequence: first design rejected, second design attempted, second abandoned in favour of retreat to existing rails.

Jamaica's Jam-Dex achieved roughly one-tenth of one per cent of currency in circulation. India's Digital Rupee, launched in December 2022, saw daily transaction volume fall to roughly one-tenth of its December 2023 peak once early-adopter incentives expired.¹²

The Austrian interpretation is not the only reading consistent with these data. Network effects and switching costs predict slow uptake; absent merchant infrastructure compounds the difficulty; distrust of central banks is another candidate. What differentiates the Austrian reading is the pattern it predicts. Where confounders predict variance by country, Austrian theory predicts a structural ceiling across countries. The ceiling is what the data show: a plateau at fractional-percentage shares sustained across unrelated jurisdictions. The pilots fail in the same way and at the same scale.

Nigeria's response in early 2023 is the most instructive episode. Confronted with the eNaira's failure to attract voluntary adoption, monetary authorities withdrew physical cash from circulation under the pretext of redesigned banknotes. Queues at ATMs, protests, and riots followed. Then-CBN Governor Godwin Emefiele subsequently claimed the episode had lifted eNaira adoption from 0.5 to 6 per cent.¹³ First intervention rejected by the market; second intervention to remove the exit option; social unrest as the second bites; the central bank presenting the unrest as a successful adoption strategy. The sequence is the Misesian interventionist spiral running in real time.

VI. Counter-Arguments

Five objections deserve serious treatment.

The first objection holds that legal or constitutional protections could prevent the worst uses of programmable capacity. A democracy can prohibit category restrictions; a constitutional court can strike down political-donation filtering. The architecture does not entail any particular use. The objection mistakes a promise for a structural fact. Infrastructure outlasts the legal framework that

constrains it; future legislators inherit the full technical capability, and once built, architectures generate bureaucratic constituencies that make reversal expensive.¹⁴ Bearer money requires no political commitment to remain bearer money. Its limits are architectural, not legislative.

A second line of criticism argues that commercial bank deposits have long been permission-based instruments. Banks freeze accounts, comply with AML reporting, refuse transactions. Permission-based monetary instruments already exist; societies function. An honest version of the objection goes further: bearer money has historically enabled tax evasion, money laundering, and ransom payments, which is why intermediary regulation arose. The point is conceded. But the trade between bearer character and compliance has always been made through layered architecture: a bearer unit plus a permission overlay enforced by intermediaries who do not own the unit. Cash users retain bearer character; bank users accept the overlay. The CBDC trajectory collapses the layering by relocating permission into the unit itself, then makes the bearer alternative obsolete by deprecating cash. Cash, foreign currency, gold, stablecoins, and Bitcoin each impose competitive discipline on the permission layer. A layer coexisting with bearer alternatives is a market participant; a layer alone is a structural monopoly.

Third, one might claim CBDC could extend monetary access to populations the existing banking system has failed. The empirical record contradicts the claim: where CBDCs were designed for inclusion (Sand Dollar, eNaira), uptake remained at fractional-percentage shares. Where genuine inclusion has been achieved in developing economies, it has come from private mobile-money networks of the M-Pesa class: locally embedded, not programmable in the CBDC sense, competitively disciplined. Access conditional on compliance is not inclusion.

The fourth objection is the most substantial in the central banker's actual case. CBDC, the argument runs, defends monetary sovereignty against the privatisation of money. Dollar-denominated stablecoins and private payment rails already process the majority of digital payments without democratic oversight; an outage at one provider can disable a national economy. Without a sovereign digital instrument, citizens lose meaningful monetary citizenship even if cash persists. The response must concede ground. Competitive pressure from stablecoins is real; operational risks of private rail concentration are real. The concession does not require defending the CBDC actually being designed. Two architectural choices are being bundled: a sovereign bearer digital instrument (without the permission layer) and a sovereign permission-based one. The monetary-sovereignty argument supports the first; what is being built is the second. The proper response to

stablecoin dominance is a bearer digital instrument with sovereign backing. The current trajectory imports the case for the former to motivate the latter.

The fifth objection, the most serious for the architectural critique itself, concerns privacy-preserving programmability. Zero-knowledge proofs and related cryptographic constructions allow technical separation of programmability from surveillance. A CBDC can in principle enforce programmed rules without the issuer learning who made which transaction. The architectural critique therefore appears to collapse: programmability without surveillance is permissible regulation, not the inversion of liberty the essay alleges.

The reply is that zero-knowledge constructions hide who is transacting, not whether the transaction is authorised. The permission layer survives the privacy enhancement. A transfer must still be verified against the programmed rules before it executes. The architectural inversion remains intact, and the Hayek and Kirzner arguments are unaffected: the planner still lacks the dispersed knowledge to set the rules correctly, and still forecloses discovery by pre-committing the permissible-transaction set.

There is a deeper concern. Privacy-preserving programmability can also conceal the rules themselves. If the issuer's restrictions are encoded in a zero-knowledge circuit, the holder does not learn what is permitted, only that the transaction was rejected. Imagine attempting to transfer money to a particular merchant and receiving only "transaction not authorised." No category disclosed, no rule cited, no avenue of appeal that does not first require knowing which rule was triggered. Transparent rules combined with surveillance at least let the holder know the conditions of monetary action and contest them politically: the basic rule-of-law requirement that constraints be knowable to those they bind. A system concealing both identity and rules combines opacity with capability: the user is subject to constraints whose contents they cannot read, enforced by infrastructure that produces no trace by which the constraints could be discovered. A fully privacy-preserving programmable CBDC may, in this sense, be worse than the surveillance-based version it replaces.

VII. Conclusion: The Architectural Window

Mariana wrote in 1605 from a position of structural defeat. His tools were moral, not architectural; the technical question was already closed in his favour. The *real* in his hand was a bearer instrument by the nature of the medium. He could oppose debasement, but he did not have to oppose transactional control, because no sovereign of his epoch could attempt it. The choice he never had to make is the choice now before central banks and the publics they serve. Hayek's knowledge problem, Mises's calculation argument, and Kirzner's discovery argument each apply: programmable conditions require dispersed knowledge no authority possesses; the permitted-transaction set is fixed before prices form; the architecture preempts the discovery process. The Salamancan ethical tradition that Hülsmann renews adds the framing claim: the inversion of monetary baseline is a structural relocation of property in transactions, even where no transaction is conspicuously restricted.¹⁵

The empirical record adds weight. The imposed CBDCs of 2020 to 2026 have been rejected by the distributed action of monetary participants where alternatives remained: plateaued adoption in the Bahamas and Nigeria, abandoned development in the Eastern Caribbean, falling usage in India. The political response, where it emerged, has been to remove the alternatives. Nigeria's cash crunch and the ECCU's serial abandonment of CBDC designs are two spirals already run; the ECB's framing of cash as obsolete points the same way.

The permission architecture is not new. It has operated through intermediaries for as long as commercial banking has existed; what CBDC changes is the locus. When the permission layer moves into the unit and cash is deprecated alongside, the layered system that has held bearer character open for centuries collapses into a single design choice held by the issuer. Whether liberty remains the default depends on the issuer's choice, and legal safeguards cannot substitute for the architectural protection cash provided. For the first time in monetary history, liberty becomes a feature that must be switched on.

Footnotes

1. Agustín Carstens, "Cross-Border Payments — A Vision for the Future," panel remarks at IMF Annual Meetings seminar, October 19, 2020. Transcript available via the IMF Media Center. The quotation is also cited in Nicholas Anthony and Norbert Michel, "Central Bank Digital Currency: Assessing the Risks and Dispelling the Myths," Cato Institute Policy Analysis No. 941 (April 4, 2023).
2. Jesús Huerta de Soto, "Juan de Mariana and the Spanish Scholastics," available at jesushuertadesoto.com. See also Huerta de Soto, *The Austrian School: Market Order and Entrepreneurial Creativity* (Cheltenham: Edward Elgar, 2008), ch. 2. Salas reference rendered from *Commentarii in secundam secundae D. Thomae de contractibus* (Lyon: Horatij Lardon, 1617), IV, no. 6, p. 9, via Huerta de Soto's translation.
3. Juan de Mariana, *De monetae mutatione* (1605). English translation: "A Treatise on the Alteration of Money," trans. Patrick T. Brannan, *Journal of Markets and Morality*, Vol. 5, No. 2 (Fall 2002), pp. 523–593. See also Murray N. Rothbard, *Economic Thought Before Adam Smith* (Cheltenham: Edward Elgar, 1995), ch. 4, on Mariana's place in the Spanish Scholastic tradition.
4. F.A. Hayek, "The Use of Knowledge in Society," *American Economic Review*, Vol. 35, No. 4 (September 1945), pp. 519–530, at p. 521.
5. European Data Protection Supervisor, formal comments on the digital euro (2023), as quoted in Ori Freiman, "CBDC Governance: Programmability, Privacy and Policies," Centre for International Governance Innovation Digital Policy Hub Working Paper (Waterloo: CIGI, September 2024), p. 8. The MIT Digital Currency Initiative provides a complementary technical framework distinguishing programmability proper from restricted-use money: Nikhil George, Tadge Dryja, and Neha Narula, "A Framework for Programmability in Digital Currency," MIT Media Lab (August 2023).
6. Ludwig von Mises, "Economic Calculation in the Socialist Commonwealth" (1920), trans. S. Adler, in *Collectivist Economic Planning*, ed. F.A. Hayek (London: Routledge, 1935), pp. 87–130. The praxeological framing in the opening paragraph of this section follows Mises, *Human Action*, 4th rev. ed. (Irvington-on-Hudson: FEE, 1996), ch. I.
7. Israel M. Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1973). The application of the discovery argument to regulatory pre-commitment extends Kirzner's analysis in "The Perils of Regulation: A Market Process Approach," in *Discovery and the Capitalist Process* (Chicago: University of Chicago Press, 1985), pp. 119–149.
8. Ludwig von Mises, *Human Action: A Treatise on Economics*, 4th rev. ed. (Irvington-on-Hudson: Foundation for Economic Education, 1996), ch. XXXVI, "The Plight of the Interventionist."
9. Central Bank of the Bahamas, "Press Release: Public Update on the Bahamas Digital Currency, SandDollar, December 2023" (1 February 2024). Late-2024 figure reported by Shaqueno Porter, Central Bank of the Bahamas, at the Digital Euro Conference; see also Ledger Insights, "Bahamas Sand Dollar CBDC has \$2.1m in circulation after 3 years" (2024).
10. Central Bank of Nigeria, *Quarterly Statistical Bulletin*, Q1 2024 (₦13.98B / ₦3.87T = 0.36%); February 2025 update reported by Human Rights Foundation CBDC Tracker, cbdctracker.hrf.org/currency/nigeria (₦18.31B at 0.37 per cent share). Initial 0.5 per cent figure: International Monetary Fund Country Report on Nigeria, 2022.
11. Eastern Caribbean Central Bank, Monetary Council Communique, 109th Meeting (18 October 2024), confirming closure of DCash Pilot effective 12 January 2024. ECCB Monetary Council Communique, 112th Meeting (4 May 2026), suspending development of DCash 2.0.
12. Reuters reporting on Reserve Bank of India Digital Rupee transaction volumes, July 2024, indicating decline to approximately one-tenth of December 2023 peak following expiry of early-adopter incentives.
13. Reuters and Associated Press dispatches, February–March 2023. The 6 per cent post-crunch adoption figure: Godwin Emefiele, public remarks reported in Human Rights Foundation, "CBDC Tracker: Nigeria," cbdctracker.hrf.org.
14. Ori Freiman, "CBDC Governance: Programmability, Privacy and Policies," Centre for International Governance Innovation Digital Policy Hub Working Paper (Waterloo: CIGI, September 2024). Freiman's eleven policy recommendations include prohibition of

programmable money and legal protection of cash, both reflecting the time-consistency concern this paragraph references.

15. Jörg Guido Hülsmann, *The Ethics of Money Production* (Auburn: Ludwig von Mises Institute, 2008). On the inversion-of-default argument as a structural-ethical claim, see also Philipp Bagus and Luis P. de la Horra, "An Ethical Defense of Cryptocurrencies," *Business Ethics, the Environment and Responsibility*, Vol. 30, No. 3 (2021), pp. 423–431.