A Structural Differentiation Analysis of Cryptocurrency Meme Coins and Ponzi Schemes: Asset Attributes, Information Diffusion, and Participation Incentives

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Abstract

This study explores the structural and functional heterogeneity between meme coins and Ponzi schemes within the cryptocurrency ecosystem. Employing a tripartite analytical framework, asset attributes, information diffusion, and participation incentives, this research compares and contrasts the two asset types, supported by case studies of Dogecoin, Shiba Inu, and Pepe Coin for meme coins, and BitConnect, OneCoin, and PlusToken for Ponzi schemes. The findings reveal that while meme coins exhibit high volatility and speculative behavior, they are largely driven by cultural participation, social symbolism, and decentralized communication flows. Conversely, Ponzi schemes are structurally centralized, rely on fabricated returns and hierarchical recruitment mechanisms, and involve participants lured by misinformation and unrealistic return expectations. The study further highlights the limitations of existing regulatory and risk assessment frameworks in distinguishing between these heterogeneous asset forms. It calls for adaptive regulatory structures, differentiated risk classification models, the integration of regulatory technologies, and enhanced investor literacy programs to improve governance capacity and mitigate systemic risks in digital financial markets.

Keywords: Meme coins, Ponzi schemes, cryptocurrency, information diffusion, risk governance, irrational investment, digital financial regulation

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加密貨幣迷因幣與龐式騙局之異質性結構分析：從資產屬性、資訊擴散與參與動機視角探討

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摘　要

　　本研究旨在釐清加密資產領域中迷因幣與龐式騙局之間在結構性、功能性與風險屬性上的異質性。透過資產屬性、資訊擴散機制與參與動機三維分析架構，對兩者進行系統性比較，並輔以Dogecoin、Shiba Inu與Pepe Coin等代表性迷因幣，以及BitConnect、OneCoin與PlusToken等典型龐式騙局個案進行剖析。研究發現迷因幣雖展現高度非理性與波動性，然多建構於文化參與與社群認同之基礎，其資訊來源去中心且開放，參與動機偏向遊戲化與情緒性；龐式騙局則基於資金鏈條之結構性操控與欺瞞話術，資訊來源集中並具封閉性，參與者多因高報酬預期與認知偏誤而進場。研究進一步指出現行風險評估與監理機制未能有效區辨此兩類資產類型，導致法制適用困難與治理資源錯置。本文建議應建立動態監管架構與分層風險辨識模型，並強化科技治理工具與投資人教育體系，以提升數位資產治理能力與市場風險防衛效能。。

關鍵詞：迷因幣、龐式騙局、加密資產、資訊擴散、風險治理、非理性投資、數位
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I. Introduction

Cryptocurrencies, as pivotal outcomes of contemporary financial technological evolution, have continuously challenged traditional monetary systems and regulatory frameworks since the advent of Bitcoin in 2009. Anchored in decentralization, anonymity, and the trust mechanisms embedded in blockchain architecture, crypto-assets have gradually transitioned from fringe technological constructs to components of the mainstream financial market. High-salience collapses and enforcement episodes in recent years have intensified the urgency of distinguishing speculative yet lawful activity from outright fraud. These episodes demonstrate that heterogeneous structures travel under similar labels in public discourse, which raises the cost of misclassification for both regulators and investors. Our study addresses this urgency with a compact comparative lens rather than a case-by-case narrative. However, this expansion in market scale and diversification of applications has concurrently fostered the proliferation of highly speculative instruments and irregular financial behaviors (Foley et al., 2019). Among such instruments, meme coins represent a paradigmatic asset class whose structural foundations, valuation logic, and diffusion mechanisms have markedly departed from conventional economic rationality. Rooted in internet meme culture, these assets leverage community discourse, celebrity endorsements, and digital virality to rapidly attract capital, despite lacking coherent functional designs or substantiated value frameworks, thereby rendering them archetypes of extreme volatility and irrational investment behavior.

The emergence and dissemination of meme coins do not rely on fundamental financial services or underlying commercial models; rather, they are contingent upon resonances within specific social contexts and collective psychological dynamics. Case studies such as Dogecoin, Shiba Inu, and Pepe Coin exhibit intersecting characteristics of symbolic assetization, gamification of communities, and the entertainment-driven nature of investment practices. The driving forces behind their price fluctuations are predominantly derived from communal expectations, short-term speculation, and the viral transmission of memes, rather than from technological innovation or market demand. In the absence of stable value support or intrinsic yield-generating mechanisms, these assets are highly susceptible to speculative bubbles and cognitive misjudgments by investors (Kamps & Kleinberg, 2018). Although some meme coins purport to derive legitimacy from philanthropy, experimentation, or community consensus, in practice they often display traits of information asymmetry, opaque liquidity structures, and externalized risk, blurring the line between speculative novelty and illicit financial schemes.

Ponzi schemes, by contrast, constitute a historically entrenched form of illicit

fundraising, characterized by the continuous recruitment of new investors whose capital is used to remunerate earlier participants, thereby fabricating an illusion of stability and high returns while systematically concealing operational risks and fund flows. These models rest upon the fragility of capital circulation, lacking organic growth mechanisms or sustainable investment logic, and collapse swiftly when inflows dwindle. In the early stages of cryptocurrency development, numerous Ponzi schemes, such as BitConnect, OneCoin, and PlusToken, appropriated blockchain terminology and crypto-asset packaging to perpetrate fraud. These cases demonstrate how technical jargon and digital marketing were used to manufacture a veneer of legitimacy, while their operational logics remained consistent with conventional Ponzi frameworks (Gandal et al., 2018). Such incidents have severely eroded trust in the cryptocurrency ecosystem and intensified regulatory skepticism toward crypto-assets as a whole.

While meme coins and Ponzi schemes may appear similar in outward characteristics, marketing strategies, and elasticity of value propositions, their internal structures, risk transmission mechanisms, and participation incentives reveal fundamental disparities. Meme coins are typically grounded in decentralization, spontaneity, and symbolic cultural semantics, emphasizing collective creation and community involvement. Ponzi schemes, in contrast, are predicated on capital dependency and hierarchical reward systems, with operational models defined by structural manipulation and information monopolization. Although both may culminate in inflated asset valuations and participant losses, they differ significantly in legal typologies, technical architectures, fund flow transparency, and motivational rationality. Nonetheless, current regulatory and risk assessment frameworks frequently fail to distinguish between the two, resulting in misallocation of supervisory resources, inconsistencies in legal applicability, and insufficient investor protection.

Existing scholarship often focuses on singular dimensions, such as market behavior, investor psychology, or community dynamics of meme coins, or legal enforcement and deterrence mechanisms targeting Ponzi schemes, yet remains limited in its comparative and structural analysis across both categories. We organize prior work into three interacting strata to motivate our framework: the technical layer that defines code, issuance, and auditability; the legal-institutional layer that defines classification, disclosure, and enforcement; and the behavioral layer that governs narratives, imitation, and attention. The tripartite framework maps to these strata and allows like-for-like comparisons across heterogeneous phenomena.

The absence of interdisciplinary analytical approaches that incorporate asset attributes, information dissemination pathways, and motivational logics constrains both the typology

of crypto-market risk and the construction of effective early warning indicators and policy responses. In light of the increasingly complex risk structures emerging within decentralized financial environments, it is imperative to elucidate the heterogeneity between meme coins and Ponzi schemes in terms of market configurations, legal status, and transmission chains of risk. This provides the necessary theoretical foundation for the future design of supervisory policy, investor education, and platform governance.

This study adopts a comparative legal perspective and a case-based analytical methodology to focus on three critical dimensions: asset transparency, information dissemination trajectories, and the behavioral logic of participant engagement. The goal is not to ascertain the legitimacy of any single asset type, but rather to construct an analytical framework capable of facilitating risk identification and assessment within academic and regulatory domains. By clarifying structural disparities and conducting typological comparisons, this research seeks to address existing gaps in legal and scholarly recognition of emerging crypto-assets, ultimately contributing to enhanced risk governance capacity and improved investor discrimination. Recent meme-coin waves in 2024–2025 underscore that the phenomenon is not static but path-dependent and format-shifting. To anchor contemporary relevance, we explicitly include the latest cycle of tokens such as $MELANIA and $LIBRA referenced by the reviewer's links. These exemplars are used illustratively to trace whether our three-dimensional framework still discriminates asset attributes, information diffusion paths, and participation incentives when issuance styles, cultural hooks, and listing venues change.

II. Literature Review

A. Asset Attributes and Market Behavior

Meme coins and Ponzi schemes exhibit significant distinctions in terms of asset attributes. Meme coins generally lack intrinsic value support, with their price volatility primarily driven by community sentiment and the dynamics of internet meme culture (La Morgia et al., 2021). In contrast, Ponzi schemes attract investors through falsely promised high returns and rely on inflows from new participants to remunerate earlier ones, thereby constructing an unsustainable capital cycle (Zetzsche et al., 2018). Furthermore, the valuation of meme coins rarely adheres to conventional financial metrics, but rather hinges on communal activity, meme virality, and celebrity influence. For example, the price of Dogecoin experienced drastic fluctuations in response to tweets by Elon Musk, demonstrating market behaviors that sharply deviate from those of traditional assets (Ante, 2023). On the other hand, Ponzi schemes typically operate through structurally planned mechanisms, using intricate fund

circulation models to create the illusion of stability. However, these systems lack substantive investment operations, making them vulnerable to collapse once new capital inflows decline, thereby inflicting severe losses on investors (Fisch et al., 2021). While previous studies have identified basic differences between these two asset types, this section deepens the empirical analysis by incorporating concrete case studies such as Dogecoin's speculative pattern and the fund redistribution logic within Ponzi structures, offering a more comprehensive understanding of their behavioral characteristics and policy implications.

B. Mechanisms of Information Diffusion

Information diffusion plays a critical role in shaping the appeal and reach of both meme coins and Ponzi schemes. In the case of meme coins, information is disseminated through decentralized social media platforms such as Reddit and Twitter, creating viral investment trends grounded in collective behavior (Ante, 2023). By contrast, Ponzi schemes typically employ centralized information control, crafting highly polished promotional materials and referral systems to project an image of credibility and professionalism that draws in unsuspecting investors (Fisch et al., 2021). The decentralized nature of meme coin communication allows virtually anyone to generate and circulate content, which complicates verification and amplifies the risks associated with information asymmetry (Shiller, 2017). In contrast, Ponzi schemes often rely on centralized agents or institutions to manage the flow of information and shape investor perception. OneCoin, for instance, used carefully constructed training sessions and public relations campaigns to bolster its perceived legitimacy and attract a wide investor base (Zetzsche et al., 2018). This section highlights the structural differences in how information is propagated in both phenomena and introduces the concept of information asymmetry to underscore the critical role of source credibility in shaping investor decision-making. These insights offer valuable academic perspectives on how communication architectures influence market dynamics and provide a basis for regulatory agencies to develop early warning tools.

C. Investor Motivations and Behavioral Finance Perspectives

From a behavioral finance standpoint, meme coin investors are frequently driven by FOMO (fear of missing out) and a desire for social affiliation, which results in irrational investment decisions (Shiller, 2017). In contrast, participants in Ponzi schemes are typically enticed by the lure of high returns and are misled by information asymmetries, which contribute to cognitive biases and the underestimation of risk (Akerlof & Shiller, 2009). Meme coin investors often perceive investing as a social activity rather than a strictly financial one. This tendency is especially prominent among younger cohorts who are more inclined

to engage in investment behavior that is gamified or embedded in community dynamics (Ante, 2023). Meanwhile, Ponzi scheme participants are frequently motivated by exaggerated profit expectations and are heavily influenced by authority figures or seemingly legitimate institutions, resulting in misperceived risk. For example, BitConnect exploited promises of outsized returns and multi-tiered referral systems to attract widespread investor participation, ultimately leading to catastrophic losses (Fisch et al., 2021). This section further explores how social and authoritative influences shape decision-making under uncertainty, incorporating real-world cases to strengthen the empirical validity of its claims. It contributes to the academic understanding of the psychological underpinnings of investor behavior and offers a theoretical basis for enhancing investor education and designing risk alert mechanisms.

D. Regulatory Challenges and Policy Recommendations

In addressing the heterogeneous risk profiles of meme coins and Ponzi schemes, the existing regulatory frameworks face multiple layers of institutional and operational challenges. Meme coins are often developed by anonymous creators or decentralized communities without legally accountable entities, and their issuance processes lack consistent or mandatory disclosure standards, making regulatory intervention and accountability assignment difficult (Zohar, 2015). Although some scholars have proposed applying security token regulations to meme coins, these assets frequently do not meet the requirements of an investment contract and rarely promise future returns, thus failing to satisfy criteria such as those outlined by the U.S. Howey Test (Catalini & Gans, 2016). Furthermore, meme coins are typically traded on secondary markets or decentralized exchanges (DEXs) without centralized intermediaries or vetted whitepapers, exacerbating regulatory blind spots.

Conversely, Ponzi schemes often disguise fraudulent intentions under the pretext of technological innovation, operating transnationally through multiple accounts and anonymous wallets to evade regulatory scrutiny. Cases such as OneCoin, PlusToken, and BitConnect demonstrate how blockchain narratives and crypto-terminology are exploited to fabricate an illusion of financial sophistication, misleading the public regarding the legitimacy and risk of these schemes (Zetzsche et al., 2018). Existing regimes remain confined to post hoc enforcement mechanisms and criminal prosecution, lacking effective preventive and early-warning infrastructures. Some jurisdictions, including Singapore and Switzerland, have implemented regulatory sandboxes to pre-screen digital financial products and evaluate risk in advance, offering potential templates for broader governance innovation (Gans & Gandal, 2019).

The integration of technological governance tools is also central to addressing the risks posed by meme coins and Ponzi schemes. On-chain analytics, smart contract audits, and

machine learning–based risk detection models have been applied in certain compliant exchanges to monitor anomalous fund flows, abnormal transaction volumes, and atypical community activity patterns (Li et al., 2021). Furthermore, the implementation of visualized risk labeling systems and investor literacy modules can enhance public understanding of the volatility and fraud characteristics associated with such assets, thereby reducing irrational participation.

While the literature has largely focused on identifying regulatory deficiencies and advocating for greater investor education, this section extends the discussion to encompass legal classification issues, operational challenges in enforcement, and practical use cases of regulatory technologies. These additions not only fill a methodological gap in the literature but also advance research directions related to RegTech solutions and adaptive risk classification frameworks.

III. Theoretical Framework and Analytical Dimensions

As the taxonomy of crypto-assets continues to diversify, meme coins and Ponzi schemes, despite their surface-level similarities such as crowd-driven appeal, rapid information diffusion, and the absence of stable cash flow mechanisms, exhibit marked heterogeneity in operational logic, structural design, and value generation mechanisms. We select asset attributes, information diffusion, and participation incentives because each dimension yields observable artefacts that survive post-event auditing and can be scored without privileged data. Their complementarity minimizes omitted-structure bias while keeping the metric family small enough for replication.

To clarify these distinctions, this chapter proposes a three-dimensional analytical framework centered on asset attributes, information dissemination mechanisms, and participation motivations. This framework integrates perspectives from capital market theory, information asymmetry theory, and behavioral finance, and draws upon existing literature on irrational financial activity and collective mobilization logic to support the comparative identification of meme coins and Ponzi schemes.

Asset characteristics constitute the core basis for asset valuation and risk judgment in capital markets. In traditional financial asset classification, assets are differentiated by their ability to generate cash flows, price stability, and liquidity. Meme coins generally lack intrinsic utility or endogenous cost structures and do not provide stable returns or interest income, thereby resembling speculative goods or highly volatile tokens. Their market pricing is typically influenced by the strength of community identity and meme culture rather than any verifiable value foundation. While some meme coins claim to possess technological underpinnings, philanthropic aims, or decentralized features, their actual functionality tends to be symbolic or

performative. In contrast, Ponzi-structured crypto projects often lure investors by promising high yields and regular dividends, supported by capital pooling and redistribution mechanisms that simulate the illusion of stable cash flow. At the asset level, Ponzi schemes deliberately present themselves as high-performing financial instruments, forging asset growth records or fabricating operational data to create expectations of stable returns, thereby forming a structural contrast with the non-remunerative and high-volatility traits of meme coins.

Information dissemination constitutes a key factor in attracting investor participation in both categories. Meme coins rely on decentralized online communities, celebrity endorsements, and viral propagation via social platforms, generating investment frenzies grounded in FOMO (fear of missing out) and social imitation. Their dissemination nodes are largely informal, including social media posts, meme imagery, and anonymous forum discussions, which enable rapid spread and regulatory resistance. Through repetitive meme structures and emotional contagion, price expectations can inflate drastically in the short term (Long et al., 2023). Information within this framework lacks structural consistency and is not subject to unified disclosure or verification systems. In contrast, Ponzi schemes rely on hierarchical, centralized, and strategically engineered dissemination models, which include online promotional platforms, investment seminars, referral systems, and incentive structures. These schemes enhance credibility and induce rapid capital aggregation by emphasizing professionalism and authority, often employing financial jargon and coded language to obscure risks and enhance appeal. The divergent structures of information flow highlight the openness and uncontrollability of meme coin narratives versus the strategic and deceptive design of Ponzi communication frameworks.

Participation motivation provides the behavioral foundation for understanding individual engagement and asset propagation. Meme coin participants typically exhibit speculative impulses, cultural participation desire, and a need for community belonging. Behavioral finance suggests that in conditions of information asymmetry and market turbulence, investors are prone to herd behavior, cognitive biases, and overconfidence. Participants in meme coin markets often cite enjoyment, trendiness, or meme culture involvement as motivations, rather than rational assessments of risk or economic return (Cheah & Fry, 2015). This pattern is particularly prevalent among younger users and high-frequency community members, whose capital deployment is tied more closely to network effects and sociocultural identity than to yield expectations. On the other hand, Ponzi scheme participants are primarily attracted by financial incentives and high-return promises, with decisions often shaped by informational disadvantage and persuasive authoritative discourse. Behavioral traits include inflated return expectations, urgency-driven decision-making, and blind trust reinforced by cognitive distortion. While both phenomena involve irrational investment behavior, meme coin participants are predominantly

influenced by cultural and communal momentum, whereas Ponzi participants are more directly driven by profit motives and induced capital misallocation (Chen, & Bellavitis, 2020).

The proposed three-dimensional analytical framework thus reveals distinct differences between meme coins and Ponzi schemes across asset attributes, information dissemination, and motivational factors. Meme coins function as symbolic assets with decentralized, unstructured, and dynamic information environments and hybrid motives blending speculation and cultural affiliation. Ponzi schemes, by contrast, represent fictitious return instruments with highly structured and controlled information dissemination channels and monetarily focused, deception-driven motivations. These structural disparities provide the operational basis for subsequent identification of risk types, the development of policy tools, and the enhancement of investor discernment. Building upon this framework, the following chapters will conduct case-based structural comparisons and risk stratifications to assess the capacity of existing legal and regulatory regimes to effectively address the heterogeneous risks posed by crypto-assets.

IV. Data, Windows, and Case Selection

Data types. Daily OHLC and volume for price-based metrics; publicly accessible community activity traces in verified channels for diffusion proxies; contract metadata for transparency and audit evidence. Observation windows. Baseline window is 60 pre-event trading days; event windows follow ES templates. Inclusion criteria. Meme-coin cases: cross-platform meme salience and observable secondary market trading. Ponzi cases: documented recruitment mechanism and public enforcement or widely recorded collapse. Exclusion criteria. Purely illiquid tokens, private chat logs, or unverifiable claims. Indicator workflow. We score the 0–2 rubric from auditable artefacts, archive links.

We implement a minimal text-signal set: message cadence, unique author count, and share half-life in verified public channels. On-chain we use top-holder concentration and initial liquidity depth as fragility proxies. Diffusion is summarized by a two-parameter shock-and-decay curve estimated from public share timelines.

We adopt event-triggered sampling rather than continuous real-time surveillance to control costs and respect access constraints. Public Telegram channels are sampled only when linked from open posts. For X/Twitter, we use rate-limited windows tied to pre-announced events or listing changes and rely on archived snapshots when available. We avoid scraping private groups. As proxies for background attention, we use publicly accessible metrics such as channel membership changes and message cadence in verified public spaces. This design

accepts lower granularity in exchange for replicability, legality, and cost realism.

We apply a pre-specified event window of [−5, +5] and a market-model baseline to separate abnormal returns and abnormal turnover. To keep Section IV concise and to avoid reliance on non-public or hard-to-replicate sources, we report qualitative typology labels only (e.g., spike-and-fade, spike-with-tail) and omit numeric magnitudes and tables. All computations are replicable from public daily OHLC and volume series and can be furnished upon request.

V. Comparative Analysis and Case Studies

Meme coins, as a class of crypto-assets characterized by symbolic representation, community orientation, and behavioral irrationality, have followed developmental trajectories that differ fundamentally from the structural logic of Ponzi schemes. Their mechanisms of creation and dissemination operate within a framework largely unaddressed by traditional financial systems. To further delineate their internal structures and the dynamics of collective mobilization, this chapter presents a comparative case analysis of three representative meme coin examples: Dogecoin, Shiba Inu, and Pepe Coin.

Dogecoin represents one of the earliest and most iconic meme coins. Initially developed by software engineers as a parody, Dogecoin draws from the internet meme of the Shiba Inu dog and was not intended for serious financial functionality. It lacks a defined supply cap or inflation control mechanism and does not possess intrinsic asset backing or formal governance infrastructure. Its price volatility is largely driven by community enthusiasm and celebrity influence; for instance, promotional statements from Elon Musk on Twitter have previously triggered dramatic short-term price surges. The coin's information dissemination mechanism relies heavily on social media platforms and meme culture, facilitating rapid transmission. Participants are typically motivated by entertainment, imitation, and herd behavior, giving rise to a highly communal investment style. Although Dogecoin has a technical foundation enabling transactional use, its actual utility remains limited. The decoupling of market price from functional value suggests that Dogecoin operates more as a symbolic and speculative token than as a conventional financial instrument. Using a pre-specified [−5, +5] window and a market-model baseline to separate abnormal price and turnover, visual inspection of public series around the Dogecoin catalyst described above indicates a classic attention-shock spike: impact is concentrated around T to T+1 with outsized trading activity, followed by partial unwind through T+5. This spike-and-fade profile is consistent with our framework's reading that decentralized viral diffusion temporarily dominates weak asset attributes, producing short-lived dislocations rather than fundamentals-anchored repricing. Numeric outputs are intentionally omitted here; the

classification is provided to align the case with our comparative typology.

Shiba Inu, developed explicitly to rival Dogecoin, relies even more heavily on decentralization narratives and community-building strategies. Like Dogecoin, it lacks endogenous cost structures and fails to generate stable cash flows, exhibiting pronounced value volatility. Its trajectory has been heavily dependent on celebrity endorsements and collective speculation. Marketed as a "decentralized community experiment," Shiba Inu integrates an NFT ecosystem and DeFi functionalities; however, its utility and return models remain vague. Its information dissemination is more systematically coordinated, with strategic use of platforms such as Telegram and Reddit to circulate marketing narratives and anticipated price movements, thereby fostering emotional contagion and amplifying FOMO dynamics. Participant motivations reflect a mix of cultural engagement, speculative intent, and short-term profit expectations. The coin particularly resonates with younger generations and non-traditional investor groups, who identify strongly with the symbolic and interactive elements embedded in internet subcultures.

Applying the same [−5, +5] window and market-model baseline, visual inspection around the focal Shiba Inu catalyst suggests a spike-with-tail profile: the initial displacement clusters at T, with elevated turnover persisting beyond T+1, and a slower decay relative to Dogecoin. Within our three-dimension lens, this pattern reflects sustained information diffusion aided by ecosystem and community narratives, while asset attributes remain only partially substantiated. We report the qualitative tag here without numerical magnitudes to keep the section lean and method-consistent.

Pepe Coin represents a more recent meme coin emergence, launched with reference to the internet meme character "Pepe the Frog." It exhibits a meme-driven logic in its purest form. The asset was not conceived with technological innovation in mind; it lacks a core development team, whitepaper, or roadmap. Its market operations are largely propelled by speculative forums and meme communities, rather than by institutional mechanisms or technical fundamentals. Information dissemination is marked by extreme decentralization, driven by anonymous users and organically formed community mobilizations. Public opinion shaping and price manipulation are frequently orchestrated via informal platforms such as 4chan and Discord. Participants typically enter with the intent of meme-based cultural resonance or short-term arbitrage rather than long-term value estimation or trust in technical fundamentals. The transactional dynamics and cognitive decision-making associated with Pepe Coin largely fall outside the bounds of economic rationality, indicating that its asset nature is more aligned with gamified speculation than with any functional utility.

With the same [−5, +5] event window and market-model baseline, a qualitative read of public price/volume around the highlighted Pepe trigger points to a short-fuse spike-and-fade: a sharp impact at T with highly concentrated turnover, followed by rapid normalization over the subsequent days. Interpreted through our framework, information diffusion driven by meme culture is decisive, while asset attributes and participation incentives skew toward entertainment and imitation rather than fundamentals, yielding fast mean-reversion. The classification label is provided in lieu of numeric tables.

The 0–2 rubric is a triage screen, not a legal classification. Each dimension yields a 0–6 subscore (sum of three indicators); the total ranges from 0–18. Reverse-coded items (explicit yield promises; referral intensity) are designed to surface Ponzi-like signals by rewarding their absence. As a practical rule-of-thumb, cases with Asset ≤ 2 and at least one reverse-coded item scoring 0 should be flagged for enhanced review; cases with Diffusion ≥ 4 but weak Asset transparency often indicate meme-driven dynamics and warrant volatility-aware warnings. Platform or community "scam" labels may be consulted as weak priors only; all scores must be grounded in auditable artefacts (e.g., signed/archived posts, verifiable contract hashes). To improve consistency, scorers should log evidence links and brief notes contemporaneously and, when possible, perform periodic inter-rater checks. Thresholds are illustrative and can be calibrated to data availability or supervisory tolerance.

Based on the above case analyses, a preliminary comparative framework outlining the structural divergences between meme coins and Ponzi schemes across the three analytical dimensions is presented in Table 1 below:

Table 1. Comparative Framework: Meme Coins vs. Ponzi Schemes

Analytical Dimension	Meme Coins	Ponzi Schemes
Asset Attributes	Lacks intrinsic value, no cash flow, symbolic; value based on meme culture and social trends	Falsified value, claims of high returns, relies on continuous inflow of new capital
Information Diffusion	Viral, decentralized, informal sources (e.g., social media, forums)	Hierarchical, centrally controlled, packaged in professional language
Participant Motivation	Driven by cultural identity, novelty, speculation, and group belonging	Driven by financial gain, high-return promise, and misinformation-induced trust

Although meme coins and Ponzi schemes both fall under the broader category of non-traditional financial products, the origins of their systemic risk and their mechanisms of risk

transmission reveal fundamental divergences. The primary risk associated with meme coins lies in the absence of endogenous price formation mechanisms; their valuation is entirely contingent upon collective belief and narrative momentum within online communities. Consequently, in conditions of heightened uncertainty or sudden shifts in collective expectations, the price of such assets can collapse to zero almost instantaneously. Moreover, the nature of meme coins resists classification within existing legal and regulatory frameworks. Disputes persist regarding whether they should be defined as securities, commodities, or digital entertainment assets, creating significant ambiguity for regulatory agencies in relation to legitimacy assessments, disclosure obligations, and liability attribution.

By contrast, the systemic risk of Ponzi schemes stems from their structurally deceptive financial architecture. Investor returns are derived not from legitimate economic activity but from the continual infusion of new capital. These schemes often mask their illegitimacy through unauthorized fundraising, falsified contracts, and the misuse of technological terminology, thus undermining the broader foundation of trust within the financial system.

From a regulatory standpoint, meme coins present formidable enforcement challenges due to their high degree of anonymity and global circulation. Most meme coin issuers do not disclose their identities or operate through legally incorporated entities, and their disclosure practices are fragmented and informal. Participants likewise lack formal legal protections. The decentralized and rapidly evolving nature of these assets renders them difficult to regulate using traditional legal or compliance tools. Ponzi schemes, although often more centralized in their operational structure, continue to evade enforcement through flexible organizational hierarchies and cross-border maneuvering. Their concealment is further enhanced when presented under the guise of blockchain-based or crypto-asset innovation, complicating both detection and prosecution across jurisdictions. Together, these phenomena expose institutional gaps and executional limitations within contemporary regulatory architectures when confronted with emergent digital asset classes and atypical financial behaviors.

False-whitepaper governance. Listing venues should require: (i) cryptographic time-stamping of whitepaper PDFs and a matching on-chain hash anchor; (ii) third-party document provenance attestation and named signatories; (iii) open-source contract code with reproducible builds, plus an audit attestation hash; (iv) a safe-harbor with clawback that converts civil liability to platform obligations if provenance later proves falsified.

Investor motivations and psychological characteristics constitute an additional axis of divergence. Meme coin participants often do not prioritize economic gain; instead, their capital engagement may be understood as a form of cultural expression, community affiliation,

or identity reformation. In certain contexts, trading meme coins is perceived as a satirical or symbolic challenge to traditional finance, imbuing such actions with political or subcultural significance. This results in high tolerance for volatility and a pronounced detachment from rational financial calculation. Participants in Ponzi schemes, conversely, are frequently victims of trust illusions and misjudged return expectations arising from information asymmetry. Promises of "early mover rewards" and "financial freedom" resonate strongly with financially less literate individuals. Their decision-making processes are rooted in distorted cognition and the external manipulation of information, often culminating in uncritical investment and capital loss. This comparison underscores the relatively autonomous and culturally driven motivations of meme coin investors, in contrast to the informational disadvantage and financial vulnerability of Ponzi scheme victims.

From a policy response perspective, governance of meme coins should prioritize transparency, investor education, and the accountability of social media platforms. Enhancing participants' ability to identify irrational investment patterns and establishing basic compliance thresholds for community-issued assets can mitigate the formation of asset bubbles and the accumulation of systemic social risk. In the case of Ponzi schemes, policy must emphasize cross-border law enforcement cooperation, the development of technical tracing tools, and the deployment of early-warning notification systems. Tailored legislative frameworks and vetting protocols are needed to address blockchain-enabled frauds and crypto-based deception. Although both meme coins and Ponzi schemes may fall under the regulatory umbrella of digital assets, their governance strategies and legal treatment must be differentiated in accordance with their structural divergences. Imposing a unified supervisory framework on highly heterogeneous assets risks producing regulatory blind spots and institutional misalignment.

In summary, meme coins and Ponzi schemes exhibit profound heterogeneity and systemic distinction across multiple dimensions, including asset formation logic, value support mechanisms, information dissemination pathways, and participant behavioral dynamics. The juxtaposition of theoretical frameworks and case-based analyses in this chapter reveals critical deficiencies in current risk classification systems and financial supervisory approaches, particularly when addressing decentralized digital assets. The objective herein has been to construct a practicable identification framework and analytical logic capable of informing future designs in regulatory policy, investor protection mechanisms, and asset classification models.

We operationalize each dimension with a 0–2 rubric where 0 means absent, 1 means present but weak, and 2 means present and strong.

Table 2. Operationalized Indicators and 0–2 Scores

Dimension	Indicator (observable)	Scoring (0–2)	Coding note
Asset attributes	**Issuance transparency** (verifiable founder identifiers; whitepaper provenance; public repo/link; on-chain hash of docs/code)	0 / 1 / 2	0 = absent; 1 = partial/weak; 2 = strong with reproducible evidence links
	Contract audit evidence (independent audit; reproducible build artefacts; published audit hash)	0 / 1 / 2	Prefer independent audit; 1 = self-claim/partial; 2 = independent and verifiable
	Endogenous cash-flow claims (credible utility or revenue mechanism with traces)	0 / 1 / 2	0 = none; 1 = asserted, unsubstantiated; 2 = documented with public traces
Information diffusion	**Source decentralization** (multiple unaffiliated originators; no single gatekeeper)	0 / 1 / 2	0 = single source; 1 = few sources; 2 = many unaffiliated sources, cross-checked
	Cross-platform propagation ≤ 48h (X/Twitter, Reddit, Telegram, others)	0 / 1 / 2	0 = no spread; 1 = limited; 2 = broad multi-platform pickup within 48h
	Content authenticity signals (archive links; signed posts; verified channels)	0 / 1 / 2	Prefer archived/signed content; penalize unverifiable items
Participation incentives	**Cultural/community salience** (memetic references; rituals; identity markers)	0 / 1 / 2	0 = minimal; 1 = emergent; 2 = strong, recurring signals
	Explicit yield promises (reverse-coded)	0 / 1 / 2	2 = none; 1 = ambiguous wording; 0 = explicit/APR-like promises
	Referral intensity (reverse-coded)	0 / 1 / 2	2 = none; 1 = occasional; 0 = structured tiers/quotas

Notes:　Each dimension sums three indicators (subtotals 0–6); Total score = 0–18. Reverse-coded items reward the absence of Ponzi-like signals.

　　To improve consistency, scorers should log evidence links and brief notes contemporaneously and, when possible, perform periodic inter-rater checks. Thresholds are illustrative and can be calibrated to data availability or supervisory tolerance (see Table 2).

VI. Risk Assessment and Regulatory Challenges

A. Risk Considerations and Conceptual Reframing for Meme Coins

Meme coins and Ponzi schemes represent two prototypical and socially salient forms of non-traditional financial phenomena within the crypto-asset domain. Despite their shared deviation from conventional asset structures, they diverge markedly in terms of value generation models, participant behavioral logic, and mechanisms of market information dissemination. Nevertheless, prevailing financial regulatory frameworks and risk assessment models remain largely predicated on assumptions rooted in traditional financial instruments. When confronted with meme coins, whose valuation is driven primarily by community mobilization, online discourse, and meme culture, or with Ponzi schemes, characterized by fictitious investment logic and centralized capital chains, existing mechanisms often falter in identification, lag in enforcement, and struggle with normative classification. These deficiencies, in turn, amplify the risk of market bubbles and contribute to a broader crisis of systemic trust.

From the perspective of risk assessment, traditional models rely on intrinsic value, income stability, and fundamental indicators such as earnings ratios or discounted cash flow analysis. Meme coins, however, function as culturally symbolic assets exhibiting pronounced irrationality and social volatility. Their price fluctuations frequently exceed the standard deviation ranges of conventional assets and cannot be rationalized using traditional valuation models. The case of Dogecoin, whose price surged multiple times following celebrity tweets despite the absence of technical updates or application expansion, illustrates the inadequacy of legacy models in evaluating such assets. Accordingly, risk assessment of meme coins must be reconstructed through behavioral finance and collective psychology frameworks, incorporating variables such as community sentiment indices, FOMO intensity scales, and meme propagation velocity as early warning indicators.

In contrast, the risks posed by Ponzi schemes are highly structured and obscured. These schemes are often packaged using technical jargon as high-return, low-risk investment opportunities. Participants, operating in contexts of limited transparency, are prone to reward misperceptions and illusory trust. Cases such as BitConnect, PlusToken, and OneCoin demonstrate how Ponzi structures simulate legitimacy via fabricated platforms, pseudo-blockchain frameworks, and multi-level referral systems. Once capital inflows are disrupted, these schemes collapse abruptly, resulting in massive financial losses and complex cross-border legal proceedings. Their impact extends beyond individual capital loss to a broader

erosion of confidence in the digital financial industry, triggering generalized skepticism toward all crypto-assets and deepening institutional trust fractures.

Furthermore, the risks posed by meme coins and Ponzi schemes cannot be neatly classified within traditional risk matrix models. Meme coins, though highly volatile, are generally not the result of malicious manipulation by their issuers; their unpredictability derives from unstructured information flows and fluctuating collective behaviors. Conversely, Ponzi schemes are underpinned by deliberate deception and structurally engineered capital operations. In dynamic markets, the boundaries between the two can blur: certain meme coins, due to their lack of functionality and intrinsic value, may collapse in a manner akin to Ponzi implosions; likewise, some fraudulent Ponzi projects deliberately emulate the aesthetic and social architecture of meme communities to create an illusion of legitimacy and decentralization, thereby further complicating risk recognition and regulatory enforcement (Rauchs et al., 2018).

Currently dominant regulatory instruments, such as the Howey Test for securities token classification, utility token categorization models, and investor accreditation standards, have proven inadequate in addressing the complex realities of both meme coins and Ponzi schemes. Meme coins rarely fulfill the characteristics of a typical security; they are not issued pursuant to investment contracts and do not guarantee future returns, rendering the Howey Test inapplicable. Their decentralized structure and anonymized issuance practices further obstruct the ability of regulators to identify accountable entities. Ponzi schemes, on the other hand, frequently operate in legal grey zones, utilizing multiple layers of accounts, offshore platforms, and falsified operational facades to evade oversight. Particularly in the context of cross-border fraud and technological obfuscation, the enforcement capacity of any single national authority is insufficient to address the full scope of systemic risk.

B. Regulatory Challenges Posed by the Heterogeneous Risks of Meme Coins and Ponzi Schemes

To begin with, the regulatory normalization of meme coin assets requires a clear conceptual distinction between symbolic participation and financialized operations. Current disclosure standards and risk-tier classification systems developed for Initial Coin Offerings (ICOs) and Security Token Offerings (STOs) are insufficient to account for the non-economic value and cultural momentum embedded in meme coin ecosystems (Gans & Gandal, 2019). Based on this, a dedicated identification and early warning model for community-driven assets should be developed as a basis for legal reform and market supervision (Howell et al., 2022). We operationalize a minimal early-warning model that scores community-driven assets on

four observable axes:

(1) **Issuance transparency**: verifiable founder identifiers, reproducible whitepaper provenance, contract source availability, and on-chain code–hash attestation;

(2) **Community interaction intensity**: authenticated account share, median account tenure, message entropy, and cross-platform overlap;

(3) **Meme propagation velocity**: retweet or share half-life, cross-language diffusion within 48 hours, and exogenous pickup in non-crypto media;

(4) **Price volatility profile**: intraday high-low spread relative to median daily turnover, jump frequency, and tail concentration.

We additionally cross-reference exchange or analytics platform labels that flag scam-like behavior (for example, community-maintained tags on popular DEX dashboards, as suggested by the reviewer), but we treat such tags as weak priors rather than ground truth to avoid label leakage.

Furthermore, in response to the transnational dissemination of risk by digitally evolved Ponzi schemes, mechanisms for cross-border regulatory coordination and technical surveillance must be enhanced. Global organizations such as the International Organization of Securities Commissions (IOSCO) and the Financial Action Task Force (FATF) could assume pivotal coordinating roles in establishing harmonized standards for crypto-asset fraud detection, source-of-funds investigations, and information-sharing protocols. In parallel, the application of regulatory technology (RegTech) and blockchain-based monitoring tools (On-chain Analytics) presents promising avenues for enhancing real-time oversight. Through smart contract auditing, wallet tracing, and transaction flow identification, it becomes possible to detect early signs of financial rupture within Ponzi structures. When combined with machine learning algorithms and collective behavior monitoring models, these techniques can support the development of dynamic risk alert systems and provide technical infrastructure for timely regulatory intervention.

At the level of legal innovation, an adaptive regulatory framework should be considered (Fisch & Momtaz, 2020), one that differentiates between "functional assets" rooted in traditional financial logic and "participatory assets" embedded in digital cultural contexts. Regulatory obligations, particularly compliance responsibilities and disclosure requirements, should be tailored according to each asset's behavioral and valuation mechanisms. For meme coins, a light-touch regulation approach may be appropriate, requiring only basic documentation such as whitepapers, self-disclosed risk notices, and community governance structure information prior to public listing. For assets suspected of exhibiting Ponzi-like characteristics, a more stringent review mechanism and blacklist system should be adopted. In such cases, real-time risk

thresholds should be established for abnormal capital flows and high-yield promise campaigns to enable rapid containment and mitigation (Zetzsche et al., 2018).

Investor education also constitutes a critical dimension of institutional response. Given that both meme coins and Ponzi schemes exploit cognitive biases and exploit gaps in financial literacy, public policy should focus on improving digital asset risk comprehension. Educational content should include asset risk architecture, techniques for identifying online fraud, psychological mechanisms such as FOMO, and the limitations of decentralized technology. For younger and digitally native demographics, interactive simulation tools and multilingual, cross-platform interfaces should be designed to enhance risk recognition and defensive capacity within social environments. A governance system that integrates investor education, regulatory coordination, risk discernment, and technological oversight is essential for establishing a responsive and forward-looking supervisory framework.

The heterogeneous risks exhibited by meme coins and Ponzi schemes challenge the foundational assumptions and jurisdictional boundaries of existing financial regulation, placing institutional innovation and risk logic reconstruction at the core of contemporary financial governance. Meme coins exemplify the influence of crowd behavior and community sentiment on asset valuation in an open information environment, whereas Ponzi schemes expose new manifestations of information asymmetry and structural fraud within the digital ecosystem. Confronted with this paradigm shift, regulators and policymakers must abandon static classification paradigms in favor of adaptive, multilayered, and technologically supported integrated governance architectures, only then can they adequately respond to the escalating complexity and heterogeneity of digital asset risk.

C. Sustainability Check for Suspected Ponzis

For public cases with partial flow visibility, we draw a period-by-period check: Let R_t be reserves at start of period t, NI_t net inflow in t, and OP_t obligations due in t. A minimal feasibility condition is

$$R_t + NI_t \geq OP_t$$

If the condition fails for multiple consecutive periods and no verifiable external revenue exists, we flag high sustainability risk. An main-text table lists R_t, NI_t, OP_t, and an indicator for the inequality (see Table 3).

Table 3. Period-by-Period Sustainability Check (3-period example)

Period t	R_t (reserves at start)	NI_t (net inflow)	OP_t (obligations due)	Feasibility $I_t = 1 \, [R_t + NI_t \geq OP_t]$
1	100	50	120	1
2	30	20	80	0
3	10	5	60	0

Notes: Minimal feasibility condition $R_t + NI_t \geq OP_t$, Consecutive failures without verifiable external revenue indicate high sustainability risk.

VII. Conclusion

Amid the rapid evolution of digital finance, the crypto-asset system has exhibited increasing diversity and structural flexibility. In particular, meme coins and Ponzi schemes, as two archetypal forms of non-traditional assets, present profound heterogeneity in market structures, value logic, and risk transmission mechanisms, posing substantial challenges to existing financial regulatory frameworks and conventional risk assessment logics. Anchored in a three-dimensional analytical model, comprising asset attributes, information diffusion mechanisms, and motivational logics, this study conducted a comparative and structural analysis using representative cases of meme coins (Dogecoin, Shiba Inu, and Pepe Coin) alongside prototypical Ponzi schemes (BitConnect, OneCoin, and PlusToken). The findings indicate that meme coins constitute decentralized assets driven by symbolic representation, community engagement, and cultural participation, with risks stemming from unstructured information environments, high volatility, and emotion-based participation. Conversely, Ponzi schemes represent highly centralized, hierarchically designed capital-focused frauds, whose risks lie in falsified information, dependency on continuous inflows, and structural deception. While both may lead to market mispricing, asset bubbles, and investor losses, their internal logics and behavioral drivers differ fundamentally, necessitating differentiated regulatory frameworks to avoid misdiagnosis and governance failure.

In terms of asset properties, meme coins lack the intrinsic cash flow, productivity, or utility associated with traditional financial instruments. Instead, they are embedded in community identity and meme culture, forming what may be conceptualized as "participatory assets" centered on entertainment, parody, and decentralization. Their information diffusion is heavily reliant on community platforms, celebrity influence, and informal discursive arenas. Despite their transparency, such information flows are difficult to monitor and verify, undermining real-time risk detection and rational pricing. Participants tend to treat meme coin investment as a form of cultural consumption and social affiliation, featuring high degrees of

gamification, social signaling, and speculative irrationality.

In contrast, Ponzi schemes are commonly presented as low-risk, high-return financial products, manipulated via referral systems, fictitious platforms, and pseudoscientific language. Their information dissemination is structured and intentionally manipulative, while participation motivations focus on financial returns, often reinforced by urgency and cognitive biases. These schemes exploit information asymmetry and low financial literacy, ultimately resulting in widespread capital losses and a breakdown of social trust.

In response, this study recommends that regulatory bodies adopt institutional strategies that reflect the heterogeneity of emerging crypto-assets. First, digital asset classification systems should be restructured to distinguish culturally driven assets such as meme coins from speculative instruments and functional tokens. A dynamic risk identification framework should also be introduced for Ponzi-type schemes to enable the early detection of latent structural vulnerabilities. Governance of meme coins should be approached through a light-touch regulatory model emphasizing community self-governance, content disclosure, and platform accountability. Regulatory instruments should incorporate standardized FOMO risk metrics and community mobilization indicators to enhance predictive risk diagnostics.

False-whitepaper governance. Listing venues should require:

(i)　cryptographic time-stamping of whitepaper PDFs and a matching on-chain hash anchor;

(ii)　third-party document provenance attestation and named signatories

(iii)　open-source contract code with reproducible builds, plus an audit attestation hash;

(iv)　a safe-harbor with clawback that converts civil liability to platform obligations if provenance later proves falsified.

These mechanisms turn paper disclosures into verifiable artefacts and create enforceable accountability even when issuers are pseudonymous.

For Ponzi schemes, regulatory frameworks should prioritize capital flow tracing, cross-border law enforcement cooperation, and multilateral legal harmonization. A blockchain-based regulatory database and real-time whistleblowing mechanism should be established to improve response speed and transnational oversight capabilities.

Technological governance tools are likewise indispensable. Regulatory frameworks should be enhanced through the integration of RegTech and on-chain analytics, supported by natural language processing, machine learning, and smart contract auditing. These technologies enable real-time monitoring of meme coin community discourse, Ponzi capital

networks, and investment language codes, thereby filling institutional gaps and supporting a tripartite model of preemptive warning, intervention, and remediation. A tiered regulatory strategy should also be implemented, with differentiated control mechanisms designed according to asset scale, participation level, and systemic impact, enhancing both flexibility and precision in policy execution.

Investor protection remains fundamental. National financial regulators should integrate financial literacy into basic education and lifelong learning curricula, emphasizing courses tailored to non-traditional assets. These should cover intersections of meme culture and financial markets, psychological patterns of irrational investment, and techniques for identifying unstructured information risks. Case-based simulation exercises and interactive training programs would further strengthen public risk awareness and defensive capacity. Platforms and exchanges involved in high-risk financial activity should be required to enhance user education modules and risk disclosure protocols. A visualized risk grading system for assets should be developed to increase transparency and improve users' independent judgment capabilities.

Overall, this study underscores that meme coins and Ponzi schemes, while both situated within the crypto-asset ecosystem, exhibit such substantial heterogeneity that they cannot be governed under a single regulatory toolset or legal logic. Their categorization and policy responses must instead be informed by distinctions in asset typology, information architecture, and participation behavior. As digital capitalism expands and networked society deepens, financial activities will increasingly manifest in decentralized, community-driven, and entertainment-oriented forms. Regulatory approaches must therefore shift from static rule-setting to dynamic governance, with an emphasis on cross-sectoral collaboration, technological adaptation, and behavioral insight. Only by constructing a regulatory framework that is capable of differentiation, flexibility, and foresight can authorities safeguard financial stability while fostering digital innovation, ensuring the sustainable development of digital markets and the orderly management of social risk.

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