

Measure Twice: Designing Trust for the Algorithmic Age

A Framework for Regulating Programmable Digital Asset Markets

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I. Executive Summary

The Fourth Industrial Revolution is characterized by efforts to make trust programmable, distributed, and decentralized. Yet, while decentralization aims to remove bias, human-coded systems are inherently imbued with human influence. The progression of prior industrial revolutions was outsourcing labor—first mechanizing muscle with steam; second, scaling production with electricity; and third, digitizing knowledge with computers. Now, we are outsourcing trust to code. This shift replaces institutional trust with architectural trust, which includes design decisions that are embedded in systems and govern behavior and incentives. Key questions arise about governing a world where rules are dictated by software and decisions are refereed by algorithms, including how to preserve fairness and flexibility in code-governed lives. The law’s ancient purpose is to civilize society by translating disruption into order, as it has done throughout history as commerce, industrialization, markets, and networks have evolved.

The Fourth Industrial Revolution is shifting the foundation of capitalism from human institutions to algorithmic architecture. While trust has been enforced by courts, regulators, and intermediaries, it is now increasingly ensured by code. This transformation promises efficiency, but also redefines where risk lives—and who bears it.

Current U.S. digital asset legislation measures form instead of function — defining assets by name (“security,” “commodity,” and a proposed “ancillary asset”) rather than by the economic behaviors and risk exposures they generate. This proposal presents a Market Architecture of Trust, a structural framework for regulating digital asset markets through measurement, design, and proportionate intervention, rather than categorical overreach. The approach revives the principles of the 1933’s securities and derivatives laws—function over form, visibility as accountability—while updating them for programmable economies.

Regulatory intervention has been necessary when there is abstraction of ownership and control of economic interests/rights, which is more exacting in its analysis since those interests/rights are modularized or disaggregated from the previously inextricably combined bundles of rights. The central concept is to regulate residual risk, not form. Technology can internalize many governance functions once performed by law; regulation should scale only where residual risk—risk not neutralized by architecture—remains.

II. Current Market Structure Legislative Proposals

Below are key features of the market structure proposals. The fundamental flaw in both is that decentralization is not required for an asset to be a non-security.

Feature	House CLARITY Act (H.R. 3633)	Senate Draft II (Sept 2025)
Key Difference	It is binary: decentralization decides everything.	Creates a temporary period to become decentralized after launch; non-decentralized tokens can avoid being treated like full securities if they follow the ancillary asset disclosure regime, with the goal of becoming decentralized.
Regulatory Categories	Two: either a Security or a Digital Commodity . Classification hinges on network decentralization. Introduces term “investment contract asset” for tokens in investment contracts, but this is only a label (tokens are still either securities or commodities).	Three: Security, Commodity, or Ancillary Asset. Fully decentralized tokens = commodities ; tokens with traditional security characteristics = securities ; others can be designated ancillary assets (a new category with temporary securities-lite treatment).
Decentralization Test	Determinative: a bright-line “ decentralization = commodity ” rule. A “ mature, decentralized ” blockchain (no controlling persons, widespread use) means its token is not a security. If a network is not mature/decentralized, its token is a security. Self-certification of mature blockchain status is deemed mature after 60 days unless the SEC objects.	Determinative: tokens on fully decentralized networks are treated as commodities. Lack of Decentralization = security or ancillary asset if it lacks traditional security rights. It sets an expectation that ancillary asset networks will decentralize over time (within 4 years).

Token Characteristics & Definitions	“Digital Commodity” : a token intrinsically linked to a functioning blockchain and not controlled by an issuer. The Act excludes any token that represents a security, any derivative contract , or stablecoin from being a digital commodity. Tokens on centralized networks are simply “digital asset securities” (investment contracts). The Act’s “investment contract asset” terminology refers to the same token but does not alter its treatment.	“Ancillary Asset” : defined as an intangible digital asset offered pursuant to an investment contract, so long as it carries no debt/equity interest or entitlement to profits, dividends, or other financial rights . Ancillary assets are part of the securities offerings at the time of sale, but the token itself is not called a security. Tokens that do embed traditional security interests or represent an investment fund share are carved out of this category. Self-certification of ancillary asset status becomes effective unless SEC rebuts within 60 days.
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III. Market Fundamentals of Self-Correction and Triggers for Regulatory Intervention

Markets are best structured and designed to be self-correcting. Markets behave according to the incentives and constraints embedded in their design. The architecture sets the incentives, and the incentives shape behavior. Markets can be further structured to discipline themselves through contract, competition, and reputation (called “private ordering”). When information is visible and incentives are aligned, the invisible hand operates as self-correcting mechanism. Prices transmit knowledge, reputation reinforces honesty, and competition rewards efficiency.

When “abstraction” enters—that is, when risk becomes detached from control, which can result from complexity outpacing comprehension, or information becoming asymmetric or hidden (including inside code)—the self-correction mechanisms of the market fails and the feedback loop breaks. That’s when residual risk begins to accumulate and cannot be priced, contracted away, or revealed by competition alone. When hidden exposures build up, private discipline loses traction. The market stops being a self-governing ecosystem.

When markets cannot self-correct, this is where regulation intervenes to restore the balance between private responsibility and public trust. Regulation is an error correction mechanism to re-establish the feedback loop that allows the invisible hand to work. Generally, it makes visible again the relationship between those who create risk and those who bear it.

IV. The Problem: Measurement Failure as Market Failure

Markets are systems of measurement; they turn complexity into prices, incentives, and accountability. When law stops measuring the right variables, it becomes part of the problem. Contemporary legislative drafts (House CLARITY Act and Senate Digital Asset Market Structure bills) measure the wrong variables. They fixate on classification—security vs. commodity vs. proposed (misguided) “ancillary asset”—instead of economic behavior and their residual risk. This produces three predictable failures:

- 1. Regulatory Arbitrage:** Risk migrates between agencies and across jurisdictions. Hidden leverage and manipulation thrive in the gaps.
- 2. Innovation Flight:** Builders move offshore to avoid ambiguous frameworks that regulate uncertainty faster than risk.
- 3. False Security:** Lawmakers and investors believe markets are governed when the most dangerous risks—recursive derivatives, opaque leverage, and fragile interdependencies—remain invisible.

The historical parallel to this is the 1920s investment trusts and the 2008 derivatives markets; both failed due to the widening separation of risk from control (abstraction) without measurement. Today’s digital asset markets risk repeating those failures unless measurement catches up with abstraction. This is not overregulation or under-regulation—it is mis-regulation.

V. How Current Legislative Proposals Codify Market Failure

A. Mis-Measuring the Variable of Risk

Digital assets are multi-behavioral instruments: they can simultaneously behave as securities (e.g., when there is agency), as derivatives (e.g., when there is synthetic exposure), and as commodities (e.g., when they serve as network fuel). The proposed bills attempt to force these hybrid instruments into static silos. This mis-measurement creates blind spots identical to those that preceded 1929 and 2008: hidden leverage, information asymmetry, and a false sense of control. Classification replaces comprehension.

It is important to identify which of the risks are present, if any that the regulations are designed to address (the purpose for regulation in the first place). We do not create regulations for the sake of regulating; they must exist to achieve a legitimate purposes and be not more restrictive than needed to achieve their aim. Depending on the type and level of potential risk, regulations serve as guardrails to address or contain those specific types of risks when markets do not self-correct. But market rules can be created to align

incentives to address risks and self-correct. Below is a summary of the reasons the various law regimes exist and the risks the rules are designed to address.

1. **Securities law:** agency (information asymmetry) and coordination (protect dispersed investors from those with control / supervision over their economic property interest).
2. **Derivatives law:** systemic stability and integrity of references (protect counterparties and markets from hidden leverage, contagion, manipulation).
3. **Commodities law:** market integrity and delivery assurance (protect commercial participants and consumers from manipulation, fraud, and distortions in price discovery, ensuring fair competition and functional spot and futures markets).

The existence of the risks from these categories are not mutually exclusive for digital assets. This is because digital assets enable modularization, such that rights previously inextricably combined in one asset can now be unbundled into separate assets, and that digital assets can possess any number of combinations of these rights, and layer them.

B. Ignoring the Derivative-Like Nature of Tokens

Many tokens function economically similar to derivatives—representing synthetic, leveraged, or recursive exposure to underlying assets or networks. The programmability of digital assets adds leverage, rehypothecation (reusing/repledging collateral holding for a third party to secure its own loans), and recursive exposure looks like diversification but is exposed to same risk indirectly and repeatedly (DeFi loops, where crypto borrowed, re-deposited, and borrowed against across multiple DeFi protocols)—all of which can create instability in the market. An illustration of a DeFi loop is if ETH is lent to a protocol in exchange for synthetic tokens (“stTokens”) that are used as collateral to buy stablecoins, which in turn are swapped for more ETH from the original protocol to earn yield in the form of additional stTokens. Participants are able to stack synthetic claims that can unwind in cascades. Agency is in contract design.

These are functionally similar to 1920s investment trusts: leveraged claims nested within each other, appearing diversified but systemically intertwined. When the first fails, contagion cascades. The proposed legislation fails to recognize this behavior, ensuring that the next crash—like 1929—will stem not from fraud, but from measurement failure. While many market participants proactively manage risk, legislation that requires them to address risks mischaracterized by inaccurate labels—rather than actual residual risks—may result in critical risks remaining unmitigated, potentially decreasing overall market stability.

C. The “Ancillary Asset” Concept: A Category Error

The Senate draft introduces the “ancillary asset”—an “intangible” associated with an investment contract. This is doctrinally incoherent.

- In traditional jurisprudence, the investment contract is the mechanism of investment; the token is the subject and/or the proceeds.
- By labeling the subject as “ancillary,” Congress risks inverting the logic of property itself—treating the medium of value as legally secondary.

This definitional confusion hardwires inconsistency into law, producing arbitrary and bizarre results, particularly when applied across the securities law overall regime.

D. Over-Reliance on “Decentralization” as a Proxy for Safety

Current bills hinge regulation on decentralization metrics—a political aesthetic, not a risk variable. Decentralization is multifaceted and, in some cases, borders on illusory; it is often conflated with distributed; and it does not guarantee reduced risk or accountability. Nodes can be decentralized but control centralized; ownership can be decentralized while information asymmetry endures. Decentralization does not eliminate reliance—it multiplies it, or at the very least transfers and may obscure it. It replaces vertical trust chains with horizontal dependencies, which can hide new vulnerabilities. The key question should not be “is it decentralized” but whether residual risk is reduced by design, and if not, how to address it. Measurement of risk, not decentralization status, should guide regulation.

The legislative proposals are further misguided in reducing the test for a security to a single variable: decentralization. This factor, which may influence one element of the multi-factor *Howey* test for one type of security (investment contract), is being elevated to the overarching test for all 30+ securities named by statute. This produces an incoherent and contradictory framework that engenders market instability.

E. The Result: Structural Fragility by Design

If enacted, the current legislative framework would have the resulting design flaws and consequences.

Design Flaw	Consequence
Categorical classification of assets	Jurisdictional confusion and regulatory arbitrage; false positives and negatives leading to application of wrong regulations and addressing wrong risks
Derivative-like behaviors ignored	Hidden leverage and systemic contagion
Overemphasis on decentralization	False positive and false negatives; false confidence; limiting competition and innovation inconsistent with decentralization
Favors decentralized token networks	Ignores tokens’ risk even if otherwise the same
Mis-definition of “ancillary asset”	Legal incoherence and inconsistent enforcement

Static statutory categories	Market ossification and innovation flight
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This is not a question of intent, but of using an incorrect measurement. The bills institutionalize opacity under the guise of clarity. They legislate the same design flaws that 1933 sought to correct.

VI. The Policy Principle: Law as Architecture, Not Reaction

Law’s purpose is not to freeze innovation, but to civilize it. It must act as an adaptive architecture that restores alignment between risk, control, and accountability. Like the disclosure-based reforms of 1933 and 1934, regulation must make abstraction legible, measurable, and self-correcting. When markets self-correct, oversight should recede. When they cannot, regulation must re-enter proportionately. The craft of law lies in precision, not proliferation.

A. Principles of Design

Markets with trust require principles of discipline including clarity (information revealing, not obscuring), accountability (power meeting consequence), incentives (encouraging honest behavior), and resilience (containing failure). Proper design leads to self-correcting markets and measured government intervention, making trust verifiable rather than illusory. Design is a strategy that tunes incentives and behavior, emphasizing measured intervention only when systems fail to self-correct. When adequate design elements are present such that markets self-govern, then intervention can recede.

B. Intervention Threshold

Markets self-correct by competition, contract, and reputation until residual risk—unseen or unowned risk—accumulates. At this threshold, governance must restore feedback loops to maintain market function, intervening proportionally and retreating once equilibrium is restored. The architecture of trust relies on transparency, accountability, and proportionate intervention, transforming complexity into order.

VII. The Economic Abstraction Framework

The Economic Abstraction Framework is not *Howey* or any other human behavioral lens, rather, it is an architectural one. It identifies when regulation is needed by measuring the distance between risk and control—measuring exposure not expectation.

A. Historical Lessons in Abstraction and Governance

Scalable Ownership: The seventeenth-century joint-stock company allowed ordinary investors to share profits without control, creating the separation of ownership and control and necessitating governance to ensure accountability .

Commodity Abstraction: The nineteenth century introduced futures markets, turning natural uncertainty into tradable risk and eventually derivatives detached from physical goods, spreading but also hiding risk.

Modern Corporation: By the early twentieth century, dispersed ownership and professional management required legal responses like the 1933 and 1934 Acts to provide transparency as a substitute for direct control, establishing a social contract linking abstracted ownership (separated from control) with disclosure and accountability.

Derivatives and Hidden Risk: Late twentieth-century financial engineering increased complexity and opacity, contributing to the 2008 crisis through repackaged risks that obscured true exposure and broke public trust.

Commodity Detachment: Financialization of commodities in the early 2000s such that commodity prices (e.g., wheat, corn) were no longer primarily determined by physical market forces of supply and demand, led to speculative price swings disconnected from physical supply, affecting entire economies.

Decentralization is not a panacea, as it redistributes reliance horizontally rather than eliminating it, potentially multiplying dependencies and vulnerabilities.

B. Five Diagnostic Factors of Abstraction

1. **Transferability.** How freely does the asset trade? How fast can risk move? High transferability amplifies contagion; it requires real-time visibility.
2. **Passive Economic Exposure.** Who creates the value? When holders bear risk without influence over value creation, accountability gaps emerge.
3. **Limited Enforceability.** Can participants protect themselves? Code-based systems may lack legal or feasible remedies; this is fragility, not necessarily fraud.
4. **Systemic Dependency.** What keeps the system running? Dependency on narrow actor sets (developers, oracles, validators) increases and obfuscates systemic risk. What systems are built on this system such that system failure cascades to other systems failing?
5. **Limited Collective Action.** Can participants coordinate? When governance requires mass unanimity, markets lose self-correcting capacity.

When these factors cluster, regulation should activate—not to replace markets, but to restore equilibrium between risk and control. When technology mitigates them, oversight should recede automatically. Law becomes dynamic—a thermostat, not a shackles.

C. Residual Risk as the New Measure of Trust

Residual risk is the risk remaining after technology, competition, and contracts act. Law should regulate this residual risk, not form or labels, adapting oversight proportionally to technological mitigation. This approach echoes the 1930s philosophy of aligning risk with control, making transparency mandatory, and intervening only when necessary.

VIII. The Modern Market Structure Compact

A. Simpler Way Forward—Modern Market Structure Compact

The proposed compact framework to restore function over form by:

- Regulating residual risk across three axes: agency risk, derivative risk, and market-integrity risk.
- Creating a shared registration pathway and joint oversight between SEC and CFTC.
- Assigning lead supervisors dynamically based on risk dominance.
- Recognizing technological mitigation to scale regulation accordingly. This model parallels banking supervision, emphasizing coordinated, interoperable regulation rather than duplication.

B. The Ethic of Measurement—Measure Twice, Cut Once

Borrowing from carpentry, governance should avoid wasting trust by measuring abstraction and residual risk carefully before acting, balancing innovation and protection to build lasting markets that deserve trust.

C. Oversight Based on Function, Not Form—with Lead Supervisor

Oversight shall correspond to predominant residual risk rather than statutory label:

- Investment risk (enterprise abstraction) — subject to SEC oversight;
- Leverage or synthetic exposure (exposure abstraction) — subject to CFTC oversight;
- Custody and market-integrity risk (market abstraction)—jointly, but deftly, supervised.

A lead supervisor will be designated based on predominant residual risk. Oversight authority shall rotate as risk shifts, with data shared through a joint regulatory node accessible to both agencies.

D. Joint Registration and Oversight

- Agencies develop and maintain digital compliance portals responsive to the technology they regulate, including establishing a regulatory node—a shared, cryptographically assured audit ledger.

- Agencies access a unified data registry to avoid duplication and enhance visibility.
- Modeled after banking supervision: one lead examiner, shared data, no overlap.
- Create a shared registration and disclosure infrastructure across SEC/CFTC.
- Enable one-rulebook for venues where securities, commodities, derivatives (and stablecoins) can coexist.

E. Recognition of Technological Mitigation

- When verifiable code neutralizes a risk (e.g., automated transparency, tamper-proof audits), the law scales down.
- Code that achieves compliance obtains regulatory relief.
- Industry solutions and safeguards shall be recognized, avoiding duplicitous and burdensome oversight.

F. Proportionate Intervention

- Regulation should expand and contract with measured residual risk, not ideology.
- Law behaves as a circuit breaker: active when markets cannot self-correct; dormant when they can.
- In so doing, laws and regulations shall avoid incentivizing one design architecture (e.g., decentralization) over another (centralization) to foster competition and a free market.

These principles allow law to evolve with innovation while protecting the public trust.

IX. Conclusion: Building Systems That Deserve Trust

Trust is shifting from being institutional to architectural. The goal of law is not to stop innovation, but to civilize it—to translate code into confidence and markets into mechanisms of fair opportunity. The 1930’s securities reforms civilized financial abstraction by requiring transparency, aligning incentives, curbing excessive speculation and leverage, and controlling contagion. Today, we must civilize financial abstraction through measurement. By regulating residual risk of abstracted economic interests instead of form, Congress can preserve both innovation and integrity—ensuring markets that are free enough to innovate and fair enough to endure. Freedom is not self-sustaining—it must be maintained by design. Measure twice. Cut once. Build systems that deserve our trust.