



RESEARCH ARTICLE

## When transactions turn awry: Infrastructural ambivalence in financial security

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### Abstract

This article conceptualizes financial transactions as parts of financial infrastructures. Not only do transactions perform services for the economy, mainly in the area of calculation and pricing, but there is also merit in a conceptually infrastructural view on transactions which uncovers their ambivalence for the stability of the financial system. This is based on a conceptualization of infrastructures that distances itself from inherited modernist notions of the completeness, full operability, and functional integration of infrastructures, and instead highlights the constitutive incompleteness, error-proneness, and looming disintegration of infrastructures owing not to external threats but to their very modes of operation. The article analyzes two post-crisis reports that try to sort out this infrastructural ambivalence of transactions, and, in that attempt, mobilize different imaginaries. In the Brady Report following Black Monday of 1987, the imaginary of the efficient competitive market was cited to stabilize the boundary between functional and dysfunctional transactions. In the FCIC Report reflecting on the subprime mortgage crisis, a quasi-sociological diagnosis of mushrooming, and morally problematic transactional relationships were invoked to separate functional from dysfunctional intermediation by financial transactions.

**Keywords:** Black Monday; financial infrastructures; global financial crisis; postcolonial theory; security-finance nexus

### Introduction

Recently, finance is increasingly seen not only as a segment of the international political economy but as an important infrastructure of contemporary economies and societies. This new interest in the infrastructural qualities of finance pertains both to political institutions and to research. Regarding the former, the financial economy has prominently been declared a ‘critical infrastructure’ by many governments, which point out that the financial economy delivers crucial functions and services to both the entire economy and to society, such as the processing of payments or the capitalization and corporate governance of companies (Brunner and Suter, 2008). To this, research adds that the financial economy can be seen as the infrastructural base of the economy, thus inverting the well-known critical argument in political economy that finance is a superstructure that has become disembedded from the production-based economy. Against this traditional critique, it is pointed out that, in addition to payment processing and company capitalization and governance, financial markets perform crucial calculative functions, notably the pricing of risks, which are traded on specific markets, and the

commensuration of the capital assets of different classes (Muellerleile, 2018). More generally, recent research proposes to use the notion of infrastructure as a conceptual lens (Bernards and Campbell-Verduyn, 2019), for instance, to account for current changes in the international financial economy, such as the role of political institutions in international payment and finance transactions (Krarup, 2019; Brandl and Dieterich, 2021; de Goede and Westermeier, 2022) as well as to explain the emergence of specific market structures and processes (Angeli Aguiton, 2021; Mellet and Beauvisage, 2020; Pinzur, 2016, 2021a, 2021b), or the interrelation between traditional financial institutions and new ‘decentralized’ services such as blockchain-based financial technologies (Rella, 2019; Beaumier and Kalomeni, 2022).

What, however, remains in the background of this new interest in finance as an infrastructure is an uncanniness in the financial economy itself regarding unforeseen consequences of the operation of financial infrastructures, although research does point out that financial infrastructures occasionally come in for criticisms from practitioners (Angeli Aguiton, 2021). Some years ago, so-called flash crashes at prominent exchanges raised considerable concern among financial professionals and commentators, which ended up being attributed to automatic trading that apparently caused short-termed extreme volatilities (CFTC SEC 2010, quoted in Easley, López de Prado, and O’Hara, 2011). What was at stake in these processes and debates were not externally caused malfunctions in financial infrastructures – for instance, such as those caused by cyber attacks – but which had originated in the very operations of those infrastructures. Thus, financial infrastructure emerges as a double-edged sword, containing the capability for enabling most complex financial operations while at the same time threatening to cause disarray because of precisely that capability.

This article addresses the question of how discourses that problematize these ambivalent properties of financial infrastructures regarding self-generated malfunctions try to draw the line between these two capacities of financial infrastructures: to enable and to cripple financial processes. The article directs attention to official expert reports, commissioned by the US government, on two historic financial crisis, namely, Black Monday of 1987 and the global financial crisis that broke out in 2008, covered respectively by the ‘Brady Report’ of 1987 and the Financial Crisis Inquiry Commission (FCIC) Report of 2011. I will demonstrate that these reports addressed the respective crises within an infrastructural imaginary of finance, and that important findings in them crucially perform the work of separation between functional and dysfunctional aspects of financial infrastructures.

The article makes two main contributions to the debate about finance as infrastructure. First, it uncovers empirical processes of ‘infrastructural inversion’, that is, of a problematization, in the field of finance itself, of the allegedly inconspicuous, even invisible, functioning of infrastructures and the uncovering of their, at first glance, opaque routine processes. Many contributions link the task of such inversion to the social scientist (following Bowker and Star (2000), where the term was coined), whereas I argue that this gesture can be found in the infrastructural field of finance itself. In order to prepare this argument, I will present a genealogy of an infrastructural imaginary of finance that is haunted by the potential self-generated malfunctions of financial infrastructures. Informed by postcolonial conceptual critiques of modernist understandings of infrastructures as optimally functional and prone to breakdown only under exceptional circumstances, the article will argue that in the face of apparent malfunctions caused by the infrastructures themselves, current emic views on finance as infrastructure (i.e., from the perspective of practitioners in the field) must perform a work of separation between the beneficial-functional and worrisome-dysfunctional aspects of the same infrastructure. Confidence in the functionality of financial infrastructures might not be

the presupposition of their imagination, but the result of a work of sorting out their ambivalences and distinguishing their good from their bad modes of operation.

The article's second contribution resides in a deepening of the conceptual infrastructural view on finance. So far, that view has oscillated between understandings of financial infrastructure as material technologies that enable financial processes on the one hand (Caliskan, 2020; Petry, 2020) and, on the other hand, understandings that see financial processes themselves, that is, in their economy-related quality, as an infrastructure for the economy (Muellerleile, 2018). The article adopts and radicalizes the latter view, arguing that key economic processes in financial markets should be regarded as a crucial part of financial infrastructures: namely, financial transactions. It is through transactions that finance performs many of its services to the economy. Regarding the development and deployment of calculative devices, this includes the pricing of assets and of risks and the commensuration of financial products of different classes and in different markets (Pinzur, 2016). The agenda derived from an infrastructural view on transactions is this: How are transactions problematized in the Brady and the FCIC reports as Janus-faced parts of financial infrastructures, making finance work while at the same time threatening to undermine it? What shape does the work of separating the functional and dysfunctional aspects of transactions assume in these reports? And how do the reports interrelate financial aspects of transactions as part of financial infrastructure with other, non-financial aspects, thereby revealing finance as a complex infrastructure that follows more than just a financial logic?

To outline the article's structure, the first section begins with the argument that financial infrastructures should be analyzed as Janus-faced, ambivalent imaginaries that require the work of separation between functionality and dysfunctionality, particularly under conditions of financial crises. Methodologically, this argument will be made through recourse to Michel Foucault's notion of problematization, which directs attention to spaces of jurisdictional undecidedness and ambivalence in fields of practice (here, financial practices) that trigger an urge to sort out the ambivalence and distinguish between licit and illicit practices. The second section argues that transactions ought to be seen as parts of financial infrastructures and not (only) as something that is enabled by those infrastructures. This section refers to conceptualizations of transactions in neoclassical and financial economics as well as in the social studies of finance, which share the argument that transactions are the basis of fundamental economic processes and even of economicity as such. The third section presents empirical case studies on the two commission reports from the point of view of how they problematize the line that separates licit from illicit aspects of financial transactions and will work out similarities and differences between them. Most significantly, while the Brady Report's infrastructural understanding of transactions sees them as a – under certain conditions, malfunctioning – hinge between different market segments whose functioning has to be guaranteed by adequate technical means, the FCIC Report problematizes the presence of transactions in fields of economic activity (notably, loans) where they, in too great a number and complexity, might turn out to be dysfunctional. The final section concludes by suggesting how the infrastructural view on finance materializes in distinct forms in the two reports, hence pointing to the malleability of the infrastructural imagination and its differential combinability with other social imaginaries.

### **The infrastructural view on finance: Ambivalence instead of functionality**

This section will address the question of what happens when infrastructures' modes of operation cause malfunctions and crises. This is a crucial question because it renders infrastructures (and among them, the financial system) *ambivalent* – that is, as something

to be secured because of its vital functions (see Collier and Lakoff, 2008; Aradau, 2010; Angelo and Hentschel, 2015), but also as a potential threat to itself. This infrastructural quality, to be detailed below, announces a different analytical angle than that represented by the talk of ‘critical infrastructures’. The latter notion implies that infrastructures may only be problematic insofar as their malfunctioning or collapse will have highly undesirable consequences, while it is implied that, if left alone, they function perfectly smoothly. With respect to finance, the discourse about cyber-security and cyber attacks on financial infrastructures is a clear case in point (Langenohl, 2023). Here, the threat is seen as entirely external to the properties of the financial system itself. This allows that system to be framed as an unambiguous (potential) victim of such attacks and the effects of such attacks as potentially fatal for the entirety of economy and society – the crucial implication being that financial infrastructures normally operate perfectly smoothly and functionally. In other words, the discourse about critical infrastructures tends to construe the vulnerability of infrastructures as being due to external threats and lacking resilience – but not to *internal, systemic* malfunctions. Such externalist securitization works on the presumption of a modernist notion of infrastructures, tightly coupled to the rise of the nation-state, its interest in fully governing and ‘integrating’ its territory, population, and resources (Folkers, 2017), and its mobilization of collective imaginaries regarding the radiant future of the political collectivity (Larkin, 2013; see also Opitz and Tellmann, 2015; Nolte and Yacobi, 2015).

Studies in financial infrastructures have usefully complicated that imaginary, as they point out that infrastructures are to be conceived of as specific ‘contextualized relations’ (Bernards and Campell-Verduyn, 2019: 777), not as fully functional systems. Also, this research argues that financial infrastructures are heterogeneous and historical to begin with, thus producing diverse and context-specific financial realities with partial overlaps as well as contradictions that unfold between different infrastructural prioritizations. Importantly, the heterogeneous and contradictory reality of infrastructures can be seen as a platform from which to observe power relations in the financial economy. For instance, David Pinzur argues that financial infrastructures ought to be seen as arenas of power struggles between different constituencies (like exchanges, but also storages, telegraph companies, and courts), and develops a notion of ‘infrastructural power’ that highlights the working of power through the operation of infrastructures (Pinzur, 2016, 2021a, 2021b).

Taking this strand of theorization of heterogeneous infrastructures further, I suggest consulting postcolonial perspectives on infrastructures. From the perspective of (former) colonies, their infrastructural development was always only partial, serving mainly the interests of the colonizers and their collaborators (see Mitchell, 2014; Gupta, 2015; Nolte and Yacobi, 2015; Tonkiss, 2015; Nolte, 2016). In settler postcolonies like South Africa, this can still be seen in the very unequal access to and quality of basic infrastructures, such as water and electricity provision or policing, granted to black and white segments of the population (von Schnitzler, 2016; Van Riet, 2020). In such historical settings, infrastructures are associated with the organization of social inequities and differential barriers to life chances, not with a fully functional, society-wide putting-to-use of resources and delivery of services. With respect to contemporary financial infrastructures, one can point to Rella’s (2019) critique of the ways that blockchain technologies, once announced as empowering their users over the institutions of traditional finance (on his example, in the area of remittances), are being functionalized by traditional international payment transfers firms not only in order to save on transaction costs, but more fundamentally to push the ‘frontier’ of capitalism further so as to capture new client segments who suffer from the retreat of traditional interbank transfer systems especially in the Global South. From such a perspective, the functioning and the malfunctioning of infrastructures become flip sides of the same coin: The provision of infrastructural services to one group

in society might be conditional on the withholding of those services – which are actually not services but privileges – from another group. Rella's point is thus to address the relationship between functional infrastructural features and (potentially) dysfunctional ones which are together constitutive of finance – like the functionality of blockchain-based financial technologies (for users, but even more for financial institutions), which is directly conditioned by the increasing dysfunctionality of international interbank transfer systems (to the detriment of customers, while banks are saving costs).

While Rella's analysis serves as an example for how the functional and the dysfunctional aspects of (financial) infrastructures are interwoven and at the same time connected to power asymmetries, in the following sections, I will put the emphasis on how this interweaving displays itself not from an external analytical angle but from a point of view located within the infrastructures in question. To this end, I introduce the notion of *infrastructural ambivalence*, which might go emically unnoticed for some time but requires resolution under conditions of crisis. Infrastructural crises are thus moments of an emic 'infrastructural inversion.' It needs to be sorted out which parts of the regular operations of the financial infrastructures are functional and which ones are dysfunctional or pose potential or actual threats. This can be compared to debates about the detrimental effects of malfunctioning drainage infrastructures after disasters like heavy rains that expose the constitutive dysfunctions of these infrastructures (Van Riet, 2018: 36). The point about that infrastructural ambivalence is precisely that as the potential dysfunctions of infrastructures might go initially unnoticed it is not possible to make that distinction between functional and dysfunctional features in advance. Instead of there being a rule in place that would distinguish between what is prescribed and what is prohibited, infrastructural processes may, as it were, 'turn out' to go awry without any indication in advance. (The question of whether it would have been possible to detect systemic infrastructural weaknesses before they cause serious problems is another matter and will only be briefly touched upon in the conclusion.)

In that ruleless space of infrastructural ambivalence and indecision, there is room for 'problematization' in the sense proposed by Michel Foucault. Foucault (1989: 295–96; 1990: 14–24) introduced the methodological concept of problematization in his studies on the moral reflection of sexualities in Greek and Roman antiquity (in particular, that between free men and male adolescents on the verge of becoming free men), arguing that problematizations are most likely to occur regarding those patterns of activity that are not subject to rigorous moral 'codes', such as laws or religious prescriptions. Problematizations regard the moral 'conduct of self' as a practice that cannot fully be deduced from such moral 'codes', but materializes as an ethical task for the individual, or more precisely certain categories of individuals, to live a moral life even in the absence of tight prescriptions and unambiguous exclusions of certain patterns of activity (Foucault, 1990: 26). Foucault's concept of problematization thus directs attention to reflections about the appropriateness of practices that are not fully and directly exposed to, and captured by, formal prescriptions and protocols. Hence, problematization may occur in precaution of potential disruptions arising from within the infrastructure, or it may emerge (as is the case with the empirical material studies in this article) post-hoc in response to unexpected, and unaccounted for by rule and 'code', crises that expose infrastructural ambivalence as a crucial aspect of infrastructural breakdown.

In the research literature on financial infrastructures, Chris Muellerleile (2018) and his study on Black Monday 1987 as a near-breakdown of financial infrastructures comes closest to this article's approach to view infrastructures as ambivalent. He interprets Black Monday as resulting from data traffic in jammed computer networks. Muellerleile expands on this crisis perception toward a more general understanding of finance in terms of *transactions* enabled by infrastructures:

The infrastructural perspective also allows us to consider financial markets as technical systems that are inherently limited in their capacity to process financial transactions, which in turn helps explain their tendency to fail. (Muellerleile, 2018: 279)

In other words, following Muellerleile, what I call infrastructural ambivalence consists of the very technical capacities, and inherent limitations, of financial infrastructures that enable the processing of transactions yet in themselves simultaneously are a potential source of the interruption and near-breakdown of these infrastructures.

Muellerleile's analysis does not only support the conceptual framework presented here, but also calls attention to another implication of infrastructural ambivalence in the case of finance: namely that financial processes themselves might become the kernel of financial crises – not so much as *economic* but as *infrastructural* entities. This implication, which will be detailed in the following section, can be approached when comparing Muellerleile's argument, which is concerned with the near-interruption of financial transactions due to the political securitization of transactions. In that literature, the security dimension of financial transactions is mostly addressed with respect to financial transactions regarded as potential problems for *political* security, as they are associated with illicit practices like money laundering or terrorist financing (de Goede, 2018; Amicelle, 2011). The question is how, among millions of ordinary transactions, *politically* threatening transactions can be detected – a task that equals the search for a distinguishing line between licit and illicit transactions and that banks and political authorities do not always find easy to perform (Amicelle, 2011). Thus, like in the case of infrastructural ambivalence theorized above, security requires a work of distinction and disambiguation, and that work is precisely what can only be performed through problematization as there is no prior practical or unambiguous regulation in place that could easily inform the entire process.

However, a more complex case arises when fundamental financial processes, such as transactions, become entangled in crises in which the security not (only) of the polity but (also) of finance itself is at stake. This is exactly the case analyzed by Muellerleile. Financial transactions are enabled by technology and at the same time endangered by the features of that technology – a point that has caught the attention of historical studies into the opportunities but also pitfalls of the trans-local communication of financial prices, like through telegraphs and the ticker tape (Stäheli, 2013; Pinzur, 2021a). It is this ambivalence of infrastructural enabling that poses a problem for financial stability. In other words, financial transactions *themselves* assume an infrastructural quality for the financial order that shares their ambivalence with other infrastructures; and what is at stake in that ambivalence is the security of the financial system. This adds a new infrastructural layer to Muellerleile's analysis: While, according to him, the *technology* enables but also potentially undermines proper transactions, I will argue that *transactions* themselves may be seen as part of financial infrastructures that enable, as well as potentially destabilize, economic processes such as calculation, pricing, and valuation.

To sum up the argument so far: In agreement with postcolonial critiques of the modernist imaginary of infrastructures as complete and fully functional, this article departs from an understanding of infrastructures as (dys-)functionally ambivalent. By dint of that ambivalence, they are prone to become objects of problematization, i.e., of reflections about how to distinguish between their functional and dysfunctional aspects in the absence of clear and exhaustive codes of law (for instance, effective technical or legal regulations).

## Transactions as part of financial infrastructures

This section's aim is to make the argument that transactions can be conceptually regarded as parts of financial infrastructures, as this will permit an analysis of their infrastructural ambivalence. To do so, it is useful to look into the history of how transactions have been conceptualized in financial economics and in the social studies of finance.

In economics, it was arguably neoclassical thought crystallizing toward the end of the nineteenth century which first theorized financial transactions within an axiomatic that reconstructed the entire political economy from the viewpoint of market exchange. Among the early neoclassical economists, Léon Walras most rigorously conceptualized the exchange transaction as an analytically isolatable unit. According to Walras's conceptualization, transactions are swaps of two items at a specific relative ratio of value that the two items have in terms of one another. Transactions are radically synchronous, that is, the exchange of the two items takes place on the spot, with no further obligation resulting for either of the two parties: The transaction enables an exchange and at the same time settles accounts. Through the imaginary figure of an 'auctioneer', in which Walras bundles various financial roles, transactions become conceptualized as discrete yet interconnected steps: 'through the instrumentality of stockbrokers, commercial brokers or criers acting as agents who centralize transactions in such a way that the terms of every exchange are openly announced and an opportunity is given to sellers to lower their prices and to buyers to raise their bids' (Walras, 1954: 84). In this conceptualization, the two parties to the intended exchange have no clue regarding the appropriate value of the item they offer; they approach each other in a slow process of 'groping' (*tatônnement*) only with the aid of an auctioneer that announces prices for bids and offers until an exchange ratio is reached that is acceptable to both parties. Transactions, thus, for Walras must be treated analytically as isolated units – as a 'sequence of temporary equilibria' (Dome, 1994: 119). Thereby the figure of the auctioneer indicates the non-trivial efforts that go into finding exchange ratios that both parties hold to be viable – an exercise which, although it must be repeated with every further transaction, is clearly circumscribed regarding its beginning (the simultaneous desire to exchange one item for the other) and its end (the exchange that settles accounts). At the same time, as transactions result in a concrete exchange ratio – in other words, in a price – they form parts of the significant environment of any further transactions, thus accumulating serially in a linear fashion (and ideally, towards an 'equilibrium' price). This understanding of transactions as discrete yet sequentially interconnecting steps is also implied in current discussions about blockchain-based decentralized payment infrastructures, where software engineers strive to guarantee the so-called 'atomicity' of international payment transactions so as to ensure 'that both legs of cross-border transactions happen simultaneously, and they either both succeed or they both fail' (Rella, 2019: 8).

Yet, compared to neoclassical economics, the understanding of transactions in the field of financial economics is even more foundational. This is so because financial economics concerns itself exclusively with the modeling of pricing routines for assets. Unlike neoclassical economics, finance is not interested in perspectivizing the entire economy according to a generalized model of market exchange but restricts itself to the development of formal mathematical models in order to understand the value dynamics of financial assets in competitive markets (Muth, 1961).<sup>1</sup> The role of transactions in these models is grounded in a way that is different from their role in neoclassical economics. For the latter, the logic of the exchange transaction derives from a subjectivist notion of value – items are exchanged and prices formed as a result of the egoistic activity of utility-maximizing individuals to fulfill their desires. For finance, the transaction rather *produces* value, here in the form of differentials between prices for the same or comparable items, and which manifest in profit opportunities (Ross, 1978). In other words, while neoclassical economics proceeds from an axiomatic model of market agency due to which subjective

value and desire are the drivers of exchange transactions, finance knows no value outside that which is produced as 'price' as the *result* of transactions. Price-producing transactions are the means of production for financial value:

In most economic models aggregate demand depends on average demand and for that reason, traditional economic theories require the average individual to be rational. In liquid securities markets, though, profit opportunities bring about infinite discrepancies between demand and supply. Well financed arbitrageurs spot these opportunities, pile on, and by their actions they close aberrant price differentials. (Ross, 2002: 131)

From this follows a certain, as one might be tempted to say, deconstructive or performative vision of transactions: producing value instead of mediating it, transactions do not need to refer to an underlying economic asset but create values through interrelating and commensurating different items, which are thus constituted through transaction-based pricing.<sup>2</sup>

The social study of finance (SSF) shares with financial economics a deconstructive or performative agenda, in that it addresses the ways that transactions not merely execute value-based decisions but rather perform economic value. However, SSF goes beyond financial economics in highlighting the social, institutional, political, and cultural conditions that enable that performance. For instance, while 'mathematical finance' is concerned with mathematical models that allow for the disassembly of financial products (for instance, a company share) into their value components (for instance, different types of risk associated with a company share), with the aim of generating alternative models for pricing a company share, SSF is rather interested in analyzing the historical, political, and social frame conditions of calculative devices and units of measurement (Millo and MacKenzie, 2003; Hardie, 2004). In a famous phrase, 'a price is a social thing' (Beunza, Hardie, and MacKenzie, 2006: 721): while financial transactions seem to result in prices with mathematical precision, SSF unpacks the social and institutional conditionalities and prerequisites at work in this only seemingly law-like process. This is also the analytical angle of Pinzur's (2021a, 2021b) research, who uncovers quite dissimilar institutional preconditions and roles for transactions in trading procedures at two different stock exchanges in the US (the Chicago Board of Trade and the New Orleans Cotton Exchange).

This brief rundown through conceptualizations of transactions shows what might count as a financial transaction: transactions are basic processual units of calculative financial operations with clearly demarcated beginning and end points that involve dyadic exchange, are productive of financial value, and are enabled through social practices and institutions. It is based on these considerations that transactions can be understood as part of financial infrastructures which enable a particular economic service, which is pricing. This represents an extension of Chris Muellerleile's (2018) argument. As mentioned, Muellerleile argues that the financial economy has assumed the significance of being an infrastructure for the entire economy, rendering basic calculative services. However, he restricts the notion of infrastructure to the technical substrate of finance, and on that basis argues that it was that technical infrastructure that turned out to be incapable of processing sudden large amounts of transactions. Yet, based on the considerations of neoclassical and financial economics as well as SSF, it can be maintained that transactions themselves may assume infrastructural qualities, namely, inasmuch it is through transactions that those crucial calculative services are performed in the first place. This argument also takes up a recent intervention by Koray Caliskan (oral contribution at SASE Conference, Amsterdam, 9 July 2022; see also Caliskan, 2020) who argues that 'infrastructure' is a relational concept, in the sense that a certain set of technically enabled processes can form the infrastructure for another (cf. Bernard and



Campbell-Verduyn, 2019: 778). Seen from that angle, transactions, based on technical infrastructure, are another technical-calculative infrastructure for services delivered to the economy.

### **Problematizing transactions as part of financial infrastructures**

In this empirical section, I will zoom in on how financial transactions were problematized due to their infrastructural ambivalence regarding the outbreak of two major financial crises. The two examples are reports by commissions set up after the stock market crash of October 1987 and the bust of the subprime mortgage market in the US in 2008. These reports can be said to be the results of problematizations of financial infrastructures by political actors and institutions that responded to a situation in which financial markets had obviously not performed as expected, thus pointing to a lack of market efficiency and/or regulatory effectiveness. The significance of these non-standing, extraordinary expert commissions that were set up after profound financial crises points to the role of experts and professions in dynamics of securitization (see Bigo, 2006; Amoore, 2013), as well as to the ambitions of the respective government to (re)define criteria for good financial conduct. The point of this comparison is not to come up with some essential proclivity of financial transactions to be crisis-prone; rather, the aim is to make visible the ways in which financial transactions were problematized, if differently, as the core of the infrastructural ambivalence of finance.

The two reports which will be analyzed in this section were selected because they each fashion a different problematization of financial transactions. Both argue that through the ways that financial transactions were processed and enabled/disabled in the financial industry, they crucially contributed to the run-up to and escalation of the crises. Moreover, the two crises that the reports analyze both had their origin in the core of the global financial system (the US), while at the same time being entangled in different historical complexities of the financial economy and of the conduct of transactions through the institutions of that economy. Lastly, both reports were commissioned by the US government, and are thus comparable in the political authorization underlying their problematizations, and hence their political significance.

Regarding methodology, it has already been mentioned that the interpretive strategy of this article puts the notion of problematization in the sense of Michel Foucault at center stage – that is, an attention for modes of reflection on ambivalences in the attempt to sort them out in the absence of a fully elaborate, complete, or effective code of legal, moral, or other regulations. This perspective lends itself particularly well to the cases under study in this article. First, both crises and the reports reflecting about them faced an inadequacy of existing technical and legal financial regulations in dealing with the complexities of the markets. Put differently, they reacted to an astounding failure or absence of technical and legal ‘code’ (that is, technical financial infrastructures and legal financial regulations), and hence turned their attention to technical and social ‘practices’ not captured by code. Second, this means that technical and social entities – financial infrastructures as well as financial professionals – became an object of scrutiny not merely because they failed to comply with existing technical standards or legal regulations but rather because their ‘conduct’ appeared to be problematic in the absence of *effective* standards and regulations. Third, Foucault’s concept of problematization maintains a connection to issues of security, especially in its political quality. He mentions that the problematizing reflections on free men’s sexual conduct in antiquity articulated a ‘concern’ (Foucault, 1990: 24) not only with respect to the individuals involved, but also with respect to the political order of the *polis* built upon those men’s self-conduct and reputation (Foucault, 1990: 219). This invites the question as to how the conduct of financial transactions, and the role that technology and

professionals played in it, is seen in the two reports as a security issue not only for the financial economy but for the social, political, and economic order in which it is embedded.

Thus, this section will look into the ways that the conduct of financial transactions became problematized in the two reports' reflection on its non-capture by existing technical capacities and legal regulations, and then compare the two problematizations of the conduct of financial transactions with a view toward how transactions became the nodal points of a discontent with the entire makeup of the financial economy.

### ***The October 1987 stock market crash as reflected on in the Brady Report***

According to a Federal Reserve Board article 20 years on, the 1987 crash at the US markets for stocks and stock options and futures, which brought a market that had been booming for years to severe temporary losses and technical disorder, was held to be a major disruption of the financial system:

The 1987 stock market crash was a shock to the stability of the financial system, not just because of the size of the drop in price, but importantly because market functioning was significantly impaired. The volume of sell orders at times overwhelmed NYSE specialists and they were forced to suspend trading in some stocks. Stock trading suspension played a role in temporarily halting trading in some option and futures contracts on other exchanges. Difficulties ensuring the necessary credit extensions and payment flows to settle margin accounts caused concern about the clearinghouse operations. The issues raised by the crash helped spur upgrades of facilities and systems by the exchanges and clearinghouses. (Carlson, 2007: 21–22)

Those technical 'upgrades' have given rise to infrastructural interpretations of the 1987 stock market crash, as suggested by Chris Muellerleile (2018). According to his analysis, financial flows can be likened to traffic with upper limits of capacity and operability, so that an event like the steep decline of prices within a period of less than two weeks, as witnessed in October 1987, can be interpreted as a kind of traffic jam. Indeed, the 'Report of the Presidential Task Force on Market Mechanisms', also called the 'Brady Report' after the Task Force's chairperson Nicholas F. Brady, arrives at a similar conclusion, identifying the main causes of the market crash as problems with transaction data transmission. It is therefore a prime empirical source for an investigation into the analysis of the infrastructural ambivalence of financial transactions.

The report starts out by mentioning the significantly increased financial value of equity markets in the US, in which context the dramatic drop in market value of the equities traded in the period from 13 to 19 October 1987 by 31 percent of the Dow Jones Industrial Average appeared so dramatic. For the Task Force:

What made the October market break extraordinary was the speed with which prices fell, the unprecedented volume of trading and the consequent dislocations of the financial markets. Thus, whatever the causes of the original downward pressure on the equity market, the mandate of the Task Force was to focus on those factors which transformed this downward pressure into the alarming events of the stock market decline and to recommend measures to ensure, as far as possible, that future market fluctuations are not of the extreme and potentially destructive nature witnessed in October 1987. [...] The events of October demonstrated an unusual frailty in the markets. Only 3 percent of the total shares of publicly traded stock in the US changed hands during this period, but it resulted in the loss in stock volume of \$1 trillion. That such a relatively small transaction volume can produce such a large loss in value over such a short time span suggests the importance of determining the extent to which

market mechanisms themselves were an important factor in the October market break. (Brady Report, 1988: 1–2)

Already in its methodological considerations, the report places the analytical emphasis ‘significantly on the primary transaction data’, identifying transaction records, together with interviews with financial actors, as the main source of information:

Recognizing the importance of determining as much as possible about each transaction, the Task Force spent much of its time gathering and then analyzing transactions of the New York Stock Exchange (‘NYSE’), Chicago Mercantile Exchange (‘CME’), Chicago Board of Trade (‘CBOT’), American Stock Exchange (‘Amex’) and the Chicago Board Options Exchange (‘CBOE’). (Brady Report, 1988: 2)

This way, the dynamics of transactions are identified as the main problem of October 1987 in definition and methodology. Further underlining this emphasis on transactions as the main problem and main source of information is the narrowing of the Task Force’s mandate to the proximate causes of the drop in asset value, while showing much less interest in ‘the causes of the original downward pressure on the equity market’ (Brady Report, 1988: 2).

Accordingly, the report arrives at an interpretation of the 1987 crash that focuses on shortcomings, malfunctions, and failures in transaction-related communicative procedures (such as brokers not answering their phones when clients called them), jammed IT infrastructure (for instance, in NYSE’s ‘automated transaction system’, which caused crucial delays in the processing of buy and sell transactions, confronting investors with prices different from those they had grounded their decisions on), and collapsing market-making norms (when traders tasked with market-making found themselves confronted with too much sale activity to counterbalance). What was at stake were thus the very identity and recognizability of transactions as financial core processes: contested beginning and end points and incomplete processing through infrastructures, leading to aberrant price formation dynamics which could not be counteracted through conventional market-making.

However, the implications of this focus on transactional processes comes into perspective only when considering the ontology that the report presupposes. Most importantly, this is the argument, made prominently and repeatedly in the report, that the crash was caused by a gap between economic processes and transactional processes:

From an economic viewpoint, what have been traditionally seen as separate markets – the markets for stocks, stock index futures, and stock options – are in fact one market. Under ordinary circumstances, these marketplaces move sympathetically, linked by financial instruments, trading strategies, market participants and clearing and credit mechanisms. To a large extent, the problems of mid-October can be traced to the failure of these market segments to act as one. Confronted with the massive selling demands of a limited number of institutions, regulatory and institutional structures designed for separate marketplaces were incapable of effectively responding to ‘intermarket’ pressures. (Brady Report, 1988: vi)

On the basis of this ontology of the ‘one’ market, the report argues that the crash should be seen as a technical and operational failure of the equity market to enter into a ‘rational’ downward trend in the stock, future, and index markets over an extended period of time of several months: ‘Ideally, the full transition from a Dow level of 2,500 on Wednesday, October 14, to a range between 1,900 and 2,000, where equity markets settled in late 1987, should have occurred in a rational way without sharp, transitory declines or rises’ (Brady Report, 1988: 53). However, this was disabled by malfunctions in the transaction processing

technology and in the diversity and limited vision of different overseeing institutions and regulatory bodies. Importantly, the report concludes that the crash could not be primarily attributed to a panic, as general expectations concerning a downturn, often held to be responsible for a market crash, crystallized only in the wake of the operative malfunctions to transactions processing (Brady Report, 1988: 53). Viewed through the lens of infrastructural ambivalence, the report frames financial transactions as fundamental *technical* infrastructures for the proper conduct of economic processes, namely, pricing in highly competitive, and highly liquid, securities markets. Their ambivalence consists in their foundational significance for market integration which, however, is also the root of their potentially disruptive effects whenever they cannot be adequately processed.

The presumed economic integration of equity markets thus serves as the benchmark for defining the necessary features of infrastructural prerequisites to govern ‘intermarket’ exchange. They revolve around the idea of creating unitary technological and regulatory institutions to account for the unity of the ‘one’ market (Brady Report, 1988: 55–68). Given its financial economic ontology – namely that, economically, markets are integrated and behave ‘rationally’ – the focus on the technical infrastructural ambivalence of transactions is key for the report. The main argument consists in highlighting the systemic potential of (technical, cognitive) market disruptions in the field of ‘intermarket transactions’ (Brady Report, 1988: 64). In their assumed quality of forming the infrastructural basic processes for what is held to be economically always-already integrated and whole, transactions appear both as threatened and as threatening: They are threatened because of technical and institutional failures to properly process and administer them; and they are threatening because the ensuing distortions, such as ‘transaction delays’ (Brady Report, 1988: 56), in the assessment of market dynamics through ‘transaction systems’ such as DOT (Brady Report, 1988: 41), trigger further transactional cascades that move the whole system to the brink of collapse.

To conclude this case analysis: The Brady Report is a result of a political (actually, the US President’s) demand to respond to a crisis of financial market stability, and it does so by problematizing the technical infrastructural quality of financial transactions. The experts suggest a problematization that moves transactions, and their temporary, technically-caused irresponsiveness to economic facts, to the center of the problematization. In effect, the Task Force articulates security concerns from the perspective of a neoclassical model of fully integrated markets. As Pinzur’s (2016, 2021a, 2021b) studies remind us, this model is not only varyingly detached from concrete financial market operations (for instance, it is closer to CBOT’s historical reality than to that of NOCE), but also does not necessarily reflect participants’ viewpoints (who, in the case of NOCE, crucially assumed market fragmentation, not integration, to be in place). However, the demands that the Brady Report confronts the political system with are informed by the conviction of fully integrated markets. As the financial system is held to be highly integrated across several markets segments anyway, thus called ‘one’ market, a security perception arises whenever, and for whatever reason, transactions fail to enable the valuation logic of this ‘one’ market. More precisely, it was the technical operation of transaction flows that caused market disintegration, not so much cognitive problems on the side of traders, and which turned awry only as a *result* of technical and infrastructural problems. In other words, transactions turn into infrastructural threats when they are not properly administered and technically empowered.

Hence, the report addresses political authorities with the double task of enhancing financial security through an infrastructural and jurisdictional unification of the equity market, while refraining from any additional supervision and regulation that would interfere with the highly integrated ‘one’ market. In the case of the Brady Report, therefore, we witness a securitization of transactions, as both threatened and threatening, that is mobilized to make a claim for a fundamental separation between political regulation and ‘economic’ processes.

### ***The subprime mortgage crisis as tackled by the FCIC Report***

In 2015 when Paul Langley published his influential monograph on the political handling of the subprime mortgage crisis and its consequences, it was already shared wisdom among researchers that the subprime crisis had not led to any fundamental political reassessment of the necessity to regulate, in the sense of constraining, financial markets (Bieling, 2014). According to Langley, what removed critical considerations from the negotiation table was a biopolitical rationality of the US and the UK governments to safeguard their populations' economic security and 'well-being':

[Governance] apparatuses did not govern the [global financial] crisis as a dislocation of market, banking, or financial capital circulations per se, but as posing a fundamental threat to the financialized security of the population in which those uncertain circulations are deeply implicated. The governance of the crisis as a security dilemma in Anglo-America was a matter of restarting, and keeping in motion, the vital and turbulent flows of global finance because of the opportunities that they apparently afford for the wealth and well-being of society. (Langley, 2015: 10)

Given this compelling diagnosis, it might seem futile to return to an earlier moment in which the regulation of financial markets – not in the sense of securing liquidity, but in the sense of restraining exuberance and outright fraud – still seemed to dominate suggestions as to how to cope with the crisis. Yet, from the perspective of the present article, which is interested in the perception of financial transactions within the framework of infrastructural ambivalence, it is illuminating to analyze a major document that does precisely this, namely the report by the National Commission on the Causes of the Financial and Economic Crisis in the United States, or in brief, the Financial Crisis Inquiry Commission (FCIC).

The FCIC Report deals with a kind of crisis which, compared to 1987, is much more profound and sustainably shook the global financial system. Accordingly, financial transactions play one role among many other factors in the problematization of financial and political security. Their problematization is embedded in an analysis that is far more critical of the ontology of the financial economy if compared to the Brady Report. Most importantly, it does not depart from the notion that the crash and its fallout were due to a mismatch between economic laws of market integration and the infrastructural quality of transaction processes, but rather identifies a kind of 'structured irresponsibility' (Honneger and Neckel, 2010) in the financial sector as a whole, ranging from commercial and investment banks to the selling of mortgage contracts to financial regulation and to rating agencies. Yet, transactions are problematized in a way that serves as a crucial hinge for the overall analysis. In a nutshell, the report identifies a steep multiplication in the number and volume of financial transactions in the subprime mortgage market as the systemic core of the crisis, thus problematizing the infrastructural ambivalence of financial transactions to both enable and cripple that market. This critique is presented in a two-pronged argumentation.

First, the report sees a multiplication of transactions as one of the main causes triggering the crisis, in particular, through the increase of over-the-counter (OTC) derivatives trading (FCIC Report, 2011: 46). Thereby it was, in particular, collateralized debt obligations (CDOs), which allowed for the packaging of large numbers of individual subprime mortgage contracts into 'structured' securities that were sold on to investors. This multiplied the number of transactions involved in the selling of subprime mortgage contracts: In addition to the transactions involved in the forging of mortgage contracts and in the search for investors who might be willing to buy these securities, CDOs allowed

for the reshuffling of the set of mortgage contracts they consisted of into different tranches distinguished by their relative risk/opportunity profile. This brought new institutional actors into the infrastructural field of transactions, like CDO managers (FCIC Report, 2011: 130). Moreover, because so-called ‘synthetic’ CDOs permitted the multiplication of trades merely ‘referring’ mortgages (that is, betting on their performances, typically through credit default swaps [CDFs]), the ‘same’ security was referenced, and financially charged, in many more transactions than would have been necessary to sell and refinance the mortgage contracts:

The mortgage itself creates leverage – particularly when the loan is of the low down payment, high loan-to-value ratio variety [which is exposed to a high default risk]. Mortgage-backed securities and CDOs created further leverage because they were financed with debt. And the CDOs were often purchased as collateral by those creating other CDOs with yet another round of debt. Synthetic CDOs consisting of credit default swaps [...] amplified the leverage. (FCIC Report, 2011: 134)

CDOs and synthetic CDOs, according to the report, thus had a built-in potential to dramatically increase leverage on subprime credit and to concentrate risk as the underlying securities – mortgages and their market value – remained the same: ‘the value of trillions of dollars of securities rested on just two things: the ability of millions of homeowners to make the payments on their subprime and Alt-A mortgages and the stability of the market value of homes whose mortgages were the basis of the securities’ (FCIC Report, 2011: 134). At the same time, the field of subprime mortgage-related transactions, as it grew much more complex, instilled a compartmentalization of risk perceptions that ultimately led to a situation in which the overall systemic risk was ever more difficult to acknowledge, and to handle, from inside the involved institutions.

The increasing leverage and complexity caused by the multiplication and complexification of ‘structured transactions’ (FCIC Report, 2011: 199, 234) around subprime credit is the first step through which the report problematizes financial transactions. Where the Brady Report diagnosed transactional cascades as the consequence of technological shortcomings, the FCIC Report’s diagnosis is rather one of over-transacted markets in which payment streams, the volume of obligations and leverage, became multiplied because of altered financial business models.

This leads to the second strand through which the report problematizes financial transactions, namely, as substituting for more traditional ways of making mortgage contracts. At several points in the report, it is stated that the mortgage-lender relationship in the US mortgage market underwent crucial changes in the run-up to the crisis. Most importantly, loan relationships, which had until then mostly focused on the relation between the lender and the borrower that traditionally remained unaltered for the whole duration of the loan, were subsequently replaced by much more multi-step, complex, short-term, and modifiable relationships mediated through transactions: ‘[W]here banks traditionally took money from deposits to make loans and held them until maturity, banks now used money from the capital markets – often from money market mutual funds – to make loans, packaging them into securities to sell to investors’ (FCIC Report, 2011: 42). For instance, in the run-up to the crisis, lending companies not only mobilized collateral for the mortgages through very short-termed credit transactions (for instance overnight repurchase transactions [repos]) as opposed to genuine capitalization, but also sold the mortgages on to further parties – in particular, through the instrument of the CDO, which, as mentioned, radically increased the number and volume of transactions entering into the administering and marketing of subprime mortgages.

Viewing these two critiques of transactions in combination, the main problem the FCIC Report sees with financial transactions in the run-up to the subprime crisis is that they

constituted profit opportunities that were increasingly abstracted from the underlying mortgage conditions and mortgage relationships. As transactions mushroomed in number and volume, a supposedly stable, steady, and calculable relationship between lender and mortgager was replaced with a myriad of one-off dyadic exchanges all bound to make profit for their parties and not meant to leave any additional obligation, liability, or relationship once they were settled.

What does this interpretation of the FCIC Report in terms of the problematization of transactions as threats to financial stability and security add to existing research on the causes and consequences of the subprime mortgage crisis and its fallout? The FCIC Report, if viewed through the key of the infrastructural ambivalence of transactions, engages in a general threat perception regarding the sheer number, intensity, and complexity of financial transactions that articulates a critique of liberal contractualism, the result being that it tends to problematize financial infrastructures along the lines of the *social*, and in particular *moral*, criteria that ought to govern them. Problematizing the dysfunctional multiplication of financial transactions, which built up an infrastructure for 'structured' finance at the expense of more traditional relationships between lender and mortgager, the report replays much older concerns with the contractual nature of modern societies, as opposed to forms of (economic) relationships characterized by long-term relationships and respected mutual obligations. It thus becomes visible as a variation on the old sociological concern, known from early theories of modernity, that 'community'-like relationships become replaced by much more anonymous, fleeting, and utilitarian contractual relationships which, all the same, are seen to be the basis for modern societies (Tönnies, 1931; Simmel, 1900). Hence, the logic of the transaction is ambivalent in terms of security: While being at the core of the financial economy, its contractual as opposed to moral structure must be hedged so as not to lead to irresponsible exuberance resulting from its disembedding from social norms. The diagnosis of the swelling of the number and volume of transactions, replacing traditional credit relationships and radically abstracting from underlying securities, corresponds to the way that sociology has problematized weakening societal cohesion and the erosion of moral norms and social solidarities as a result of a contractually triggered division of labor (Durkheim, 1957). Seen in this light, the FCIC Report displays a remarkably sociological imagination. Too many transactions and too much transactional traffic weaken the salience of social norms in finance and is responsible for the decay of the financial economy. At the same time, the inescapability of transactions and contractualism as infrastructure for the working of a modern society (or economy) is retained.

Rendering transactions a security problem, the FCIC Report effectively identifies the problem with transactions in the subprime mortgage crisis as another instance of a much more general crisis dynamics of modernity (cf. Huysmans 1998). It thus invokes an imaginary of financial infrastructures as *socially* and *morally* embedded in society – a strategy that, as Marieke de Goede (2005) has shown, is historically intrinsic for the self-justification of finance (cf. Pinzur, 2021b) – and rendered transactions a security problem as they triggered a disembedding of the financial economy out of the moral fabric of norm-oriented social relationships. However, the diagnosis left political institutions, as the report's major addresses, with a message that was only partially operable. While the report did at least indirectly address regulatory institutions, among them such of the political administration (like the Fed), with demands to correct the 'profound lapses in regulatory oversight' (FCIC Report, 2011: xxviii) over financial infrastructures, it could hardly demand of them the restoration of the (alleged) moral integrity of the financial economy before the advent of structured financial products. Remembering Langley's (2015) and others' diagnosis that the brief moment when an effective critique of the general working of the financial economy seemed to be in reach was all too soon replaced by a valorization of that very 'liquidity' which, according to the FCIC Report, caused the problem in the first place

(too many short-term transactions, too much leverage), the question is whether the moral framing of transactions in the FCIC Report involuntarily contributed to the ineffectiveness of its critique. So, the demands put to the political system by the report were ambiguous. While it pointed to the responsibility of government institutions for financial stability and for keeping predatory transactions at bay, thus claiming some currency for political rationalities of control over the financial economy, it tended to couch its critique in a moral register, thus sidelining those aspects of the financial crisis that were related to the infrastructural ambivalence of financial transactions.

### **Sorting out infrastructural ambivalence: A comparative view**

Comparing the two reports, we can distinguish two different strategies of problematization, and hence two attempts to bring order to a situation in which the difference between proper and improper transactions became blurry. The Brady Report takes a focus on *technology*, arguing that lacking computational power made transactions turn awry. The lack of ‘code’ (in Foucault’s sense) to which this problematization responded thus referred literally to technical computer code and its machinic foundations. However, the dividing line between functional and dysfunctional transactions is ultimately drawn through recourse to neoclassical theories of efficient markets, as it is the stipulation of the presence of the ‘one’ single market that is the key for the definition of the problem: The awry character of transactions reveals itself where they, for technological reasons, to not correspond to the economic orders of commensuration on competitive markets. This is different in the FCIC Report, which problematizes the ambivalence of transactions as residing in the multiplication of their number and the excessive ways in which they intruded into formerly non-transactional relationships between different financial actors, such as lenders and borrowers. The criterion which articulates this problematization is, ultimately, not an economic criterion (such as market efficiency in the Brady Report) but a *moral* criterion known from the sociological theory of modernity, namely, the rise of anomie as an effect of the excessive substitution of norm-oriented social relationships by contractual ones.

Infrastructural ambivalence, in the case of financial transactions, uncovers the character of infrastructures as complex and potentially malleable assemblages consisting of different components that do not necessarily follow only one logic (Bernard and Campbell-Verduyn, 2019). The ways that the two commissions problematized transactions combined financial logics with technical and moral considerations, respectively. According to the Brady Report, IT infrastructures had to be matched with the economic ‘laws’ of highly liquid financial markets; while the FCIC Report saw the market functionality of transactions undermined by an erosion of social norms that crystallized in the sheer multiplication of transactional processes in market infrastructures. Thus, the comparison shows that problematizations of infrastructural ambivalence in the area of finance can align themselves with, and become articulated through, different ‘modern social imaginaries’ (Taylor, 2002). In the case of the Brady Report, the problematization invokes the ‘invisible hand’ of the market as a benchmark that helps sorting out the technical infrastructural ambivalence of financial transactions. The FCIC Report, in turn, invokes a related, but sociologically inflected, imaginary of economy and society as a set of contractual relationships that might effect a crisis of normative behavior.

Beyond these differences, a crucial similarity stands out: namely, that the infrastructural view on financial transactions is instrumental in deflecting and effacing political-economic critiques of the financial economy. In the case of the Brady Report, this is accomplished not only by refusing to look at the political and economic conditions for



the crisis, but also through the valorization of market efficiency theorems that render Black Monday as a departure from the laws of the 'one' competitive market. In the FCIC Report, the political and economic dimensions of the subprime crisis are effaced through the definition of the problem in terms of vanishing moral norms caused by a dysfunctional excess of transactional relationships in the financial infrastructure.

## Conclusion

This article has argued that financial transactions may be conceptualized as parts of financial infrastructures. This is not only due to their capacity to perform services for the economy, mainly in the area of calculation of crucial financial and economic vectors through pricing, but also because a conceptually infrastructural view on transactions allows uncovering their fundamental ambivalence regarding their (dys-)functionality in such calculative processes, and the meaning of that ambivalence for the stability of the financial system. A precondition for such a critical analysis is a conceptualization of infrastructures that parts with inherited modernist notions of the completeness, full operability, and functional integration of infrastructures, and instead highlights the constitutive incompleteness, error-proneness, and threatening disintegration of infrastructures owed not to external threats but to their very own modes of operation.

The infrastructural ambivalence of financial transactions was traced in attempts of problematization, as represented by the two post-crisis reports analyzed in this article, that try to find ways to distinguish licit from illicit transactions, and, in that attempt, mobilize different imaginaries. In the Brady Report, the imaginary of the efficient competitive market was referred to in order to stabilize the boundary that separates functional from dysfunctional transactions. In the FCIC Report, a quasi-sociological diagnosis of mushrooming transactional relationships was invoked to separate functional from dysfunctional intermediation by financial transactions in the mortgage and securities business.

These problematizations reveal that financial infrastructures are referred to emically as complex assemblages that combine different operational logics – in the cases discussed in this article, not only the logic of competitive and efficient markets but also those of technical capacity and normative soundness. Thus, radicalizing and expanding Muellerleile's (2018) analysis, I argue that financial processes themselves, i.e. transactions, are part and parcel of financial infrastructures, yet attain this quality in an amalgamation with other components – like technical and normative ones – that articulates the 'financiality' of financial infrastructures against the background of a much broader infrastructural assemblage.

As was briefly mentioned in the beginning, the infrastructural view on finance bears the risk of turning the relationship between the financial and the production-based economy from its feet onto its head. To view finance exclusively as infrastructure offers a standpoint that disables political-economic critiques of finance because it always-already posits finance as the functional base for the entire economy. The analyses conducted in this article help provide this assessment with more nuance. As seen, the infrastructural imaginary of financial transactions, even as it allows and indeed invites problematizations of financial transactions, tends to deflect and efface political-economic critiques. In the case of the two post-crisis reports analyzed, it combines with social imaginaries that are principally affirmative of the basic order of the financial economy, deemed to be rooted in market laws yet in need of support by technical capacities and morally responsible transactional arrangements. Much as finance has historically succeeded in self-legitimization through distinguishing itself from illegitimate practices such as gambling

or lay financial practices (de Goede, 2005; Preda, 2009), it might also be successful in establishing a similar distinction when it comes to sorting out its infrastructural ambivalence. Thus, if this article heralds a conceptual view on transactions as part of financial infrastructures, it does so to point out the problematic aspects of this view if emically actualized in financial practices, institutions, and discourses.

## Notes

1. This does not preclude the possibility for finance to see the entire economy, and even society, as a pool of assets. See Adkins, Cooper, and Konings (2020).
2. This is the dogma, at least. In actuality, the point is precisely that transactions are *not* necessarily supposed to immediately produce or change prices, like in so-called dark pools (Lewis, 2014). However, this critique is not significant for the present attempt at conceptualizing transactions as infrastructural components of finance.

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