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A Crisis of Data? Transparency Practices and Infrastructures of Value in Data Broker Platforms

Matthew Zook and Ian Spangler

Department of Geography, University of Kentucky, USA

Despite the prevalence of transparency discourses in economic life (e.g., postcrisis socioeconomic reforms), scholarship is just beginning to analyze how these discourses produce new relations between market actors in platform economies. In this article, we argue that in the context of financial markets and the political economy of data, transparency functions as a discursive construction that creates suitable conditions for the manufacture and extraction of data as an asset. First, we examine the role of transparency and opacity in various understandings of the 2007–2008 global financial crisis (GFC). In doing so we link the emergence of FinTech firms to a careful ex post facto reconstruction of the GFC as what we term a "crisis of data." Then, through problematizing the idea that transparent economic relations necessarily lead to greater accountability, equity, or public good, we argue that transparency is better understood as a relational practice that is continuously and contingently renegotiated. Taking up the example of debt data, we provide case studies of the data brokerage companies BlackRock and dv01 to analyze how transparency constitutes the material infrastructure of debt markets, which facilitates the construction of data assets for profitable circulation in a financialized political economy. We analyze our case studies with a focus on four transparency practices used to infuse data with value—building relationality, increasing granularity, managing directionality, and creating legibility. *Key Words: data brokers, debt, financial crisis, platform economy, transparency.*

Although discourses around transparency are common in both public life (e.g., Dodd-Frank) and academic inquiry (Gorwa and Ash 2020; Ananny and Crawford 2018), critical analyses of transparency discourse in contemporary economies remain a relatively new endeavor. In this article, we systematically and critically theorize transparency, conceptualizing it as a material infrastructure of debt markets that can be strategically leveraged to extract value from data. Through case studies of data brokerage firms, we analyze four transparency practices used to infuse data with value: building relationality, increasing granularity, managing directionality, and creating legibility.

Extending work in critical transparency studies that problematizes the concept of "mere transparency" (Safransky 2020, 206) as desirable in and of itself, we argue that transparency emerged, especially after the 2007–2008 financial crisis, as a key discursive and material infrastructure for contemporary processes of indebtedness and financialization. More specifically, we contend that transparency is a relational practice, rather than the mainstream window metaphor of "seeing through" to objective truths. In the context of the political economy of debt data, we argue that transparency functions as a discursive construction that creates suitable conditions for the practical extraction of data as an asset (Fourcade and Healy 2017; Sadowski 2019; Beauvisage and Mellet 2020).

Our article proceeds as follows. First, we theorize data opacity and transparency relative to the 2007–2008 global financial crisis (GFC) to link the emergence of financial technology (FinTech) firms to an ex post facto reconstruction of the GFC as what we term a "crisis of data." Then, through problematizing the idea that transparent economic relations necessarily lead to greater accountability, we outline transparency as a relational practice that is constantly reworked through discursive and material practices around data, most recently characterized by a focus on granular (e.g., loan-level) data on debt. We then use case studies of the data brokers BlackRock and dv01 to analyze how transparency is built into the material and spatial infrastructure of debt markets (e.g., Knorr Cetina 2003), and the ways these practices facilitate the construction of data assets necessary for a financialized economy.

Conceptualizing Debt, Transparency, and FinTech

This section details the social meanings of consumer debt within contemporary capitalism to highlight the emergence of transparency as a key discursive construct for financial reform after the 2007–2008 GFC. Notably, the development of "platform capitalism" (Langley and Leyshon 2020) coincided with calls for transparency in finance, resulting in regular use of transparency rhetoric by FinTech platforms (Bourne 2020; Wójcik 2021). From this, we specify how transparency discourse is used to facilitate processes of value creation from data assets.

Social Meanings of Debt

The role of consumer debt under capitalism is to enable consumption via credit, thus providing capital for the productive economy (e.g., Searle and Köppe 2017). Debt, in particular individual, household, or mortgage debt, is our principal focus in this article. In building a framework that accounts for the social complexity of debt, we conceptualize it at once as an instrument and a condition and follow Harker and Kirwan (2019) to emphasize the deep intertwining of these concepts.

First, as an *instrument*, debt is a promise to pay instantiated by the provision of a loan. Because lenders do not have unlimited capacity, they seek ways to increase their lending power, such as bundling debt instruments into securities for resale. Investors purchasing these securities buy "property right[s] to the income stream that flows from the debtor" (Charron-Chénier and Seamster 2018, 89), coming in the form of future dividends. Selling this promise of future money provides lenders resources to make more loans (e.g., liquidity), creating new relations of debt that can in turn be resold. Securitization also obscures relations of debt ownership and obligation, making it difficult to understand who is enrolled in any particular revenue stream (Weber 2010). As discussed later, transparency is often viewed as a remedy to this complexity, the idea being that if data on debt are more transparently available, the risk exposure of securitization can be more readily understood (e.g., Green 2008; Klein, Mössinger, and Pfingsten 2020).

Second, as a *condition*, being in debt intertwines the personal and impersonal on everyday landscapes (Deville and Seigworth 2015). Marketing of financial products like pension plans, home mortgages, and consumer credit (van der Zwan 2014, 111) increasingly yokes the health of financial markets to individuals' well-being. This "financialization of everyday life" (Lai 2018) naturalizes debt (Karaagac 2020), with indebtedness emerging as another form of governmentality through which "life itself becomes an asset to be managed" (van der Zwan 2014, 113). As economic relations become ever more financialized—reliant on financial channels, assetization, and rentierism more than commodity production or trade—structures of mass indebtedness (Federici 2014; Adkins 2017; Langley 2020) increasingly characterize modern capitalism.

Of course, debt as a condition is not one-sided, and debt relations produce different subjectivities (e.g., debtors, creditors, investors) within the financial supply chain and across space. Examples include gendered relations of power in merchant banking (McDowell and Court 1994), traders in financial markets (Knorr Cetina 2003; Zook and Grote 2017), and housing investors (Gorter and Jacobs 2020). Researchers conceptualize debt as assemblages of differently situated "financial subjectivities" (Lai 2017) and portfolio mentalities relating indebtedness to assets and risk, in which consumers manage their households "like hedge funds" (Bryan and Rafferty 2014, 407). This individualizing of debt relations (e.g., through a deepening of mortgage debt) privatizes social reproduction via the appropriation of gendered divisions of labor (A. Roberts 2013).

The conditions of debt and indebtedness also introduce value judgments, wherein paying back money is configured as a "simple matter of morality" (Graeber 2011, 9). The reproduction of capitalism through debt is in fact violent, effectively trust-made-real enforced by state-backed punishment for delinquent debtors. In this regard, debt means different things to different actors depending on their position in society and space (Guérin and Venkatasubramanian 2020). For example, Seamster (2019) argued that lower levels of debt in Black households often lead to financial isolation, rather than financial health. In comparison, 65 percent of the most indebted households in the United States are millionaires (Charron-Chénier and Seamster 2018), a reminder that debt can be a productive

asset when put "to work," instead of being spent outright on rent, food, or utilities. The figures of the "student-in-debt" (Adamson 2009) or the "mortgaged lives" of indebted homeowners (García-Lamarca and Kaika 2016) are not just by-products of capitalist accumulation; rather, they are instrumental subjectivities for the reproduction of capitalism itself (Christophers 2015).

In all, debt is a nuanced arrangement of social relations, capital flows, and dynamic spatialities. When macroeconomic policies are implemented, however, debt is often flattened to a purely economic relation understood through transparent structures and better data. Drawing on the example of the 2007–2008 GFC, the following section demonstrates the limits of transparency as an idealized solution to the complex problem of debt instruments and conditions.

A Crisis of Data on Debt and a Solution of Transparency

The production of debt instruments is a key means of generating new revenue streams for investment in capital markets. This was disrupted during the 2007–2008 GFC, when obscured risk within mortgage-backed securities led to great uncertainty across credit markets and raised urgent questions around how to ensure the sustainability of securitization. Paraphrasing Marx and Harvey, Dymski (2018) wrote that crises are born from debt, when "promises to pay multiply without adequate attention to ability to pay" (541)—a succinct, but incomplete, description of what led up to the GFC.

Popular neoclassical economic approaches to resolving this crisis of confidence posit that more information on debt relations can help predict and avoid mass economic crises. In this view, "financial instability arises [because] of disturbances to market logic, not as a consequence of market logic" (Dymski 2018, 540). As early as December 2008, behavioral economists had begun diagnosing the "sources of [market] imperfections" as those of "asymmetric information" (Green 2008, 263). According to Green (2008), while the prime market enjoyed a "sufficient flow of information to produce an information equilibrium" before the GFC, "borrowers in the subprime market are highly heterogeneous and the differences are not fully transparent" (263). Similarly, Adam Agathangelou of the UK-based Transparency Task Force (TTF) argued:

[M]arket crashes occur when people suddenly become aware of information that they previously didn't have. … It follows that if we have a market that's terribly opaque, where there is a lot of secrecy or misinformation or confusion about what's really happening in the financial ecosystems around the world, we significantly increase the chunks [sic, chances] of the crash. So, [the TTF's] cause is to make the markets far more transparent, knowing that one of the values that will [sic, we'll] deliver to everybody is a more stable financial ecosystem and that … is why transparency is so important. (Wall 2017)

An article in the *Journal of Financial Intermediation* similarly defined the GFC as a failure of transparency:

Investors lacked transparency and access to loan-level information to conduct risk assessments of securitization pools, and had thus to rely heavily on rating agencies. … Against this background, opacity was a key driver of the latest subprime lending crisis, and of the ensuing decline of the securitization market. (Klein, Mössinger, and Pfingsten 2020, 2)

In popular media including the *Financial Times* and *The Wall Street Journal* (Kaufman 2008; Casey 2014; Clark 2020; Sinha 2020; Michaels and Kiernan 2021), as well as in scholarly economic research (Rosengren 1999; Vishwanath and Kaufmann 1999; Rodan 2000; C. Kaufmann and Weber 2010; Lang and Maffett 2011), transparency is repeatedly named the remedy to financial crises.

From this we understand the neoclassical framing of transparency—especially in the case of the 2007–2008 GFC—as a crisis of data on debt narrative. The crisis of data narrative contends that greed and rampant speculation combined with opaque markets, overly complex financial instruments, and insufficient transparency produced a spectacular and unpredictable economic crash. Such arguments have long had an important place in financial systems: Transparency was one of two key principles for reconstituting the post-Depression U.S. financial structure (Minsky 1993, 4–5; see also Vestergaard 2012). We argue, however, that transparency discourses in the wake of the GFC were distinctive given their focus on data about debt. The crisis of data narrative implies that changes in material practice—specifically, more transparent data about the risk profiles of debt securities—would have mitigated or even prevented the GFC. A key outcome of the crisis of data narrative is that policy responses need not focus on controlling greed, simplifying debt

Table 1. Examples of data fields available in loan-level Freddie Mac data sets

1	Credit score	16	Amortization type (formerly product type)
2	First payment date	17	Property state
3	First time homebuyer flag	18	Property type
4	Maturity date	19	Postal code
5	Metropolitan Statistical Area (MSA) or metropolitan division	20	Loan sequence number
6	Mortgage insurance percentage (MI %)	21	Loan purpose
7	Number of units	22	Original loan term
8	Occupancy status	23	Number of borrowers
9	Original combined loan-to-value (CLTV)	24	Seller name
10	Original debt-to-income (DTI) ratio	25	Servicer name
11	Original UPB	26	Super conforming flag
12	Original loan-to-value (LTV)	27	Pre-HARP loan sequence number
13	Original interest rate	28	Program indicator
14	Channel	29	HARP Indicator
15	Prepayment penalty mortgage (PPM) Flag	30	Property valuation method

Note: UPB = unpaid principal balance; HARP = Home Affordable Refinance Program.

instruments, or implementing policies that value the health of people over the health of markets. Rather, the response is on ensuring that there is sufficient data (e.g., loan-level data) on debt or specific loans.

Here, loan-level refers to analysis of risk exposure via a granular understanding of individual loans from which debt instruments like securities are built. Loan-level data sets exemplify the idea that financial crises can be tamed through data analysis. As a proponent of loan-level transparency wrote, "Critical information [during the GFC] was unavailable because there were no common requirements or formats for reporting such information. [Without] loan level information, it was impossible to distinguish good loans from bad ones or to value CDO and associated derivatives whose performance depended upon underlying loan pools" (Jackson 2010, 1). Resulting policies include the Dodd-Frank Act in the United States, as well as the Financial Stability Board and the Basel III Accord internationally, which introduced new requirements for disclosure (transparency) of securitization debt. Elsewhere, securers of debt such as Fannie Mae and Freddie Mac made data sets on loan-level transparency widely available.[1] Beginning in March 2013, Freddie Mac made quarterly loan-level data on all mortgage purchases and guarantees available from 1999 to the present (Freddie Mac 2015). The breadth and depth of these data are significant: In the first quarter of 2008 alone, Freddie Mac purchased or guaranteed more than 420,000 individual mortgages resulting in a 1.5-gigabyte text file that we struggled to meaningfully engage with via standard desktop spreadsheets. This data set is further actualized through the specification of data fields for each record including zip code, credit score, flags for first-time homebuyers, and large (i.e., super conforming) mortgages (see Table 1).[2]

These policies and data sets can be understood as "de-risking" initiatives, which protect asset classes, and those who invest in them (Gabor 2021, 453). Drawing on Gabor, Christophers (2021) explained that "de-risking occurs through … enabling the creation of new asset classes as markets emerge from crisis" (4). The process of de-risking is effectively an alliance between states and private market actors (e.g., asset managers) that relies on the creation of credit through securitization described earlier. Whereas those examples focus on state-led initiatives, our case studies show how FinTech firms like dv01 also actively participate in the program of de-risking through transparency practices. As private data brokers normalize the expectation of loan-level transparency, increasing amounts of individual consumer data at all scales are cross-referenced across data sets (Crain 2018) to create new relational meanings and value. Given our goal to account for the social meanings of debt, it is essential to consider which actors can use these new configurations of transparency to create legibility, the conditions of access, and the ways the directionality of transparency holds some accountable but not others.

The Rise of FinTech

Today, key stewards of the crisis of data narrative are FinTech firms. Emerging after the 2007–2008 GFC, FinTech firms offer financial products and

services, technologies, and institutions that "intersect in various ways to provide technologically mediated or enabled financial solutions" (Lai and Samers 2020, 2; Wójcik 2021). A key characteristic of FinTech firms is that "transaction data produced by digital and mobile payments is aggregated and monetised"—for example, through classifying customers for advertising, sales, or credit risk purposes (Langley and Leyshon 2020, 337). FinTech firms' goals often include developing a platform business model leveraging user data to scale up via network effects (Langley and Leyshon 2020, 382). FinTech firms emerged from the GFC both temporally and causally, arguably part of the "wall of money" deployed to increase the supply of capital and "[offset] the post-crisis chill in risk taking" (Boivin and Harrison 2016, 1). Perry Rahbar, the founder of our case study firm dv01, argued that the rise of person-to-person (P2P) lending platforms such as Lending Club, Prosper, and SoFi represent a shift in consumer expectations around transparency: "Consumers saw P2P lenders as a more transparent and modern option compared to the traditional banks they blamed for the 2008 mess" (Rahbar 2016).

After the GFC, opacity was associated with big banks and transparency was associated with smaller startups—a process that provided an important value proposition for FinTech companies (Bourne 2020).[3] FinTech firms often insist that data—the bigger, the better—reveal hidden processes and social relations, thereby ensuring more equitable financial markets by creating new structures of transparency. In this configuration, the capture and analysis of data is like pulling back the curtains on a window, or lifting the lid on a "black box" (Fields, Bissell, and Macrorie 2020, 463) to reveal objective truths, rendering transparent the previously opaque.

These transparency demands, however, insufficiently address the power dynamics of digital economies. Without contesting that the opacity of risk of certain financial instruments contributed to the crisis, we argue that conceptualizing the GFC as primarily a crisis of data dismisses the deregulated policy environment (e.g., the Commodity Futures Modernization Act of 2000), the predatory banking practices, and the purposeful misappraisal of collateralized debt obligations by rating agencies prior to the GFC (Rolnik 2019). A key driver of the postcrisis "wall of money" was quantitative easing policies, but instead of infusing banks with liquidity and lending

power, quantitative easing strategies "propped up the value of assets *without* translating into higher rates of employment or growth" (Adkins, Cooper, and Konings 2020, 3). Furthermore, the excessive risk and speculation that contributed to the GFC are less bugs than they are features, being as they are "baked into the system of capitalism itself and … actually the very fundamentals upon which all capitalist activity is predicated" (Allon 2010, 367; Christophers 2020). As Allon (2010, 367) argued, focusing on spectacular elements such as fraud, excess, and speculation fails to acknowledge how the "normalization of practices of calculation and investment within everyday life" (including debt in its full social meaning) created amenable conditions for the crisis to unfold.

In this regard, the so-called opacity of financial markets is but one part of a much broader assemblage of structures, forces, and actors that sent markets tumbling in 2007, rendering the crisis of data narrative—and the proposed solution of transparency—highly suspect. Here, Berlant's (2011) concept of "crisis ordinariness" is useful in understanding how the crisis of data narrative gained such traction, and why transparency alone remains an insufficient solution. With "crisis ordinariness," Berlant articulated crisis as an unexceptional, ordinary process that can be triggered by an event but suffuses the everyday. Thus, terming something a crisis amounts to a "redefinitional tactic" that "aspires to make an environmental phenomenon appear suddenly as an event" (Berlant 2011, 101). We argue that the GFC was ex post facto deemed a "crisis of data on debt" to be "solved via transparency" by market actors including mainstream economists, data brokers, and prospective FinTech entrepreneurs. Whether an empirical crisis of data exists or not is rather beside the point. Rather, what is important is the discursive production and strategic management of a particular period of time, and the retrospective diagnostic: namely, that data transparency can predict, and even forestall, financial crises. With Berlant, the crisis of data narrative can be understood as a redefinitional tactic. Although it never "happened" in the sense that an event might "happen," the crisis of data narrative permeates widespread understanding of how the economy works and the role of debt and data. In short, the crisis of data provides an understandable narrative in which transparency offers a straightforward solution to more generalized investor anxiety of market failure.

Performing Data Transparency

Given that opacity was only one element behind the GFC, a key question for this article is this: What are the implications of transparency's emergence as an important theme in conversations about financial reform?[4] We argue that transparency functions as a discursive construct and material infrastructure that creates suitable conditions for the assetization of debt data (Fourcade and Healy 2017; Sadowski 2019; Beauvisage and Mellet 2020; Bourne 2020).

Following Çalışkan and Callon (2010), we understand transparency as a form of "marketization" that performatively enacts an ideal of laissez-faire market fairness. Transparency, presented rhetorically as an accountability mechanism, helps create a perception of governments and markets as open and responsible (Torssonen 2019; Gorwa and Ash 2020). Feminist geographers have long critiqued such valorizations of transparency, arguing that the hegemonic power structure conceals itself "by appearing transparent" (Rose 1995, 778; see also Klein, Mössinger, and Pfingsten 2020). Transparency is critiqued as "overvalued" (Etzioni 2010), contradictory (Bühlmann, Colman, and van der Tuin 2017), and even "tyrannous" (Strathern 2000). Ananny and Crawford (2018, 974) proposed the "transparency ideal" as a shorthand for the assumption that transparency allows one to "see inside the truth of a system."

With this in mind, we follow Torssonen's (2019) view of transparency as an ideology that "works to mask, legitimize, and facilitate undemocratic bureaucratic control" (473) that can prevent meaningful accountability within prevailing political economic structures (Crain 2018). This is tied to the often-implicit assumption that "*seeing* a phenomenon creates opportunities and obligations to make it accountable and thus to *change* it" (Ananny and Crawford 2018, 974). In this way transparency "privileges a politics of revelation predicated on visibility," while sacrificing the messy and relational systems of meaning that produce and are produced by data, particularly so-called big data (Fields, Bissell, and Macrorie 2020, 463; see also Birchall 2011, 2014). In short, the structural conditions and rhetorical performance around what transparency is are consequential for the material impacts of what transparency does.

Therefore, the discursive framing of the GFC as a crisis of data resolvable through greater transparency allows financial actors to enroll data—particularly data about debt—in new and expanded ways. In particular, the transparency ideal advances the processes and practices of economization by constituting data relationally, connecting data with other data, to bring meaning, infuse it with value, or both. These data can be well-structured and directly tied to a phenomenon such as debt (see Table 1) or unstructured (not categorized into well-defined variables) and seemingly unrelated to debt, such as someone's post frequency or friends' network on social media. This "all data is credit data" approach (Gabor 2021, 450) renders transparency a "strategic alliance" (Bourne 2020, 1610) enacted by financial firms to produce value from relationally constituted data assets, or "datassets" (Beauvisage and Mellet 2020). Given our understanding of debt as fundamental to modern capitalism, data about debt (which allows further value extractions) become ever more important.

In this sense, data are much more than simple information, but function effectively as an asset (i.e., revenue-generating property) "that must be constantly valued as a balance sheet item but often precisely cannot be readily traded" (Adkins, Cooper, and Konings 2020, 16). The formalization of new asset classes (e.g., Ouma 2020) is instrumental to contemporary capitalism, which increasingly constitutes class through assetization and future revenues instead of wage labor relations. Data, particularly personal and debt-related data, constitute a well-established asset class (Sadowski 2019). The value of personal and debt-related data is intensified by the "data imperative" of capitalist societies, including state-managed capitalist societies such as China,[5] to "collect it all" (Crampton 2015; Fourcade and Healy 2017, 14). This reliance on data within modern capitalism increases the uneven directionality of transparency between the watcher (seeking to extract value) and the watched (the source of value). As Fourcade and Healy (2017) argued, "the *recorded* individual has come into full view," and "the *recording* individual has faded into the background" (11). In this configuration, the ideal recorder is mostly opaque, whereas the ideal recorded individual is fully transparent.

This environment—asymmetric relations of transparency that produce data as a valued asset (class)—

Table 2. Frequency counts for industry classifications for Crunchbase firms referencing transparency

Rank	Industry (Frequency)	Rank	Industry (Frequency)
1	Insurance (196)	11	Analytics (60)
2	Payments (162)	12	Venture capital (59)
3	Banking (158)	13	InsurTech (53)
4	Real estate (148)	14	Personal finance (46)
5	Crowdfunding (108)	15	Artificial intelligence (45)
6	Consulting (73)	16	Health care (45)
7	Asset management (72)	17	Wealth management (44)
8	Lending (71)	18	B2B (36)
9	Mobile payments (63)	19	Accounting (34)
10	Real estate investment (62)	20	Impact investing (33)

Note: We exclude from this list the industries that (1) are not definitionally distinct from finance, or (2) represent technology or a technology-mediated function rather than a sector.

shaped the emergence of FinTech (Bourne 2020). Driven by the postcrisis image problem faced by big banks (Atal 2020, 3; Wójcik 2021, 567) and enabled by technical innovations, FinTech firms are predicated on their ability to collect, create, and deploy data, preferably via platform logics (Andersson Schwarz 2017) and business models (Langley and Leyshon 2017). For FinTech firms, transparency is an effective strategy of value creation from data assets; for example, loan-level data figure centrally into both the delivery of software products and the extraction of profit. In her analysis of *Fintech* magazine's marketing materials, Bourne (2020, 1615) argued that firms deploy transparency discourses to create value. Firms across the FinTech industry form strategic alliances through "relationship transparency," the construction of transparency for data assets and financial products between vendors and buyers (Bourne 2020, 1609). Bourne (2020) conceptualized a "transparency–publicity nexus" (1608) in which FinTech firms discursively construct their products in opposition to the so-called opaque and risky practices of traditional finance.

Building from Bourne's approach, we analyze how data discourses of financial firms extend into specific data transparency practices and how they extract value through relationality and the proprietary dynamics of data dashboards and platforms. We identify four practices that data brokers use to extract value from data: building relationality, increasing granularity, managing directionality, and creating legibility. Through case studies of two data brokers—the industry standard BlackRock, and a younger startup, dv01—we highlight how these practices rely on contingent and often contradictory

configurations of transparency. Transparency itself emerges as an amorphous concept that is conditionally transformed to generate value propositions for data assets.

Practicing Data Transparency

We first examine the general use of transparency rhetoric in the FinTech sector via a database of 1,980 firms curated from Crunchbase, a commonly used data source for the tech sector. Our curation includes firms that (1) have the keywords "transparent" or "transparency" within their full description, and (2) belong to the Industry Groups[6] of Lending & Investments, Financial Services, and Payments (selected as the best representation of the financial sector). The frequency counts for industry classifications[7] for these firms are outlined in Table 2.

Although an imperfect measure, the top five industries classification—insurance, payments, banking, real estate, and crowdfunding—are consistent with our focus on mortgage and consumer debt. The descriptions of the most highly ranked firms (as per Crunchbase's ranking) are filled with rhetoric about creating "transparent buying experience" for consumers (Cowbell Cyber, founded in the San Francisco Bay Area in 2019), or "unprecedented transparency, security, and efficiency" (JetClosing, founded in Seattle in 2016) or "transparent, scalable, and efficient" (PatchOfLand, founded in Los Angeles in 2014) in near-mind-numbing quantities. This is not surprising given the wide adoption of the "crisis of data" rhetoric (Berlant 2011) discussed earlier. What is less clear, however, are the actual affordances that

transparency provides to everyday, noninstitutional actors. In short, firms use transparency to signal better, safer, faster, and more satisfying ways of doing things, but how is this redefinitional tactic put into practice? How exactly is greater transparency made to work? Or as Kemper and Kolkman (2019) asked, "transparent to whom?" Moreover, given that this discourse is interwoven with assumptions of greater data availability and granularity, what is the directionality of transparency?

Data Brokers and Transparency Practices

The history of assetizing debt has greatly complicated how debt is managed. Precisely because debt is bundled, tranched, sold, and resold, downstream buyers of assetized debt want a clear understanding of the associated risk. To achieve this, the financial industry relies fundamentally on transparency.

Data brokers, "a set of emerging actors specialized in the collection, aggregation, processing, and selling of personal data" (Beauvisage and Mellet 2020, 78), are some of the most adept practitioners of transparency (both rhetorically and materially). Although the data broker classification is broad, it "generally refers to companies that specialize in the collection and exchange of personal information and is usually associated with large scale, 'big data' operations" (Crain 2018, 90). These companies include both long-existing firms in credit scoring, geodemographics, and marketing sectors such as Experian or Claritas, as well as FinTech startups including those partnered with platform companies interested in leveraging their stores of consumer data to develop personal loans and alternative credit scoring products.

Data brokers form the practical link between debt markets and platform capitalism. By collecting data on debt, data brokers constitute an important aspect of the material infrastructure of contemporary capitalism. They produce a supposedly transparent view of debt markets, which serves the dual purpose of (1) validating data as an asset while (2) de-risking certain types of debt instruments, such as mortgages, consumer loans, and household debt. We characterize the ways data brokers extract value from data (Crain 2018, 90) as four different transparency-enhancing practices: building relationality, increasing granularity, managing directionality, and creating legibility.

Building relationality focuses on the value that comes from connecting disparate data sources that combined can provide new insights. Crain (2018) argued that "virtually nothing is out of bounds" with data brokers regularly seeking "demographic, economic, behavioral, health, religion, sexuality, and life event–based information" (90). Tied to the larger moment of big data, data brokers are driven by expectations that machine learning and artificial intelligence can construct meaning from complex and multidimensional correlations; for example, how consumer debt risk relates to individual social media use (Fei et al. 2015) or recreational activities (Oksanen et al. 2018). These metrics exemplify an increasing interest in unstructured data, such as social media interaction and user sentiment, in addition to structured data such as shown in Table 1. Relatedly, data exchanges, platforms to which companies upload proprietary data for analysis with other third-party data, are enabling more seamless relationality between the complex data sets of platform users (Eckerson 2020).

Increasing granularity emerges as data brokers provide access to information specific to individual people, loans, or debt obligations. The logic is that greater granularity allows analysts to pinpoint risk and how larger macroeconomic events might cascade through these instantiations of the economy. Data brokers often specialize in certain data categories, evidenced by CoreLogic's focus on mortgage data (including Freddie Mac's loan-level reporting on residential mortgages), PeerIQ's provision of consumer loan data analytics, and Terbine's collection of Internet of things (IoT) data (Crain 2018).

Managing directionality reflects that data brokers operate under conditions in which data are largely transparent in a single direction. Namely, owners of debt have access to great amounts of granular data and debtors have little transparency on the holder of the debt. This directionality of data is managed by data brokers in various ways such as selling access to data (often short-term) rather than the data itself, for example, in "X-as-a-service" business models that "turn social interactions and economic transactions into 'services' that [take] place on their platform" (Sadowski 2020, 567). Because access is less expensive than ownership, the market for granular data on debtors has further expanded, without a corresponding increase of data on the originator or owner of debt.

The final practice is *creating legibility*, allowing buyers to easily explore and analyze data through interactivity and visualizations provided by the data broker. These systems emphasize dashboards (Mattern 2015) for easy interaction, promoting the need for continued access. Creating legibility also includes cleaning and cross-referencing data sets to provide one-stop access and the assurance that data have been tamed and ordered, providing further justifications for ongoing subscriptions to data brokers.

With these four different practices in mind, we now turn to a detailed examination of two data brokers and their associated platforms: BlackRock and its Aladdin product (the global gold standard, focused on data about assets of all sorts), and dv01's suite of analysis and visualization tools (reflecting a FinTech startup's approach to providing transparency to mortgage and consumer debt). Our analysis reveals key tensions between the rhetorical ideal of transparency as a post-GFC socioeconomic good, and the ways transparency functions as a "strategic alliance" for value creation (Bourne 2020) between data brokers and owners of debt. Through a close examination of material practices in BlackRock's Aladdin and dv01, we specify how transparency operates as a material and spatial infrastructure of debt markets and argue that transparency is practically leveraged toward investor and stakeholder gains through the assetization of data.

BlackRock's Aladdin: Material Infrastructure of Financial Markets

BlackRock is the world's largest asset management firm, managing $9.5 trillion in assets from its headquarters in New York and eighty-nine branch offices in thirty-eight countries around the globe. The firm focuses on risk management, reputedly tied to its founder's experience with pioneering mortgage-backed securities during the mid-1980s ("The monolith and the markets" 2013). Central to BlackRock's approach to risk management is its Asset, Liability, and Debt and Derivative Investment Network (Aladdin), designed to help asset managers assess relational risk across their portfolio (Betz 2016). Focused on the risks associated with complex assets, Aladdin relies on historical stores and current streams of data to facilitate a range of trading strategies including passive index funds and active management. Haberly et al. (2019, 171) categorized

Aladdin as a digital asset management platform (DAMP) to emphasize its role in centralizing the asset management market, a point aptly demonstrated by BlackRock's size. As they benefit greatly from the ability to relate data across sector and scale, their efforts toward monopolization via network effects make Aladdin (and DAMPs more generally) particularly emblematic of platform capitalism (Braun 2021, 14).

Although BlackRock was already in operation for decades, the 2007–2008 GFC (and concerns about transparency on the loans underlying mortgage-backed assets) further enhanced the company's reputation as a "neutral" data broker. Of course, this so-called neutrality should be contextualized by the company's strong connections to U.S. political elites and acquisitions and market expansion strategies. For example, BlackRock was assigned to oversee and price the defunct Bear Stearns's assets as part of the U.S. response to the GFC, and played a similar role in Britain and Greece ("The monolith and the markets" 2013; Phelan 2014). This reinforced a particular kind of big data rhetoric around BlackRock and Aladdin; namely, the idea that its deep storehouses of historical data and details on the underlying components of various securities offer a fundamentally necessary transparency for understanding relational market risk. Combined with its global presence, this rhetoric allows BlackRock to position Aladdin-derived transparency as a key means to address (and prevent) financial instability. In other words, spatial difference resulting from "disturbances to market logic" (Dymski 2018, 540) can be countered by powerful actors (e.g., the United States or European Union, but also corporations) by creating homogenization across space via the data transparency that BlackRock offers via Aladdin.

Often compared to a car dashboard, the Aladdin platform provides asset managers with greater data legibility at the granularity of single trades or assets and scales up for more holistic views of fund or firm-level risks. It acts, according to some users, "like oxygen" for asset managers (Gara 2017), a point readily reinforced by the fact that even BlackRock's rivals rely on Aladdin (Braun 2021, 14). The promise of transparency is reiterated by BlackRock's marketing rhetoric of offering access to "all parts of the risk and investment process across a portfolio on a single platform," which in turn "leads to full, real-time transparency into exposures and risks"

(BlackRock 2021a). In short, BlackRock promises transparency across space, sector, and securitization.

Aladdin's ability to bring legibility to debt-based income streams has been instrumental to its growth. This high level of adoption also brings new concerns. First, if asset managers rely on Aladdin's ready-made legibility (vs. developing their own model), this could standardize understandings of risk. Such a situation could create an unacknowledged level of systematized thinking, amplifying reactions during market turmoil and panic. In other words, "if trillions of dollars are being managed by people using the same risk system, those individuals may be more likely to make the same mistakes" (Mooney 2017). Aladdin's expansion beyond the financial sector, with major tech firms like Google and Apple holding subscriptions (Henderson and Walker 2020), also incentivizes efforts to increase legibility (via more data interactivity and better dashboard interfaces) to better encourage renewals. Second, the directionality of the Aladdin platform is skewed primarily toward investors, resulting in a one-way transparency. Indeed, although "BlackRock's Aladdin operating system prides itself on being 'more than just technology,' the company's website does not supply a clue as to where the magic comes in" (Marzolph 2019, 281). Our searches for tutorials for the Aladdin platform, or even screenshots, turned up nothing, nor did we receive a response from Aladdin's "Contact Us" request form online. Thus, in a very real sense, the actual interface remains opaque, an exceedingly ironic black box given its rhetoric and performance of transparency as a key part of market making.

The inaccessibility of Aladdin reminds us that the uncredentialed citizen-investor is, by default, excluded from engaging with a platform that has significant impact and influence on contemporary markets. Although this exclusion stems in part from consumer protection laws around financial markets, the directionality of transparency remains decidedly one-way: Only institutionally verified investors can access the tools of market making. Of course, as Obar (2020, 3) reminded us, access to the platform—or even access to the data that it holds—would not alone rectify the concerns highlighted here. The challenge is to deliver "meaningful consent from the transparency that results" (Obar 2020, 4; see also J. Roberts 2009), but it is not immediately clear what structures of economic consent would look like in a market system where personal data are harvested en masse, asset management trumps ownership, and the bar for accessing data and

transforming it into legible intelligence is high. Although investing apps like Robinhood and SoFi are lauded as democratizing personal finance, cases like the GameStop stock surge—during which Robinhood froze trading of GameStop stock due to "market volatility"—highlight how individuals have different access to transparency than established institutional actors enjoy.

Beyond Aladdin, BlackRock continues to develop tools (and associated rhetoric) to enhance transparency, most recently focused on alternative investments. In 2019, BlackRock acquired eFront, a platform for managing nonstandard investments like private equity, real estate, infrastructure, and private debt. "With eFront," BlackRock explained, "you can manage private assets in your portfolio, understand risk and performance attribution, and gain transparency into every level of your investments." BlackRock positions private equity as an asset class at a contradictory nexus between transparency and opacity. For the private equity asset class, transparency is equated with volatile and "emotional reactions" to price movements, whereas the opacity of private markets is viewed as beneficial to investors: "Private equity … isn't subject to the same daily volatility [as equity and fixed-income markets]. Its movements in value aren't splashed across major news outlets. … Paradoxically, the complexity and opacity of the private market benefit pension funds, as investors don't have the same emotional reactions to its movements despite the high-risk nature of its assets" (BlackRock 2021b).

Where BlackRock previously positioned transparency as a positive value proposition, here, BlackRock positions opacity as a positive value proposition. Transparency, they suggest, leads to "emotional reactions," and too much press exposure can negatively affect valuations (see also Madhavan, Porter, and Weaver 2005). As Christophers (2015) reminded us, markets are the space wherein "the value created in production is realized" (184). Further, as Çalışkan and Callon (2010, 21) noted, markets are maintained and produced in part by emotions like hope, trust, and fear. Building from this, we argue that BlackRock strategically deploys transparency and opacity to create value-producing configurations that are differentially advantageous depending on the market spaces, devices, and actors involved (Hall 2012, 143). What we find are multiple kinds of transparencies and opacities, with

rhetorical and material implications for the markets that they describe, predict, and perform.

Altogether, these concerns raise questions around what Knorr Cetina (2003) called the "material infrastructure of financial markets" (10), or the assembly of connections, hardware, and software that bring marketplaces—and thus, value—into being (see also Spangler 2020). We contend that BlackRock's platforms (as well as emerging FinTechs) constitute material infrastructure organized around and enabled by a proliferation of transparency discourse with the goal of flattening difference. In this sense, Aladdin and eFront are key material manifestations of the decade-long promise of big data "to organize and interact with data, enabling users to drill down into data sets, filter out uninteresting data, select an item or group of data and retrieve details, view relationships among items, extract sub-collections, and to overlay and interconnect disparate data, enabling summary-to-detail exploration within a single visualisation system" (Kitchin, Maalsen, and McArdle 2016, 3). This decision-making infrastructure provides users "not only a perceptual edge, but a performance edge," as Mattern (2015) wrote: "The ideal display offers a big-picture view of *what* is happening in real time, along with information on historical trends, so that users can divine the *how* and *why* and redirect future action" (italics in original). Although certainly not the only material effect emerging of the political economy of big data (e.g., see smart cities [Shelton, Zook, and Wiig 2015] and health data [Sharon 2018], the scale and profit opportunities of data brokers within finance are immense.

In sum, we argue that Aladdin is a type of big data "flow architecture" that "project[s] market reality while at the same time carrying it forward and allowing it 'to flow'" (Knorr Cetina 2003, 7). Similar to the emblematic Bloomberg terminal, Aladdin delivers "more than just windows to physically distant counterparts"—Aladdin builds relationality, increases granularity and manages the directionality of data use via user-friendly interfaces to produce the core and the context of markets, the ground on which market actors stand as they transact (Knorr Cetina 2003, 5).

dv01: Transparency as Product and Fantasy

Transparency also looms large in the origin story of dv01, founded by Perry Rahbar, a mortgage-bond trader with Bear Stearns during the GFC. When their stock plummeted, he recalls being "hunkered down at his desk … until 4 a.m., combing through dozens of IT systems and thousands of rows in spreadsheets in an effort to quantify the firm's mortgage exposure for a potential buyer" (Gara 2017). In our analysis we again examine the material infrastructure of markets, in the case of dv01 the meanings and functions of data transparency in the constitution of debt markets.

dv01 offers a platform for asset-backed and mortgage-backed debt security markets including student, personal, and mortgage debt. Working mainly through partnerships with real estate investment trusts (REITs) and FinTech lending companies, including Lending Club, Prosper, SoFi, and Redwood Trust, dv01 ingests data on billions of dollars in securitizations and makes loan-level debt legible through enhanced interactivity. Clients of this transparency product include banks (both traditional and investment), loan issuers and originators, hedge funds, and asset managers. dv01 emphasizes data visualizations to highlight loan-level performance information:

> The vivid, colorful graphics make it apparent that loans made during the second quarter of 2015 have been some of Lending Club's worst-performing. At 14 months into the pool, 3.74% of loans were in default. Loans made in early 2014, by contrast, did far better. … On another screen dv01 data show that, as expected, grade-D Lending Club borrowers … performed worse than higher-rated grade-C borrowers. (Gara 2017)

Data transparency is prominently featured, both discursively and materially, in dv01's marketing of its products and services. This reproduces the crisis of data narrative by emphasizing the persistence of obsolete practices that led to the GFC. According to the company's "About Us" page:

> The $20T + U.S. mortgage and consumer lending markets operate on a workflow that is inefficient and fragmented. … The outdated processes and technologies make it difficult for investors to efficiently analyze loan-level data. At dv01, we're changing that. By providing the industry an end-to-end solution for accessing, reporting and analyzing standardized loan-level data, we're doing our part to prevent a repeat of 2008.

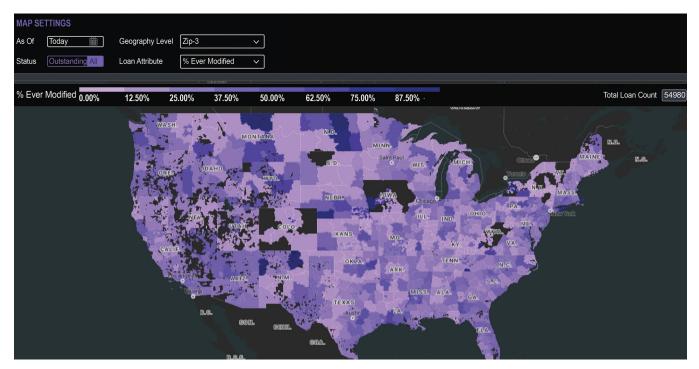From this foundation, dv01 constructs a complex version of transparency not simply as a product—raw

Figure 1. dv01's geo map dashboard product.

data or visualizations—but also as an achievable dream (Ananny and Crawford 2018) that a full understanding of a specific, relational arrangement of risk exposure is possible. In other words, dv01 is not just selling a product necessary for the securitization of debt and creation of assets, but the *fantasy of data transparency*—a direct response to the crisis of data narrative that proliferated following the GFC. "Fantasy" refers to something unachievable that is nevertheless held up as an aspirational object and pursued (e.g., Ahmed 2010). The fantasy of data transparency is further evidenced in the heavy marketing rhetoric focused on the product of loan-level transparency; that is, increasing granularity to include the risk exposure of individual loans. The unachievability of the fantasy is that things could always be in more transparent relation to one another. The data are fine, but they could be finer; risk exposure is clear, but it could be clearer.

To use the product of data transparency and produce assets, users access a customizable dashboard for exploring securitizations, portfolio surveillance, credit facilities, and market intelligence, as well as proprietary tools for big data wrangling (TapeCracker) and cross-platform interoperability (Data Direct). The dv01 dashboard enhances data legibility by providing interactivity such as the Historical Performance Tool, which includes the ability to copy and paste

subsets of data into offline spreadsheets, and the ability to look at delinquencies across multiple pools. Their Geo Map (see Figure 1) feature allows users to visualize loan clusters at the state or three-digit zip code level, with filters for loan attributes like modifications, balance, loan count, and more. According to dv01, such products are important for users; that is, "mapping geographical data can help better visualize clusters of loans." These dashboard tools are examples of creating legibility through which users can explore dv01's data sets, and even export those data sets as tabular data. Although exporting data to a .csv file certainly enhances data relationality, it is important to note that users own neither the data nor the means of producing these visualization products. Furthermore, this legibility comes at the expense of granularity, as zip codes are a misleading unit for spatial analysis and data visualization (Forrest 2019).

dv01 is not the only company that offers loan-level data on mortgage and consumer debt. As noted earlier, Freddie Mac offers loan-level credit performance data on all its mortgages from 1999 to 2020 (see Table 1) and its Data Dynamics platform makes quarterly loan-level reports available. A user who downloads this, however, must create legibility through their own data analysis, making already-packaged transparency a key selling point of dv01
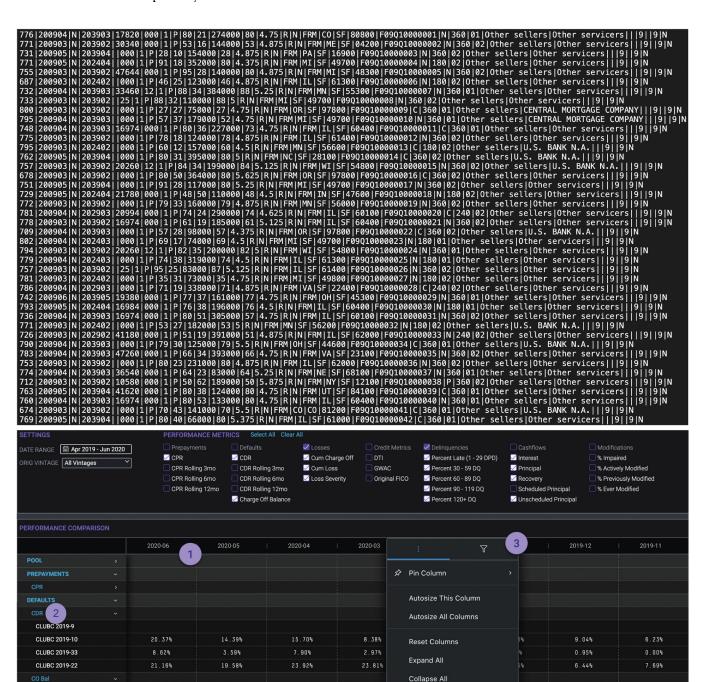
Figure 2. Comparison between Freddie Mac raw data and dv01's dashboard. Freddie Mac data (top) makes information transparent by increasing granularity, whereas dv01's dashboard (bottom) provides deeper legibility so users can make sense.

(and similar offerings by CoreLogic, acquired in a $6 billion deal in 2021 [see Evans 2021]) and BlackRock's Aladdin platform. The accessibility of Freddie Mac's data set represents a materialization of transparency, but dv01's interactive dashboard extends this entry-level transparency into the

registers of legibility, active use, and fantasies of how markets should operate (see Figure 2 comparing Freddie Mac data with dv01's dashboard). This discrepancy between spreadsheets and dashboards—between providing access and making sense—demonstrates that transparency is not in itself a relation where access equals accessibility. Rather, transparency represents material configurations and arrangements of economic actors, policies, and politics, which are increasingly mediated by data dashboards and the digital means of data collection. Knowledge production (how the market is practiced), fantasy (how the market should work) and power relations (who gets to participate in markets) in these heavily assetized spaces are solidified through products and fantasies that conceptualize debt transparency in particular ways.

From this, we argue that dv01 is interested in debt in its full articulation: as both a product and as a fantasy, albeit in contradictory ways. By bundling loan-level information on individual consumer debts into a neatly organized dashboard, dv01 creates a product for understanding risk exposure, and in so doing helps consumer debt instruments to be traded as assets. After all, debt is an asset *par excellence*: Its creation infuses institutional investors with liquidity and allows individual market actors to fulfill their social role as consumers. At the same time, the dv01 dashboard, with its organized legibility, color and shading choices, and ability to change visualizations with a mouse click, offers the fantasy of a world that is well-ordered and fully knowable. Thus, the combination of the product and fantasy of data transparency enable commoditized representations of the conditions of indebted subjectivity that are at the heart of modern capitalism (Christophers 2015).

The overall directionality of monetizing transparency as product and fantasy is shaped by an uneven relationship between data brokers and data "prosumers" (Cockayne 2016). As detailed earlier, asymmetric relations of transparency between the recording individual and the recorded individual are a fundamental characteristic of the data broker industry. This is both because data sources are argued to be proprietary information by data brokers, and the complex relationality of data that has been obtained, derived, and repackaged for new uses that confound consumers' ability to meaningfully access these systems (Crain 2018, 94–95). Combined this leads to a carefully constructed situation of "privacy asymmetry" by data brokers that makes "comprehensive transparency … effectively impossible to implement" (Crain 2018, 93). Thus, the loan-level transparency that dv01 (and other data brokers) provides to lending markets and financial institutions, is of a particular kind: highly interactive and relational, greatly expanded in scale, but decidedly unidirectional.

Conclusion

In this article, we follow a problematic of what transparency does for debt, asking what it means to have transparent data, and transparent data means and does for different actors across space. From this, we argue that discourses of transparency, especially in the context of (big) data, must always be understood within a relational social context. The contemporary discourses around transparency, specifically in framing financial market practices, emerged in response to the 2007–2008 GFC as a remedy to the crisis of data. We contend that this crisis of data narrative is insufficient but has nevertheless proliferated via regulatory reforms and entrepreneurial activity. Key stewards of this narrative are often FinTech firms, as the crisis of data framing provides them a ready role as purveyors of transparency (Bourne 2020). We further argue that transparency functions as a discursive construction that creates suitable conditions for the manufacture and extraction of data as an asset. Where data are viewed as an objective representation of economic reality, *transparent data*—data that are tactile, filterable, and easily accessible—are constructed into valuable market information. Through our case studies we detail how four practices for creating value through data transparency—building relationality, increasing granularity, managing directionality, and creating legibility—constitute the material infrastructure of debt markets.

Our argument is not that existing transparency mechanisms ought to be rolled back, nor that opacity be reintroduced to financial markets and data relationships. On the contrary, our intent is to displace the existing dichotomy between transparency and opacity (Birchall 2011, 6) in the realm of debt markets, showing that transparency and opacity represent a range of discursive and material arrangements deployable by market actors to different ends. Our case studies show how transparency functions

and is constituted through the specific practices of two data brokerage companies: one, a well-established asset manager, and the other a young FinTech firm. In both cases, the configurations of transparency are constructed around specific practices to create market relationships around data assets, as well as structural processes focused on expanding the scope of operation for finance.

Our analysis has primarily focused on transparency practices, but these practices are part of structural processes that often leverage transparency to implement fundamental changes in the financialization of everyday life. Echoing the rhetoric of "banking the unbanked" or "the bottom of the pyramid," efforts to deploy transparency as a means of opening up new spaces for financialization are a key strategy of data brokers (e.g., Rieke et al. 2016). As the founder of dv01 noted during a discussion on consumer loans in May 2020, an unexpected benefit of the COVID crisis was building a data record of how consumer loans (nonmortgage) fared during an economic downturn:

> Once we are through this and we have this kind of performance data on record I think then it is going to be way easier for people to buy into these loans and this asset class. And do it with confidence. I think this was the thing that everyone was waiting for. We didn't really have as good of a comp going back to the financial crisis. So I do think whoever gets through this, I mean I am not sure that every single originator will, but for those that do I think it will definitely be stronger on the other side, the market, it will be way more resilient for it. (Rahbar 2020)

To date, dv01 has released more than two dozen volumes of COVID performance reports, detailing "real-time loan performance across multiple consumer credit asset classes" (dv01 2020). Assets can only be legitimated as an asset class if they can be "meaningfully set in relation to other asset classes, and if the underlying 'assets' generate legitimate returns to investors" (Ouma 2020, 69). In other words, new asset classes are formalized through specific de-risking practices (Gabor 2021). In this case, dv01's work to relate the performance of consumer debt to other asset classes is an important step toward formalization. The data transparency that dv01 is offering could provide the foundation for expanding financialization into less standard forms of debt (i.e., unsecured consumer debt vs. mortgages). Although these efforts are by no means unique to dv01 (e.g., BlackRock's eFront offering seeks to standardize data on alternative investments to better facilitate

capital inflow), they demonstrate how transparency practices around data and debt facilitate the construction of data assets necessary for a financialized economy.

ORCID

Matthew Zook http://orcid.org/0000-0002-6034-3262
Ian Spangler http://orcid.org/0000-0002-8395-8120

Notes

1. See https://capitalmarkets.fanniemae.com/tools-applications/data-dynamics.
2. UPB stands for unpaid principal balance, and HARP refers to the Home Affordable Refinance Program.
3. Although erosion in consumer trust in banks helps drive FinTech adoption (Yang 2021), customer surveys (Principato 2021) and scholarly research (Stewart and Jürjens 2018) show that FinTech firms often overstate this erosion in trust.
4. A related manifestation of post-GFC interest in transparency (not taken up in this article) are blockchains designed around "a public history of transactions" (Nakamoto 2008, 8).
5. Categorizing different state approaches to the "data imperative" is beyond this article's scope, but it is important to acknowledge that our analysis is based in Western experience (primarily the United States) and that China represents a rather different approach. See Lai's (2012) overview on financial centers in China and Aho and Duffield's (2020) discussion of China's approach to technology and statecraft.
6. *Industry groups* are Crunchbase-defined sectoral groupings with forty-seven industry groups in all (Crunchbase 2021b).

7. *Industries* are descriptive keywords for firms listed within Crunchbase with 744 options in all (Crunchbase 2021a).

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MATTHEW ZOOK is a University Research Professor of Digital and Economic Geographies, University of Kentucky, Lexington, KY 40502. E-mail: zook@uky.edu. His research focuses on digital technology, financial geographies, big data, neighborhood change and cities, and the role of finance in urban and regional development.

IAN SPANGLER is Assistant Curator of Digital & Participatory Geography at the Leventhal Map & Education Center in the Boston Public Library, and a PhD Candidate in Geography at the University of Kentucky, Lexington, KY 40502. E-mail: ian.spangler@uky.edu. His research examines the impacts of digital real estate technologies on housing and financialization in the United States.