

Shadow Banking: Policy Challenges for Central Banks

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Abstract

Central banks responded with exceptional liquidity support during the financial crisis to prevent a systemic meltdown. They broadened their tool kit and extended liquidity support to nonbanks and key financial markets. Many want central banks to embrace this expanded role as “market maker of last resort” going forward. This would provide a liquidity backstop for systemically important markets and the shadow banking system that is deeply integrated with these markets. But how much liquidity support should central banks provide to the shadow banking system without risking their balance sheets? And would not an accommodative market-making role send the wrong signals to market participants? I discuss the expanding role of the shadow banking sector and the key drivers behind its growing importance. There are close parallels between the growth of shadow banking before the recent financial crisis and earlier financial crises, with rapid growth in near monies as a common feature. This endogenous ebb and flow of shadow banking-type liabilities is indeed an ingrained part of our advanced financial system. We should think twice before we let central banks backstop the liquidity needs of private shadow banking markets, at least not before there has been substantial market reform. It would indeed be ironic if central banks were to declare victory in the fight against too-big-to-fail institutions, just to end up bankrolling too-big-to-fail financial markets.

Keywords: *Shadow banking; Policy challenges, Central banks*

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Background to the Study

Untraditional central bank liquidity operations prevented a systemic meltdown after Lehman Brothers filed for bankruptcy in September 2008. Central banks broadened their tool kit and extended liquidity support from systemic institutions to core funding markets. Subsequently, they provided additional liquidity support through asset purchases, large-scale market interventions and other creative ways of easing credit conditions. As a result, central banks' balance sheets have grown dramatically compared with GDP.

Scholars broadly agree that these untraditional policies saved the global financial system from a systemic meltdown in 2008. Extending liquidity support beyond the traditional banking perimeter to shadow banking markets (e.g., asset-backed securities, money market instruments and commercial paper) prevented a wholesale financial panic. Backstopping liquidity in core funding markets is increasingly seen as a natural extension of the traditional “lender-of-last-resort” function of central banks [Carney (2008), Mehrling (2014)] and this market-making function could well become a standard part of the central bank toolkit [Carlson et al. (2015)]. Some are, however, concerned about extending the government safety net too far and would prefer to rein in the expansion of the shadow financial system with stricter regulation [Tarullo (2013, 2015), Turner (2013)].

The shadow banking system represents a special policy challenge for central banks, since its growth is closely linked to the regulation of the banking system. The transmission of monetary policy is also affected by the size and behavior of the shadow banking system [Nelson et al. (2015), Stein (2014)]. The two parts of the financial system are closely linked through a network of securities lending, repurchase agreements (repo) and derivatives markets. Recent policy proposals will increase transparency and control leverage [E.U. (2014), Financial Stability Board (FSB) (2014b)], but the shadow banking system will remain highly procyclical. Embracing a central bank market-making role for such an endogenous credit system could add to its procyclicality. Central banks could risk becoming implicit guarantors of shadow banking liabilities.

Strengthening oversight and regulation of shadow banking is high on the G20 agenda for 2015. The updated FSB road map includes significant policy proposals related to margins and haircuts, securities financing, rehypothecation, money market funds and the asset management industry [FSB (2014b)]. Getting shadow banking policies right is important for the market-based credit system and the stability of the broader financial system. This paper reviews some of the recent developments in the shadow banking system, describes its endogenous process of credit creation, points to some similarities with the past, discusses the increasing use of collateral and how this web of securities financing transactions increases systemic risk and contagion, and then finally lays out the policy challenges facing central banks trying to safeguard core funding market liquidity. I conclude that central banks should not embrace an expanded market-maker role without meaningful shadow banking reform.

Shadow Banking Redefine

There is a growing awareness that the shadow banking system is not a financial system distinctly different from regulated banking. Banks are big players in the shadow banking

system, both as collateral providers and as repo participants. Money market funds are major funding sources for the big banks, and the over the counter (OTC) derivatives market is an integral part of the shadow banking system through its extensive reliance on pledged collateral. Gabor (2013) shows that big banks are dominant in the shadow banking system in Europe, and reports from the Bank for International Settlement (BIS) note that a few global banks dominate the global OTC market [BIS (2014)]. By recasting the shadow banking debate in this light, we can appreciate that many of the ongoing regulatory debates on collateral policies, haircuts, liquidity rules, high-quality liquid assets, risk weights for sovereign debt and the central banks' role as market maker of last resort are indeed tightly connected.

When G20 leaders in 2009 asked the FSB “to identify the main risks related to shadow banking and eliminate all dark corners in the financial sector,” the initial approach focused on institutions outside the regulated banking system that could represent a threat to financial stability. Based on this approach, the size of the global shadow banking system was estimated to be almost U.S.\$70 trillion, or 25% of global financial intermediation [Adrian et al. (2013)]. The FSB responded by establishing five separate work streams to deal with the challenges of shadow banking and the E.U. Commission launched its own consultation on how best to tackle systemic risk stemming from shadow banking entities and activities [FSB (2011), E.U. (2012)]. Through this work, a more nuanced view of shadow banking has emerged, focusing in particular on fragile repo funding, securities lending, derivatives trading, global liquidity creation and money market financing [E.U. (2013), Gabor (2013)]. As the former FSA chairman Adair Turner observed [Turner (2012a)]: “We need to understand shadow banking not as something parallel or separate from the core banking system, but deeply intertwined with it.”

Key to this “new” understanding of the shadow banking complex is the collateral intermediation function that underpins the financial plumbing of our market-based financial system [Singh (2014)]. The procyclical nature of this collateral-based financial system, through funding and asset price fluctuations, is now seen by many as the essential feature of the shadow banking system. This “new view” of shadow banking is reflected in the updated FSB roadmap towards strengthening oversight and regulation of shadow banking [FSB (2014b)] and the E.U. regulation on transparency and reporting of securities financing transactions [E.U. (2014)], where the focus is now squarely on financial activities, such as securitization, securities lending, repo markets and rehypothecation, rather than on institutions.

The FSB Global Shadow Banking Monitoring Report 2014 [FSB (2014a)] notes that “further improvements in data availability and granularity will be essential for authorities to be able to adequately capture the magnitude and risks in the shadow banking system.” Such data will be essential to judge risks and the potential systemic impact of the shadow banking system. They add: “In the future, improvements in data availability should allow for the mostly entity-based focus of the 'macro-mapping' to be complemented with an activity-based monitoring to cover developments in relevant markets where shadow banking activity may occur, such as repo markets, securities lending and securitization (ibid.).”

The capacity of the shadow banking system to operate on a large scale in a way that creates bank-like liabilities through a complex chain on collateral transactions has created multiple forms of feedback into the regulated banking system. The use and reuse of collateral exacerbates procyclical dynamics and makes the whole financial system more fragile. When times are good, market participants tend to be more willing to let counterparties reuse collateral, increase market liquidity and thereby lower the cost of capital. But in more stressed market conditions, market participants become more sensitive to counterparty risk and more reluctant to let their collateral be reused. This puts additional strains on already tight liquidity conditions and tends to amplify the procyclicality of the shadow banking system. These recent initiatives to collect more information should give us valuable insights into the “mechanics” of shadow banking, but will not, by itself, address the procyclical nature of this nonbank credit system.

Shadow banking in the past

That private money is not cash and that all IOUs are not equal should not come as a surprise. The collapse of the shadow banking system during the recent global financial crisis is not unprecedented if we look closer at earlier crises. Henry Thornton (1802, Chapter III, p. 37) made similar observations in his 1802 book an enquiry into the nature and effects of the paper credit of Great Britain: “When confidence rises to a certain height in a country, it occurs to some persons that profit may be obtained by issuing notes, which purport to be exchangeable for money; and which, through the known facility of thus exchanging them, may circulate in its stead.”

Hyman Minsky (1982) noted that this desire for more cash than is available from its usual source sows the seeds for next financial crisis. During a boom, the margin of safety decreases, and economic units take on more and more leverage. Money markets have a tendency to expand during boom periods, providing an elastic source of private credit. As money markets expand, a general decline in the liquidity of households and firms follows. This makes them vulnerable to fall in asset prices. There will be a general expectation about liquidity in key asset markets that cannot be sustained unless the central bank moves in and supports the price, i.e., monetization by the central bank. But this is surely “fair-weather” liquidity, since “no one would seriously defend the proposition that all things should be made liquid” [Simmons (1947)].

Andrew Haldane (2012) adds that “cycles in money and banking credit were indeed familiar from centuries past” and yet, for some odd reasons, these insights were ignored for perhaps a generation, with near-fatal consequences for us all. “Investors and firms did not expect asset market liquidity to be impaired or funding disruptions to last for so long” [quote from Senior Supervisor Group Report (2008)]. The sudden collapse in liquidity conditions when the Reserve Primary Fund “broke the buck” in September 2008 came as a big surprise, and market stability was only restored after central banks intervened with unprecedented liquidity support.

Former Federal Reserve Chair Ben Bernanke observed that the financial crisis can best be understood as “a classic financial panic transposed into the novel institutional context of the

21st century financial system” [Bernanke (2013)]. He draws our attention in particular to the Panic of 1907, when financial innovations gradually undermined the coordinating role of the clearinghouse and lightly regulated trust companies were used to circumvent reserve requirements. When investors realized that the market was overextended, there was a sudden rush to realize positions, leading to fire sales and further losses. A steep decline in interbank lending was important in both episodes. And much of the panic occurred outside the traditional banking system, in the shadow banking sector.

The perception that claims on trust companies (or shadow banks) was as good as cash was based on explicit or implicit promises by their sponsors to provide liquidity and credit support. Or the perception was based on the high ratings of the securitized assets on their balance sheets [Tarullo (2013)]. But as a BIS report noted 25 years ago [BIS (1986)]: “The presumed superior liquidity of securitized assets over conventional bank loans may turn out to be a mirage if a substantial number of the creditors attempt to liquidate their holdings simultaneously.” The fire sales in 2008 resembled the panic liquidation by trust companies in 1907. The sudden withdrawal of funding led to rapid deleveraging and “repo runs.” Fire sales of securities into falling markets created adverse feedback loops of mark-to-market losses, margin calls and further liquidations. This “unwinding of the risk illusion, that is, the assumption that lending to shadow banks was essentially risk-free, helped transform a dramatic correction in real estate valuations into a crisis that engulfed the entire economy” [Tarullo (2013)]. This endogenous nature of private credit (and liquidity) was not sufficiently appreciated before the crisis. Inside money expands like ripples in the pond during the upswing on the back of private promises to pay (back).

As Hayek observed in 1931, “the characteristic peculiarity of these circulating forms of credit is that they spring up without being subject to any central control, but once they have come into existence their convertibility into other forms of money must be possible if a collapse of credit is to be avoided” [Hayek (1931)]. This convertibility of inside money (shadow bank money) into outside money (cash) is achieved when central banks intervene in a crisis to support vanishing market liquidity. But how far should central banks stretch their balance sheets to support liquidity in these private, endogenous markets? This becomes a pressing question when markets have grown at an exponential pace, such as the repo and OTC derivatives markets. Should taxpayers' monies be put at risk to support a financial system with such “excess credit elasticity”? The alternative, and more realistic, view of banking now recognizes that “banks can create money out of nothing” [McLeay et al. (2014)]. So can shadow banks — where demand for leverage meets demand for safety [Pozsar (2015)]. It then follows logically that privately created money can disappear as well — in a liquidity spiral. As Adrian and Shin (2009a) note, “... when liquidity dries up, it disappears altogether rather than being re-allocated elsewhere.”

Global liquidity is today highly influenced by this interplay between banks and nonbank financial institutions and the ebbs and flows of risk perceptions in global financial markets [BIS (2011)]. International bank credit exhibits strong boom-bust cycles that appear to correspond closely to episodes of financial distress, and periods of strong growth in cross-border credit are often characterized by elevated risk appetite. This “self-reinforcing

interaction between risk appetite and liquidity is not yet sufficiently appreciated” [Cœuré (2012)], even though it is quite clear that private liquidity has become highly endogenous to the conditions in the global financial system.

Adrian and Shin (2009b) explore the hypothesis that “the financial intermediary sector, far from being passive, is instead the engine that drives the boom-bust cycle.” Rather than looking at how financial frictions might affect the real economy, they go straight to the financial sector and try to understand how finance became the propagator of the crisis instead of a conduit for prosperity. They note that securitization was intended to disperse risks associated with bank lending so that investors who were better able to absorb losses would share the risks [Adrian and Shin (2009a)]: “But in reality, securitization worked to concentrate risks in the banking sector. There was a simple reason for this. Banks and other intermediaries wanted to increase their leverage — to become more indebted — so as to spice up their short-term profit. So, rather than dispersing risks evenly throughout the economy, banks and other intermediaries bought each other's securities with borrowed money. As a result, far from dispersing risks, securitization had the perverse effect of concentrating all the risks in the banking system itself.”

The procyclical process of liquidity creation raises particular challenges for central banks. First, as Hyman Minsky pointed out long before the recent financial crisis, “securitization implies that there is no limit to bank initiative in creating credits, for there is no recourse to bank capital” [Minsky (1987)]. This makes the supply of credit almost infinitely elastic, as every new “euphoric era means that an investment boom is combined with pervasive liquidity-decreasing portfolio transformations” [see Minsky (1982), and also Borio (2013) on the “excess elasticity” of the financial system]. Second, the more recent experience with quantitative easing (QE) has shown that bank credit is quite autonomous and difficult to influence, as the link between bank credit and central bank money is weak. Private liquidity tends to move quite independently of the prevailing stance of monetary policy, reflecting.

Private sector risk perceptions (the risk channel) and the ease of arranging nonbank financing (via the shadow banking infrastructure). These liquidity cycles are then amplified by the rise and fall in collateral prices, which again propagate through the collateral chains of the shadow banking system. Banks and shadow banks are not just allocating pre-existing savings; collectively, they create both credit and deposits [Turner (2012b)]. Their cyclical behavior is now at the heart of the more violent swings in the financial cycles that we have experienced over the last two decades.

This new financial landscape requires a reorientation in both theory and policy. Before the crisis, money and credit were seen as either redundant or at least inessential in the mainstream New Keynesian paradigm [Borio and Disyatat (2011)]. Standard models are based on one representative, riskless agent, so anyone's IOU could and would be immediately and fully acceptable in payment for goods or services [Goodhart and Tsomocos (2011)]. There is no need for money! Building new models that capture the interaction between the financial and the real sectors and the role of credit are now a key preoccupation of academics and

policymakers. This may require some novel approaches, as mainstream theory needs to interact with, and build on, insights from non-traditional schools of thought. As Borio and Disyatat (2011, p. 31) note, a deeper understanding of financial crises and the workings of our modern finance-based global economy will require “a rediscovery of the essence of monetary analysis.”

The Steps Forward

Fortunately, there is a rich theoretical tradition dealing with the instability of financial markets that can be tapped to improve our understanding of modern capitalist economies with banks, finance and credit. One major contributor is Hyman Minsky, who built his financial instability theory on the back of J. M. Keynes's deep insights into the working of a modern monetary economy. According to Martin Wolf (2012) of the Financial Times, “His masterpiece *Stabilizing an unstable economy*, provides incomparably the best account of why the mainstream theory is wrong,” i.e., that the modern capitalist economy is inherently stable. “Periods of stability and prosperity sow the seeds of their downfall. The leveraging of returns, principally by borrowing, is viewed as a certain route to wealth. Those engaged in the financial system create — and profit greatly from — such leverage. When people underestimate perils, as they do in good times, leverage explodes.”

No wonder that former Fed Chairman Alan Greenspan admitted “shocked disbelief” while watching his “whole intellectual edifice collapse in the summer of 2007” and that he confessed that he had “put too much faith in the self-correcting power of free markets.” And he added: “... the immense and largely unregulated business of spreading financial risk widely, through the use of exotic financial instruments called derivatives, had gotten out of control and had added to the havoc of the crisis.” The increased procyclicality of the financial system has led to a reorientation in policy. In addition to policy measures aimed at strengthening the robustness of financial institutions, there is now a greater willingness to address the endogenous credit cycles more directly. Macroprudential instruments will be targeted at excessive credit growth, and central banks and supervisory authorities will work together to improve underwriting standards [IMF (2013)]. In addition, there is a greater willingness among policymakers to intervene in the free workings of financial markets, as “markets are no longer viewed as self-stabilizing” [Tett (2013)].

It remains to be seen if the proposed reforms will be enough to dampen the endogenous cycles of finance. The extraordinary expansion of shadow banking credit is still supported by the preferential treatment of repo and derivative transactions under bankruptcy law [Perotti (2012, 2013)]. And lax rehypothecation rules still encourage the buildup of collateral chains that propagate failure between key actors in core funding markets. As noted, such breakdowns in market liquidity could again lead to pressure for central bank interventions. Central banks' liquidity policies are thus closely related to the developments in the shadow banking sector and the “changing collateral space” [Singh (2013a)].

Shadow Banking and Collateral Pressures

The shadow banking sector is both a user of collateral and a collateral provider. According to

Manmohan Singh of the IMF, shadow banking is really a network of collateral transactions that today constitutes our modern financial system [Singh (2014)]. This “Collateral landscape” is now changing, due to various regulatory initiatives and the general move toward more secured financial transactions. The result is a scramble for safe assets and increasing concerns about collateral shortages in the future [IMF (2012)]. Several reports have analyzed the potential shortages of highly liquid collateral [IMF (2012), BIS (2013b)]. Many argue that there will not be a shortage of high-quality liquid assets (HQLA), since primary issuance is expected to remain fairly high going forward [U.S. Treasury (2013)]. However, there could be a scarcity of HQLA, especially if markets become stressed again [BIS (2013a)].

The effectiveness of netting and the size of net exposures will determine the final demand for HQLA. There will surely be effects on pricing, market structure and the workings of markets more broadly [Heath et al. (2013)]. But the true level of asset encumbrance and the risk it poses for banks is so far unknown, and the financial stability implications of increased collateralization of financial transactions and rising asset encumbrance levels remain poorly understood [Gai et al. (2013)]. One predictable effect of the upcoming scramble for HQLA is “collateral transformation services” that can expand the HQLA universe. As collateral becomes increasingly scarce, a key shadow banking function will be to mobilize and reuse collateral [Singh (2014)]. They will source collateral (from insurance companies and pension funds), increase the collateral velocity (i.e., reuse), pool collateral (among firms in the same company) or recreate securitization (creating what appeared to be high-quality assets, as was customary before the recent crisis) [Hauser (2013)].

The downside of this collateral transformation is more interconnections between key players in the financial market and increased risk of contagion. As Singh (2013b) notes: “Collateral transformation is likely to fill the void but will increase the nexus between banks and nonbanks.” And these new interconnections between financial institutions will weaken the resilience of the financial system in adverse conditions [Heath et al. (2013)]. Policymakers, therefore, need to strike a balance between the desire to ensure the soundness of financial institutions and the costs associated with a potentially too-rapid acquisition of safe assets to meet this goal [IMF (2012)]. This concern with shortages or scarcity of HQLA has led to increased pressure on central banks to relax their liquidity policies; banks want cheaper funding and wider collateral pools. They also want to include central bank liquidity facilities in their pool of liquid assets under the new Basel LCR liquidity regulation. Such “committed liquidity facilities” (CLF) could potentially reduce the banks' need for mobilizing new HQLA. But it would surely undermine the spirit of the Basel liquidity proposal [Schmitz (2013)], except in jurisdictions that are short of sovereign debt [Stein (2013a)].

The new collateral-intensive financial system confronts central banks and governments with a deeply political question: how to manage the potential systemic risk generated by the shadow banking system, especially in times of stress [Gabor (2013)]? As regulators try to instill more safety in the system, transaction costs will increase, prices go up and volumes fall. But scaling back the profitable OTC market may be like putting the genie back in the bottle. The pushback from the financial industry over the proposed OTC reforms shows that this will be a tough

battle. And the new market equilibrium for highly liquid assets is indeed “hard to fully fathom in advance” [Stein (2013a)]. There is also the risk that pressure to collateralize the huge unsecured repo and OTC positions may expose clearing agents (CCP) to new and unexplored concentration risk. This could put pressure on central banks to provide even more liquidity in a crisis to avoid a new systemic meltdown [Murphy (2013), Tucker (2014)]. And increased collateral requirements would also expose the financial system to procyclical and self-reinforcing spirals as market participants will repo, swap or sell assets to meet collateral calls in times of stress [ESRB (2012)].

The huge scale of the collateral-based shadow banking system represents a dilemma for central banks [Moe (2012)]. Unless the endogenous growth in shadow banking liabilities is somehow constrained, there will be continued pressure on central banks to stop fire sales and create outside liquidity in periods of stress [Perotti (2012)]. However, before central banks commit to backstopping the liquidity needs of the shadow banking system, more conceptual work is needed to clarify the scope for self-insurance against liquidity risk and how to define the modalities of central bank liquidity support [Tarullo (2013, 2014)].

Collateral Dilemmas

Central banks' liquidity policies were transformed during and after the financial crisis. Many central banks initiated new and innovative liquidity facilities with a wider set of counterparties, at much longer maturities and against a gradually much wider set of collateral. Without this timely liquidity support, the breakdown in market liquidity would most likely have led to the disorderly failure of a number of major financial institutions. Carlson et al. (2015) argue that this expanded role for the Federal Reserve in liquidity provision was a natural extension of the classical lender-of-last-resort policy prescribed by Walter Bagehot.

“The Fed lent not only to banks but seeking to stem the panic in wholesale funding markets, it also extended its lender-of-last-resort facilities to support nonbank institutions, such as investment banks and money market funds, and key financial markets, such as those for commercial paper and asset-backed securities” [Bernanke (2013)]. The scale of liquidity support was massive, as “the Fed's balance sheet was being used to directly replace the decline in balance sheet capacity of the financial intermediary sector” [Adrian and Shin (2009a)].

The massive increase in central bank liquidity support led to changes in their collateral policies. In principle, central bank credit should only be granted to solvent firms against good collateral. This is a safeguard against reckless money growth and limits the central bank's exposure to financial loss and lessens the need for counterparty credit assessment [Cheun et al (2009)]. A shortage of eligible collateral acts like a brake on central bank credit, as an anchor, much like gold under the gold system of international finance. A strict collateral policy would, in this way, help in preserving the integrity of the fiat money system. Central bank credit should be backed (and constrained) by something of real value. But the breakdown in unsecured interbank credit after the crisis put commercial banks in a squeeze. Their liquidity needs increased dramatically, while their counterparties withdrew collateral at the same time.

In response, central banks relaxed their traditional strict collateral requirements in order to accommodate the bank's desperate need for liquidity. And banks became more creative in finding ways to post low-quality, but acceptable, collateral at the central bank, because better quality collateral had alternative uses with better returns.

This type of behavior was well known even before the crisis, as observed by a former European Central Bank (ECB) executive board member [quoted in Chailloux et al., 2008, p.5]:¹⁴ “Quite understandably, (central bank counterparties) have economized on the use of central government bonds, which has been often almost the only collateral counterparties could still use in interbank repo markets. Instead, they have brought forward less liquid collateral ... including ABSs, for which primary and secondary markets have basically dried up.” By facilitating this type of “collateral manufacturing,” central banks' collateral policies facilitated the buildup of leverage before the crisis in the banking and the shadow banking systems. Banks could use their high-quality collateral to obtain repo financing, thereby providing pledge-able collateral for the daisy chains of rehypothecation in the shadow banking system. By running an accommodative collateral policy before the crisis, many central banks thus supported the excessive market growth that they eventually had to bail out during the crisis with even more relaxed collateral standards.

The recent changes in collateral policies of the Bank of England can be seen as a natural extension of this accommodative liquidity policy [BoE (2013)]. The new Governor announced the policy with the headline: “We are open for business” [Carney (2013)]. Facilities will, in the future, be on longer terms, the range of assets accepted as collateral will be wider, including raw loans if required, all facilities will be cheaper and there will also be foreign exchange liquidity lines, based on international swap lines (ibid.). This new liquidity policy is consistent with the Governor's long-held position that “in times of crisis, central banks must act as a market-maker of last resort, by becoming a counterparty to major market participants” [Carney (2008)]. But embracing this expanded role also carries certain risks.

As Martin Wolf (2013) noted after the new BoE policy was announced: “A central bank can, in principle, create domestic money without limit. But if it uses that power more freely, it will encourage banks and markets to generate more maturity transformation, making themselves and the economy more vulnerable to panic.” Central banks are thus faced with an inherent tension between the market's need for liquidity in times of crisis and the strictures of their own collateral rules. As Zorn and Garcia (2011) from the Bank of Canada observed: “The benefits of a flexible collateral policy were demonstrated during the crisis, but how flexible should collateral policies be? How much risk can or should a central bank take on? How can operational readiness to accommodate this flexibility be balanced with the costs, particularly when extraordinary events are, by definition, infrequent?”

If banks perceive the central bank's collateral policy in a (new) crisis correctly, they may well, hold less good collateral and more bad collateral today (a form of Gresham's law). And the central bank may not be able to stick to their announced strict collateral policy, just as the banks expect. As Paul Tucker (2009) noted: “In other words, a central bank policy of lending

against only the best assets is likely to prove time inconsistent when it comes to the crunch.” If central banks insist on only highly liquid assets as collateral for liquidity support in a crisis, some otherwise solvent banks with liquidity problems may fail. This is obviously a policy dilemma for central banks. They risk amplifying the financial crisis by tightening their lending standards during it. This is obviously counterintuitive, as they are supposed to rescue the financial system in a crisis. But it illustrates well the tensions between a “risk-based” collateral policy [Alphandary (2015)] and a “macroprudential-based” liquidity policy [Allen (2013)].

A countercyclical central bank collateral policy could indeed be useful in dampening the financial cycle “and provide some funding alternatives when conditions in the market become tight and build an illiquidity discount into some asset prices” [Chailloux et al. (2008)]. However, such a policy can only be viable if “collateral neutrality” is restored in normal times. “Otherwise, central banks would increasingly ease their collateral requirements and end up undermining public confidence in the soundness of their balance sheet, potentially weakening the trust in money” (ibid.). Going forward, central bank collateral policy will have to grapple with these conflicting goals. Central bank collateral policy will also have to be integrated with the broader policy shift toward macroprudential policies [Allen (2013)]. Their collateral policy will be important, not only for short-term liquidity policy, but also for the longer-term development of core funding markets. Central banks will have to decide which funding markets are systemic and how far they will accommodate the endogenous growth of shadow bank liabilities in these markets.

Policy Challenges

Despite a temporary slowdown in global shadow banking activities after the financial crisis, they remain large and growing. The sharp growth in investment funds that offer instant redemption, while investing in relatively illiquid assets, has recently led to concerns among regulators of potential market illiquidity [BoE (2014)]. Governor Tarullo (2015) from the Federal Reserve Board has urged policymakers to review shadow banking activities “that pose significant risk of rapid investor flight during stress periods.” And Constâncio (2015) from the ECB has confirmed that “we are now witness to the emergence of a shadow banking sector that is also vulnerable to runs.” This new financial landscape raises some important policy challenges for central banks, especially how far they should go in accommodating the potential demand for safe assets from the shadow banking sector.

Johnson and Santor (2013) from the Bank of Canada argue that central bank liquidity support should be permanently available, and that the traditional lender-of-last-resort function should be expanded to include support of core funding markets, “with the central bank being a “market maker” of last resort if necessary” [Johnson and Santor (2013)].

Carlson et al. (2014) go further and argue that central banks should act aggressively as market makers of first resort in a systemic liquidity crisis, since it would be inefficient for individual entities to self-insure for a systemic liquidity event. But if market participants are ill informed and under “the illusion of market liquidity” [BoE (2014)], liquidity will be underpriced based on the expectation of the central bank backstopping the system. It would then be fully rational

for individual asset managers to operate on the premise that they can “dump their collateral and get out of town before things get ugly” [Tarullo (2013)]. But should we not expect more from market participants that invest in relatively illiquid assets and offer instant redemption? Former Undersecretary of Domestic Finance (U.S. Treasury) Mary Miller [Miller (2014)] notes that it's time to take a closer look at the asset management industry and check whether their broad spectrum of products all meet the test of liquidity.

We need to find a way to curb private liquidity creation before central banks can become market makers of any resort. Limiting the growth of the shadow banking system is one key element in this new balance. As Borio (2013) notes: “The Achilles heel of the international monetary and financial system is not so much the risk of a structural excess demand for safe assets,” but rather the “excess elasticity” of the same system, i.e., the inability of policy regimes in place — monetary, prudential and fiscal — to prevent successive financial boom and bust cycles. Countercyclical haircuts and margins for securities financing transactions could become part of the new macroprudential toolkit needed to lean against this spontaneous credit creation in the shadow banking system.

Better reporting of securities financing transactions [E.U. (2014)] will help in transparency but will not in itself dampen the procyclicality of the shadow banking system. As long as the underlying incentives are strongly supportive of continued growth in nonbank credit, in large part due to low-risk weights and the preferential status of collateral-based credit transactions, the reporting requirement may well be in vain [Perotti (2013)]. Sheila Bair (2013) is blunter when she notes: “Repos among financial institutions are treated as extremely low risk, even though excessive reliance on repo funding almost brought our system down. How dumb is that?”

Central banks will, therefore, continue to be under pressure “to stop fire sales and create outside liquidity” in a systemic crisis [Perotti (2012)] unless the incentives are changed. The recent FSB roadmap for shadow banking includes important policy proposals that could make a difference and provide the basis for a new form of macroprudential market regulation [FSB (2014b), Tarullo (2015)]. Cash buffer requirements and international minimum standards for fund redemption fees are other policy tools that are currently being considered [Constâncio (2015)]. As Minsky (1985) noted long ago, a flexible central bank liquidity policy should be combined with tough regulatory measures both before and after the crisis: “Clearly, central bank lender-of-last-resort interventions must lead to legislated or administered changes that favor hedge financing and ... the central bank should continuously 'lean against' the use of speculative and Ponzi financing” (ibid). Central bank liquidity support for core funding markets should, therefore, be conditioned on meaningful structural reforms that can bring better balance between the shadow banking sector's ability to self-insure and central banks' capacity and willingness to provide backup liquidity. “The idea that a huge expansion even of a reformed financial system would bring great global benefit is doubtful” [Wolf (2013)] and “even right-wing voices now think it makes sense to restrict the size and behavior of banks” [Turner (2013)].

We need to establish a sound system of credit creation reflecting the real economy's need for finance. The current shadow banking system, backed by highly volatile collateral values, has made our whole financial system more fragile. "If credit creation left to itself goes beyond optimal levels, constraining it may be beneficial" [Turner (2013)].

Central banks should be especially concerned about providing liquidity to core financial markets without meaningful structural reform. A judicious review of the robustness of core funding markets is at least needed before central banks commit fully to the new role of market maker of last resort. Until it can be shown that these financial markets are reasonably able to stand on their own without central bank support in a crisis, authorities should insist on further reforms. It would indeed be ironic if central banks declared victory in the fight against too-big-to-fail institutions, just to end up bankrolling core funding markets.

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