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Crowdfunding as a Pure Coordination Game: Revisiting Neoclassical and Transaction Cost Theory

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Abstract: The increasing importance of crowdfunding in entrepreneurial finance has opened multiple theoretical debates on how this phenomenon should be conceptualized. While the neoclassical approach considers crowdfunding as a simple market transaction governed by price mechanisms, and the transaction cost theory emphasizes the role of organizational governance structures, both perspectives fail to capture the core dynamic at play in crowdfunding transactions. This paper proposes that crowdfunding is fundamentally a pure coordination game, where the coordination of expectations among backers and project initiators is central to success. Drawing upon the limits of neoclassical and transaction cost frameworks, this study introduces the framework of coordination games and conventions, rooted in game theory and social conventions, to explain how collective action emerges among independent agents. The analysis demonstrates that neither price mechanisms nor hierarchical governance determine funding outcomes, but rather mutual expectations and self-fulfilling prophecies do. This theoretical contribution offers new insights for platform design, public policy, and the understanding of decentralized collective action.

Mots-clés : Crowdfunding ; Coordination game; Focal point; Mutual Expectations; Convention.

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1 Introduction

Thanks to the development of technology and the evolution of Web 2.0, numerous practices based on the collective intelligence of crowds have emerged. Starting with e-commerce platforms and content-sharing systems, extending to product evaluation and recommendation systems, this new paradigm has reshaped existing industries and given rise to new activities. The literature on these crowd-based practices, commonly referred to as *crowdpractices*, is

rapidly expanding. However, for many researchers, these practices remain theoretically ambiguous and analytically elusive.

Within the existing state of the art on these practices, especially on crowdfunding, three primary theoretical streams can be identified. The first focuses on the normative theory of these practices, examining how crowdfunding operations are organized and the factors contributing to their success. The second adopts a critical distance, analyzing the economic and social impacts of these emerging practices; this stream has framed much of our previous doctoral research.

The third stream, within which this present work is positioned, seeks to develop a normative theory of crowdfunding by investigating how crowdfunders coordinate their expectations during a campaign. Our central research question thus aims to explore the mechanisms by which coordination between project initiators and crowdfunders occurs. To address this question, we will revisit core frameworks of economic theory to illuminate, or at least clarify, the conceptual ambiguities previously mentioned.

The neoclassical framework serves as our starting point, offering a market-centered analysis of economic phenomena in terms of optimizing agents. In the first section, we will explore the foundations of this framework and assess its suitability for analyzing crowdfunding as an economic phenomenon. Specifically, we will examine whether price mechanisms alone can ensure coordination among rational individuals in this context.

Second, we will explore the institutional framework, particularly transaction cost theory, which challenges the assumptions of perfect rationality and market efficiency and highlights the role of governance structures in managing economic transactions. This section allows us to analyze crowdfunding within an institutional context and examine who, if anyone, exercises control over resource allocation and project selection.

Third, we will introduce the framework of conventions, which offers an alternative form of coordination based on consent rather than coercion. Finally, we will argue that the theoretical framework of pure coordination games, rooted in game theory, provides the most appropriate lens for analyzing our research object, as it models how rational agents seek to achieve mutually beneficial outcomes through the coordination of expectations.

Through this progression, we aim to demonstrate that crowdfunding represents a pure coordination game, a domain where collective expectations, focal points, and mutual beliefs drive success, rather than price mechanisms or organizational governance.

2 Literature Review and Theoretical Background

2.1 The Neoclassical Framework: Coordination Through the Market

Traditionally, neoclassical economics has explained economic phenomena in terms of individual agents (households or firms) interacting within markets. In this framework, prices play a central role in transmitting all necessary information to decision-makers, allowing them to coordinate their actions independently.

The neoclassical model rests on two fundamentally distinct elements. First, the notion of individual economic agents whose behavior is governed by optimization under given constraints, constraints that include both individual production functions and the terms of exchange in the broader economic system. Second, the market, where individual decisions aggregate, and the terms of exchange adjust until individual decisions converge in mutual compatibility, resulting in market equilibrium where supply equals demand (Arrow, 1974).

Following general equilibrium theory, market mechanisms ensure that agents continue making independent decisions until compatibility is achieved. When perfect competition prevails, prices reflect the preferences of buyers and sellers, enabling each actor to coordinate their

activities toward a superior outcome. Trade ceases when both parties achieve their desired allocations, and no further gains are possible.

2.1.1 Instrumental Rationality

The concept of rationality in neoclassical theory derives from philosophical notions of reason and calculation (ratio). Instrumental rationality emphasizes individual isolation, where agents focus solely on achieving maximum utility without ethical considerations or social relations (Boudon, 2009). The utilitarian tradition dominates: individuals seek to maximize their material well-being through optimal choices.

In this context, means and ends are strictly separated. Preferences are given, and individuals use technical reasoning to select the most efficient means for maximizing utility. Within the Arrow-Debreu world, individuals never interact directly; the market system abstracts interpersonal relationships, reducing all exchanges to quantifiable goods.

Instrumental rationality requires two critical conditions (Postel, 2003):

- Ethical disengagement: Agents need not consider the ethical consequences of their actions on others.
- Perfect foresight: Agents must accurately predict the future consequences of their choices.

The market system resolves uncertainty by providing perfect information through prices, allowing agents to calculate optimal consumption bundles according to their preferences and budget constraints (Varian, 2015). This transforms decision-making into a purely technical optimization problem where errors equate to irrationality.

2.1.2 Parametric Rationality

The independence of actors leads to parametric rationality: individuals react to given prices but cannot influence them. Prices are exogenous parameters beyond the control of any single agent. Consequently, agents express their preferences through consumption bundles, but their choices cannot strategically influence others.

The rationality of agents is not only calculative but also strictly bounded by market constraints. Market rules, not individual will, determine agents' behavior. Individuals necessarily comply with market laws to achieve optimization (Tricou, 1994). Thus, their behavior reflects both their preferences and the structure of the market system itself.

2.1.3 The Market as a Coordination Mechanism

General equilibrium theory seeks to demonstrate that perfectly competitive markets lead selfish agents to collectively optimal outcomes, in the Pareto sense. The two fundamental theorems of welfare economics establish that:

- Every general equilibrium under perfect competition is Pareto efficient.
- Any Pareto efficient allocation can be achieved through a competitive market for appropriate initial endowments (Arrow, 1951; Varian, 2015).

This result grounds Adam Smith's metaphor of the "invisible hand" in rigorous mathematical terms (Postel, 2003). The market, without requiring organization or central coordination, aligns individual interests toward socially optimal resource allocation.

However, this logical existence of equilibrium, as established by Arrow-Debreu, remains a mathematical abstraction, offering no insights into how equilibrium is actually reached. The problem of stability and uniqueness of equilibrium has troubled even leading theorists (Arrow

& Hahn, 1971; Hahn, 1980). In real economies, equilibrium may not exist, may not be unique, or may be unstable.

By excluding uncertainty, cognitive limits, and interpersonal interactions, the neoclassical framework deliberately omits key aspects of real-world coordination problems (Simon, 1976). The reduction of rationality to optimization eliminates cognitive and psychological dimensions of decision-making. Furthermore, by limiting coordination mechanisms to markets alone, organizational structures are rendered irrelevant to resource allocation.

While the neoclassical framework allows us to model crowdfunding as an interaction between entrepreneurs (seeking funds) and investors (supplying funds), it fails to capture the essence of crowdfunding transactions. Price mechanisms are insufficient to explain contributors' behaviors, which often transcend financial calculations to include cognitive, social, and motivational dimensions. Nor can it address the high specificity and uniqueness of crowdfunding projects, which rarely involve homogeneous products amenable to price-based coordination.

These limitations prompt us to explore alternative frameworks capable of accounting for the complexity inherent in crowdfunding.

2.2 The Transaction Cost Framework: Coordination Through Organizations

The seminal work of Coase (1937) introduced organizations as alternative coordination mechanisms to markets, relying less on prices and more on administrative and contractual arrangements. Organizations emerge to reduce the transaction costs inherent in market exchanges, especially under conditions of uncertainty, asset specificity, and limited rationality. Later, Williamson (1975, 1985) systematized transaction cost economics by emphasizing the behavioral assumptions of bounded rationality and opportunism. While individuals remain intentional in seeking efficiency, their cognitive capacities are limited, and their behavior may become self-interested in unpredictable ways, especially when information asymmetries exist.

2.2.1 Bounded Rationality

Bounded rationality acknowledges that while agents intend to be rational, their decision-making capabilities are constrained by incomplete information, limited cognitive processing, and environmental complexity (Simon, 1991). For Williamson, bounded rationality interacts with complex environments to create coordination challenges that markets cannot resolve efficiently. Unlike Simon, however, Williamson retains an optimization logic within these bounds. His version of bounded rationality thus remains instrumental and calculative, albeit within informational limitations (Alchian & Woodward, 1988; Arrow, 1974).

2.2.2 Opportunism

Opportunism compounds coordination problems by introducing the possibility that agents may act deceptively or fail to honor commitments. This creates both ex-ante risks (adverse selection) and ex-post risks (moral hazard), making long-term contracts and cooperation difficult to enforce (Coriat & Weinstein, 1995).

The problem of opportunism is particularly acute when small numbers of agents interact repeatedly or when future contingencies are difficult to specify contractually. In these settings, market transactions become risky, increasing the need for governance mechanisms that monitor and discipline behavior (Williamson, 1975).

2.2.3 Asset Specificity

A key insight of transaction cost theory is that asset specificity transforms otherwise anonymous, reversible market transactions into long-term, path-dependent relationships (Alchian, 1984; Williamson & Sidney, 1991). Investments in specialized assets tie parties together, raising switching costs and making relational governance essential.

Specific investments lock parties into durable interdependence, rendering purely market-based transactions impractical. Hierarchical organizations, with their authority structures and administrative controls, provide the necessary governance to contain opportunism and manage the complexity of such specialized exchanges (Williamson, 1985; Ménard, 2012).

2.2.4 Hierarchical Coordination and Efficiency

For Williamson, hierarchical organization represents the most efficient governance structure under conditions of bounded rationality, opportunism, and asset specificity. Authority allows for centralized decision-making, reducing negotiation costs and enhancing control (Williamson, 1985; Postel, 2003). The hierarchical structure performs essential governance functions: informing agents, designing incentives, and monitoring compliance (Ménard, 2012; Holmstrom & Milgrom, 1991).

Hierarchical governance substitutes coercion and administrative rules for market discipline, enabling coordination among agents who otherwise cannot trust one another. Efficiency becomes the ultimate criterion for choosing among governance structures.

However, this coercive logic, while effective in certain contexts (such as firms or banks), does not correspond to the nature of crowdfunding. Platforms do not allocate resources or enforce contractual compliance. They do not discipline participants or impose hierarchical authority. The allocation of financial resources remains entirely voluntary and decentralized, with contributors free to coordinate, or fail to coordinate, their expectations.

The limits of transaction cost theory thus become evident when analyzing crowdfunding. Unlike firms or banks, crowdfunding platforms neither internalize transactions nor exercise control over contributors' decisions. The relationship between backers and project creators lacks both the asset specificity and governance structures that characterize hierarchical coordination.

3 Crowdfunding as a Pure Coordination Game

3.1 Moving Beyond Market and Organizational Coordination

The two dominant economic frameworks, neoclassical market theory and transaction cost-based organizational theory, fail to fully account for the coordination problem that defines crowdfunding. Neither price adjustments nor hierarchical governance structures explain how individuals voluntarily coordinate to fund projects characterized by uncertainty, interdependence, and absence of contractual obligations.

In crowdfunding, project creators set goals, deadlines, and rewards, but no single actor dictates resource allocation. Backers make voluntary, independent decisions to contribute based on their expectations about others' behavior. Unlike firms, where managers allocate resources through administrative authority, crowdfunding platforms serve merely as intermediaries facilitating interactions without assuming responsibility for the outcome.

This structure suggests that crowdfunding is governed primarily by the coordination of expectations among independent agents. It is here that game theory, and particularly pure coordination games offers a more accurate analytical framework.

3.2 The Logic of Pure Coordination Games

In a pure coordination game, players seek to align their actions to achieve a collectively desirable outcome. The payoffs depend not on conflicting interests but on whether agents

succeed in coordinating their strategies. Success hinges entirely on mutual expectations and shared beliefs.
The formal structure of a pure coordination game can be represented as:

Table 1 : Payoff Matrix for Crowdfunding as a Pure Coordination Game

	Others Contribute	Others Do Not Contribute
You Contribute	High payoff (success)	Low payoff (failure)
You Do Not Contribute	No cost, but missed opportunity	No cost, no benefit

Source : Based on standard payoff structures in coordination games (Schelling, 1960; Lewis, 1969).

The essential feature is the interdependence of decisions: each backer's optimal choice depends on their belief about the choices of others. In the absence of a centralized decision-maker or price adjustment mechanism, the problem becomes one of achieving mutual consistency of expectations.
This dynamic is central to crowdfunding: an individual is willing to contribute only if they believe others will also contribute sufficiently to reach the funding threshold.

3.3 Crowdfunding as a Threshold Public Good

Crowdfunding campaigns often follow an "all-or-nothing" model. The project succeeds only if the total contributions meet or exceed a predetermined funding threshold (T). This structure mirrors the well-known threshold public goods game:

- There are N potential contributors.
- Each contributor chooses whether to contribute c (a fixed amount) or nothing.
- The project succeeds if the sum of contributions ≥ T; otherwise, contributors are refunded.
- If successful, all contributors derive utility from the project's realization.

Let:

- U be the utility derived from project success.
- c be the contribution cost.
- p be the probability (subjective belief) that others will contribute sufficiently.

The expected payoff for contributing becomes:

$$E(\text{contribute}) = p(U) - c$$

The expected payoff for not contributing is simply:

$$E(\text{not contribute}) = 0$$

An individual will contribute if:

$$p(U) \geq c$$

Thus, contribution depends on the individual's belief that sufficient others will participate.
This formulation captures the strategic uncertainty inherent to crowdfunding: success requires agents to form expectations about the expectations of others, a problem of higher-order beliefs.

3.4 Equilibria in Crowdfunding Games

Coordination games often exhibit multiple equilibria:

1. Successful Coordination Equilibrium: Everyone believes others will contribute → widespread contributions → project succeeds.
2. Failed Coordination Equilibrium: Everyone doubts sufficient contributions → no one contributes → project fails.

These multiple equilibria arise from self-fulfilling prophecies: beliefs about others' behavior shape one's own behavior.
The fragility of coordination highlights the challenge for crowdfunding platforms and project initiators: they must generate common knowledge and focal points that allow backers to believe that success is attainable.

3.5 Platforms as Coordination Devices

Crowdfunding platforms incorporate several design features that help resolve the coordination problem by generating expectational convergence:

- Visible progress bars: Showing percentage of funds raised creates real-time feedback, signaling growing collective commitment.
- Deadlines: Introduce urgency and limit the window for coordination failure.
- Early backers: Act as focal points and trigger herd behavior.
- Social media integration: Amplifies signals through external networks.
- "All-or-nothing" rules: Reduce the risk of wasted resources and incentivize contributors to wait for social proof before committing.
- Platform reputation: Established platforms like Kickstarter or Ulule act as trust mechanisms, lowering the perceived coordination risk.

These tools do not function like price adjustments or hierarchical commands; instead, they act as expectational scaffolding that helps participants converge on a shared belief about project viability.

3.6 Empirical Stylized Facts Supporting Coordination Games

Empirical observations from numerous crowdfunding campaigns consistently reflect coordination dynamics:

- A large share of contributions occurs near deadlines, consistent with contributors waiting to observe others' behavior.
- Early contributions significantly increase the probability of success by triggering expectational cascades.
- Highly publicized projects with strong social networks succeed more often, not necessarily due to superior quality but due to stronger belief propagation.

These empirical patterns are difficult to reconcile with either neoclassical optimization or transaction cost governance but fit naturally within a coordination game framework.

3.7 Crowdfunding: Neither Market Nor Hierarchy

The table below summarizes the theoretical distinctions:

Table 2: Theoretical Comparison of Coordination Mechanisms

Feature	Neoclassical Market	Transaction Cost Organization	Crowdfunding Coordination
Resource Allocation	Via price mechanism	Via managerial decision	Via mutual expectations
Rationality	Instrumental, calculative	Bounded, opportunistic	Strategic, belief-dependent
Role of Uncertainty	Assumed away	Managed via hierarchy	Central to behavior
Nature of Interaction	Anonymous exchange	Hierarchical authority	Voluntary, expectation-driven
Coordination Mechanism	Market clearing	Organizational governance	Shared beliefs & focal points

Source : Based on threshold public goods games (R Mark I , 1988; Oliver, 1993).

Thus, crowdfunding constitutes a distinct coordination problem best captured through the lens of pure coordination games.

4 Implications of the Pure Coordination Game Framework

4.1 Theoretical Implications

Reconceptualizing crowdfunding as a pure coordination game has significant theoretical consequences for the understanding of collective financing phenomena. Unlike the neoclassical and transaction cost approaches, which rely respectively on price adjustments and organizational governance to achieve coordination, the coordination game perspective highlights the crucial role of belief formation and mutual expectations.

In crowdfunding, contributors do not optimize based solely on fixed prices or contractual assurances; rather, their decisions depend critically on their beliefs about how others will act. The key issue is not valuation of the project in isolation, but whether enough others believe in its success to justify one's own participation. Thus, expectational interdependence becomes the central coordination mechanism.

This perspective allows us to address several important questions that remain unresolved in existing theories:

- Why many high-quality projects fail despite offering attractive rewards (failure of expectation convergence).
- Why early contributions disproportionately influence campaign success (early contributors serve as focal points).
- Why deadlines and funding thresholds are critical design features (they structure belief formation and limit strategic waiting).

In this sense, crowdfunding resembles Schelling focal point problems (Schelling, 1960) more than either efficient markets or hierarchical firms. It is the existence of shared signals that allow dispersed individuals to converge on a mutually acceptable outcome.

Furthermore, this approach integrates aspects of convention theory (Hume, 1740; Lewis, 1969), where social rules emerge spontaneously from repeated interactions and shared expectations. As in conventions, contributors in crowdfunding establish behavioral norms over time, learning how much early support is necessary, how reputations form, and how to interpret platform signals.

4.2 Managerial Implications for Platform Design

Understanding crowdfunding as a coordination game also offers valuable insights for platform managers and entrepreneurs:

- Design of signaling mechanisms: Platforms must make campaign progress highly visible through real-time dashboards, percentage-funded indicators, and milestone alerts.
- Encouraging early contributions: Special rewards for early backers or seed funding by organizers can serve as coordination anchors.
- Deadline setting: Short deadlines may increase urgency but reduce information aggregation; longer deadlines allow belief adjustment but risk loss of momentum.
- Leveraging social networks: Campaigns must harness external social media to broadcast signals widely and accelerate belief propagation.
- Facilitating common knowledge: Platforms can use endorsements, expert reviews, or platform-based vetting to foster initial trust, lowering the burden of individual belief formation.

By explicitly designing for belief convergence, platforms can actively facilitate the self-organizing coordination process that underlies campaign success.

4.3 Policy Implications for Regulators

Finally, the coordination game perspective has important policy implications. Traditional regulatory concern; focused on market failures, fraud prevention, or governance transparency, do not fully address the unique challenges of crowdfunding.

Since crowdfunding depends fundamentally on belief dynamics, regulators may focus on:

- Information transparency: Ensuring that campaign data, risks, and financial needs are clearly disclosed to support informed belief formation.
- Signal integrity: Preventing false signaling (fake backers, inflated progress reports) that might manipulate expectations unfairly.
- Platform accountability: Holding platforms responsible for the integrity of their coordination mechanisms without imposing rigid controls that undermine voluntary coordination.

Rather than imposing heavy-handed oversight, policymakers might focus on enabling trustworthy coordination environments, where collective belief formation can occur safely, transparently, and credibly.

Conclusion

The rapid emergence of crowdfunding has raised fundamental questions about the nature of economic coordination in the digital age. While much of the existing literature has attempted to interpret crowdfunding through the well-established frameworks of neoclassical market

theory and transaction cost organizational theory, these models remain insufficient to capture the essence of how crowdfunding functions in practice.

The neoclassical framework, rooted in the autonomous optimization of rational agents under perfect information, cannot accommodate the interdependent, expectation-driven behaviors that characterize crowdfunding campaigns. Price mechanisms alone do not explain why individuals choose to contribute or abstain, nor why campaigns often experience nonlinear dynamics as they approach their funding thresholds.

Similarly, transaction cost theory, with its focus on bounded rationality, opportunism, and hierarchical governance, does not align with the decentralized, voluntary, and non-coercive nature of crowdfunding platforms. In contrast to firms or traditional financial intermediaries, crowdfunding platforms do not assume control over resource allocation; rather, they facilitate interactions without governing outcomes.

This paper has argued that crowdfunding is more accurately conceptualized as a pure coordination game, where mutual expectations, shared beliefs, and collective focal points determine success or failure. Contributors are engaged not in price optimization or contractual negotiation, but in a strategic dance of belief formation, where each agent's willingness to act depends on confidence that others will do the same. The existence of multiple equilibria (success or failure) emerges from this interdependence.

By adopting the coordination game framework, we gain a clearer theoretical understanding of the mechanisms underpinning crowdfunding dynamics. This approach highlights the central importance of platform design features that foster transparency, create credible signals, and support belief convergence. It also opens new avenues for public policy focused on enabling safe, trustworthy coordination rather than imposing rigid market or governance structures.

More broadly, this theoretical shift invites future research to explore coordination games in other emerging domains of collective digital behavior, where decentralized actors face uncertainty yet achieve remarkable cooperation through shared expectations. Crowdfunding thus stands not as a deviation from economic theory, but as an opportunity to expand its boundaries to better capture the richness of modern collective action.

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