Before Money: Redesigning Data Debt as the Foundation for Fintech Futures

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This paper reconceptualises digital data exchange through the lens of debt theory, revealing how fintech users enter ongoing, asymmetric obligations when engaging with financial platforms. Drawing on Graeber's anthropological analysis of debt as fundamentally social, the paper explores how the European Union's PSD2 regulation—while enabling fintech innovation—largely failed to address power imbalances in data relationships. The paper identifies design patterns that perpetuate extractive data practices in current financial technologies, from obscured value exchange to dependency creation. Building on this critique, the paper introduces the design opportunity of Fiduciary AI Systems that invert conventional extraction models by allowing users to "hire" trusted AI tools that analyse financial data explicitly on their behalf. This approach transforms indefinite data obligations into bounded personal and professional relationships with clear temporal limits. By reimagining financial data relationships through the debt lens, we provide both critical insights and a constructive design direction for addressing power asymmetries in digital financial systems.

CCS CONCEPTS • **Human-centered computing** → **Interaction design theory, concepts and paradigms; Interaction design process and methods; HCI theory, concepts and models;** • **Information systems** → *Information systems applications*; • **Social and professional topics** → *Computing / technology policy*; • **Computing methodologies** → *Artificial intelligence*; • **Applied computing;**

Additional Keywords and Phrases: Debt, Money, PSD2, Fintech, Design

1 INTRODUCTION

The digital economy has fundamentally altered how value is represented, exchanged, and accumulated. While traditional economies operate primarily through monetary transactions, digital platforms have created systems where personal data functions as a form of payment. When users access "free" digital services, they enter exchanges where their data—behavioral patterns, preferences, social connections—operates as currency. This transformation raises profound questions about how we conceptualise economic relationships in digital contexts [1, 21].

David Graeber's anthropological theory of debt provides a compelling framework for examining this shift. Graeber argues that debt is not merely a financial arrangement but a fundamental social relationship with moral dimensions that predates formal currency systems [9]. If debt is indeed the primary organising principle of economic systems, how might we understand the digital economy where data has become a primary representation of value?

This paper proposes that digital economies establish new forms of debt relationships where data operates as both medium of exchange and obligation. When users "pay" with their data, they enter ongoing, often undefined relationships with platforms that bear striking resemblances to traditional debt structures [15]. By reconceptualising digital exchange through this lens, we reveal power dynamics that shape design practices in financial technologies and identify potential interventions that might create more equitable digital futures.

Fintech by design presents a unique opportunity to address these problematic data debt relationships. As financial technology increasingly mediates economic activities, designers have the ability to create alternative models that could ameliorate or even reverse extractive data practices. While much of the digital economy has normalised indefinite data extraction, Fintech stands at a critical juncture—particularly in regulatory environments such as 'Open Banking' and the European Union's PSD2 framework—where deliberate design interventions could establish more equitable arrangements [8, 19].

Financial interactions carry rich contextual information about users' lives, social connections, values, and needs. Rather than treating this data merely as an asset to extract, we propose that fintech design can establish transparent, time-bounded relationships where data serves user needs without creating perpetual obligations. By reimagining how Fintech systems handle data through approaches like Fiduciary AI Systems, designers can create models that prioritise user agency and temporal boundaries while still deriving valuable insights. These alternative approaches could potentially influence broader digital economy practices beyond financial technologies[11, 12].

2. DATA AS DEBT: KEY THEORETICAL INSIGHTS

Graeber's anthropological examination of debt reveals several insights directly applicable to digital contexts. First, debt relationships predate formal currency systems, originating as social obligations rather than financial arrangements. Second, debt has historically been moralised, with economic obligations framed as moral responsibilities. Third, debt creates asymmetric power relationships between creditors and debtors that are maintained through various forms of coercion. Finally, unsustainable debt accumulation has historically led to either debt cancellation (jubilees) or social upheaval [9].

When applied to digital economies, these insights reveal striking parallels. Digital platforms establish ongoing obligations that extend far beyond discrete transactions. These relationships feature power asymmetries where platforms dictate terms, possess superior information, and maintain the ability to unilaterally modify agreements [14]. The "payment" extracted through data collection lacks clear boundaries or termination points, creating open-ended obligations more similar to debt bondage than equitable exchange [4].

While traditional debt is denominated in currency, data debt involves the quantification and extraction of human experience itself. Activities like social interaction, emotional expression, and physical movement become sources of value extraction [13]. This expansion of what can be quantified and exchanged represents a significant evolution in how economic relationships are structured. Just as Graeber demonstrated that debt systems involve moral judgments and social control, data-based debt similarly moralises participation—users who refuse to "pay" with their data face exclusion from digital spaces increasingly essential to modern life [17].

3. OPEN BANKING AND THE MISSED OPPORTUNITIES OF PSD2

The European Union's Payment Services Directive 2 (PSD2) provided a foundation for both the potential and limitations of current approaches to digital economies. Implemented in 2018, this regulatory intervention fundamentally transformed European banking by mandating that financial institutions open their data and payment infrastructure to third parties with user consent [8]. It's crucial to recognise that the explosive growth of European Fintech over the past several years stems directly from this regulatory decision—not merely from market-driven innovation or technological development [20].

PSD2 created the legal and technical foundation upon which much of Europe's Fintech ecosystem now stands. Companies like Revolut, N26, Klarna, and Monzo leveraged this regulatory framework to challenge traditional banking models [5]. Payment processors, financial management apps, and embedded finance solutions proliferated specifically because regulation mandated data access that would have been impossible in previous regulatory regimes.

Despite catalysing an entire industry, PSD2's implementation has largely failed to address the fundamental power asymmetries inherent in data debt relationships. While it liberated transaction data from banking silos, it primarily transferred data debt relationships from banks to Fintech companies. Instead of owing data to just one institution, users now potentially owe it to multiple third parties, often with less regulatory oversight than traditional banks [14].

What makes PSD2 particularly relevant to our debt framework is the missed opportunity to reconceptualise value itself. Every financial transaction carries contextual meaning beyond monetary exchange—where we shop, when we spend, what we purchase—creating a rich data layer that could serve personal insight rather than extraction [16]. Transaction data reveals not just individual behavior but social relationships, connecting to Graeber's notion of debt as fundamentally social rather than merely financial [9].

The theoretical potential of PSD2 included the development of services valuing aspects beyond money—environmental impact, community benefit, or health outcomes [22]. While innovative applications have emerged, mainstream implementation has largely replicated extractive models under the guise of user empowerment [15]. This pattern reveals how even progressive regulation can be co-opted to reproduce existing power dynamics when the underlying conceptual framework—in this case, the nature of value and debt—remains unexamined.

4. DESIGN PATTERNS THAT PERPETUATE DATA DEBT

Current digital economic design practices frequently reinforce and intensify data debt relationships. Several common patterns deserve particular scrutiny:

1. Obscured Value Exchange: "Free" service models deliberately obscure the true cost of participation, creating what appears to be costless access while establishing indefinite extraction rights. Terms of service and privacy policies function as debt contracts that few read but most "consent" to, establishing terms that can be unilaterally modified by platforms [4].
2. Continuous Extraction Mechanics: Infinite scroll, algorithmic feeds, and engagement metrics create psychological inducements to maximise data generation [7]. Unlike discrete financial transactions, these mechanics establish continuous extraction with no clear boundaries or termination points.
3. Exit Barriers: Platforms deliberately increase the cost of leaving by making data export difficult, tying social relationships to proprietary systems, and creating psychological switching costs [1]. These barriers function similarly to early loan repayment penalties in traditional debt contexts.
4. Opaque Valuation: While financial debtors generally understand the principal and interest rates of their obligations, data debtors operate with minimal transparency regarding what data is collected, how it is valued, or how it will be used [14]. This informational asymmetry creates significant power imbalances that benefit institutional actors.
5. Dependency Creation: As essential services—from job applications to healthcare—migrate to digital platforms, non-participation becomes increasingly untenable [2]. This necessity creates forms of structural coercion that resemble historical debt enforcement through access restriction.

5. DESIGN OPPORTUNITY: FIDUCIARY AI SYSTEMS

Financial data offers unprecedented insights into users' lives, yet current Fintech models typically extract this data for institutional benefit rather than user empowerment. I propose Fiduciary AI Systems as a design opportunity that inverts this extractive relationship.

These systems would enable users to "hire" trusted AI tools that analyse financial data explicitly on the user's behalf and under their terms. Unlike conventional models where platforms indefinitely collect data, these fiduciary systems would implement the core principles from our design framework: temporal boundaries on data access, transparent value visualisation, and graduated permission models.

Applications could span multiple domains: analysing spending patterns to identify health and wellbeing opportunities; assessing transactions' environmental impact to suggest sustainable alternatives; or recognising social connection patterns to counter isolation. In each case, insights remain user-owned rather than becoming corporate assets.

This approach directly addresses power asymmetries in current data relationships by establishing clear boundaries, purposes, and termination rights. It creates data relationships resembling professional services rather than indefinite debt obligations. By designing financial tools that serve as genuine fiduciaries, we can establish models that might later influence broader digital economy practices, transforming how value flows in data relationships while preserving user agency and privacy.

7. CONCLUSION: REIMAGINING DIGITAL VALUE EXCHANGE

The transition from money to data as a primary representation of value has transformed economic exchange without eliminating the fundamental social relationships that underlie all economic systems. By applying Graeber's anthropological analysis to contemporary digital economies, this paper has sought to reveal how platforms create persistent social obligations that mirror traditional debt while introducing novel characteristics specific to digital contexts [9, 21].

This reconceptualisation has profound implications for fintech design. Rather than treating financial technologies as neutral tools for individual resource management, designers must recognise that they are creating systems that structure power relationships with significant social consequences [15]. Addressing the inequities of digital economies requires moving beyond consumer protection frameworks toward approaches that directly confront the asymmetric power dynamics established through data extraction.

The Fiduciary AI Systems design opportunity proposed here represents an initial step toward financial technologies that establish more equitable data relationships. By inverting the conventional extraction model, this approach allows users to "hire" trusted tools that analyse financial data explicitly on their behalf with clear temporal boundaries. This transforms indefinite data obligations into bounded professional relationships where value primarily flows to users rather than platforms.

Future research should focus on developing and testing concrete implementations of this approach, evaluating its effectiveness in creating more balanced power relationships in financial contexts. By bringing together critical theory and design practice, we can move beyond critique to construct viable alternatives to current extractive models in fintech that might eventually influence broader digital economy practices.

As the HCI community eagerly addresses the "Future of Money," this paper suggests a moment of pause: perhaps we first need to understand money's origin story. If Graeber is correct that debt precedes money—not the other way around—then to design truly equitable financial futures, we must first reckon with the debt relationships already embedded in our digital present. The future of money begins with acknowledging its past.

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