

THE TRANSFORMATION OF BANKING INTERMEDIATION THEORY IN THE CONTEXT OF FINTECH AND DECENTRALIZED FINANCE (DEFI)

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ABSTRACT

This study aims to conceptualize a new theoretical framework for financial intermediation in response to the rise of Financial Technology (FinTech) and Decentralized Finance (DeFi), which have introduced structural and functional changes to the traditional role of banks. Classical intermediation theory, which emphasizes delegated monitoring, liquidity transformation, and maturity transformation, is increasingly insufficient to explain emerging hybrid and disintermediated financial systems. This research adopts a qualitative library-based method, using thematic literature analysis from peer-reviewed academic journals, institutional reports, and policy papers published between 2017 and 2025. The findings reveal that intermediation functions are no longer confined to traditional institutions; instead, they are distributed across smart contracts, decentralized protocols, and algorithmic platforms. A key novelty of this study lies in the articulation of “protocolised intermediation,” a concept that captures the convergence of centralized banking and decentralized architectures into hybrid financial models. The analysis also introduces a dual-axis framework to categorize intermediation based on levels of decentralization and functional transformation. Furthermore, the research synthesizes recent insights on risk governance, regulatory arbitrage, and digital trust, positioning them as critical variables in the theoretical evolution of intermediation. In conclusion, the study offers a reconceptualized understanding of intermediation theory, aligning it with the realities of the post-classical, algorithm-driven financial ecosystem. This contribution is expected to support further academic exploration and inform global financial policy debates.

Keywords: *Financial intermediation, FinTech, DeFi, protocolized intermediation, theoretical framework*

INTRODUCTION

The classical theory of financial intermediation posits that financial intermediaries exist to reduce transaction costs and mitigate informational asymmetries between surplus and deficit agents, thereby facilitating efficient allocation of capital and liquidity transformation (Mitchell, 2005). Financial intermediaries such as banks act as delegated monitors, enabling savers to rely on the intermediary to screen and monitor borrowers, thereby alleviating problems of adverse selection and moral hazard (Diamond & Dybvig, 1983). These institutions also perform maturity transformation—depositors can withdraw funds on demand while the bank makes long-term loans—and size transformation by pooling many small deposits to make larger loans (Freixas & Rochet, 2008). Over time, the dominant theoretical frameworks have been challenged by deeper capital markets and technological innovation, but the core role of intermediaries



as liquidity providers and risk-transformers remains central (Diamond & Rajan, 2001). As resources become more mobile and information frictions decrease, the question arises whether intermediation remains valuable, yet empirical evidence shows that intermediaries continue to grow in importance (Wagner, 2011). Financial intermediation theory thus evolves to incorporate risk trading, participation costs, and delegated monitoring beyond simply cost reduction and information asymmetry (Mitchell, 2005). According to the Nobel Prize Foundation, intermediaries remain critical for capital allocation and systemic stability in the economy (Bernanke, Diamond & Dybvig, 2022). This foundational theory sets the stage for understanding how new architectures like fintech and decentralized finance may disrupt or transform the traditional intermediary model.

In contrast, the theoretical paradigm of decentralised finance (DeFi) and fintech-driven intermediation explores how emerging digital platforms and smart contract protocols challenge the intermediary role by enabling peer-to-peer financial services without a conventional central actor (Chiu, Koepl, Yu & Zhang, 2023). DeFi enables financial services such as lending, borrowing, derivatives, and asset management to be performed via open, permissionless blockchain networks, thereby bypassing traditional deposit-taking banks and other intermediaries (Bestas, 2023). From an economic theory perspective, DeFi raises questions about the necessity of intermediaries when transaction costs, information asymmetries, and monitoring can potentially be addressed algorithmically or via protocol governance (Bank of Canada Staff, 2023). Moreover, fintech innovations blur firm boundaries and enable unbundling of financial services, reducing transaction frictions and enabling new entrants and business models (Feyen, Frost, Gambacorta, Natarajan & Saal, 2021). The replacement or transformation of intermediation functions by algorithms and decentralised protocols suggests a re-conceptualisation of the intermediary role, from a value-adding middleman to a platform enabler or disintermediated architecture (Moura, 2018). This lens also compels theorists to revisit the strategies of scale, scope, network effects, and regulatory implications in the digital age (Feyen et al., 2021). Given this shift, the concept of banking intermediation theory must be extended to account for decentralised architectures and the potential re-intermediation via protocols rather than traditional banks (Cetorelli, Cisternas & Sarkar, 2021). In sum, understanding this theoretical evolution is essential for examining how banking intermediation theory transforms in the context of fintech and DeFi.

The first major problem is that the integration of Intermediation Theory with the emergence of FinTech and Decentralized Finance (DeFi) has produced significant risk-asymmetries for traditional banking institutions. FinTech innovations have been shown to increase operational, credit, liquidity and market risk within banks by altering their business models and creating new sources of exposure (Liu, 2025). The displacement of traditional intermediation channels means banks may lose their delegated monitoring advantage while simultaneously taking on new tech-driven risks (Murinde, 2022). Shadow banking behaviour enabled by FinTech platforms allows risk

to accumulate outside the standard regulatory perimeter, undermining banking stability (Buchak, 2017). Moreover, the rapid pace of digital transformation in banking has often lacked a coherent theoretical framework, leading to gaps in risk modelling and oversight (Liu, 2025). As banks adopt FinTech intermediated services, the assumptions underlying classic intermediation theory — such as liquidity transformation and information asymmetry mitigation — are challenged (Boot, 2020). Empirical research suggests that banking regulation struggles to keep pace with FinTech expansion, resulting in regulatory arbitrage and potential instability (Frost et al., 2019). Consequently, the mismatch between traditional intermediation theory and the evolving FinTech-enabled ecosystem constitutes a core problem for both theory and practice.

The second problem lies squarely in the decentralised architecture of DeFi, which diverges sharply from traditional intermediary-based models yet remains insufficiently integrated into existing theoretical frameworks. DeFi protocols rely on smart contracts, blockchain governance and peer-to-peer architectures, but carry significant vulnerabilities including protocol risk, oracle failures, governance attacks and systemic contagion potential (Capponi et al., 2023). Governance structures in many DeFi projects remain under-developed or heavily concentrated, undermining the idealised decentralised model and introducing agency risk (Ma et al., 2023). The regulatory environment for DeFi remains fragmented globally, creating uncertainty and limiting the ability of theoretical models to anticipate institutional behaviour and systemic outcomes (Salami, 2021). Further, the disintermediation effect in DeFi challenges the validity of intermediation theory's core concepts such as delegated monitoring and liquidity transformation (Kaja & Martino, 2021). From a banking intermediation perspective, the coexistence of traditional banks and DeFi protocols creates hybrid intermediation structures that lack clear theoretical categorisation (Omarini, 2024). The mismatch between established intermediation theory and the radically new architecture of DeFi generates conceptual, regulatory and stability-related issues that require deeper theoretical refinement.

Despite the growing body of literature on Financial Intermediation Theory and the expanding empirical work on FinTech and Decentralized Finance (DeFi), there remains a significant gap in the integration of these concepts into a unified theoretical framework that captures how banking intermediation is fundamentally transformed in the hybrid ecosystem of FinTech-enabled banks and protocol-driven DeFi platforms (Kou et al., 2025). While existing research has examined FinTech's impact on bank performance (Xu et al., 2025) and governance issues in DeFi applications (Ma et al., 2023), few studies have explicitly addressed how classical intermediation functions such as delegated monitoring, maturity transformation, and liquidity transformation are re-configured or displaced in the age of algorithmic and decentralised architectures. Moreover, regulatory and stability challenges identified by institutions like the International Monetary Fund (2022) show that FinTech and DeFi are eroding traditional perimeters of bank regulation, yet the theoretical implications for intermediation models remain underdeveloped. The lack of a coherent conceptual model means that researchers

and practitioners struggle to account for the hybrid forms of intermediation emerging — where banks, FinTechs and DeFi protocols may coexist or compete — and how these forms should be theorised. Therefore, this study seeks to fill that void by proposing a refined theoretical lens for banking intermediation in the context of FinTech and DeFi, thereby contributing to both academic theory and practical understanding.

This research offers a novel conceptual integration by reinterpreting classical Banking Intermediation Theory through the dual lens of FinTech disruption and the emergence of Decentralized Finance (DeFi). Unlike previous studies that focus on empirical performance or regulatory aspects, this study formulates a theoretical model that repositions the role of intermediaries within algorithmically-governed financial systems. It uniquely combines the logic of delegated monitoring with the structural mechanisms of smart contracts and blockchain governance. By mapping the evolution of intermediation functions — from centralized banks to disintermediated protocols — the research identifies hybrid forms of financial intermediation not yet clearly defined in academic literature. Furthermore, it introduces the concept of “protocolized intermediation” as a new layer in financial theory. This perspective is rarely explored in existing theoretical discourse. As such, the study contributes original insights to the conceptual development of banking and finance in the digital era.

The primary objective of this research is to develop a theoretical framework that explains the transformation of banking intermediation functions in response to the proliferation of FinTech and DeFi. Specifically, the study aims to identify and analyze how traditional concepts such as liquidity transformation, risk-sharing, and delegated monitoring are being redefined in digitally native financial systems. It also seeks to explore the structural and governance differences between centralized and decentralized intermediaries. By doing so, the research provides a foundation for evaluating the relevance and adaptability of classical intermediation theory in a rapidly evolving financial ecosystem. Another objective is to offer guidance for future empirical work and regulatory formulation through a solid theoretical lens. This will help bridge the gap between technological advancement and financial theory. Ultimately, the study aspires to contribute to more inclusive and updated academic models of financial intermediation.

RESEARCH METHOD

For this research, a library-research (pustaka) method will be employed, which involves systematically reviewing and synthesising existing scholarly literature rather than collecting primary empirical data. This method allows the researcher to explore and critically evaluate theoretical frameworks, prior studies, and conceptual developments relevant to banking intermediation, fintech, and decentralized finance (DeFi). According to Paré, Trudel, Jaana, & Kitsiou (2015), literature review is essential for “generating new frameworks and theories” and for determining the extent to which a specific research area reveals interpretable trends or patterns. Library research also involves identifying, selecting and analysing secondary sources such as peer-reviewed journal articles, books, conference papers, regulatory reports, and recognised white papers to map how classical

intermediation theory is being transformed in the fintech/DeFi context. Reliability and validity are ensured by focusing on recent, high-quality academic publications and authoritative sources as recommended by university library guides. The researcher will define inclusion and exclusion criteria for literature (e.g., date range, relevance to intermediation theory, fintech/DeFi dimension), conduct comprehensive database searches, utilize citation-tracking techniques, and then synthesise findings into thematic categories. This approach provides a solid conceptual foundation and identifies gaps in existing theory, thereby aligning with the objective of proposing a refined theoretical model for banking intermediation in the digital era.

The data collection process in this library research relies on secondary sources obtained through systematic literature searches in credible academic databases such as Scopus, Web of Science, JSTOR, and Google Scholar. The researcher will establish clear inclusion criteria, including relevance to banking intermediation theory, FinTech, and DeFi; publication years between 2017–2025; and publication in peer-reviewed journals or authoritative institutional reports. Keywords such as “banking intermediation,” “FinTech disruption,” “DeFi theory,” and “protocol-based finance” will guide search queries. A source tracking matrix will be developed to document retrieved studies, their objectives, methods, findings, and relevance. Regulatory reports from institutions such as the IMF, BIS, and central banks will also be included for triangulation. Literature will be filtered using citation chaining and snowballing techniques to uncover seminal and cutting-edge works. All selected documents will be stored and managed using reference software such as Zotero or Mendeley. This systematic approach ensures that the collected data reflects both theoretical and practical dimensions of the research topic.

The data analysis process follows a qualitative, thematic analysis approach, which involves organizing and interpreting the reviewed literature into conceptual categories relevant to the study's focus. Braun and Clarke's (2006) six-phase framework for thematic analysis—familiarization, coding, theme development, theme review, defining themes, and reporting—is adopted to ensure analytical rigor. Each source will be coded to identify theoretical contributions, conceptual gaps, and positions related to intermediation theory, FinTech models, and DeFi structures. The themes will include: transformation of intermediation functions, governance mechanisms in DeFi, hybrid financial structures, and regulatory reinterpretations. These themes will be compared against classical banking intermediation assumptions to identify where shifts, disruptions, or theoretical expansions occur. Analytical memos will be written throughout the process to document the evolving understanding of theoretical intersections. Data will be synthesized narratively to build a conceptual map and, ultimately, a proposed theoretical model. This enables the research to derive meaningful conclusions grounded in diverse yet interconnected scholarly perspectives.

RESULTS AND DISCUSSION

The first major finding reveals that traditional banking intermediation functions are being structurally reshaped by FinTech innovations and decentralized finance (DeFi)

protocols. Classical functions such as liquidity and maturity transformation, historically managed by centralized institutions, are now replicated through token pools and algorithmic smart contracts. This transformation challenges the foundational assumptions of intermediation theory, particularly around trust and central authority. Table 1 shows a comparison between traditional and emerging models, highlighting the shift from human-based delegated monitoring to code-based decision systems. The persistence of regulatory gaps in DeFi environments also reflects a shift in how compliance is enforced. These developments signal a paradigm shift, where the core purposes of intermediation persist, but the actors and mechanisms delivering them are increasingly digitized and decentralized (Feyen et al., 2021; Liu, 2025).

Table 1: Comparison of Classical and Emerging Intermediation Functions

Function	Traditional Banks	FinTech/DeFi
Liquidity Transformation	High – via deposit-loan model	Token-based liquidity pools
Maturity Transformation	Enabled through term mismatch	Smart contracts with fixed terms
Delegated Monitoring	Performed by bank officers	Code-based governance and DAOs
Risk Management	Formal frameworks, Basel norms	Algorithmic or peer-reviewed models
Regulatory Compliance	Centralized, enforced by regulators	Often fragmented, jurisdiction-dependent

Secondly, thematic analysis of recent literature uncovers five dominant conceptual clusters that illustrate the evolving discourse in financial intermediation. Key themes include hybrid intermediation models, disintermediation via protocols, governance risks in decentralized systems, and theory adaptation. The hybridization theme reflects the coexistence of traditional banks and FinTechs collaborating or competing within shared financial spaces. Meanwhile, the rise of DAOs and self-governing financial platforms introduces new theoretical challenges, particularly regarding principal-agent problems and systemic risk. Table 2 summarizes the key themes and representative authors. These thematic clusters not only extend the theoretical debate but also expose conceptual blind spots in classical models that fail to account for algorithmic, protocol-driven environments (Buchak et al., 2017; Ma et al., 2023).

Table 2: Thematic Clusters from Literature Review

Theme	Key Authors/Studies	Core Findings
Hybrid Intermediation Models	Feyen et al. (2021); Liu (2025)	Traditional and digital systems now coexist
Disintermediation via Protocols	Chiu et al. (2023); Capponi et al. (2023)	Protocol-based finance bypasses intermediaries
Governance and Risk Structures	Ma et al. (2023); Capponi et al. (2023)	DAOs pose novel risks and power imbalances

Regulatory Arbitrage	Buchak et al. (2017); Salami (2021)	FinTech/DeFi operate outside legacy frameworks
Theory Adaptation	Mitchell (2005); Kou et al. (2025)	Classic theory needs reconceptualization

Lastly, the findings confirm a theoretical vacuum in the existing literature when it comes to explaining the full implications of protocol-based finance on intermediation roles. Most current theories still presuppose the necessity of centralized intermediaries, ignoring the operational logic of distributed ledger technologies. The literature reviewed by Kou et al. (2025) and Mitchell (2005) points to a delayed theoretical adaptation, where empirical innovation outpaces conceptual frameworks. While new systems perform similar economic functions, their institutional logics and risk profiles differ significantly. As shown in both tables, although financial intermediation remains functionally relevant, its delivery mechanisms are fundamentally evolving. This suggests that intermediation theory must evolve — not merely by incorporating new actors — but by redefining the very architecture of financial coordination. The research thus underscores the urgent need for a post-classical theory of financial intermediation that reflects the realities of decentralization and automation.

Recent literature on the evolution of Financial Intermediation Theory highlights how traditional frameworks must adapt to the disruption brought by Financial Technology (FinTech). For example, Kou et al. (2025) demonstrate that FinTech innovations such as blockchain, AI and machine learning are reshaping the credit-intermediation function of banks, challenging the delegated monitoring role (Kou et al., 2025). Berger (2024) offers analysis that competition in intermediation services has intensified due to FinTech entry, forcing incumbent banks to rethink their business models (Berger, 2024). Similarly, Bogaard (2024) argues that while FinTech has successfully unbundled banking services, the dominant bundled model retains strengths, which means theoretical reinterpretation is needed (Bogaard, 2024). Omarini (2020) highlights the emergence of new services provided by FinTech and TechFin firms that significantly alter customer interactions and value chains (Omarini, 2020). Meanwhile, early studies such as Thakor (2020) explore the interface between fintech and banking broadly, but call for updated theory to account for platform-based structures (Thakor, 2020). This body of work collectively underscores that the classical intermediation model—based on centralized banks performing maturity, size and risk transformations—faces fundamental reinterpretation rather than mere incremental change. Thus, the theoretical field is shifting from viewing intermediaries as static bridging entities toward seeing them as dynamic platforms subject to technological and structural disruption.

In parallel, recent literature focusing specifically on Decentralized Finance (DeFi) explores how intermediation theory is being challenged by permissionless protocols, smart contracts and decentralised governance mechanisms. Azar (2024) investigates how information asymmetries manifest differently in DeFi intermediation chains and how arbitrage opportunities and transparency trade-offs emerge (Azar, 2024). Kumar (2025)

provides a comprehensive review of the DeFi ecosystem, highlighting the need for an analytical framework to evaluate structural changes in intermediation roles (Kumar, 2025). Oben (2024) reports that while DeFi promotes inclusion and transparency, significant risks in security, regulatory ambiguity and volatility remain unaddressed in theory (Oben, 2024). Zeiß (2024) examines how banks are re-intermediating into crypto-asset ecosystems, creating hybrid models that combine traditional and decentralised features (Zeiß, 2024). Capponi, Iyengar & Sethuraman (2023) analyse how DeFi protocols introduce new governance risk categories—consensus, oracle failures, frontrunning—that the old intermediation theory does not cover (Capponi et al., 2023). These developments suggest that intermediation theory must incorporate governance, algorithmic trust and decentralised architectures to remain relevant. In sum, the literature signals a paradigmatic shift: from banks as sole intermediaries to a landscape where intermediative function can be performed by protocols, platforms or hybrid structures, demanding fresh theoretical conceptualisation.

This research introduces a novel conceptual framework by integrating classical banking intermediation theory with the emergent dynamics of FinTech and Decentralized Finance (DeFi) platforms, thereby shifting the analytical focus from the intermediary institution to the algorithmic and protocol-based architecture of value transformation (Omarini, 2024). While existing studies tend to treat FinTech and DeFi as disruptive phenomena in isolation, this study uniquely positions them within the intermediation function—liquidity transformation, maturity transformation, and delegated monitoring—to show how these functions are re-configured when intermediaries become disaggregated (Gramlich et al., 2023). It further contributes by articulating the concept of “protocolised intermediation”, a bridging construct that captures the hybrid forms emerging where traditional banks collaborate or compete with algorithmic platforms (Momtaz, 2024). Another element of novelty resides in the normative dimension: the research doesn’t just describe what is changing, but proposes how a post-classical intermediation theory could be formed to account for trust-minimised, decentralised architectures (Del Sarto, 2025). Such theoretical advancement fills the epistemic gap between empirical fintech/decentralisation trends and classical models that assume centralised, human-mediated intermediation (Adamyk, 2025). The study also offers a refined typology of intermediation roles in the digital era, distinguishing between “active protocol intermediary”, “embedded bank intermediary”, and “pure decentralised intermediary” modes. By doing so, it expands the conceptual vocabulary available to researchers and practitioners. Hence, the novelty lies both in the analytical integration and in the theoretical reconstruction of intermediation for a digital finance ecosystem.

In terms of methodological contribution, this study leans on a structured literature review that emphasises the convergence of intermediation theory, FinTech business models, and DeFi governance mechanisms—a cross-disciplinary synthesis seldom attempted with such breadth (Ismail, 2024). Unlike many prior literature reviews which focus solely on FinTech adoption or DeFi risk, this research explicitly targets the intermediation role as the analytical unit and traces how it evolves across institutional,

technological, and regulatory layers (Colovic, 2024). The novelty further lies in the extension of the thematic taxonomy to incorporate “regulation-embedded protocol intermediation” as a distinct category, recognising that regulation itself becomes a mediator in hybrid finance systems. The research also introduces a dual-axis framework measuring intermediation change along *institutional centralisation* $\rightleftharpoons$ *decentralisation* and *functional persistence* $\rightleftharpoons$ *functional transformation*, enabling visual mapping of emerging models. Moreover, by focusing on recent empirical studies (2023-2025) such as DeFi intermediation chains and FinTech inclusion trajectories, the study ensures that the theoretical reconstruction is grounded in the most current realities of financial innovation (Farhani, 2025; Del Sarto, 2025). As a result, the study not only proposes new theory, but also advances the debate on how financial intermediation will be mediated in the coming decade.

This research offers significant global relevance as it proposes a modernised theoretical lens to understand the evolving nature of financial intermediation in an increasingly digitised and decentralised global economy (Kou et al., 2025). By bridging classical banking theory with the disruptive mechanisms of FinTech and DeFi, the study provides policymakers and international financial institutions with a conceptual framework to guide regulatory innovations and institutional reforms (Feyen et al., 2021). The findings also benefit emerging markets by outlining inclusive models of intermediation that bypass traditional infrastructural barriers through digital platforms (Chiu et al., 2023). As financial systems across borders increasingly face convergence of traditional and decentralised architectures, this study helps clarify systemic implications and governance challenges (Capponi et al., 2023). Global regulators such as the BIS and IMF can utilise the proposed typologies to better understand hybrid financial ecosystems (Buchak et al., 2017). Moreover, scholars worldwide can adapt this model as a foundation for further comparative studies across regions and jurisdictions (Mitchell, 2005). In the era of algorithmic finance, such theoretical reformulation is necessary to anticipate future global crises and inform the next generation of cross-border financial cooperation (Bernanke et al., 2022). Thus, the research holds global impact not only in theory, but also in shaping practical, systemic-level understanding of modern financial intermediation.

CONCLUSION

Based on the literature analysis, this study concludes that the classical theory of financial intermediation must be redefined to reflect the structural and functional shifts brought by FinTech and Decentralized Finance (DeFi). The core functions of intermediation—liquidity transformation, maturity transformation, and delegated monitoring—are no longer exclusive to traditional banks but are now replicated and restructured through algorithmic and protocol-based systems. The emergence of hybrid intermediation models, along with the rise of protocolised finance, reveals the inadequacy of existing frameworks in capturing new risks and governance dynamics. FinTech enables efficiency and reach, while DeFi introduces decentralised alternatives with distinct

theoretical challenges. Regulatory gaps, evolving trust mechanisms, and decentralised governance further complicate the intermediation landscape. Therefore, this research contributes by proposing a reconceptualised lens of intermediation that accounts for both institutional persistence and digital disruption. Ultimately, the study lays a theoretical foundation for further exploration of financial systems in the digital era.

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