

Formal institution building in financialized capitalism: the case of repo markets

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Abstract

Money markets are at the heart of financialized capitalism, as those markets that provide the funding liquidity needed for credit creation and leveraged trading. How have these markets evolved, grown, and become critical for larger financial flows? To answer this question, I distinguish an early period of financial globalization marked by regulatory arbitrage, offshoring, deregulation, and informal trading practices from a period of regime-consolidation marked by formal institutionalization. Concentrating on repo markets as the key funding sources for market-based banking, I demonstrate that new institutional arrangements for these markets were initiated by private sector associations, but supported and authorized by public authorities. Bond trader groups codified new contractual arrangements and these were validated via reforms of bankruptcy codes and changes in central banks' policy frameworks in the United States and European Union. Through these modifications and re-articulations in institutional conditions, transactions and large exposures on money markets became routine affairs—for shadow banking actors like money market funds as well as for commercial banks. The article concludes by discussing the continuity of regime-consolidation efforts after the transatlantic financial crisis and hypothesizes that they reveal “neopatrimonial” features.

Keywords Central banks · Financialization · Legal aspects of finance · Market infrastructures · Money markets · Repo

Financialization not only rests on credit expansion as a driving force (Jordà et al. 2014; Schularick and Taylor 2012). It also involves a profound change in the very processes by which credit is issued and distributed in the financial and economic system. For instance, banks—the key originators of credit—have “marketized” both sides of their balance sheets. They no longer issue loans to hold them on their books, but turn these

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loans into securitized assets that can be transacted with other banks and non-bank firms (Goldstein and Fligstein 2017). Likewise, funding for the creation and acquisition of such assets has become tradable. The actors involved in these transactions are deposit-taking banks, cash pools, investment funds, and shadow banks. Such firms occupy specific positions on longer chains of finance (Arjaliès et al. 2017; Thiemann 2018); and some, like large and complex financial conglomerates, try to gain competitive advantages by combining various market involvements, turning into marketized versions of what once were called “universal banks” (Hardie et al. 2013a, b; Saunders and Walter 2012). Differences between countries and regions remain important, but convergent tendencies predominate (Jordà et al. 2017).

Historically, there existed a close association between the involvement of firms and markets in credit issuance and money creation and the degree to which these actors and domains were institutionally embedded and tied to the state (Tooze 2018). Banks, in the strict sense of depository institutions, are very much creatures of regulation and law, as a designated group of financial actors that is granted (or “franchised”) with the legal privilege of creating and holding IOUs that are guaranteed to be redeemable in currency at par (Hockett and Omarova 2017; Ricks 2016). States were also critical in defining and stabilizing hierarchies of credit (Mehrling 2012), which are relatively durable status differentiations in the “moneyness” of liabilities, from high-risk and idiosyncratic to relatively safe and highly liquid (i.e., more money-like) debt.

The question raised in this article is to what extent and in what ways can we identify equivalent enabling conditions for credit and money creation in financialized economies. Evidently, key elements of institutional embedding have been weakened or entirely disappeared. Banks have lost some of their privileges (and regulatory constraints) (Funk and Hirschman 2014); new instruments are being used that provide functional equivalents to deposit-money (Ricks 2016); and much trading in money and capital markets now happens across jurisdictions, some in offshore realms; on the respective markets, it is increasingly difficult to draw a neat distinction between publicly regulated entities and shadow banks.

At the face of it, these developments render plausible positions in political economy and sociology that associate financialization with the rise of market orders that have become partly, if not entirely, disembedded from state-regulated domains. In political economy, we encounter different versions of this argument. Some scholars posit a “revolution from above.” Seeking higher returns or responding to disruptive competition, principals and agents of capital arguably abandoned their commitments to national social contracts and undermined the rules and regulations that had shaped the post-war embedded order (Streeck 2014). Other scholars attribute more agency to state actors in this process, suggesting that neoliberals either turned liberalization into a hegemonic project (Fourcade-Gourinchas and Babb 2002; Hall 1986) or saw strategic advantages in market liberalization, for domestic (Krippner 2011) or foreign policy reasons (Strange 1998). In sociology, more emphasis has been put on the new ordering forces in financial markets—technological systems (Knorr Cetina 2003; Pardo-Guerra 2010); global microstructures (Knorr Cetina and Bruegger 2002); interconnected global cities (Sassen 2001); or cognitive infrastructures like models and ratings that support valuation and trading in increasingly anonymous, border-spanning transactional spheres (Millo and MacKenzie 2009).

However, challenging these dominant strands of research, a growing number of works rearticulate the centrality of institutions in contemporary finance, especially in the core domains, where credit and money creation take place. For instance, in close conversation with legal scholars (Pistor 2013; Pistor 2019), Bruce Carruthers suggests that “the markets that organize capitalism are based on a set of underlying institutional preconditions” (2015, p. 379) and that “[f]inancialization ... involves the modification and re-articulation of these preconditions” (ibid., p. 380). The areas where such modifications and re-articulations are observed include: new *property relations* (e.g., associated with securitized assets) (Pistor 2019); new *contractual rights and obligations*, e.g., agreed payments that are contingent on the occurrence of particular market events; *regulatory standards* (e.g., for capital adequacy) and *accounting rules* (Thiemann 2018) defining modes and arenas of competition; and changing *legal differentiations between types of claims and claimants* (Sissoko 2010). Besides defining new elements of institutional order, Carruthers and colleagues also suggest that the very processes of rule-making have changed (Riles 2011). Private sector groups, like trade associations and industry bodies, increasingly dominate the modification and re-articulation of often highly technical, but decisive rules. They innovate contracts, provide legal advice, control critical infrastructures, and influence public law and technocratic policy making processes.

This “rediscovery” of institutions in financialized capitalism intersects with recent discussions in monetary theory. In extension of credit and chartalist positions (Ingham 2004; Innes 2004[1913]), a growing number of scholars emphasize the mutability of money forms in financialized capitalism (Gabor and Vestergaard 2016; Ricks 2016) and the continuing, if not increasing, importance of state authority in “accommodating” and “monetizing” privately issued IOUs. For instance, Hockett and Omarova write that “the phenomenal growth of the shadow banking markets reflects the fact that these markets ultimately operate in conformity with the credit-generation model, whereby private liabilities generated in the shadow banking markets are publicly accommodated and monetized” (2017, p. 1175). Empirically, much of this new monetary literature is concerned with changes in central banking techniques (e.g., open market operations, collateral frameworks, etc.), where accommodation and monetization are practically accomplished (Mehrling 2011). Some works also focus on how states modify and enhance infrastructures for sovereign bond trading that are critical for the functioning of financial markets (Gabor 2016).

In this article, I use the empirical case of money markets to explore further the role of formal institutional arrangements, with the aim to advance and integrate sociological, legal, and monetary studies. Money markets provide a useful access point to the questions being raised here because they have become the Achilles heel of financialized economies. On these markets, financial firms (banks, broker-dealers, etc.) engage in wholesale borrowing (collateralized or unsecured) or issue short-term tradable liabilities. Actors who offer such short-term refinancing (e.g., money market funds) thereby *validate* the credit creation or leveraged trading by “traditional” and shadow banks.¹

¹ On money markets liabilities are issued, traded, and valued with maturities under a year. Instruments on these markets vary: Some involve direct credit relations between counterparties (e.g., Eurodollar deposits or repurchase agreements), while others consist in tradable securities (e.g., certificates of deposit and commercial paper) (Cook and Laroche 1993).

When this validation succeeds, risky long-term investments and highly leveraged positions are being transformed into short-term, information-insensitive, highly liquid, and (seemingly) less risky—more money-like—claims inside the financial system (Holmstrom 2015). Importantly, the actors usually providing such validation are themselves in the business of making monetary promises—to depositors, creditors, fund owners, etc. Accordingly, money markets are central for the expansion and contraction of credit pyramids, as well as their internal structure.

The empirical argument I develop here is that the expansion of money markets and their growing systemic significance in the period up until the crisis of 2007–9 rests on the thorough institutionalization of their most critical parts. I pursue this argument by contrasting two historical periods whose distinct features resonate strongly with the different scholarly positions discussed above: In a first period, from the 1960s to 1980s, we observe that *rule-evasion*, *offshoring*, and *deregulation* drove innovations in new liability management techniques and the expansion of new transactional domains. Banks escaped their post-war institutional embedding by exploiting loopholes and moving into the unregulated Eurodollar sphere, where privately negotiated and supervised conventions prevailed. State actors responded to this process with competitive deregulation and identified strategic (domestic and foreign policy) advantages in the rise of unfettered markets. However, from 1980s onwards, the patterns of development changed: Market participants increasingly confronted legal conflicts, uncertainties, and endemic breakdowns in money markets and thus pushed for more institutionalization. Repo markets were singled out as the money markets, where such institutionalization could be achieved, by strengthening the creditor protections derived from collateral, and by formalizing the “key practices, rights, and obligations” (Riles 2011) associated with collateralized credit transactions. Crucial for the success of these private formalization efforts was that *state* actors—law makers, bureaucrats, and central bankers—actively supported these activities and granted “general validity” (Thévenot 1984) to the new repo market rules. For instance, adaptations in bankruptcy laws (Roe 2011; Sissoko 2010) rendered enforceable creditors’ “super-priority” status inscribed into repo contracts (Roe 2011); and significant changes were made to monetary policy frameworks to become compatible with and enhance repo market liquidity. These acts of authorization went hand in hand with central banks’ accommodation and monetization, gradually moving them into the position of repo dealers of last resort (Hördahl and King 2008; Mehrling 2011; Murau 2017; Nyborg and Östberg 2014).

In order to analyze how these institutional modifications contributed to the creation of a “repo-based financial system” (Sissoko 2019), I compare the accelerated growth of repo markets during the 1980s to 2000s with the relative decrease of volumes in unsecured (non-collateralized) markets during the same period of time. As complementary evidence, I also document how industry representatives and advisers came to define repo as a money-like asset, comparing it to credit or debit on a bank account. Moreover, by looking at some critical cases (through annual reports; corporate histories, etc.), I show that, particularly in Europe, repo markets played a strategic role in consolidating a structural money market dependence of large, diversified banks.

The “run on repo” during the World Financial Crisis (Gorton and Metrick 2012) and frictions in repo markets since these events have shed new light on the contradictions and problems of regime-consolidation. Ultimately, the construction of repo markets during the 1980s to 2000s was supposed to secure conditions under which market

actors could price liquidity and thereby provide informational signals to the broader system under which terms credit-issuance would be monetized and validated. However, it has become clear since 2007 that these markets cannot generate stable prices for liquidity, that state institutions ultimately undergird the safety and moneyness of credit, and that the availability of funding throughout cycles of over-confidence and uncertainty depends on monetary accommodation by the state. It is therefore all the more striking that “collaborative” modes of rule-making with the private sector (Riles 2011), aimed at further *strengthening* a repo-based system, have persisted. I suggest that the respective relations between public and private actors increasingly reveal “neo-patrimonial” features. The sector’s rule-making authority and privileged status is granted on public policy grounds that are less and less credible.

This article proceeds as follows: In the following section, I start discussing the early period of money market innovation and expansion, which is plausibly interpreted by, and thus was formative for, various versions of the liberalization-argument in financial market research. But I suggest that we need to distinguish this experimental from a consolidation period, in which we observe institutional work towards standardizing and formalizing market practices that involved legal changes, infrastructure-making, and policy innovation by public actors. The article then discusses the effects of this institutionalization on conceptions and practices of money market trading and internal liquidity management techniques at European banks. I conclude by discussing the increasingly visible “neo-patrimonial” features of the post-crisis regime.

Money market expansion during the liberalization-phase of financial globalization

Taking up and combining arguments from legal works, institutionalist sociology, and contemporary monetary theory, in this article, I emphasize the importance of publicly authorized, often highly formalized (e.g. legal) institutional arrangements in consolidating a particular regime of credit expansion characteristic of financialized economies. However, this is not to question that financial globalization has been a disintegrating force for post-war institutional orders and emerged as a constraining factor in the exercise of state power. For instance, dismantling capital account regulations was a game-changer for the power-relations between financial markets and states, allowing market actors to arbitrage rules and raising constraints for different public policy areas (Eichengreen 2008; Helleiner 1994; Rodrick 2011; Strange 1998). Also, marketization and globalization have unearthed those regulations and institutional structures that constrained the role of finance during the post-war years (Calomiris 1998). Political economists have rightly emphasized the significance of these liberalization processes, although they disagree over their precise causes. My own intention here is not to resolve these debates but to show that liberalization only “marked the beginning of a new era of financial globalization” (Das 2010, p. 78) rather than defining its mature form. Growing financial instability, the insufficiency of informal conventions in expanded transactional spheres, and the emergence of new techniques of state governing reliant on markets raised a demand amongst private *and* public actors to re-articulate the institutional foundations of money markets.

I thus start off by introducing a periodization and by arguing that different concepts are useful for understanding different phases of development. For the early period of financial globalization in the 1960s to 1980s, I suggest that key concepts associated with liberalization—rule-evasion, regulatory arbitrage, the emergence of private market authority, and deregulation—are useful for understanding how money markets evolved. These concepts are less appropriate, however, for understanding distinct developments in the 1980s to 2000s.

A first observation to support the liberalization-perspective is that, in the early period of money market development, the private sector drove change by undermining and disrupting extant institutional settlements. Particularly formative were developments in the United States. Here, many of the early innovations in funding techniques originated and directly resulted from efforts at evading New Deal regulations. These rules had turned into competitive disadvantages for the large banks vis-à-vis non-bank financial companies or state-chartered institutions (Reinicke 1995, 30), and the rules had led to decreasing profitability in the “conventional” (loan making/deposit taking) banking business (Calomiris 1998). US money center banks responded to this situation by inventing techniques and instruments that allowed them to circumvent and undermine these rules. For instance, banks’ issuance of certificates of deposit was a response to the disintermediation of savings (among others, due to the arrival of money market mutual funds) and was intended to get the banks around restrictions on interest payments (Konings 2011; Krippner 2011).² These regulation-circumventing innovations gradually led the respective firms to endorse new techniques of managing their liabilities through market channels. With the use of certificates of deposit and comparable money market instruments, it was now possible to seek funds actively on the markets that allowed balance sheet expansion beyond the constraints imposed by the availability of deposit liabilities and reserve requirements. These innovations in liability management persisted even after New Deal rules like *Regulation Q* (interest rate ceilings) had gone.

It is in the same period that offshore market domains developed that facilitated regulatory arbitrage. London merchant banks had begun intermediating Eurodollar credit transactions—deposit taking and lending in US dollars by firms not domiciled in the United States—from the late 1950s onwards and had thereby defined a new market sphere that fell into the British legal jurisdiction, but remained unregulated in all other respects (i.e., being “offshore”). What turned Eurodollar into a structurally significant short-term funding market was the arrival of American corporations and banks during the 1960s.³ American Eurodollar participants did not only dramatically increase the volume of transactions, but also brought with them US-style techniques of active liability management that were gradually adopted by their European peers (Green 2015). For instance, London clearing banks, the core institutions of British finance, learnt to use US funding instruments in the 1960s and 1970s through their London-based American competitors; sterling certificates of deposit became introduced in the late 1960s and commercial paper—“a long-established instrument in the United

² Similarly, Thiemann and Lepoutre (2017) argue that the asset-backed commercial paper market ultimately resulted from banks’ attempts to expand balance sheets beyond what capital adequacy rules allowed.

³ For the 1960s, scholars suggest that there existed a perverse relationship between new laws being implemented to address the United States’ growing capital account imbalances, and the offshoring effects on banking activity; the three laws being cited are Kennedy’s Interest Equalization Tax (1964); the foreign Credit Restraint Program (1965); and the Foreign Investment Program (1968).

States”—became widely used in Britain during the 1980s (White 1992). Moreover, as Battilossi (2010) argues, Eurodollar markets served as contexts of innovation in their own right. Due to the offshore nature of banking on these markets, assets and liabilities needed to be managed in particular ways. Retail deposits with more predictable patterns of fluctuation were unavailable for Eurodollar banks, and market participants could not have direct recourse to central bank liquidity. Since most liabilities were denominated in US dollar (more than 70%), such backstop was only accessible via US-based Federal Reserve System member banks. Eurodollar participants thus developed “efficient dealing room functions in order to fund the expansion of international business through managing Eurodollar liabilities” (ibid., p. 50). This meant that active trading and constant adjustment of liabilities and assets was imperative in order to square the books. With the advancement of these techniques, banks adopted new versions of interest rate arbitrage and maturity-mismatching, which were now conducted in the wholesale realm, across different markets and currencies.

There has never been a sociological study of Eurodollar as a market order. But from the available evidence we have, we can assume that there exist strong parallels between the early offshore interbank markets and the spot currency markets (Knorr Cetina 2003; Knorr Cetina and Bruegger 2002). As already mentioned, due to their offshore nature, Eurocurrency markets emerged as self-regulated realms. They relied on communicative and transactional links between the banks’ dealing rooms in relevant trading centers (Singapore, Bahrain, London, and New York). Price discovery was organized through private regulatory mechanisms like the LIBOR indicative rate-setting (MacKenzie 2009); through brokerages (usually based in London); and electronic information systems like Telex. Stigum (1983) describes that, since many transacting parties did not have access to the official interbank US dollar settling system Fedwire, the Eurodollar market settled through a private system called CHIPS. Contracts between Eurodollar participants involving the transfer of millions of US dollars were drawn informally, with “little more documentation than [would fit on] an ordinary slip of paper” (Windecker 1993, p. 366).

In summary, then, finance-internal forces—rule-circumventing innovations, offshoring into Eurodollar, and the emergence of ICT-enhanced private trading norms—were critical for the trajectory of money markets during the early financial globalization phase. As mentioned above, this development has raised the question amongst international political economists in what ways state actors reacted to these liberalization processes. A first plausible argument to emerge from this literature is that states increasingly adopted a mode of competitive deregulation with an eye on domestic financial sector interests; they wanted to support national champions and their financial centers to compete in globalizing markets. Accordingly, the countries, where banks were most challenged by new competitors and that were most receptive to sectorial interests, were the first to deregulate (Green 2015). In the United States, systematic liberalization began in the 1980s (Calomiris 1998; Thiemann 2018). In Britain as the “entrepôt” for Eurodollar trading, banks had been obliged to hold 28 to 32% in safe assets (government bonds) against sterling liabilities up until 1971 (Turner 2014), at which point the Bank of England lowered that rate to 12.5 (reserve requirements were completely abandoned in 1981). This decision was motivated by an attempt to strengthen domestic regulated banks vis-à-vis previously unregulated “fringe” and Eurodollar firms. Due to the strength and openness of their domestic financial sectors,

UK and US authorities were also the staunchest opponents of initiatives at regulating international money markets through cooperative efforts, e.g., within the *Standing Committee on the Euro-currency Markets* (Braun et al. 2019).

A second plausible argument is that states acted benignly to rule evasion, offshoring, and the rise of private market orders because, for key state elites, these developments incidentally helped address foreign and domestic policy problems. A large body of scholarship has made this argument for the United States—the country enjoying the “exorbitant privilege” of issuing the system’s reserve currency (Eichengreen 2010). But other states also came to adopt a more accommodating attitude toward the Eurodollar markets after they realized that these markets channeled Petrodollar dollars from oil producers to developing countries and thus shielded Western countries from volatile and potentially inflationary financial flows (Braun et al. 2019). Lastly, Greta Krippner (2011) and others (Quinn 2017; Streeck 2014) have recently interpreted public authorities’ endorsement of liberalization as a political strategy to deal with distributional conflicts: Credit expansion became a palliative response to growing inequalities and thus allowed policy-makers to postpone or depoliticize hard distributional choices.

The overarching argument of these different positions on state agency thus is that, as markets expanded and liberalized, policy makers found reasons to come to terms with and support the (re-)emergence of global finance. We therefore ended up in a world in which the regulations defining banking and money markets in the New Deal/post-war era, like capital controls, credit controls (Reinicke 1995), reserve requirements (Bonner and Hilbers 2015), and restrictive membership rules for different market segments, had disappeared. I do not deny the importance and validity of this argument, but suggest that it incompletely captures the processes, whereby money markets consolidated as critical infrastructures of financialized economies. Before turning in more detail to the institution making that enabled such consolidation, let me here recount three arguments informed by different sociological, legal, and political economy scholarships that make plausible why the liberalization logic increasingly became insufficient and inadequate for the continuation of financialization.

A first key argument is that, from the 1980s, financial instability increased massively, affecting money markets as the Achilles heel. As became evident through several crises (Franklin National; Continental Illinois; Chase Manhattan, etc.), the more firms came to rely on money market funding, the more vulnerable they were to a run. But the daunting problem was not just that the respective firms would go under. Increasing financial integration through money markets also meant that any such failure of a core market participant would precipitate through the system, affecting all those highly leveraged banks that had lent to the respective firm. For that reason, no matter whether default risks for core firms emanated from high exposures to developing countries (e.g., in the Mexican crisis), from boom-bust cycles in real estate, or from failed bets on interest rate convergence in the global bond markets (as was the case with Long Term Capital Management): The unresolved problem resulting from liberalization and marketization was how to address a potential fallout within the money markets that threatened system stability as a whole. This problem defined a new point of convergence between private market and public policy interests, a shared concern for stability around which new alliances in favor of institutionalization could form. Importantly, the period of liberalization preceding these efforts had effectively set the conditions under which new institutional responses were sought: The new systemic risks in integrated

markets were to be addressed by *safeguarding* the markets, rather than curtailing or constraining them.

Second, a chief concern for private actors was that, with more diversity in market participants and growing transaction volumes, extant informal governance arrangements no longer sufficed. Failures, frauds, or disputes proliferated, whose resolution required knowing what the precise contractual arrangements were and how they could be enforced. As Windecker reports, “private commercial banks, [governments, lw], and the courts were all confused about the proper law governing Eurodollar deposits” (1993, p. 377), which led to several litigations and contradictory court rulings in the 1980s. Transacting at increasing “distance,” in anonymous and highly complex markets, thus raised the demand for new mechanisms to address counterparty risks, to clarify contractual rights and obligations, and to define a regulatory and jurisdictional context within which legal disputes could be resolved. These concerns for writing formal rules conducive to market transactions resulted in industry associations emerging as the primary advocates and agents of institutionalization from the 1980s onwards.

But public policy makers had their own reasons to support these efforts. For as more and more policy action came to consist in governing with and through markets, this raised the demand for a stable nexus of policy making with markets and relative predictability in market outcomes. For instance, it was not enough for central bankers to rely on growing capital markets to determine interest rates and distribute credit; they needed to establish a stable link between long-term interest rate formation and their own policy intentions (stable inflation and positive economic output), as well as sustain a degree of stability in market rates that could not be achieved by private modes of coordination alone. Liberalization and deregulation thus provided insufficient foundations for “neoliberal” policies to work (Konings 2011; Konings 2018; Walter and Wansleben 2019). Formalization thus also resulted from public policy makers trying to develop and enhance their market-based governing (Braun 2018).

The age of regime-consolidation arguably reflects the convergence of these different, public and private interests in formalization. Accordingly, towards the end of the twentieth and the beginning of the twenty-first century, we can see how private and public sector efforts at institutionalizing money markets became more and more aligned. I now turn to a particular empirical context to describe this dynamic: the repo markets. From the 1980s to 2000s, these markets developed into the “primary source of funding for market-based banking institutions” (Adrian and Shin 2008). My argument here is that this development was spurred by the thorough institutionalization of repo markets during the same period of time. Contracts in these markets became standardized; contractual forms formalized; legal “touchdown points” (Riles 2011) explicated; and policy frameworks adapted in attempts to stabilize liquidity and address market frictions. All these actions contributed to the development of repo into the critical infrastructures for market-based credit intermediation and banking.

How repo became a highly institutionalized segment of the money markets

Repurchase agreements (repos) are particular types of transactions to acquire or provide funding in wholesale markets, i.e., between banks and other large financial as well as

non-financial firms. Repos consist in the temporary exchange of securities, as collateral, against cash, and an agreement to reverse this transaction, with the return of the same or equivalent securities at a later, predetermined date. Depending on the perceived risk associated with the underlying collateral, the cash borrower pays a “margin rate” or “haircut” on the repo. Due to this haircut, repos usually are “over-collateralized” loans (Sissoko 2019), meaning that the cash-lender holds more value in collateral than she has lent out in cash. Moreover, in bilateral repos, the lender can “rehypothecate” (re-lend) the borrowed securities for the duration of the loan (some limits apply in the United States). The price differential between the initial purchase and the later repurchase, agreed on at the very start of the contract, constitutes the interest on the loan. While there exist repos for various durations, most repo contracts are short-term: in the euro-area, 90% of repos last under a week; and the US triparty repo market primarily consists in overnight trades.

Repo markets first developed in the United States, as a source of funding for nonbank government securities dealers (Garbade 2006). But from the late 1960s onwards, they expanded beyond the confines of this particular segment, when banks started borrowing through repo from money market funds that had drained liquidity out of savings deposits (Sissoko 2010; Toma 1988). A true take-off followed in 1990s and 2000s. In the United States, outstanding contracts grew from a volume of \$833 billion in 1990 to \$4498 billion in 2007; and in Europe, where market size had initially been much smaller (participants reported a gross volume of EUR 2157 billion in 2001), the market grew to EUR 6382 billion in 2007.⁴

Gabor (2016) must be credited for drawing attention to these markets beyond more technical discussions, to reveal their strategic significance for state-finance relations. She theorizes these relations through what she calls the “repo trinity.” This trinity brings together fiscal interests in maintaining high demand for sovereign bonds, which is enlarged through the use of such bonds as collateral in repo market transactions; with central bank interests in implementing monetary policy via liquid and highly integrated money and capital markets; with state and industry interests in increasing stability in the core funding markets of a market-based system. A key argument to emerge from Gabor’s “repo-trinity” thus is that regime-consolidation involved combining heterogeneous interests of governments, private sector groups, and technocrats. Gabor mentions key interventions and policy changes in order to document how these various interests were forged together. In the following, I extend this argument and demonstrate that the primary mode of coordination and alignment between these various interests consisted in the creation and modification of formal institutional arrangements that were supposed to constitute repo as the core market to provide and price liquidity.

A first step in this development consisted in the *standardization and formalization of contracts and trading conventions*. As mentioned above, Eurodollar transactions involved hardly any documentation (Windecker 1993). Repos emerged from similar market practices, based on informal agreements between a select group of US government securities dealers. But as the market ecology became larger and more

⁴ In Europe, we also see a more gradual move away from transactions collateralized by government bonds, which were used in over 90% of transactions in 2001 and still for 80% of trades in 2007. A striking aspect here is in that, as a deliberate result of ECB policy (Gabor and Ban 2016), the use of peripheral European public debt as collateral expanded significantly up until the sovereign debt crisis of 2010ff (see concluding section).

heterogenous, cases of fraud and failure increased and transaction volumes became more volatile (Garbade 2006). Private bond dealer associations—i.e., the interest groups representing participants with most stakes in these markets—responded to this situation by introducing standardized, comprehensive, and highly formalized contracts. The most significant outcome of these efforts was the development of so-called “master agreements” that market participants can sign with their counterparties to predefine the contractual framework for their transactions (this development is closely related to developments in wider derivatives markets; see Riles 2011). The Public Securities Association (the PSA), now the Securities and Financial Market Association (SIFMA), published its first prototype master repurchase agreement (governed by New York Law) for US Treasuries dealers in 1986 (Harding and Johnson 2017); a few years later, in 1992, the International Securities Markets Association (ISMA; later renamed ICMA) adopted a similar approach, publishing a “Global Master Repurchase Agreement” (GMRA) for the European market governed by English/Welsh law.

Master agreements are important for resolving legal ambiguities that had haunted Eurodollar trading and early repo markets. For instance, the question of defining jurisdiction, which had increasingly created conflicts and confusions in Eurodollar markets was resolved (the formally defined jurisdictions in most master agreements are New York or England/Wales). However, the inventors of master agreements did not simply embed repos within particular traditions of law. Rather, in order to define *how* repos would be legally interpreted—where their “touchdown points” were—the respective associations in the United States and Europe used the MRA and GMRA to disambiguate repos as transactions in securities, rather than secured loans. This disambiguation was important to create the preconditions for enforcing “close-out netting” provisions as defining features of repos. These provisions allow a solvent party vis-à-vis an insolvent counterparty to determine unilaterally the net claims resulting from their transaction and to enforce these claims independently of usual bankruptcy proceedings, thereby considerably reducing counterparty risk (Bergman et al. 2004). A key problem for enforcing close-out netting is, though, that most bankruptcy regimes foresee a “breathing space” for the insolvent party, with the consequence that securities held by a creditor as collateral might become subject to “automatic stay.” Bankruptcy courts usually also have discretion over the priority-ordering between different claimants. In more informal trading based on oral agreements and scant paper documentation, participants in the American markets had often implied that repos were secured loans, which had made them subject to the respective bankruptcy proceedings (Walters 1982). The resultant problems became evident when a US bankruptcy court re-characterized the repo liabilities of a failed securities dealer in such a way, disallowing the creditors to retain collateral. This particular instance invigorated action by the US government securities dealer association to formalize contracts in order to forestall future “re-characterizations.” Additionally, by classifying repos as securities transactions, the MRA and later the GMRA also provided a legal basis for “rehypothecation,” i.e., the re-use of collateral by the cash-lending parties for the purpose of borrowing funds.

Together with a move in the United States in the 1980s to intermediate a large share of repo transactions via clearing banks (JP Morgan Chase and Bank of New York Mellon), the introduction of master agreements thus provided a key building block of an increasingly formal “private legal governance” (Riles 2011) regime. But rather than

simply resting on market-internal formalization, *these rules were validated and have been given authority through national legal amendments, regulations, and changes in policy frameworks*. Most importantly, legislators have enshrined the exceptional creditor rights in repo contracts through “carve-outs” in national bankruptcy provisions. In the United States, this process started in the mid-1980s, after the failure of Lombard Wall Inc. led securities dealers and the Federal Reserve to seek ways to reinvigorate and stabilize repo markets, which by then were identified as an existential funding source for a market-based financial system (Roe 2011; Sissoko 2010). Congress delivered on these demands in 1984 by amending the debtor-friendly *Chapter 11 Bankruptcy Code*, exempting repo participants from usual proceedings and giving creditors in these markets “superpriority” (Roe 2011). Similar rules were also inserted into the *Federal Deposit Insurance Act* in 1989 and made applicable to non-bank financial institutions through the *Federal Deposit Insurance Corporation Improvement Act* of 1991; finally, in 2005, the US Congress dropped initial limitations on the kind of collateral to which exemptions from “automatic stay” applied.

In Europe, legal amendments were initially not as critical as in the United States because the GRMAs being used here were subject to English law, which had known netting arrangements and special enforcement rights for secured creditors for a long time (Bergman et al. 2004). Legal expertise being sought by the International Securities Markets Association (ISMA)—the major body behind repo standardization in Europe—had confirmed this enforceability, together with the notion, formalized in the GMRA, that repo is considered in Europe as a *title transfer* rather than secured loan. Nevertheless, two EU Directives, the *Settlement Finality Directive* (1998) and the *Financial Collateral Arrangements Directive* (2002) consolidated the status of repo by explicitly enshrining close-out netting and by formalizing transactions as title transfers. This was an important vindication by state legislators because, even though repo transactions can be “coded” in English law, an insolvent firm will be treated according to the bankruptcy laws of its home jurisdiction (e.g., France or Germany), which means that the respective proceedings bear the risk of “recharacterization”; the two mentioned *Directives* eliminated that risk.

By this point, as Gabor (2016) reconstructs, initial resistance to the expansion of wholesale interbank markets from a few central banks (most notably the Bundesbank) had been broken, and the community of G10 policy makers embarked on a project to support repo market development. Central bankers’ rationale behind this shift was that increasing financial instability could be addressed through designing a resilient market system and that repo markets would bolster their own “infrastructural power” (Braun 2018) vis-à-vis an increasingly integrated, price-sensitive financial system (CGFS 1999). Once repo had come to occupy this strategic significance for central bankers, they became the most powerful lobbyists for legal changes in favor of repo. But beyond that, they also became critical actors in establishing collectively binding market rules. For instance, central bankers were decisive in establishing a distinction between special and general collateral (GC), the latter of which rests on formally defined baskets of securities that are treated as equivalent for the purposes of conducting funding transactions. Such changes were introduced by central bankers via working groups on repo market architecture and through adaptations in their own policy implementation frameworks. In Britain, the Bank of England was strongly involved in such formalizations during the mid- to late 1990s, when it adopted a new policy implementation framework

based on gilt (UK government bond) repo transactions. A key decision, in that process, consisted in re-defining the eligibility of counterparties for official central bank transactions. With the choice of implementing policy via repo markets—a choice widely adopted amongst OECD central banks—this privilege could no longer be exclusively granted to deposit-taking banks or to some specialist group of firms (e.g., the Discount Houses in Britain), but depended on who the key participants in repo markets were. In the United States, Fed transactions with non-banks had already been authorized by the *Federal Deposit Insurance Corporation Improvement Act* of 1991 (Ricks 2016, p. 197–198); and a similar broadening of eligibility was decided by the Bank of England in 1997. Relatedly, central banks' decision on eligible collateral had a decisive impact on markets. Through these decisions, central banks ultimately define which types of credit (here: bonds) is publicly validated. In the United States, the Fed expanded the range of collateral it accepted in repo operations to include mortgage-backed securities in 1999, thereby encouraging “shadow banking as a process of manufacturing high-quality collateral that could mitigate the growing scarcity of public securities and eventually replace them as the core liquid assets” (Gabor 2016, p. 982). In the Eurozone, eligible collateral had been broadly defined from the outset and pro-cyclically narrowed during the sovereign debt crisis (Gabor and Ban 2016); the Bank of England long stuck to accepting only gilts but extended the range of collateral, including mortgage-backed securities, during the financial crisis of 2007–2009.

These adaptations in central banks' formal operational frameworks were primarily justified with respect to enhancing the effectiveness of monetary policy. But they also broadened the possibilities for central banks to accommodate and monetize private credit creation in an increasingly fragile financial system. After massive Fed money market inventions following Continental Illinois' collapse, Minsky had already noted that “the volatility of financial markets and the need for close relations between banks and the central bank increases as banks come to depend on making their position by placing liabilities” (Minsky 1985, p. 14). In other words, public accommodation and monetization had become an enduring and significant aspect of credit expansion in late twentieth and early twenty-first century economies (Braun et al. 2019; Mallaby 2017, p. 303; Stigum 1983, p. 170); and this accommodation and monetization was increasingly accomplished using repo. Among the different money markets, this is the market chosen as systemically essential and to be stabilized with public funds; and it is through repo transactions that banks should receive lender of last resort support. This choice for repo had been made earlier, but it became explicit and consequential during the crisis of 2007–2009 (Murau 2017). For instance, the Fed, the European Central Bank, and the Bank of England all broadened the collateral they accepted against which they would provide liquidity; extended the range of repo market participants eligible in their different lending programs; and set up special facilities to swap safe against illiquid collateral (Hördahl and King 2008).

So the argument here is that through private and public efforts at formalizing institutional arrangements, repo markets developed into a highly standardized, legally privileged, and publicly backstopped segment of the broader money markets. This formalization of institutional arrangements during the 1980s to 2000s was motivated by problems of financial instability, internal market governance, and state governability in the age of neoliberalism—problems that had mounted as an increasingly globalized and integrated financial system expanded on the back of liberalization processes. Private

sectorial interests were decisive in this shift. Market actor representatives not only innovated contractual arrangements (e.g., through master agreements) but also lobbied law-makers to validate these arrangements through changes in bankruptcy codes. But state actors, particularly central bankers, had their own reasons in authorizing and validating the new market rules, in order to strengthen their governing powers within a broader financialized context. Moreover, it is important to recognize that the process of (re-)writing formal rules had its internal logic and created path-dependencies. For instance, privileged treatment of repo markets had initially been limited to transactions secured by government securities. This delimitation was implied in the early US bankruptcy “carve-outs” of the 1980s and in the collateral frameworks of central banks. But the same contractual templates were soon used by market participants to trade in repos collateralized by synthetic assets, such as mortgage-backed securities; and public authorities followed these developments in the 2000s by extending “superpriority” status for creditors and adapting central bank collateral frameworks accordingly.

“Secured money” in a market-based system

In this and the following section, I aim to show that the thorough institutionalization of repo markets had wider effects for practices of credit issuance and banking that prevailed until the crisis of 2007–2009. In this section, I reconstruct how the formalized, standardized, and publicly subsidized nature of repo allowed for new kinds of relationships in money markets. For lenders, it offered a routine way to deposit funds, akin to holding savings on a bank account for retail customers; and correspondingly for borrowers, the existence of strongly institutionalized repo markets suggested that the validation of their risk-taking activities was a matter of course. In the next section, I then look at the importance of repo for the adoption of market-based techniques and organizational forms at the core depository institutions.

As suggested earlier, contemporary “chains of finance” involve divisions and transactional relationships between bank and non-bank financial firms (Pozsar et al. 2010), who occupy specific positions on these chains. For instance, money market funds provide short-term funding, expecting that they can thereby maintain a stable value of their investments and a high degree of liquidity (i.e., unwind their positions without price effects at any moment); broker-dealers act as market makers that borrow cash from money market funds and lend securities and cash to leveraged institutional investors (or “long pools”) (Sissoko 2019, p. 8). Broker dealers also trade amongst each other (Baklanova et al. 2015, p. 19). The formalization of repo markets discussed above appeared to offer solutions for the coordination and collective action problems encountered in this complex and fragmented shadow banking sphere. Through the emergence of highly codified and standardized practices, corporations could readily identify their transactional rights and obligations, settlement procedures, the choice of legal jurisdiction etc., without intimate relations with counterparties or lengthy negotiations (ibid., p. 30). Most importantly though, standardized, state-sponsored repo markets led these actors to perceive wholesale transactions as low risk affairs, despite the fact that they lent to a diverse range of counterparties. Descriptions of repo as “secured money” (Bank of England 1997) or “secured deposits” (ICMA 2019) articulate this perception. They imply that lenders can treat short-term claims in repo as cash-like, that is, as

claims that can always be withdrawn and used to meet one's upcoming liabilities (Ricks 2016, 4; Sissoko 2010, p. 27). Significantly, the perceived reduction of risk was achieved *without* requiring close (and costly) scrutiny of borrowers, even if claims were over-the-counter and involved large exposures towards particular counterparties; in other words, wholesale transactions remained “information insensitive” (Holmstrom 2015). In turn, funding liquidity became more easily available, which led borrowers to depend increasingly on the respective markets. Such perceived safety and elasticity in the availability of funding liquidity evidently derived from the secured nature of credit transactions with the use of collateral. As Riles argues, such collateral provides “a way of *setting limits* on the messy complexities of a global market, a way of *obviating the need for* knowledge and trust, an alternative to developing shared private norms” (2011, p. 55). But the reliability of these apparent risk-management solutions depended not just on the existence of collateral as such. Just as important were the market infrastructures, formal contractual agreements, and legal provisions accompanying collateralized credit transactions. This is reflected, for instance, in the recommendations given by policy makers and representatives of major banks about how counterparty risk should be managed, issued after the LTCM disaster and Russian default crisis. The experts advised the financial sector to “ensure that close-out arrangements using commercially reasonable valuations can be carried out in a practical and time critical fashion during periods of market distress, *with a high degree of legal certainty*” (CRMPG 1999, p. 4, my emphasis); and manuals written by derivatives lawyers advised market participants to seek positions in derivatives and repos backed by “superpriority” laws as a smart solution for hedging risk (Roe 2011, p. 555).

We can discern the aggregate effects of financial firms adopting these recommendations by comparing the development of the repo-segment of the money markets to other types of transactions and instruments. To the extent that repo not just grew in absolute, but also relative terms, this indicates that the respective firms preferred operating within the institutional scaffolding that shields this particular money market segment. Indeed, across different jurisdictions, we can observe this trend. In the United States, in 1980, unsecured loans between banks had a volume of about \$77 billion, which was almost half as much as repo market turnover during the same year. But these unsecured loans hardly grew in line with financial firms' balance sheets during the following 30 years (see Fig. 1). Repo thus essentially assumed by far the largest share in overall wholesale market liquidity, with commercial paper, the second significant instrument, barely making up a quarter of repo market turnover (BNYM 2015, p. 7). We can observe a comparable development in the eurozone, where unsecured loans constituted the primary source of wholesale funding in the early 2000s (ECB 2002). Since then, such loans have dropped, while the volume of repo transactions has grown (see Fig. 2). Equally, in Britain, when gilt (UK government bond) repo markets were officially introduced in 1996, bankers' acceptances (including commercial bills) were still widely used as the traditional London money market instruments (GBP 21.5 billion). But this figure dropped to GBP 1.8 billion in 2007, seeing a parallel rise of gilt repos from GBP 68 billion in 1996 to ca. 302 billion in 2007 (see Fig. 2). These comparisons support the notion that, if money market funding is an essential ingredient of market-based finance, the “secured,, standardized, state-sponsored parts of these markets—repos—assumed a critical role in providing such funding in the run-up to the

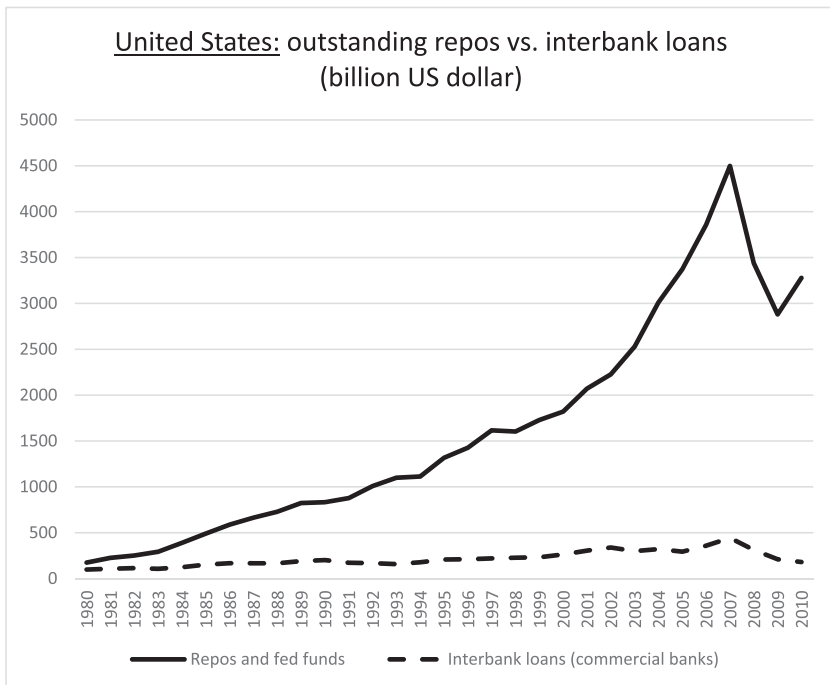


Fig. 1 United States: outstanding repos vs. interbank loans (billion US dollar). Sources: Data on repos taken from the fourth quarter release of *Financial Accounts of the United States* for 1980–2010 (all sectors; “security repos and Fed funds”); data on interbank loans taken from *Federal Reserve Economic Data* (“interbank loans, all commercial banks”; seasonally adjusted monthly values for December, 1980–2010)

crisis of 2007–2009. In this segment, market participants were able to transact “at a distance” with counterparties and, in the eyes of participants, risks appeared manageable, despite huge sums of cash changing hand (or accounts) every day.

Repo and the development of market-based banking

The more actors assume that they can fund leveraged asset positions with money market liquidity, the larger do balance sheets grow. In that sense, marketization has not been in contradiction to, but actually facilitative of, the development of large and complex financial institutions whose activities include mortgage-funding far down the credit pyramids and repo borrowing, in addition to deposit-taking, higher up. What we thus find in financialized economies are new versions of “universal banks” whose principal newness lies in the fact that maturity-mismatching, liquidity transformation, and risk-transformation are interlinked with different markets on which the various assets (e.g., mortgage securities) and liabilities (e.g., money market loans) are traded with and valued by other financial firms (Hardie et al. 2013a, b).

The strategic importance of repo for the development of this new organizational model becomes particularly evident for the case of European commercial banks. In most European financial systems, these banks have been the dominant actors (Zysman 1983), controlling credit-issuance and investment activities in the respective economies

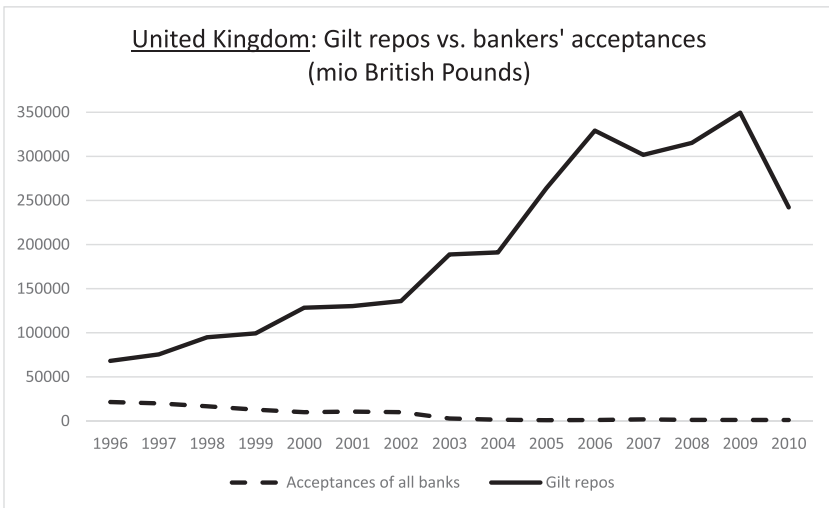


Fig. 2 United Kingdom: Gilt repos vs. bankers’ acceptances (mio British Pounds). Sources: Bank of England Database repos gilt (quarterly amounts outstanding reported in November of institutions conducting gilt repo business; sterling and all foreign currency gilt repos total; not seasonally adjusted, 1996–2010); For bankers’ acceptances, I used the Bank of England “A Millennium of Macroeconomic Data for the UK” database (“bills of exchange”); annual data, 1996–2010)

and funding these activities mainly through retail or saving deposits (Byrne and Davis 2003). But as the ECB observed already in the early 2000s, “deposit collection was not able to keep up with strong loan growth and ... banks therefore had to rely more on credit-sensitive market financing and wholesale depositors” (ECB 2002, p. 5). To be sure, a turn of European banks to wholesale markets had begun earlier, when they had entered the Eurodollar markets. But through repo, such money market exposure and

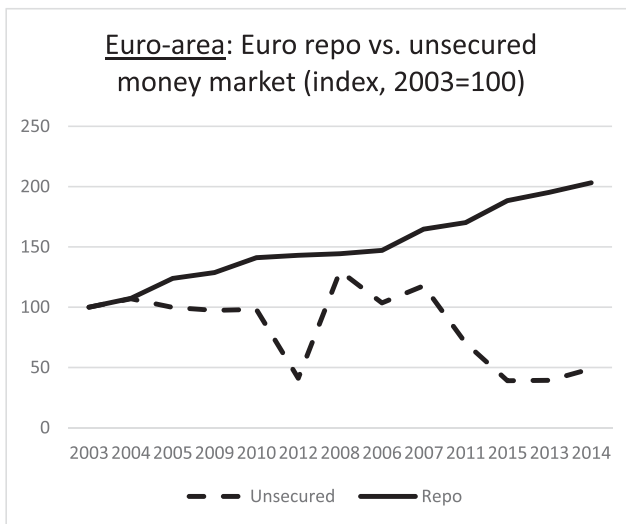


Fig. 3 Euro-area: Euro repo vs. unsecured money market (index, 2003 = 100). Source: ECB Money Market Survey (“unsecured” and “secured segment” annual data, 2003–2014)

active liability management not only expanded, but also became more deeply ingrained in how the respective organizations work. Until the 1980s, money market activities were kept relatively detached from the banks' other activities; for instance, Eurodollar books were separated from the rest of banks' accounts, restricting the exposure for the respective "desks" (Stigum 1983). At corporate centers, Treasury departments practiced liquidity management as a necessary prerequisite for other, more profitable banking activities rather than a market- and profit-oriented aspect of financial trading in its own right. But through repo, a process of integrating money market trading into the banks' broader business practices and management processes began. Organizationally, this integration meant that, whereas investment banking units (money market desks; swap desks; derivatives desks; secondary markets desks) remained responsible for operative liquidity management, strategic decisions became centralized (BCG 2011; ECB 2002). Through this organizational structure, banks deepened the market-approach, organizing liquidity management as a profit-oriented activity. Running large "matched books," i.e. major liability and asset positions in the repo markets, became the most significant component of this strategy. One particular advantage of repo was that it connected investment and main street banking. Loans could be securitized and hence almost funded "themselves." Together with this new way of managing liquidity came a new conception of risk. The managers' primary concern was no longer to observe prudential limits for other banking activities as a result of constrained liquidity. Rather, liquidity risk became re-conceived in terms of balance-sheet scenarios, e.g., potential adverse market developments leading to losses in a book comprised of short-term assets and long-term liabilities; or valuation risks that had implications for liquidity since the valued assets served as collateral.

I zoom in on two cases in order to show how European banks, following different trajectories, gravitated to this new organizational model in the 2000s, and the strategic role that repo played in this change. One case is from the British banking system that had traditionally been organized into specialized segments of clearing banks, merchant banks, money market dealers (Discount Houses), stock brokers, etc. The London clearing banks (Barclays, Lloyds, Midland, National Provincial and Westminster) had formed the monetary core and dominant cartel of this system, responsible for running the payments infrastructure, holding the vast majority of deposits, lending working capital to corporations, and investing in a considerable share of domestic sovereign debt (Needham and Hotson 2018). It was the collapse of this business model through British de-industrialization, Eurodollar, deregulation, and the advent of new rivals in London markets that led the "clearers," in the 1980s and 1990s, to turn to wholesale markets and expand into the previously separate domains of securities trading and mortgage lending. Initially, though, these expansions and associated restructurings did not lead to a consistent new business model (Rogers 1999).

Only in the 2000s did the British banks seem to have resolved these difficulties, reflected in the strong expansion of their balance assets (Hardie and Maxfield 2013, p. 58). Royal Bank of Scotland (RBS) was at the epicentre of this expansion. The Edinburgh-based firm had entered the circle of London clearers through the acquisition of National Westminster in 2000. RBS appears as an extreme case—after all, this firm had to be nationalized in 2008 due to its practical insolvency. Post-crisis reports found that a key reason for the bank's failure was that it had developed a "highly risky liquidity profile" (FSA 2011, p. 96) through large short-term money market borrowing.

But what is revealing about RBS is that its way of trading in wholesale markets was not exceptional and followed a common strategy. From 2004 onwards, RBS had reduced its unsecured borrowing and instead expanded its repo exposure, from 0.5% of liabilities in 1998 to 18.5% in 2007.⁵ Compare this to Barclays, which stressed its health and strong liquidity position in the exceptional crisis year of 2008 (Barclays 2008, p. 126). Barclays had assumed considerable liabilities in unsecured borrowing (22% of liabilities in 2002), but started to reduce these positions in the mid-2000s, in favour of repo, which comprised about 14% of liabilities in 2007. The overall change in liability structures at Barclays thus was similar to that of RBS. These firms followed a consistent—if problematic—strategy, aimed at deriving advantages from the banks' diverse business areas. In particular, credit issuance, securitization, and repo borrowing were supposed to be brought together under the umbrella of a “universal,” market-managed bank. As Barclays reported in 2004, “[t]he Group has a large residential mortgage portfolio which could be securitized and hence forms a large—and as yet untapped—source of liquidity” (Barclays 2004, p. 66). Integrating money market financing with the practice of universal banking also implied a shift in managerial approaches that we can see at RBS and Barclays: In the 2000s, these banks sought to combine “active presence in global money markets” (Barclays 2004, p. 65) with centralized decision-making through Chief Financial Officers and asset liability committees (ALCOs). When in October 2007 the British regulators challenged RBS about its dependence on short-term wholesale funding, the managers were not off-the-mark in claiming that this dependence, as well as their overall managerial approach, was “consistent with that of our peer group” (FSA 2011, p. 99).

A second revealing case is UBS, the largest Swiss bank. In contrast to the British clearers, the two banks to eventually form UBS (Swiss Banking Corporation and Union Bank of Switzerland) had, from their foundations in 1854 and 1912, had been universal banks in the continental European tradition (Tilly 1989), with origins in large-scale corporate lending and equity investments, combined with extensive branch networks and highly profitable wealth management (Ritzmann 1973). During the financial crisis, UBS incurred losses of c.a. \$38 billion and was only able to survive due to various central bank support measures domestically and in the United States. I take up this case because, following these losses and bail-outs, a widespread interpretation became that in the years preceding 2008, UBS had given up on the principles of prudence and conservatism once at the heart of Swiss banking, instead emulating the risky business strategies of US investment banks. But this common narrative clashes with a key finding of a post-crisis report (Straumann 2010). This report found that managers had actually believed they were pursuing a conservative strategy in line with the corporation's tradition.

To understand the bankers' underlying notion of prudence here, it is important to note that, during the 1980s, UBS had suffered losses and reduced margins in corporate and sovereign lending as well as domestic mortgage financing. On the asset side of the bank's balance sheet, UBS's primary strategic objective thus became to “avoid illiquid and concentrated positions” (UBS 2007, p. 2). Securitization was very much part of the solution to this problem and thus opened the door to new sources of funding (i.e., repo

⁵ Figures cited for RBS and the other banks are taken from the “consolidated balance sheets” reported in annual reports.

borrowing). But UBS also assumed a strong presence in repo markets for another reason, more directly associated with its proclaimed prudence: As a bank holding considerable amounts of savings from domestic and foreign (often tax evading) customers, UBS had long sought ways to place these funds in the international money markets that paid a reasonable interest rate, but could easily be withdrawn. For that reason, UBS had been one of the principal lenders in the Eurodollar markets (Loepfe 2011, p. 249-250). But for a conservative Swiss bank, the Eurodollar markets had increasingly become uncomfortable territory, due to the legal uncertainties and counterparty risks discussed above. Accordingly, it was a step towards more prudence, in the eyes of managers, to reduce interbank loans (from 6 % of assets in 1997 to just over 2 % ten years later), and to turn to repo instead. UBS thus became a major player in repo markets via a large matched book, constituting up to 30% of total liabilities and around 20% of assets. This turn to repo was seen to align with, rather than contradict, the managers' aim to preserve the conservative identity of UBS.

Discussion and conclusion

The primary purpose of this article has been to show that we need to distinguish the dynamics of liberalization, defining a first phase of financial globalization, from the dynamics of regime-consolidation. Different concepts and scholarly perspectives are needed to understand these two periods. In the first period, there existed a strong drive by private sector actors to evade rules and undermine institutional settlements, e.g., by venturing into the Eurodollar markets. These processes brought about new instruments, corporate forms, and transactional spheres that had a lasting impact on the shape of money markets in financialized capitalism. The more rule-evasion became widespread and offshore markets grew, the more did states engage in deregulation and recognized strategic political advantages arising from liberalization.

My argument rests on the idea that these liberalization dynamics did not generate a durable regime. Growing financial instability, the inadequacy of informal trading norms in larger and more diverse markets, and the states' increasing reliance on market-based governing techniques informed attempts at more thoroughly institutionalizing money markets and formalizing their nexus to public policy and law. I suggest that we can characterize the subsequent dynamics of regime-consolidation in the following terms. First, private sector organizations like ISDA and bond dealer associations played a prominent role in developing and defining formal rules. Decisively, this private rule-making became publicly authorized, through various channels: through legal amendments, e.g., in bankruptcy codes; and through technocratic policy changes, e.g., via alterations in the eligibility criteria of counterparties and types of collateral for central bank operations. A second observation relates to the interests and rationales behind this regime-consolidation. My argument rests on the idea that the formal institutionalization of money markets became a project defining convergent interests of private and public actors. Private actors saw that consolidating trading practices in expanding and more heterogeneous market spheres would require formal rules. Moreover, as "systemic risks" increased in the respective markets, private actors saw that they needed collective mechanisms for addressing adverse shocks, such as money market runs. The private sector partly used the classic tactics of capture to make public actors align with these

private interests, especially when legislators dependent on campaign contributions were involved (Johnson and Kwak 2010). But a complementary, powerful factor was that public policy makers had their own reasons to support formalization (Gabor 2016; Konings 2011). For instance, law makers readily adopted changes to bankruptcy codes because they shared the belief that these amendments (supported by experts from the central banks and Treasuries) would strengthen financial stability. Safeguards for the core market domains were readily provided because central bankers and other policy makers believed that crises in these domains would have adverse consequences for the economy as a whole. Moreover, monetary and fiscal policy makers hoped to pursue other objectives, e.g., high effectiveness of monetary policy implementation and reliable bond market funding, via the strengthening of repo markets.

The growing systemic importance of these markets for market-based credit intermediation in the 1980s to 2000s highlights the importance of formal institutional arrangements. For instance, the formalized nature of collateralized funding markets was essential for structural changes in money market trading. Because cash investors like money market funds perceived repo lending as a practice akin to putting savings into a bank account, with an equivalent institutional support apparatus behind it, they were willing to increase their exposures, a process that was especially consequential in the run-up to the crisis of 2007–2009. Likewise, borrowers with collateralizable assets assumed that, within the stable environment of repo markets, they could mobilize these assets for acquiring funding liquidity at any time. This explains why the proportion of total investment bank assets financed by overnight repos doubled between 2000 and 2007 (Roe 2011, p. 552). But the institutionalization of repo also had a transformative effect on the practices of large financial conglomerates. For the case of RBS and UBS, I have shown that these banks increased and deepened their money market exposures through repo, believing that repo borrowing and lending provided a consistent strategy for generating bank-internal synergies (e.g., with securitization) and rationally managing liquidity and counterparty risks (Hardie et al. 2013a, b).

The regime-consolidation processes foregrounded in this article unfolded in the period from the 1980s until the 2000s. This raises the question of whether 2007–2009 defines another caesura for money market development. There exist various signs that this is indeed the case. After all, we observed a “run on repo” in 2008 (Gorton and Metrick 2012). Many securities previously perceived (and rated) as high-quality collateral and widely used in the repo markets became virtually worthless from one day to the next. The mass production of safe assets like mortgage-backed securities and their funding through collateralized borrowing were abruptly stopped. Even today, repo markets have not fully recovered from this shock. Moreover, during the height of the financial crisis, many large borrowers, not just Lehman and RBS, were cut off from existential repo funding and were unable to meet their liquidity needs. This has lastingly altered the market. Borrowers fear being cut off from funding in times of market distress and thus primarily conduct repo with ultra-safe collateral, i.e., government securities (Sissoko 2019). Relatedly, since 2007, lenders have rediscovered credit risk, more strongly differentiating haircuts on different kinds of collateral. These frictions have been aggravated in the Eurozone by its sovereign debt crisis. Southern European sovereign bonds have lost their status of equivalence with those of Northern European states, leading to significant drops in their use as collateral (insufficiently

counteracted by the ECB) (Gabor and Ban 2016); and divergent haircuts and interest rates are being charged for borrowing with different bonds (Brand et al. 2019).

On the back of these developments, several analysts have suggested that the project of installing safe and elastic money markets at the heart of financialized capitalism has failed. First, and most obviously, repo markets have shown to reinforce, rather than mitigate, procyclical dynamics in financial markets. That is because value uncertainty in asset markets directly translates into changing funding conditions in money markets—on the way up, when high collateral values allow for more leverage; and on the way down, when devaluations of collateral create liquidity shortages (Brunnermeier and Pedersen 2009). Over-collateralization, daily revaluation of collateral, and close-out netting provisions protect creditors, but these protections arguably aggravate problems for the broader system. That is because protected creditors have little reason to screen counterparties systematically and to contribute to system resilience; they withdraw funds when counter-cyclical liquidity provision is most needed (Sissoko 2010). There is also growing evidence that repo markets have created new governability problems, in particular, for the implementation and transmission of monetary policies (Gabor 2016; Ricks 2018). For such implementation and transmission to work, relatively small official transactions with a select number of market participants, collateralized with ultra-safe collateral (i.e., government bonds), should translate into consistent changes in interest rates for other types of repo transactions, for unsecured interbank borrowing, and for the wider economy. But this process no longer works effectively. For instance, Ricks (2018) observes that the Fed’s attempts at increasing the Federal Funds rate (the Fed’s target for unsecured interbank lending) insufficiently translated into changing funding conditions in the broader money markets. The ECB faces an even bigger problem, due to fragmentation in Eurozone sovereign bond markets (Brand et al. 2019). More generally, considerable evidence exists to support the notion that repo markets have failed in providing a resilient framework for pricing and allocating liquidity.

In the light of these critiques, it is all the more telling that regime-consolidation has actually continued since the crisis. Public and private actors have accelerated their efforts in providing institutional scaffolds and public backstops for these markets. These efforts have involved a further strengthening of creditors’ “superpriority” through revised master agreements and new laws affecting the netting of positions (CGFS 2017). Even more significant reforms have been made in the infrastructures for repo transactions. For the American context, the primary focus has been on the Triparty Repo market, which intermediates most of the transactions between broker-dealers and money market funds. Through a task force at the New York Fed, involving key market actors and regulators, new settlement procedures were agreed to reduce credit risk. In the euro-area, infrastructures are being upgraded by enhancing the role of central clearing parties, which were used only in about a third of transactions in 2009 and now account for 60% of transactions (ECB 2017, p. 160). The result of these recent efforts has been an “accelerated shift away from unsecured interbank lending as a source of funding to the secured market” (Brand et al. 2019, p. 7).

More research is required to understand the persistence of regime-consolidation in a broader context, in which the promise of repo markets to price and allocate liquidity, efficiently together with the promise of generating welfare via associated credit-

expansion processes, has lost much of its credibility (Beckert 2019). One proposal I make here is that, throughout the period of regime-consolidation analyzed in this article, neo-patrimonial relationships have developed between public and private actors, which explain why public authorities remain duly committed to consolidating a “repo-based financial system,” despite its apparent dysfunctionalities (Sissoko 2019). Neo-patrimonialism is a controversial concept to describe defunct bureaucracies in poor and developing countries (Eisenstadt 1973); but I use it here in a more general sense, to capture how particularistic relations between public policy makers and market actors are maintained behind a façade of rationalized, seemingly universalistic institutional arrangements. For the case of repo, we arguably observe such a situation. Extant market structures increasingly depend on subsidies and safeguards from state institutions, particularly central banks, even though they fail to accomplish the outcomes that are supposed to legitimize these public subsidies and safeguards.

Two areas may be particularly useful for exploring these neo-patrimonial features of recent regime-consolidation. The first is associated with the enlarged role of central banks as active dealers in repo markets. On the one hand, central banks have given a general promise for repo market participants to provide funding liquidity, should another run on repo or more minor frictions occur.⁶ There thus exists an endemic problem of asymmetric risk-taking in the financial system (usually theorized as moral hazard) that current regulation has failed to address. But more important for the contemporary situation is that major central banks like the Federal Reserve and the ECB have also become the primary *debtors* in repo markets, i.e., those market participants that borrow uninvested funds against the temporary sale of different assets (Brand et al. 2019; BNYM 2015, p. 22; Ricks 2018). Central banks thus have literally evolved into the primary repo market makers and guarantors of market liquidity. However, if we accept the finding that repo fails as a source of funding to support efficient and stable credit allocation for the broader economy (Sissoko 2019), we may conceptualize such market making in neo-patrimonial terms: Publicly justified as a contribution to macroeconomic growth, the central bank’s interventions arguably serve the purpose of maintaining the business models of market participants at the apex of the contemporary financial system.

Regulation may be another area, where neo-patrimonialism is at work. The broad thrust of such regulation has been towards the establishment of rules (higher capital adequacy ratios; new leverage ratios; liquidity provisions) that should strengthen resilience while safeguarding and stabilizing systemically important firms and infrastructures (Carney 2017). Stellinga and Mügge (2017) introduce the notion of “regulators’ conundrum” to describe the uncertainties that regulators face when attempting to fine-tune different regulatory metrics with these broad intentions in mind. For instance, a key warning sign for regulators has been when trading volumes decrease as a result of new regulations, consistently leading to readjustments in the respective metrics and ratios. This indicates that regulation has become another domain, where general public interests, e.g., in financial stability, have become intertwined and confounded with more particularistic interests, i.e., the profitability of firms in core markets.

More research on these processes is required. But the preliminary evidence presented so far already drives home the fact that regime-consolidation in finance involves

⁶ For instance, the Bank of England adopted such permanent facilities in October 2008. In the United States, Congress restricted the Fed’s discretion over liquidity support measures after 2008 (Tucker 2018).

extending and deepening formal institutional arrangements and thereby also tightens the nexus between market structures and the state. In addition to the necessary empirical research, we still need to spell out more fully what this tightening means for our broader understanding of financialized capitalism.

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