The political economy of repo markets

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Abstract: since the crisis, a new imaginary of 'shadow banking' has been invoked to capture the world of leveraged, complex finance rendered visible, and politically salient, by the collapse of Lehman Brothers. To understand its hitherto unnoticed systemic importance, political economy scholars have focused on poorly designed regulatory regimes as its driver and on securitization as its primary activity. Absent from this account is the repo market, a systemic unregulated market at the core of the 'shadow' collateral-intensive world. The paper approaches the repo market as terrain for exploring broader questions of the politics of financial crises and macro governance in market-based global finance characterized by increasing tradability of risk. Governments are important 'shadow' actors through their role as prime collateral manufacturers, a new role that disrupts the Great Moderation institutional arrangements for macroeconomic governance. The US Treasury is a path-breaker in seeking to create a new story of macro-governance, centered on 'shadow money'. This puts governments and central banks on equal footing in modern finance as creators of money whose actions have important consequences for financial stability.

Key words: shadow banking, repo markets, government debt market, European banking, US Federal Reserve, US Treasury, shadow money.

The current period is distinguished from 2003 and other antecedents by the broader systemic fears about our system of credit intermediation, and I agree strongly with the idea advanced in the materials that were presented last week that the level of the Treasury repo rate is more critical to Treasury market functioning and the functioning of other markets than the target rate or the effective fed funds rate. The deterioration in repo market liquidity [...]correlates strongly with lots of other bad things—fails in Treasury markets, the inability to predict market clearing prices, and the inability to hedge other assets.

FOMC Meeting Transcript, December 15-16, 2008

Institutional consolidation, a broadening range of financial products and greater connectivity among firms have in recent decades materially changed the nature of systemic risk.

New York Fed conference 'New Directions for Understanding Systemic Risk', May 2006

In international political economy and heterodox political economy, it is well established that the 'management of money is political' (Kirshner, 2003: 645; Dow, 2012). Since the crisis, even mainstream economics recognizes that interest rate decisions have distributional consequences (Blanchard et al, 2010). More recent, the discursive dimension of managing money has received much attention since it highlights a crucial distinction, Katzenstein and Nelson (2013) argue, between risk and uncertainty. Uncertainty conceived as a lack of knowledge about 'fundamental structures' renders central banking an exercise in the management of expectations through 'story-telling' (Pigeon, 2011; Holmes, 2013).

The task of telling credible stories has been complicated in the global financial crisis by a new imaginary of shadow banking, for many the most important financial phenomena of recent times (see Pozsar et al, 2010; Pozsar 2014; Haldane 2014; also FSB 2011). Popularized by financial economists that theorized the global financial crisis as a crisis of leveraged risk-taking (Gorton and Metrick, 2012) and then adopted by the Financial Stability Board as a new area in urgent need of governance structures (FSB, 2011), the term encompasses *shadow institutions*, broadly understood as non-regulated, bank-like entities and *shadow activities or markets*: securitization and repo markets (Pozsar et al, 2010; FSB, 2011; Claessens et al, 2012).

While the term 'shadow banking' is new, some of its pillars have been subject of scholarly interest even before the crisis. Sociologists of finance conceived securitization as a set of practices for domesticating uncertainty (Carruthers, 2011; Mackenzie et al, 2007), while anthropologists drew attention to the increasingly blurred distinction between risk production and risk management (Zaloom, 2004; Myazaki, 2007). Since the crisis, scholars typically focus on poorly designed regulatory regimes to explain the rapid growth of shadow banking and its post-crisis resilience (see Schwarcz, 2012; also Rixen 2013). For instance, Rixen (2013) attributes the slow progress in the governance of shadow banking to competing pressures on governments to remain attractive to mobile financial activity. With some exceptions, as in Kessler and Wilhelm's (2013) focus on temporality, the political economy

of shadow banking has so far been the political economy of regulatory struggles. Few political economists have demonstrated an explicit interest in generalizing the systemic implications of shadow banking.

The paper aims to fill in this gap by focusing on the repo market. Repos, or securities financing transactions, involve a temporary loan of cash guaranteed by collateral. In theory, any asset (government or corporate bonds, securities, equity, mortgage loans) can be 'repo-ed' as long as the cash lender accepts it. Unlike securitization, repos risk practices have received little scholarly attention (see Riles, 2011; Singh 2011; Singh and Stella 2012). The neglect is partly due to data shortages, since repo markets are mainly over-the-counter markets. Arguable more important is the de-politicization of collateral management, conceived as a legal (and demandingly technical) aside to more interesting practices of securitization, derivatives trading or arbitrage. A notable exception, Riles's (2011) wonderful study stands out in unpacking the (legal) politics of collateral in the global governance of finance. Yet by approaching collateral as a set of routinized knowledge practices to 'hold back risk' in derivatives trading (p.21), Riles cannot ask whether collateral is always and everywhere a benign financial instrument, or whether repo collateral risk practices enable aggressive risk taking. In contrast, private finance and regulators treat repo markets as systemic (FSB 2012; Comotto 2012). Calling into question the distinction between shadow and 'regulated' banking, Paul Tucker, of the Bank of England, put it as follows: 'anybody with a securities portfolio can build a shadow bank by lending it out for cash and using the cash to make loans' (Financial Times 2012)[1].

The paper makes several contributions. It first generates 'useful knowledge' for both academics and practitioners, as Johnson et al (2013) call for, to explore past and theorize future financial crises. To do so, it brings together the substance of repo markets (finance) with its mode of governance (political economy), building bridges between financial economics and political economy of market-based banking and finance more broadly (Hardie et al 2013).

More broadly, the paper conceptualizes repo markets as terrain for examining the nature of financial crises in a market-based global financial system characterized by 'logics of calculation' (Katzenstein and Nelson, 2013:21) and increasing tradability of risk (Kambhu et al 2007). In theorizing repo fragility, the paper argues that the illusive distinction between the production and management of risk (Zaloom 2004) at the core of repo risk practices underpins the journey into uncertainty that marks crises of financial capitalism (Kessler, 2011). Further, the paper draws attention to the politics that repo markets set in motion. Echoing Beck's discussion of the political character of risk (see Porter, 2009), repo politics comes into sharp focus during crises. Central banks cannot resolve 'shadow' crises discursively, as it has become fashionable to argue (see Katzenstein and Nelson 2013) because financial stability directly depends on the actions of another state actor, the Treasury. The private risk rules governing repo markets before Lehman's collapse have turned Treasuries into 'collateral factories' for shadow banking.

[1] http://www.ft.com/cms/s/0/23eefd10-3175-11e2-b68b-00144feabdc0.html#axzz2cUpgkP59

From a repo angle, shadow banking should not be understood as the progressive undermining of the (regulatory) authority of the state, but as an outcome of financial globalization that poses new challenges to existing economic bargains (see Berger 2000). Shadow banking erodes the Great Moderation neoliberal bargain that combines an independent central bank preserving price stability (and sometimes growth) with a fiscally prudent government informed by neoclassical growth ideas. Rather, in the age of shadow finance, the Treasury can no longer hide behind orthodox ideas of balanced budgets and market-neutral sovereign debt management. This is immediately obvious when examining crisis of shadow banking: financial stability becomes simultaneously the provision of central banks and Treasuries because repo risk practices generate shadow-specific kinds of uncertainties. During crises, fragile repo connections generate a constant scrutiny of governments' ability to continue to supply good collateral, expressed in terms of preserving market liquidity.

Drawing boundaries between monetary and fiscal policy, we know from monetary history, has never been an easy task. It is particularly difficult in an ideational context that attributes great importance to central bank independence. Yet, if government bond markets are essential to financial stability, stabilizing expectations about future fiscal trajectories becomes imperative. Similar 'story-telling' demands are placed on Treasuries, without the discursive/theoretical repertoires that 'independence' affords central banks. Rather, government's involvement in shadow banking has implications that are directly counter-intuitive to standard economic theory. Fiscal expansion may be a counter-cyclical macroprudential policy (Pozsar 2011), while non-fiscal factors, in particular liquidity, may play a crucial role in government bond market dynamics (ECB 2006). It is no longer central banks alone that need to learn to 'talk and listen to markets' (see Nelson and Katzsenstein 2014: 310), but governments – through their Treasuries - too.

The US Treasury, the paper argues, is a path-breaker in seeking to create a new story of macro-governance, centered on 'shadow money' (see Pozsar 2014). This puts governments and central banks on equal footing in modern finance as creators of money whose actions have important consequences for financial stability. Thus, the management of 'shadow' uncertainty is deeply political. Its political character does not solely arise from its story-telling dimension, but also from how government and central banks imagine and conduct relationships with each other and with financial institutions.

Governing uncertainty through stories

Recent critical reflections on the 'art' of central banking, particularly during crisis, have sought to re-establish the analytical importance of the Knightian notion of uncertainty (Nelson and Katzenstein 2014). The distinction between risk and uncertainty is not only a Keynesian question of asset pricing (see Kirshner 2009) but also a mark of modern financial capitalism that 'mixes calculable risk with unknowable uncertainty' (Katzenstein and Nelson 2013). Central banks govern the world of risk and uncertainty by telling stories, stories that enable financial markets to make decisions when expectations cannot be formed and held

with much confidence (Pigeon 2011; Holmes 2013; Katzenstein and Nelson 2013; see Dow 2004 for a heterodox economics account). Monetary policy need not work as predicted by standard theories as long as central banks can persuade markets that it does (Pigeon 2011).

Paradoxically, the discursive approach to central banking articulates well with the pre-crisis mainstream macroeconomic theory and the imaginary of macroeconomic governance it constructed. This established a very clear division of labour between central banks and governments. Through monetary policy, the central bank alters 'signals' and ensures that the 'market' interprets them correctly by anchoring expectations (Woodford 2007). The macroeconomics of the Great Moderation thus involved an outright refusal to accept institutional relationships beyond the discursive realm of expectations management, whether these relationships were to financial institutions or governments (see Caballero 2010, Blanchard et al 2010). The nature of money or the institutional embedding of financial markets is irrelevant to being 'credible' and 'accountable' (through the inflation target) to markets. Sharing a 'scientific' interpretative framework with financial markets does the job of monetary policy (Gabor and Jessop 2014).

Whereas central banks gained epistemic authority from the 'scientization' of monetary policy (Marcussen 2006), rendering them institutions crucial to neoliberal global financial governance (Hall 2008), governments in their capacity of fiscal policy makers enjoyed little to none. Academic economists typically derided the 'alchemy' of fiscal policy, stuck in Keynesian (read antediluvian) hydraulics of multipliers (Leeper 2010), while central banks maintained that fiscal rectitude would best serve the most important macroeconomic policy objective, of price stability. Treasury officials overtly embraced a neoliberal agenda of 'privatisation, labour market reform, and growth policy' that framed growth as a question of micro (structural)-policies centered on 'innovation, infrastructure, deregulation and skills' rather than Keynesian aggregate demand management (Macphearson 2013).

In this governance arrangement, central bank no longer have responsibilities for managing government debt, as they did during the heyday of Keynesian economics (Dyson 2014). Interventions in government bond markets would undermine both central bank independence and the general principle that government debt markets should serve to provide both funding and discipline to states (ECB 2006). Rather, governments make fiscal policy and delegate responsibility for funding it to autonomous debt management offices (DMOs). Embedded in the Treasury, DMOs collaborate with primary dealers (banks or other financial institutions) according to two principles: (a) to operate as 'professional and predictable market players sticking to basic market rules, thereby supporting a liquid and transparent market for government securities' and (b) to implement a microportfolio approach that focuses on securing continued access to markets at lowest costs with ***no*** concern for broader macroeconomic objectives (Bloomestein and Hubig 2012).

For political economists, the shift from orthodox Keynesianism to portfolio approaches codifies the role that Treasuries play in neoliberal arrangements of global governance alongside central banks and international financial institutions (Baker 1999, Hall 2008). Microportfolio theories provide a useful narrative for Treasuries to advance the priorities of

mobile financial capital anchored in 'sound money and free markets' principles. Behind the apparent de-politicization, debt managers maintain close relationships with primary dealers, who are entrusted to distribute debt and to promote secondary market liquidity. For instance, the Treasury Borrowing Advisory Committee (TBAC hereafter) in the United States, composed of investment funds and banks, has a mandate to answer specific questions posed by the US Treasury and to provide technical advice on debt management in formal meetings that take place four times a year. Primary dealers in turn use their proximity to Treasuries to lobby for market-based best practices rather than outright regulation (Dyson 2014). Thus, Treasuries accept orthodox economic theory (the separation of monetary and fiscal policies), and it is precisely that theory that provides the level playing field that global financial capital invokes in order to promote ideas of self-regulation, sound money and free markets.

Crisis management – including the purchase of government bonds in quantitative easing programs – does little to disturb this imaginary (see Streek 2013). The political dominance of austerity discourses (Blyth 2013) and the central banks' promise to 'exit' crisis measures suggests that this is but a temporary disruption (Erturk et al 2013). Governments plan to return to their neoliberal 'destiny', minimizing interventions and subjecting themselves again to the discipline of government bond markets, this time by (rhetorically) renouncing the pre-crisis practice of pressuring their banks into holding their debt. In turn, the new mandate for financial stability will re-establish the epistemic authority of central banks and strengthen their institutional power, allowing them to sharpen story-telling devices that explicitly recognize the uncertainties accompanying the endogenous nature of financial instability.

While the discursive approach explicitly rejects the picture of objective technocrats that mainstream economics assumes them to be, it assumes central banks to be political in devoting their energies to domesticating uncertainty in financial markets, assumed homogeneous and therefore analytically irrelevant. This reinforces the economic imaginary of a central bank disembedded (and distanced) from calculative risk practices, financial markets, and the structural changes these may experience. As a paradigmatic example, Katzenstein and Nelson (2013) argue that risk and uncertainty are important analytical categories to study the practice of central banking, the growing importance of mark-to-market accounting and trading in financial markets. However, Katzenstein and Nelson treat these as distinctive domains, failing to ask the crucial question: in a world of calculative risk practices, has central banking nothing to do with mark-to-market accounting and speculative trading practices?

Paradoxically, since the crisis, it was central bankers that connected these domains under the banner of shadow banking (see Tarullo 2012, 2013, Carney 2013). In their 'stories', shadow banking embodies an on-going structural shift in finance towards risk-based calculative and trading practices. According to Andrew Haldane, Bank of England's master story-teller, a new age is upon us, an age of asset managers (rather than banks), of risks 'showing on market-to-market balance sheets every day', as 'financial activity will migrate outside the banking system. And with that move, risk may itself change shape and form'. While this new narrative can plausibly be interpreted as strategy to sideline the role that (global) banks play

in shadow banking (see Engelen 2014), it is not only that. It also indicates to the anxieties and challenges that shadow banking or market-based finance poses for central bankers.

The next sections argue that repo markets have been critical to the transformation of finance into market-based finance, and of the state as crucial to practices of risk-taking in financial markets. This requires new modes of governing uncertainty beyond the discursive efforts of the central bank.

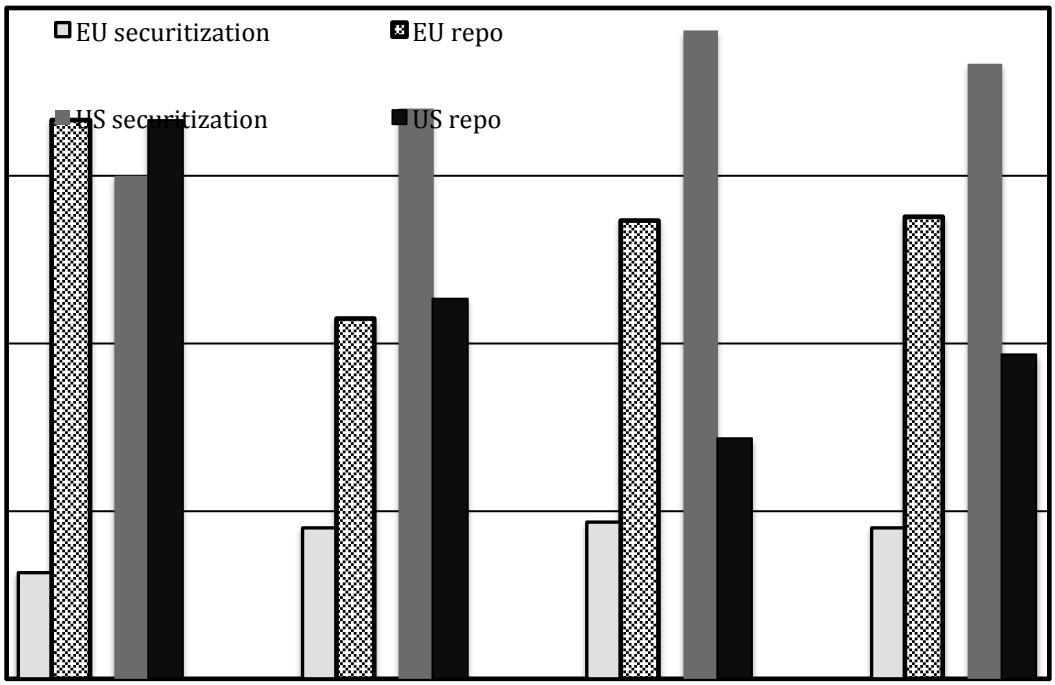
Situating repo markets in shadow finance

The New York Fed (Pozsar et al, 2010) first mapped the shadow banking universe, drawing on the term coined by McCaulley (2007). The Fed study presented an extraordinary complex map of non-regulated institutions that fulfilled functions traditionally pertaining to banks. In line with this definition, the FSB (2011:1) set out a regulatory agenda for shadow banking defined as 'entities and activities structured outside the regular banking system that perform bank-like functions'. Among these non-bank entities, the study listed finance companies, money market funds, (some) hedge funds, special-purpose vehicles etc. In turn, it identified two activities specific to shadow banking: securitization and collateral intermediation through repos and securities lending markets.

For regulatory purposes, a focus on shadow institutions raised definitional difficulties. Take for instance the European Commission's (2012) consultations on shadow banking. Many respondents objected to the 'shadow bank' term, either because of the perceived pejorative connotations, or because non-bank institutions already subject to regulatory provisions rejected additional regulation. Furthermore, the well-documented involvement of European banks into US shadows banking (Acharya et al, 2010; Shin, 2011) called into question the distinction between regulated and shadow banks. That the distinction had legal, rather than operational purposes linked to regulatory and/or tax arbitrage became clear once European banks had to provide liquidity support to their shadow banking entities (conduits) when the crisis hit US markets. Thus, scholars recognized that mutations and innovations would continuously outpace regulators' ability to identify shadow banks (see Claessens et al, 2012, also Lysandrou and Nesvetailova 2014).

In turn, analytical discussions of shadow markets have so far privileged securitization. Most studies define shadow banking as 'securitization-based, non-bank credit intermediation" (Pozsar et al, 2010; Bouveret, 2011:1, also Nesvetailova and Palan 2013). Conversely, the famous map in Pozsar et al (2010) placed shadow banks along securitization chains. Remarkably, Lysandrou and Nesvetailova (2014) only touch on repos in a footnote, to dispute a policy proposal. With few exceptions (see Singh, 2011; Claessens et al 2012; Moe 2012; 2014 also Gabor 2013), the early shadow banking literature presented collateral intermediation as a subset of securitization activities (see Pozsar 2010, also ECB 2012 and FSB 2011). Empirically, this focus of securitization is problematic: while US securitization volumes are higher than repo volumes, the opposite is true for Europe (see Figure 1).

Figure 1 Securitization vs. repo market (volumes outstanding), US and EU, USD trillion.



Source: data from FSB, 2011; ICMA, 2011; Singh and Stella, 2012, Gorton and Metrick 2012.

Securitization took centre stage for several reasons. First, securitization captured public attention as the crisis started with a run on complex securitized products relying on the subprime US housing market (see Gorton and Metrick, 2012). The readily available data on securitization products allowed regulators to make sense of the crisis and narrate it, given the urgency of regulatory reform, as a crisis of 'securitized banking' (Engelen et al, 2012). Second, the rapid pre-crisis growth of securitization had been at the core of policy discourses applauding the benefits of financial innovation as an efficiency improving, risk-spreading technique (Engelen et al, 2011). In contrast, once financial actors stopped trading, or found it impossible to value highly rated securities (ABSs, MBSs, CDOs, square CDOs), securitization came to embody the misleading promises and 'distorted incentives' underpinning financial innovation (Shin, 2009). It vindicated Minskian analyses of financial instability and private leverage cycles (see Moe, 2012; Nesvetailova and Palan, 2013), as well as contributions from cultural economy writ large (Pryke and du Gay, 2007) that drew attention to socio-cultural and interpretative practices underpinning the pricing of complex securitized products (Carruthers, 2010; MacKenzie, 2011).

Analytically, securitization could also be used to frame shadow banking as a new mode of financial accumulation. For example, Lysandrou and Nesvetailova (2014) argue that the primary purpose of shadow banking entities is not to design clever strategies for regulatory arbitrage, but to increase 'the rate of production of yield bearing debt securities required by

the global investor community'. The definition invokes a new financial landscape where (shadow) investors (mutual funds, insurance companies, pension funds, asset managers) demand tradable financial instruments, leaving behind the old world dominated by banks offering deposits to small savers. In part, this historical trend reflects the rise of the financial subject increasingly confident in her calculative practices since the 1980s (Johal et al 2014). Financial literacy campaigns encouraged the poor to learn how to overcome their fears of finance, to 'recognize' predatory lending practices and generally accept the financialization of social relationships. Middle classes and the super rich (the high-net worth individuals) turned to more complex investments to create market portfolios that would mitigate future risks as the state and employers retreated from social obligations for retirement, health and education (Erturk et al 2005). The age of 'asset managers' is the flip-side of the rapid erosion of the welfare state.

In contrast to these complex and multi-disciplinary lenses to approach securitization, critical scholars treat collateral as a legal technicality without analytical relevance for the rhythms of global finance, except for Riles (2011). Repo markets are typically the focus of analytical from financial economists and regulators, as conduits for systemic risk (see Gorton and Metrick 2010, Singh 2011, Pozsar and Singh 2012). Yet this is a conversation with a distinctly Anglo-Saxon flavour. Gabor (2012) and Gabor and Ban (2013) argue that scholarly neglect of European repo markets stems from a continuous reliance on the market vs. bank dichotomies used by comparative political economists and regulators alike to contrast the bank-dominated (continental) European financial system with the US arms-length finance, more germane to the rise of shadow banking. Policy makers rely routinely on this distinction to explain differentiated regulatory regimes or central bank intervention (see ECB 2012). In turn, critical scholars that explore the rise of market-based banking in Europe (see Hardie and Howarth 2009; Hardie et al 2013) have little to say about the systemic importance of collateral or repo activity, even though statistics show that the twenty largest European banks transacted 3 of every 4 Euros passing through the European repo market (Hordhal and King, 2008).

The next section explores the distinctive role that repo markets play in the organization and production of risk (and uncertainty) in market-based finance.

Managing vs producing risk: an illusive distinction

> *Within the financial sector, diversity appears to have been reduced for two separate, but related, reasons: the pursuit of return; and the management of risk (Haldane 2009)*

Scholars and policy makers have proposed different ways in which risk practices matter. For sociologists of finance, risk models shape and order financial markets, not as accurate models but as communicative devices that organize increasingly dense connections between market players (Millo and Mackenzie 2009). Risk models 'materialize' social conventions that allow finance to operate (Nelson and Katzenstein 2014), altering markets in the image of the models they hinge on. But this may have systemic consequences, if social conventions and

sophisticated models generate persuasive narratives that risks can be identified and managed carefully. Under the illusion of risk protection, Haldane (2009) argued, financial actors may engage in 'pack hunting for yield', following similar trading strategies that generate financial instability.

What preserves the distinction between risk protection and risk production that Haldane alludes to? One of the few to question this distinction, Zaloom's (2004) anthropological study of futures markets argued that 'rationalized risk management establish the conditions for speculations in financial contracts' (p. 366). In this 'productive' account, risk management, rather than a costly practice to govern the gap between the present and the future in order to minimize losses, is fundamental for aggressive risk taking (see also DeGoede 2005, Ashton 2011).

It is precisely this dual nature that distinguishes the repo market from other shadow activities. As a market systemic to shadow banking, the repo market engenders risk practices that go into productive territory. A counterparty's risk protection is the other party's risk production.

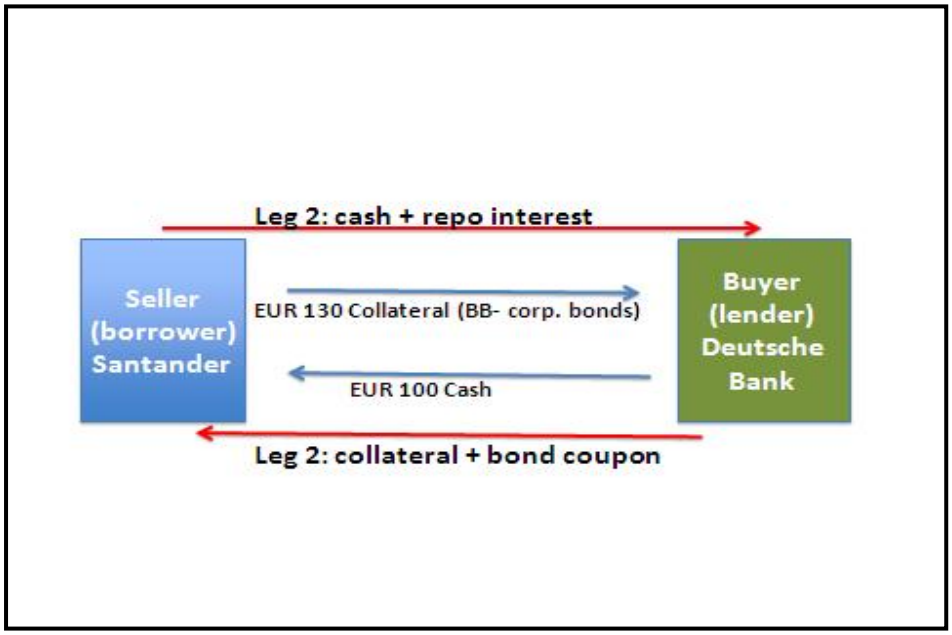
Consider the risks attached to traditional banking activities. Theories of financial intermediation have explained banking as an activity of developing close, information-intensive relationships with borrowers (Bhattacharya and Thakor 1993). Banks' assets (loans) are illiquid, that is, they cannot be traded, precisely because banks need proprietary information about borrowers to manage the risks underpinning loan creation and pricing (Boot 2000).

By contrast, repo practices have evolved to reduce information demands in lending relationships, substituting them for readily observable market prices of collateral. The cash lender requests collateral, to which it may apply a haircut (asking for a collateral portfolio higher in market value than the cash loan). It then calculates daily the market value of the collateral portfolio (mark-to-market), and makes margin calls if the market price falls. Risk management practices (mark-to-market and margining) allow the cash lender to liquidate her collateral portfolio and recover the cash in case the repo counterparty defaults. For this, legal practices allow the collateral receiver to become owners of that collateral (in Europe) or exempt collateral from automatic stay (in the US, see Comotto 2012). Thus, the practices of managing counterparty and collateral risk – legal ownership of collateral, mark-to-market, margin calls and haircuts - minimize the need for proprietary information about counterparties.

For example, in a one-week repo, Deutsche Bank lends cash to Santander against Spanish BB- rated corporate bonds at a 30% haircut: for every EUR 100 cash, it asks EUR 130 corporate bonds at market value, and charges a repo interest rate (see Figure 2). While Deutsche Bank is the legal owner of those corporate bonds until the end of the repo transaction, the two parties remain involved on a daily basis. To ensure that it does not lose in the process – when, for example, that collateral falls in market price - Deutsche Bank calculates the market value of those corporate bonds on a daily basis (marking them to market) and makes margin calls: if the price of corporate bonds falls, Santander has to post

additional collateral to Deutsche Bank. If Santander Spain defaults, then Deutsche Bank may sell the collateral and recover its cash.

Figure 2 The mechanics of a repo transaction



It is precisely the risk management regime, designed by private finance, which renders repos 'productive' for leveraged risk production. Repo cash lenders (Deutsche Bank) do not assume any of the collateral *risks or returns*. These remain with the cash borrower. In the example above, although Deutsche Bank becomes legal owner of collateral, it does so only for the purposes of Santander's potential default. Rather, Deutsche Bank has the obligation to transfer any coupon payments to Santander (Comotto, 2012). In economic substance, repos are lending relationships.

Thus repo risk practices enable aggressive risk taking. For example, Santander buys corporate bonds, and finances them in the repo market, while retaining the underlying exposure to the risk and returns of those BB- bonds. In the upswing of a financial cycle, when market prices increase across the board and haircuts are low, mark-to-market accounting means that Santander will receive every day some collateral back from Deutsche, rendering its funding of the BB- bonds cheaper. This improves funding levels, allowing Santander to take additional leverage by, for instance, purchasing new assets that it can further fund through repos (see Adrian and Shin 2008). As long as the cost of the repo (the repo rate and the haircut) remains below the expected return on the repo-ed assets, Santander can increase its leverage. Collateralized borrowing may thus be strongly pro-cyclical, inflating asset prices. As the FSB puts it: 'a system based on securities financing may be more procyclical because of the direct relationship between funding levels to fluctuating asset values' (FSB 2012: 3).

Furthermore, repo practices allow re-use or re-hypothecation (FSB 2012). Following with the previous example, Deutsche Bank accepts those corporate bonds because it needs it to settle a

short position, to hedge an interest rate exposure or because, as a market-maker, it can re-lend those securities at more favourable rates in the same market. These various functions highlight how repo actors can lend and borrow the same piece of collateral repeatedly, if there are no legal restrictions on re-use (re-hypothecation). Singh (2011) describes these as collateral chains (or networks): the same asset can move between various counterparties in different repo transactions, so that all these counterparties have a common exposure to the collateral value. Singh (2012) estimated that before the 2008 crisis, a high-quality asset typically sustained at least three different repo transactions, generating what the European Commission described as 'dynamic collateral chains' connecting several financial institutions (European Commission, 2013[2]).

Repos thus shape the financial markets that provide collateral for repo activity, re-ordering what Brunnermeier, Gorton and Krishnamurty (2011) conceptualized as risk topographies. Missing from their analysis is the recognition that repos re-order risk landscapes: once an asset becomes collateral in repo transactions, the liquidity of the market it trades in changes (Comotto 2012). This is the second, politically more important, productive aspect of repos. By virtue of repo risk practices, some assets make better collateral than others. Demand for leverage increases demand for collateral to fund leveraged positions, so that trading and liquidity increases for asset markets that gain collateral status.

At first sight, the markets that most benefit from the rapid growth in repo volumes are government bond markets, since repo players prefer government debt to any other collateral. Around 75% of assets flowing through collateral networks both in the US and Europe come from governments, both before and since the crisis (Hordahl and King 2008; ECB 2012; ICMA 2012). This is somewhat counter-intuitive: the growth of a systemic shadow market relies on state issuance of debt. What explains this preference for government debt as collateral and what are the political economy implications of governments becoming shadow actors?

For Giovannini (2013), they key architect of the private set of rules that governed European repo markets before the crisis, the preference for government debt is a story of costs and profitability. At the core of a risk-based financial system is the institution least likely to renege on its obligations: the state. This makes it an attractive tradable asset and government bond markets the most liquid of all asset markets (at least for high-income countries). Liquid collateral markets mean lower haircuts, limited price volatility, and less margin calls for repo borrowers, reducing the costs of funding and leveraging.

Consider securitization in the US. From a demand angle, securitization can be interpreted as a market response to the shortage of low risk 'repo-able' government debt (Pozsar 2011, Stein 2012, Lysandrou and Nesvetailova 2014). Shadow banking becomes a 'collateral factory' keeping pace with appetite for risk and leverage that the US Treasury did not meet by issuing government bonds (Giovannini 2013). A similar process of manufacturing high

[2] *'If this collateral is lodged in cash, it can be re-invested. These strategies generate dynamic collateral chains in which the same security is lent several times, often involving actors from the shadow banking system.'*

quality collateral can be identified in Europe, albeit not through private securitization markets. Rather, the European ambitions to achieve a rapid integration of financial markets prompted the European Commission and the ECB to encourage the cross-border use of collateral in repo markets (Gabor and Ban 2013). In this, the intention was to rely on the repo market to iron out risk differentials between Euro sovereigns. European banks included sovereign bonds of Eurozone members historically viewed as less safe (Italy or Greece good examples) into collateral chains, and in doing so, flattened yields and risk outlooks. The relative collateral distribution reflected the relative size of the sovereign debt market, with government debt issued in Germany and France together amounting to around 30% of all overall transactions, followed by Italian, Spanish and other European sovereigns (ICMA 2008). The combined repo volumes of collateral issued by the GIIPS countries rose to around 20% of overall repo transactions, because repo risk practices constructed German and Greek government bonds as equal collateral before Lehman.

In sum, before Lehman's collapse, the private set of rules governing repo markets constructed the perfect illusion: that repo risk practices would do away with uncertainty inherent to financial assets whose future prices, Keynes argued, are unknowable (Kirshner, 2009: 532). To policy makers, Keynes appeared inconsequential: if the counterparty defaulted, the collateral this provided could be sold immediately. The daily margining practices would ensure that the repo lender would recover her cash loan whatever the direction the collateral market would take. This was a bet on liquidity: in deeply liquid markets, repo-reliant institutions could always sell collateral without systemic consequences.

On both sides of the Atlantic, policy makers bought into this illusion because the 'fetish of liquidity', as Keynes called it, became increasingly powerful as a discourse of sovereign debt management. Put differently, Treasuries across the world wanted liquid government bond markets, since liquid markets minimized price disruptions so that government could roll debt over easily. It was this promise of liquidity in the first place that prompted governments to allow (shadow) banks to develop private rules for repo markets. In the Eurozone, governments of Members States, the European Commission and the European Central Bank sought to energize a European repo market by allowing European banks to design their own repo rules through the Giovannini Working group. The Giovannini recommendations structured the Financial Collateral Directive of 2002, a Directive that presents repos as liquidity-enhancing, risk-reducing financial instruments. In the US, Congress exempted US Treasuries repo collateral from automatic stay in 1984, and extended automatic stay status to mortgage-related repo securities in 2005 (Acharya and Oncu 2010). The narrative of risk-reducing repos was so powerful that Ben Bernanke noted, in May 2008: 'remarkably, some financial institutions have even experienced pressures in rolling over maturing repurchase agreements (repos). I say "remarkably" because, until recently, short-term repos had always been regarded as virtually risk-free instruments and thus largely immune to the type of rollover or withdrawal risks associated with short-term unsecured obligations'3. Bernanke's observation is remarkable because it neglects evidence that repos had generated systemic disruptions well before 2008.

[3] http://www.federalreserve.gov/newsevents/speech/bernanke20080513.htm

The disruptive life of repos: a question of liquidity

Even before Lehman's collapse, US regulators worried that there was something new about the systemic threats to the US financial system. Participants in the 2006 conference of the New York Fed on 'New Directions for Understanding Systemic Risk' noted that the 1998 Russian crisis rendered visible the profound transformation that finance was undergoing (Kambhu et al 2007). The transformation revolved around the 'increasing tradability of risk', marking the shift from bank-based to market-based financial systems. In market-based systems, contributors argued, it is the loss of liquidity in asset markets that triggers crises, rather than banks' inability to meet the withdrawal of retail deposits.

Had Bernanke read that conference as a guide to the cutting issues in systemic risk, he would have found several mild warnings, but nothing to explicitly contradict his view that short-term repos were risk-free instruments. Thus, Kambhu et al (2007) drew attention to two repo-related events: the 'sharp and unusually sustained decline' in repo volumes following the collapse of the hedge fund Long Term Capital Management, and the disruptions that could occur, particularly to the US government bond market, if one of the two banks that intermediate in the tri-party repo market would experience operational disruptions such as the 9/11 attacks. Despite these allusions to repo actors and collateral market liquidity as issues of systemic relevance, the conference reproduced the Great Moderation narrative: that market discipline – including better risk management – should be the rule, and regulation the exception to mitigate the systemic risks attending the growing importance of market liquidity.

Before 2008, the Bank for International Settlements (BIS) stood alone in the regulatory world against this common wisdom. It shared the Fed's (2007) assessment that the lesson of the Russian crisis was that market liquidity is systemic in modern, risk-based finance. Unlike the Fed, however, it explicitly linked systemic liquidity to repo risk practices, identifying repo markets as the global conduit for uncertainty. Thus, BIS researchers argued that the Russian 1998 crisis triggered a 'global flight to liquidity and global margin call' that highlighted the links between 'leverage, market risk, funding arrangements, collateral practices and asset market liquidity' (Domanski and Neumann 2001:23).

The causal mechanism works as follows: when the collateral asset that supports several distinctive repo transactions falls in price as a result of market turmoil, all repo parties that hold that collateral mark it to market and make margin calls. Alternatively, to roll-over overnight repos, repo borrowers may face both higher haircuts and lower market prices for their repo-able assets. In either scenario, borrowers must find either additional collateral or cash. Funding shortfalls must be matched by borrowing elsewhere. Yet if liquidity preference is high and nobody wants to lend cash or high-quality collateral, repo borrowers have to sell some assets in order to meet margin calls. Fire sales ensue, market liquidity collapses, asset prices fall triggering further margin calls. Essentially, even without haircut increases, repos can be destabilizing. Abruptly changing liquidity in a collateral market triggers mark-to-market losses that create further funding gaps. As liquidity disappears from asset markets,

marking-to-market precipitates funding problems, destabilizing asset prices (Plantin, Shapra and Shin 2004).

Since 2008, scholars and central banks framed the collapse of Bear Sterns and Lehman Brothers through the BIS narrative of disruptive repo practices (see Brunnermeier and Pedersen 2009; Acharya and Oncu, 2010; Mehrling 2012). Explicitly acknowledging the BIS research, Gorton and Metrick (2009) described Lehman's collapse as a run on repo, citing empirical evidence that in bilateral repo transactions, repo lenders hiked haircuts on asset backed securities (ABS, RMBS, CMBS, CLO and CDO) from zero to around 40% within a few days in September 2008. Private assets that collateralized around 30% of repo transactions before September 2008 were no longer accepted as collateral in repo markets. In the United States, fire sales and increasing haircuts meant that repo-reliant financial institutions could only raise repo funding against government bond collateral.

Thus, Lehman's collapse marked a fundamental change in how central banks view the systemic disruptions produced by repo markets. The transcripts of the Federal Reserve meetings in 2008, and then the regulatory agenda of the Financial Stability Board, stress that collateral risk practices could, and did, disrupt the asset markets where financial institutions source collateral. The debate in financial economics then focused on whether repo instability affected all collateral markets equally, or whether government bond markets were immune to the repo disruptions outlined by Gorton and Metrick (2009).

The empirical evidence is not conclusive. Econometric-based studies agree that repos disruptions did not stretch to government bond markets, for both US repo markets (Copeland, Martin and Walker 2011; Krishnamurty, Nagel and Orlov 2013) and European repo markets (Mancini, Ranaldo and Wrampelmeyer 2013). Questioning the assumptions behind econometrics-based accounts, Gabor and Ban (2014) argued that Europe's sovereign debt crisis was a crisis of collateral in 'periphery' government bonds, albeit underpinned by the peculiar institutional set-up of the Eurozone.

Financial economists offered no convincing theoretical account to explain why uncertainty affects perceptions of collateral quality in distinctive way across asset markets. Credit ratings do not offer a reliable metric of 'safety', since markets for private triple AAA-rated debt lost liquidity rapidly in 2008. Rather, financial economists distinguished between information-sensitive and information-insensitive assets (Gorton and Metrick 2012); or safe and un-safe assets (Gourinchas and Jeanne, 2012). Information-sensitive assets loose good collateral status once financial actors acquire additional information about the issuer that produces uncertainty about the quality of the asset (Tri Vi Dang, Gorton and Bengt Holmstrom, 2010).

Clearly, this explanation hinges on the interpretative abilities of financial institutions, assumed to be at their best during crisis. As a theoretical account, this is hardly persuasive. Recognizing the weakness, Gourinchas and Jeanne (2012) envisage a world where 'nothing is really safe', but where central banks manage uncertainty about collateral quality, as the ECB did in 2012, when it promised to do whatever it takes to stabilize government bond markets (see Gabor 2014).

In sum, theoretical debates in financial economics lay bare the distinctive role that governments play as collateral manufacturers for shadow finance. If shadow banking or market-based finance needs safe assets during periods of uncertainty, it means that government decisions, both in fiscal policies and sovereign debt management, have immediate financial stability implications. But it also raises the question of what this role means for the governance of shadow banking in general, and of repo markets in particular.

Governing repos: from FSB to the US Treasury

> 'central banks should assume an explicit role in managing the risk-taking cycle in the wider economy.'
>
> Haldane, 2014: The Age of Asset Management?

The first attempts to re-regulate repos after Lehman's collapse took place in the transnational arena of the Financial Stability Board (see Helleiner 2012). Mandated to transform shadow banking into governable market-based finance, the FSB identified three areas of action (Carney 2014): (i) curtail links between regulated and shadow banking; (ii) improved transparency and monitoring and (iii) regulate the two shadow banking markets: better incentives for safer *securitization* structures and minimum margin requirements (haircuts) for securities financing transactions *in repo markets*. Repos create cyclical liquidity in the markets used as collateral, cyclicality sharpened by margining practices: low in upswing, and high in periods of market tensions. Minimum margins, Carney (2014) stressed, would 'reduce the cycle of excessive borrowing in economic booms that cannot be sustained when liquidity dissipates in core fixed-income markets'.

It is important to note that minimum haircuts are not the only tool to contain repo pro-cyclicality. The FSB could have imposed regulations on the type of assets that can be used as repo collateral. For instance, accepting that leverage is cheapest where financial institutions borrow against government bonds, the FSB could have excluded government bonds from collateral pools. But this would have been a much stronger regulatory intervention, since minimum haircut requirements do not restrict repos directly but make them more expensive. Nevertheless, targeting the repo instrument was innovative in macroprudential terms because it finally took regulation to the market, beyond the old focus (as in Basel) on institutions. Jeremy Stein (2013), then of the US Fed, argued that market-targeting tools would mitigate the systemic consequences of fire-sales without leaving much room for regulatory arbitrage. Any financial intermediary active in the repo market would have to implement it.

In 2012, the FSB put forward two approaches for setting numerical floors on haircuts: a high level and a backstop level (see Table 1). Both differentiated across the residual maturity of collateral. Thus, short-term government bonds would have carried a 0.5% haircut requirement

in the high-level scenario, compared to 15% on main index equities and 25% on other equities. That the FSB assigned government bonds such a low haircut suggests that rules for governing collateral practices were created on arguments of 'safe asset' status of collateral rather than cyclicality and leverage. Had the FSB been guided by leverage concerns, it would have set higher haircuts on short-term government bond collateral, since this is the 'cheapest' collateral for leveraged securities financing transactions.

Table 1 Haircut levels, FSB proposals

Residual maturity of collateral	2012 Haircut level (backstop level in parenthesis) vs. **2013**		
	Sovereign	*Corporate and other issuers*	*Securitized products*
≤ 1 year debt securities, and FRNs	0.5% (0.25%) ---- **0%**	1% (.5%)---**0.5%**	2% (1%)----**1%**
1> ≤ 5 years debt securities	2% (1%) ------ **0%**	4% (2%)-----**1%**	8% (4%)----**2%**
> 5 years debt securities	4% (2%) ---- **0%**	8% (4%)----**2%**	16% (8%)---**4%**
Main index equities	15% (7.5%)-------**4%**		
Other equities	25% (12.5%)------**7.5%**		

As most ambitious regulatory initiatives negotiated at global level, these recommendations were considerably watered down by August 2013, when the FSB (2013) issued its latest repo proposals. According to the FSB:

> The proposed framework of numerical haircut floors would apply initially to non-centrally-cleared securities financing transaction in which entities not subject to regulation of capital and liquidity/maturity transformation receive financing from financial entities subject to such regulation against collateral other than government securities.

Under the new framework, the FSB excluded from its regulatory reach repos between banks (around 80% of overall volumes in Europe) and all repos with government collateral. It replaced the innovative market-based approach with an institution-based approach. Even on those transactions, haircuts are half of the initial backstop level. After the 2013 proposals, the margin-regulated repo space amounts to 8.7% of the repo universe.

Repo lobbies on both sides of the Atlantic had strongly opposed minimum haircut proposals. By framing repos as risk reducing instruments, repo lobbies concluded that harsh regulations may perversely increase systemic risk. On its own, this argument would hardly convince the FSB to change its view that repos enable leverage and liquidity cycles. Rather, the repo lobby resorted to a different strategy: to create strategic alliances with other important actors.

Strategic alliances, Pagliary and Young (2014) argue, may offer finance lobbies a more effective way to influence policy in the aftermath of a crisis that de-legitimizes claims to self-regulation. Thus, repo lobbies sought to enlist central banks and Treasuries. The ECB had already expressed reluctance to include repos in the perimeter of the European Financial Transactions Tax, arguing that repo markets were about the only functioning (wholesale) market in Europe that distributed liquidity (Gabor 2014). Excessive regulatory interventions would force the ECB to assume the private function of the repo market, hampering its exit strategy. In turn, the US Fed took a more critical position, particularly through Daniel Tarullo and Jeremy Stein. Both issued strong warnings about the disruptive potential of the repo market. Second, the repo lobbies found some Treasuries more susceptible to the argument that repo markets provide liquidity to government bond markets, so that minimum margin requirements would erode market liquidity.

Thus, repo lobbies benefited from regulators' inability to formulate clear preferences about their position in and towards shadow banking (see Mugge and Stellinga 2014). Attempts to define, theorize and measure liquidity are notoriously difficult, and the academic evidence on the link between repos and government bond markets conflicting. Government bond markets do benefit from becoming collateral markets simply because in the upswing of a financial cycle demand for leverage also increases demand for government bonds. Yet in a downswing, government bonds can experience fire sales and haircut spirals, as Ireland or Portugal know too well (Bank of England 2011). Long-content with neoclassical ideas of budget responsibility and professionalized sovereign debt management (see Macphearson 2013), Treasuries are gradually realizing that shadow banking has rendered them crucial actors in the financial stability arena, position conferred by their function as systemic factories of collateral for shadow banking.

Pioneer among its peers, the US Treasury has embarked upon an important project: to position itself towards shadow banking, and to shape a new narrative of macro-economic governance that reflects this position. To do so, it first built the institutional structures to support the production of new economic ideas on financial stability from a Treasury perspective – the Office for Financial Research (created by the Dodd Frank Act) – and then recruited one of the best known theoreticians of shadow banking, Zoltan Pozsar, to work at the OFC.

That the theoretical framework for institutionally locating Treasuries in the shadow-banking world would be developed by Zoltan Pozsar is not a coincidence. While working at New York Federal Reserve, Pozsar wrote, alongside three other Fed economists, the first paper that defines and describes in great detail shadow banking (see Pozsar et al 2010). Then, while at the IMF, Pozsar (2011) argued that the Treasury could influence the expansion of shadow banking by varying the supply of Tbills according to macroprudential objectives. That Pozsar moved from the IMF to the Office of Financial Research signals the interest that the latter had in formulating a new narrative of debt management that engages with broader financial stability objectives.

Pozsar (2014) introduced government bonds markets explicitly in shadow banking by arguing that 'sound money' doctrines no longer describe the complex practices through which money is created in modern financial systems. Instead, he proposed a new theory of 'shadow money' that conceives of government bonds circulating through repo markets as the most important form of modern money. This provides theoretical grounding to earlier attempts – from private finance in the TBAC meetings - to frame government bond markets in a shadow banking narrative. Thus, during the April 2013 meeting, the TBAC presentation, entitled 'Availability of High-Quality Collateral', defines 'shadow money as the value of outstanding bonds times one minus the average repo haircut on those bonds'. It distinguishes between public shadow money (treasuries and other government guaranteed debt) and private shadow money (investment grade and high-yield corporates, non-agency MBS, ABS, CMBS).

Pozsar first maps the institutional contours of what Andrew Haldane termed 'The age of asset managers': institutional cash pools (pension funds, insurance companies, treasuries of large multinational companies) and levered portfolio managers. For both, he argues, money begins where M2 (cash, term and sight depostis) – the money created by banks - ends. For both, money is repos. Institutional cash pools prefer to hold their cash in repos rather than bank deposits because the later, with deposit guarantees capped at USD250.000, represent unsecured exposure to banks. Repos are simply safer. In turn, leveraged portfolio managers use repos to fund securities portfolios. Thus, repos bring together demand for safety from institutional investors who are cash-rich with demand for risk from leveraged portfolio investors. Both type of investors prefer public shadow money, that is, repos collateralized with government debt. Shadow banking, like traditional banking, involves state-facilitated creation of private (repo) money.

Given that Treasuries do not have a mandate for managing sovereign debt as public shadow money, it is plausible and possible that the supply of government debt will not meet the demand for public shadow money. In this case, shadow banks respond by creating private shadow money: repos collateralized with private assets closer in moneyness (low credit risk, low duration risk, and low liquidity risk) to government debt. Treasuries can do for market-based finance what the central bank does for bank-based finance, creating the 'base asset' that supports the growth of shadow liablities (see Pozsar 2011).

Thus, 'shadow money' theories provide (shadow) banks active in the TBAC with a convenient narrative to shape the emerging regime for governing shadow banking. Indeed, since 2008, TBAC (2009) has argued that the US Federal Reserve needs to 'make reserve creation portable beyond the banking system'. Put differently, the TBAC has been lobbying for the Federal Reserve to extend the traditional lender of last resort facility to shadow banks, which did not have accounts with the Federal Reserve. By 2013, the Fed did indeed introduce the reverse repo facility, issuing public shadow money (repos collateralized with government bonds) to money market funds. This may well be an institutional innovation that central banks require in order to manage shadow finance.

Yet shadow money theories also imagine a different relationship between the Treasury and the central bank, one where the Treasury commands legitimacy over its involvement in the management of shadow finance by virtue of its role as a 'shadow' central bank.

Conclusion

In the last months of 2008, the US Federal Reserve discovered that repo markets have systemic implications for the government bond markets and for private asset markets. This marked a new era in the governance of repo markets, as policy makers started questioning the narrative that the private set of repo risk rules have no systemic consequences, as private finance convincingly argued before the crisis both in the US and the Eurozone.

Through repo transactions, collateral moves in networks connecting banks to other banks or non-bank financial institutions. These connections are both systemic and fragile. Repo connections are fragile because they are the cheapest source of funding for leveraged financial activity, but also because practices of risk management and re-use can amplify concerns about collateral quality and ignite liquidity spirals. They are systemic because repo markets are now the most significant source of market funding for banks and non-banks with large trading portfolios. A run on shadow banking occurs as a downsizing of collateral networks, with a smaller number of connections supported by the same collateral simultaneous with a narrower range of acceptable collateral. What counts as acceptable in a crisis of shadow banking fundamentally depends on the institutional structures in which the repo market is embedded. The European crisis shows that shadow connections built around sovereign collateral can quickly disintegrate in the absence of central bank support.

The FSB's regulatory efforts demonstrate that repo reform runs into numerous political economy obstacles that go to the heart of the governance of market-based finance. Private finance successfully defeated FSB initiatives by capitalizing on the Treasury's position in shadow banking, and on the lack of theoretical ideas to ground that position beyond the simple threat that regulating repos would result in a loss of market liquidity. Because of its privilege as issuer of the world's safest asset, the US Treasury has been at the forefront of ideational efforts to create epistemic authority in order to meet the institutional challenges raised by shadow finance.

References

Acharya, V. V, P. Schnabl, and G. Suarez. 2010. Securitization without risk transfer. National Bureau of Economic Research.

Bair, Sheila, 2013. Everything the IMF wanted to know about financial regulation and was afraid to ask. Available at http://www.imf.org/external/np/seminars/eng/2013/macro2/pdf/sb.pdf

Baker, A. (1999). Nebuleuse and the'internationalization of the state'in the UK? The case of HM Treasury and the Bank of England. *Review of International Political Economy*, *6*(1), 79-100.

Bank for International Settlements. 1999. *Implications of repo markets for central banks.* Committee on the Global Financial System Paper No 10.

Bank for International Settlements. 2011. *The impact of sovereign credit risk on bank funding conditions*, Committee on the Global Financial System Paper no 43.

Berger, S. (2000). Globalization and politics. *Annual Review of Political Science*, *3*(1), 43-62.

Blyth, M. (2013). *Austerity: the history of a dangerous idea*. Oxford University Press.

Blommestein, H., & Hubig, A. (2012). *A critical analysis of the technical assumptions of the standard micro portfolio approach to sovereign debt management* (No. 4). OECD Publishing.

Bouveret, A. 2011, An Assessment of the Shadow Banking Sector in Europe, mimeo.

Brunnermeier, Markus and Lasse Pederson. 2009. Market Liquidity and Funding Liquidity, *Review of Financial Studies* 2201-2238.

Caballero, R. 2010. Macroeconomics after the Crisis: Time to Deal with the Pretense-of-Knowledge Syndrome, *Journal of Economic Perspectives*, American Economic Association, vol. 24(4), pages 85-102, Fall.

Claessens, S., Ratnovski, L., & Singh, M. M. (2012). *Shadow banking: economics and policy* (No. 12). International Monetary Fund.

Comotto, R. 2012. Shadow banking and repo. European Repo Council paper. available at http://www.icmacentre.ac.uk/images/2011/08/shadow-banking-and-repo.pdf

Dyson, K. (2014). *States, Debt, and Power:'Saints' and'Sinners' in European History and Integration*. Oxford University Press.

Engelen, E., Ismail Ertürk, Julie Froud, Sukhdev Johal, Adam Leaver, Mick Moran, Adriana Nilsson, Karel Williams 2011. *After the Great Complacence: Financial Crisis and the Politics of Reform.*Oxford University Press.

European Commission 2012. Green Paper Shadow Banking. 19 March 2012, Brussels. [Last accessed 14 Aug 2012.] Available from URL: http://ec.europa.eu/internal_market/bank/docs/shadow/green-paper_en.pdf.

European Commission, 2013. *Shadow Banking – Addressing New Sources of Risk in the Financial Sector*. Communication, September 4. Available at http://ec.europa.eu/internal_market/finances/docs/shadow-banking/130904_communication_en.pdf

Flandreau, S. 2013. Do good sovereign default? Lessons from history. BIS paper 72, pp. 19-26.

FSB (Financial Stability Board) (2012) Global Shadow Banking Monitoring Report. 18 November 2012. [Last accessed 22 Feb 2013.] Available from URL: http://www.financialstabilityboard.org/publications/r_121118c.pdf.

FSB (Financial Stability Board) (2013) Strengthening Oversight and Regulation of Shadow Banking. Available at http://www.financialstabilityboard.org/publications/r_130829b.pdf

FSB (Financial Stability Board) 2011. Shadow Banking: Scoping the Issues. A Background Note of the Financial Stability Board. 12 April 2011. [Last accessed 20 Jul 2011.] Available from URL: http://www.financialstabilityboard.org/publications/r_110412a.pdf.

Gabor D. and C. Ban. 2013. Fiscal Policy in Financialized Times: Investor Loyalty, Financialization and the Varieties of Capitalism. Available at SSRN: http://ssrn.com/abstract=2201518 or http://dx.doi.org/10.2139/ssrn.2201518

Gabor, D. 2010. *Central banking and financialization. A Romanian account of how Eastern Europe became subprime*. Palgrave Macmillan.

Gabor, D. 2012. The Power of Collateral: The ECB and Bank Funding Strategies in Crisis. *SSRN eLibrary* (May 18).

Gabor, D. 2014. The Financial Transactions Tax and Shadow Banking. Mimeo, UWE Bristol.

Giovannini, A. 2013. Risk-free assets in financial markets. BIS paper 72, pp. 73-79.

Goldman Sachs, 2013. Report on the European Financial Transactions Tax.

Gorton, Gary & Metrick, Andrew, 2012. Securitized banking and the run on repo, *Journal of Financial Economics*, Elsevier, vol. 104(3), pages

Gourinchas P. and O. Jeanne 2012. Global safe assets, BIS Working Papers 399, Bank for International Settlements.

Grauwe, Paul De, and Yuemei Ji. 2012. ―Mispricing of Sovereign Risk and Multiple Equilibria in the Eurozone.‖ *VoxEU.org*. http://www.voxeu.org/article/mispricing-sovereign-risk-and-multiple-equilibria-eurozone.

Haldane, A. (2014). The Age of Asset Management? Available at http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech723.pdf

Holmes, D. R. (2013). *Economy of Words: Communicative Imperatives in Central Banks*. University of Chicago Press.

Hördahl, P., and M. King. (2008) Developments in Repo Markets During the Financial Turmoil. *BIS Quarterly, December*.

Hughes, P. 2010. Trust: Economic notions and its role in money and banking. PhD Thesis. University of Stirling. https://dspace.stir.ac.uk/bitstream/1893/3063/1/PH-Trust%20Thesis.pdf

International Capital Markets Association (2008) European repo market survey, December.

Kambhu, J., Weidman, S., & Krishnan, N. (2007). Preface to New Directions for Understanding Systemic Risk. *Economic Policy Review*, (Nov).

Kessler, O. (2011) 'The Same As It Never Was? Uncertainty and the Changing Contours of International Law', *Review of International Studies,* 37(5): 2163–82.

Kirshner, J. (2003) Money is politics, *Review of International Political Economy*, 10:4, 645-660.

Leeper, E. M. (2010). *Monetary science, fiscal alchemy* (No. w16510). National Bureau of Economic Research.

Lysandrou, P., & Nesvetailova, A. (2014). The role of shadow banking entities in the financial crisis: a disaggregated view. *Review of International Political Economy*, (ahead-of-print), 1-23.

MacKenzie, D., Muniesa, F. and Siu, L. (2007) 'Introduction', in D. MacKenzie, F. Muniesa and L. Siu (eds) *Do Economists Make Markets? On the Performativity of Economics,* Princeton: Princeton University Press, pp. 1–19.

MacPhearson, N. (2013) The origins of Treasury control. Speech by the Permanent Secretary to the Treasury https://www.gov.uk/government/speeches/speech-by-the-permanent-secretary-to-the-treasury-sir-nicholas-macpherson-the-origins-of-treasury-control

Mehrling, P. 2012. Three Principles for Market-Based Credit Regulation. *The American Economic Review* 102 (3): 107–112.

Miyazaki, H. (2013) *Arbitraging Japan: Dreams of Capitalism and the End of Finance,* Ithaca, NY: Cornell University Press.

Moe, T. 2012. Shadow Banking and the Limits of Central Bank Liquidity Support: How to Achieve a Better Balance between Moe Global and Official Liquidity. Levy Economics Institute Working Paper.

Mügge, D., & Stellinga, B. (2014). The unstable core of global finance: Contingent valuation and governance of international accounting standards. *Regulation & Governance*.

Nesvetailova, A. and Palan, R. 2013. Minsky in the Shadows: Securitization, Ponzi Finance, and the Crisis of Northern Rock, *Review of Radical Political Economics*, published online 28 January 2013. DOI: 10.1177/0486613412470090

Pagliari, S., & Young, K. L. (2014). Leveraged interests: Financial industry power and the role of private sector coalitions. *Review of International Political Economy*, *21*(3), 575-610.

Pigeon, M. A. (2011) 'The Wizard of Oz: Peering behind the Curtain on the Rela- tionship between Central Banks and the Business Media', in D. Winseck and D. Yong Jin (eds) *The Political Economy of Media: The Transformation of the Global Media Industries,* New York: Bloomsbury Academic, pp. 255–71.

Plantin, G., H. Sapra, and H. S. Shin. 2005. Marking-to-Market: Panacea or Pandora's Box? *Journal of Accounting Research* 46:435–60.

Pozsar, Z. (2014) Shadow Banking: the Money View. Office of Financial Research Working Paper. Available at http://www.treasury.gov/initiatives/ofr/research/Documents/OFRwp2014-04_Pozsar_ShadowBankingTheMoneyView.PDF

Pozsar, Z. (2011). *Institutional cash pools and the Triffin dilemma of the US banking system*. International Monetary Fund.

Pozsar, Z., and M. Singh. 2011. The nonbank-bank nexus and the shadow banking system. IMF Working Paper WP/11/289. Washington, DC: IMF, December.

Pozsar, Z., T. Adrian, A. Ashcraft, H. Boesky. 2010. *Shadow banking*. Staff Report no. 458, Federal Reserve Bank of New York, July.

Regulation and Supervision, Cheltenham, UK: Edward Elgar, pp 3–29.

Riles, A. 2011. *Collateral Knowledge: Legal Reasoning in the Global Financial Markets.* Chicago and London: University of Chicago Press, 2011.

Rixen, T. 2013. Why reregulation after the crisis is feeble: Shadow banking, offshore financial centers, and jurisdictional competition. *Regulation & Governance*, DOI: 10.1111/rego.12024

Scwarz, S. 2012. Regulating Shadow Banking. Inaugural address for the Inaugural Symposium of the Review of Banking and Financial Law. Available at http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=3121&context=faculty_scholarship

Singh, M. 2011. Velocity of Pledged Collateral: Analysis and Implications, IMF Working Paper 11/256.

Singh, M., and P. Stella. 2012. Money and Collateral. *SSRN eLibrary* (April). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2050268.

Streeck, W. (2014). The politics of public debt: Neoliberalism, capitalist development and the restructuring of the state. *German Economic Review*, *15*(1), 143-165.

Stein, J C (2012): "Monetary policy as financial stability regulation", *The Quarterly Journal of Economics*, 127(1), pp 57–95.

Thelen, K. 1999. Historical Institutionalism and Comparative Politics. *Annual Review of Political Science*, 2:369-404.

Zaloom, C. (2004). The productive life of risk. *Cultural Anthropology*, *19*(3), 365-391.