

The roots of shadow banking

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Introduction

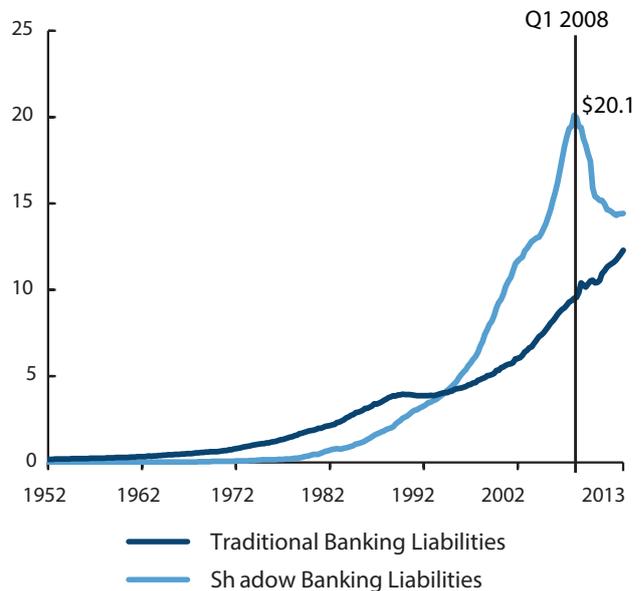
The shadow banking sector is an ill-defined financial segment that expands and contracts credit outside the regulatory perimeter. It was critical in the build-up and demise of the credit boom. While much reduced since 2008, in the US its size still exceeded bank assets in 2011. Figures 1 and 2 show how rapidly the sector can expand, as well as contract.²

What have we learned since the crisis on shadow banking? As Paul Tucker has observed, not all intermediaries deemed shadow banks do banking (Tucker 2012).³ I will propose a transaction-based definition, which implies that even banks are active in some shadow banking activities.

The essential structure of banking is about funding risky assets with demandable debt. Banks perform various key risk transformations through their balance sheet – diversification, maturity transformation, and liquidity transformation. Banks are special as they can support long-term investment at a low funding cost, thanks to their (perceived) ability to promise liquidity on demand. This promise is made credible by deposit insurance and access to central bank refinancing, and enables very high bank leverage. Confidence in immediacy ensures that demandable debt is routinely rolled over, thus supporting long-term lending.

As most savers prefer risk-free liquid claims, more intermediation (and risk absorption) by banks

Figure 1 Evolution of regulated and shadow banking credit volumes



Note: Traditional banking liabilities refer to total liabilities of US chartered depository institutions, foreign banking offices in the US, banks in US affiliated areas, credit unions, and holding companies, less corporate bonds they have issued and other long-term liabilities. Shadow banking liabilities (netted from overlaps with the Federal Reserve Flow of Funds Table L.110) refer to the sum of total outstanding open market paper, total repo liabilities, net securities loaned, total GSE liabilities and pooled securities (prior to Q4 2008), total liabilities of asset-backed securities issuers, and total shares outstanding of money-market funds.

Source: Office of Financial Resources, 2013.

results in more credit for the economy, but it also increases their vulnerability when confidence is shaken. To ensure stability, bank credit volume is constrained by regulatory capital ratios. So financial markets have thought of new ways to fund risky assets with inexpensive funding. Shadow banking requires creating a variant of demandable debt, not subject to capital ratios and credibly backed by some direct claim on liquidity.

1 I would like to thank Stijn Claessens, Darrel Duffie, Viral Acharya, Markus Brunnermeier, Jeremy Stein, David Skeel, and the editors for excellent feedback. The opinions stated here are those of the author and do not necessarily reflect those of the ECB.

2 Note that the decrease in shadow banking credit is partly due to incorporation of structured investment vehicles, acquisitions, and transformation of shadow banks into banks.

3 For instance, money-market funds are simply pools of uninsured depositors, and do no proper lending or monitoring.

Figure 2 Changes in regulated and shadow banking systems since 2007

Sources: Federal Reserve, US Treasury, Haver Analytics, Securities Industry and Financial Markets Association, OFR analysis.

Shadow bank funding

Historically, depositor confidence was supported by high capital, reputation, and limited competition. As competition increased and capital fell, central banks' emergency liquidity transformation and deposit insurance allowed steadily higher credit and bank leverage.

How can shadow banks mimic banks' unique credibility in promising liquidity on demand without access to central bank liquidity and insured deposits? Shadow banks may simply rely on bank credit lines for emergency liquidity. A large part of securitisation was placed in structured investment vehicles, funded with very short-term paper backed by credit lines by the sponsoring banks. These were allowed to be off-balance-sheet, though the sponsor banks bore all the contingent liquidity risk. While this specific regulatory arbitrage opportunity has now been shut down, the ability to conduct unregulated shadow banking transactions has largely survived.

I argue that shadow banks' distinctive liquidity guarantee arises from their issuing of collateralised financial credit, such as repurchase agreements (repos). These are often combined with collateral swaps to maximise liquidity transformation. This is the source of shadow banking's very short-term, inexpensive funding, as well as of the risk externality it creates. But how can these liabilities deliver investors credible liquidity upon demand?

How to jump a running queue? Superior bankruptcy rights

Security pledging grants access to easy and cheap funding thanks to the steady expansion in the EU and the US of 'safe harbour' status, the

so-called bankruptcy-remote privileges for lenders secured on financial collateral (also called qualified financial contracts). Their claims are now uniquely excluded from mandatory stay under EU and US bankruptcy law. Critically, creditors using such contracts can immediately repossess and resell pledged collateral. They also escape most other bankruptcy restrictions such as cross-default, netting, eve-of-bankruptcy, and preference rules. These safe harbour privileges ensure immediacy for their holders. Unfortunately, they do so by undermining orderly liquidation, the foundation of bankruptcy law.

The consequences became visible upon Lehman Brothers' default, when its massive portfolio of repos and derivative collateral was taken out of the bankruptcy estate and resold within hours. This produced a shockwave of fire sales of asset-backed securities holdings by other safe harbour lenders. While these lenders broke even, their rapid sales led to lower prices, and spread losses to all others, eventually forcing public interventions. It thus became clear that safe harbour not only undermines the value of the unsecured claims of a specific entity (even deposit insurance or tax claims), but may create external effects on markets.⁴ Because safe harbour offers superior claims for some lenders over others, it inevitably reduces everyone else's security. Most of the time, the privilege appears innocuous – after all, default by financial intermediaries is a rare event. But the extreme safety in tail events produces a formidable risk externality.

As well as accelerating fire sales, safe harbour provisions also have a significant ex ante effect on the degree of credit risk, as the time series of risk-taking during the credit boom suggests. The privileges were massively expanded in a coordinated legislative push in the US and EU (see Devos 2006 and Perotti 2011).⁵ This immediately led to an acceleration of shadow banking funding

4 Unsecured creditors had to wait five years to get around 20 cents on the dollar.

5 Limited safe harbour status was granted as exceptions in the 1978 US Bankruptcy code, limited to Treasury repos and margins on futures exchanges for qualifying intermediaries. They were broadened progressively to include margins on over-the-counter swaps. The massive changes took place in 2004, when any financial collateral pledged under repo or derivative contracts, whether over-the-counter or listed, by any financial counterparty, came to enjoy the bankruptcy privileges (Perotti 2011).

for mortgage risk-taking. The guaranteed ease of escape for repo lenders led to the final burst in the pace of mortgage lending and repackaging in 2004–2007, when credit standards fell through the floor. Lehman Brothers was simply the most exposed of all shadow banks, with an average debt maturity of less than three days carrying a huge exposure in mortgage credit.

Liquidity transformation along the credit chain

Shadow banks expanded massively with securitisation, where the ‘most liquid’ parts of mortgage loans were pledged under safe harbour. However, shadow banks can also expand by relying on the liquidity of assets they do not own, via collateral swaps. A major source of pledgeable financial collateral is ‘mined’ by borrowing liquid assets from long-term asset managers, such as insurers, pension and mutual funds, custodians, and collateral reinvestment programmes (Poszar and Singh 2011). In exchange, beneficial owners receive fees, booked as yield enhancement. The borrowed securities are then pledged to repo lenders or posted as margins on derivative transactions. Experienced asset managers protect themselves via collateral swaps, in which the security borrower pledges collateral of lower liquidity as a guarantee. The liquidity risk transformation chain may have more links.⁶

Safe harbour privileges ensure immediacy for their holders. Unfortunately, they do so by undermining orderly liquidation, the foundation of bankruptcy law

Security pledging can be a force for good if incentives are appropriate. It activates the liquidity value of assets from long-term holders who do not need it. Such extraction of unused collateral service value may be seen as enhancing ‘financial productivity’, and it certainly increases asset liquidity. Its expansion clearly boosted securitisation. It enables overstretched borrowers to further increase leverage (certainly if other lenders fail to fully appreciate its effects). Yet this can be an illusory gain, flattering market depth in normal times at the cost of greater illiquidity in times of distress.

Shadow banking runs

A jump in market haircuts, and ultimately a refusal to roll over security loans or repos, is the shadow banking system’s equivalent to a classic bank run. As a security borrower cannot raise as much funding from its own illiquid assets, it is forced to deleverage fast or go bust. In both cases this triggers fire sales. Once repo lenders seize

collateral, they wish to sell fast for a number of reasons. First, they are not natural holders. Second, they do not suffer from a lower price as long as the price drop is less than their haircut. Third, they are aware that others are repossessing similar collateral at the same time, so they have an incentive to front-sell. In addition, real money investors who lost their original holdings are likely to sell the repossessed, less liquid collateral, as they wish to re-establish their portfolio profile. More critically, they legally need to sell within days to be able to claim any shortfall in bankruptcy court. Thus resale incentives associated with repossessed collateral lead to an acceleration of sales even for assets originally invested for a long holding period.

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Finally, although central banks are not in charge of shadow banks, they come under pressure to extend credit or purchase assets to stop fire sales. This completes the banking analogy.

The safe harbour debate

It is now evident that shadow banks (or rather, shadow banking activities, wherever performed) need safe harbour privileges to replicate banking. No financial innovation to secure escape from distress can match the proprietary rights granted by safe harbour status, which ensure immediate access to sellable assets.

Safe harbour has long been an obscure detail even for senior policymakers and academics. One reason for this is that few repossessions took place, as only one major shadow bank was allowed to go bust (though its effect on MF Global clients has been notable). Traditional unsecured lenders have taken notice, and now request more collateral, squeezing bank funding capacity and limiting future flexibility.

Many attentive observers find such an unconditional assignment of superpriority to repo and derivative claimants excessive, and see it as encouraging excess risk-taking (Bolton and Oehmke 2011). In an excellent summary, Duffie and Skeel (2012) discuss the costs of safe harbour. In their words,

“safe harbours could potentially raise social costs through five channels: (1) lowering the incentives of counterparties to monitor the firm; (2) increasing the ability of, or incentive for, the firm to become too big to fail; (3) inefficient

substitution away from more traditional forms of financing; (4) increasing the market impact of collateral fire sales; and (5) lowering the incentives of a distressed firm to file for bankruptcy in a timely manner.”

While these arguments are well understood, we wish to reinforce the ex ante effect of safe harbour. Repo lenders and derivative counterparties are extremely safe. Not only do they enjoy immediacy in default, they also reset margins daily. By construction, just like insured depositors, these claimants can afford to neglect credit risk. Thus this source of funding cannot be entrusted to perform any monitoring role. Supportive evidence comes from the critical role played by repo financing in funding the last wave of securitisation, where lending standards fell continuously. Another critical ingredient of that last fatal phase of the credit boom was the credit enhancement provided by derivatives. Between 2004 and 2007 the credit default swap market grew from \$5 trillion to \$60 trillion. Thus the expansion of safe harbour privileges appears to have contributed significantly to the creation of excess risk in the credit boom.

Duffie and Skeel cite as a benefit: *“a reduction of the incentives of repo and derivatives counterparties to ‘run’ as soon as the debtor’s financial condition is suspect”*. This is true, but it simply reflects the fact that margins can be adjusted daily. A rapid increase in repo haircuts is equivalent to a shadow bank run. More importantly, a larger amount of superpriority claims makes other lenders run earlier and faster, as they come to realise how their claims are being diluted. The recent major shift from traditional unsecured creditors towards secured debt, which is undermining traditional bank funding patterns, reflects this new awareness.

Duffie and Skeel also cite the enhanced reliability of derivative transactions. Indeed, safe harbour does facilitate hedging transactions, but also speculative ones. But surely it is questionable whether the highest level of protection should be granted to collateralised lenders, and to shadow bank funding, over all other investors. For all these reasons, regulators and the public need to make an informed decision, which does not seem to have happened (see Schwarcz and Sharon (2014) for the legislative history of the safe harbour provision in the US).⁶

The ultimate financial stability concern is that shadow banking funding can be scaled up easily by securitisation or collateral mining (as long as real money investors agree). The implicit capital ratio is as low as security lenders choose to tolerate

it, and thus becomes highly procyclical. Whenever liquidity is abundant, the channel can expand very rapidly. Both micro- and macroprudential oversight authorities have limited tools to control the associated contingent liquidity risk (including for the part of shadow banking which is pursued within banks). Collateral lending, by splitting up liquidity transformation, lengthens credit chains and expands the number of connections among intermediaries, further contributing to systemic risk (Gai et al. 2011).

Thus the expansion of safe harbour privileges appears to have contributed significantly to the creation of excess risk in the credit boom

The main argument used by the industry in the US Congress debate on bankruptcy reforms was that safe harbour ensures immediate freeing-up of pledged securities upon an individual large-scale failure. It was meant to prevent distress in cases such as that of Long-Term Capital Management (although emergency Fed lending had promptly resolved the problem). Such an episode was naively termed ‘systemic risk’. With hindsight, it was equivalent to declaring any financial institution as systemic and thus deserving of absolute priority. Most clearly, no-one understood the real systemic risk externality it would create (Schwarcz and Sharon 2014).

A first step: a public registry

Any prudential policy aimed at containing the risk externality associated with safe harbour requires proper measurement. In Perotti (2011), I suggest that claims be publicly registered (just as secured real credit generally is) as a precondition for safe harbour status. This will ensure proper disclosure, essential to macroprudential regulators, and avoids unauthorised or misunderstood (re)hypothecation. The need for a central repository seems by now well accepted among senior policymakers, especially once all securities are securely identified by a unique identifier code (as in the case of the newly introduced Legal Entity Identifier).

Changing bankruptcy law against the interests of well-established lobbies will not be simple, however sensible (Schwarcz and Sharon 2014).⁷ With this in mind, central banks may take a lead by establishing a standard. In their position as the main supplier of liquidity and secured refinancing, they can demand that securities pledged under

⁶ Creation of new proprietary rights is an exceedingly rare legal innovation. Limited liability and the bankruptcy stay were the last main instances in the area of financial contracting.

⁷ Remarkably, safe harbour status has been further extended since the crisis, without much scrutiny. An EU directive amendment (Directive 2009/44/EC) grants eligibility to all credit claims “in the form of a loan”. More legislation is being prepared for central securities depositories, amending Directive 98/26/EC.

safe harbour be regularly registered in order to be eligible for refinancing. Concretely, such assets may be considered eligible provided their safe harbour status had been registered earlier, such as in the previous month. This would avoid having securities be registered only once the chance of default becomes significant.

Broader reform proposals

The main proposals to reform safe harbour status aim at firmly restricting eligibility. Tuckman (2010) suggests that only cleared derivatives should enjoy the status. Duffie and Skeel argue it may be limited to appropriately liquid collateral (thus not asset-backed securities!) and only transparent uses (e.g. derivatives listed on proper clearing exchanges). Implementing these proposals would defuse the Damocles sword of dangling fire sales, since the eligible collateral would be precisely the type of assets in demand in a liquidity crisis. This would achieve the goal of putting the most explosive feeder of shadow banking back in the bottle, containing the scope of quasi-money to currency and bank deposits. It would essentially limit it to a form of 'narrow' shadow banking.

Safe harbour claimants should be paying for the privilege, thus internalising the risk externality created

While limiting eligibility to safe collateral is probably the best solution, it is meeting intense resistance from the industry, which has become quite addicted to this legal construction. It is important to recall that intermediaries have become used to pledging borrowed or even clients' assets as collateral to their repo funding and even their derivative positions.⁸ Indeed it amounts to a major (socially welcome) change in its business model, and would constrain significantly the scale of funding for entities and transactions not subject to capital requirements.

Another solution would be to bring this form of funding under the regulated periphery, through mandatory haircuts for collateralised secured credit. This would satisfy the basic principle that to avoid regulatory arbitrage, equivalent transactions leading to systemic liquidity risk must be subject to similar rules for both banks and shadow banks. This would essentially extend Basel III rules to shadow banking. Yet, international negotiations at the Financial Stability Board to establish minimum

haircuts have failed so far to achieve any results, leaving at present no global policy in place. For proposals to link capital adequacy requirements to the use of collateralised secured credit, see Tarullo (2013) and Stein (2013).

A Repo Resolution Authority has been proposed as a solution to maintain the pledgeability of less-liquid collateral under safe harbour (Acharya and Oncu 2012). The idea is to prevent the immediate release of all collateral, while avoiding the effects of a complete mandatory stay. In this approach, the authority would take over the exposure under safe harbour, immediately transferring to repo and derivative counterparties a large fraction (over 90%) of their claim. The collateral would be disposed in an orderly resolution, with the lenders remaining fully liable for any residual loss. This would resolve the urgent issue of avoiding propagation via fire sales, and the residual risk-bearing would surely contain the risk externality.

At the macroprudential level, once collateral held under safe harbour were registered, policymakers would be able to track its evolution, finally enabling the mapping of contingent liquidity risk. If the stock appears to grow too fast, various steps may be undertaken.

In Perotti (2011), I propose that safe harbour claimants should be paying for the privilege, thus internalising the risk externality created. In normal times, a low charge should be levied on registered claims. Such charges should be adjusted countercyclically – lowered in difficult times, and raised when aggregate liquidity risk builds up, to slow down an otherwise uncontrollable expansion.

A more drastic solution involves limiting the stock of safe harbour claims directly (Stein 2012). This approach may be achieved by a cap-and-trade model, which a registry receiving fees could support. Yet past experiences in controlling externalities within a cap-and-trade system have failed, thanks to predictable over-issuance. The cap may be adjusted with some frequency, but this takes away its main advantage, as well as undermining its credibility. It seems much easier to adjust a systemic charge on the privilege.

Conclusions

Due to the safe harbour rules, a shadow bank can hold risky illiquid assets and earn risk and term premia with funding at the overnight repo rate. In what is essentially a synthetic bank, repo and collateral swap haircuts act as market-defined capital ratios, and stretch the degree of maturity transformation. Both features result in potentially large excess volatility following asset liquidity shocks.

⁸ In some cases the re-use of the collateral is not well understood or appreciated even by the beneficial owners. MF Global pledged assets held in custody for clients to fund their own activity. Owners recognised the exposure only once their assets were repossessed by third parties. But because the safe harbour status grants a proprietary right to the repo lenders, the original owners had in fact been legally expropriated.

Safe harbour was created by investors seeking extreme safety, a form of quasi-money. Yet investors who claim superpriority in distress seek a scarce resource. As such contracts may be created at will, they may be overexploited, leading to a novel ‘tragedy of the commons’.

Safe harbour volume at present reflects private contracting choices. As its use grants an ability to create quasi-money, it enables unregulated banking, with capital ratios set by cyclical market margins, and subject to shadow bank runs.

At the system level, it is simply impossible to promise security and liquidity to all.

This liquidity transformation across states and entities has procyclical effects, enhancing credit and asset liquidity in normal or boom times, at the cost of accelerating fire sales in distress (when arguably it really matters).

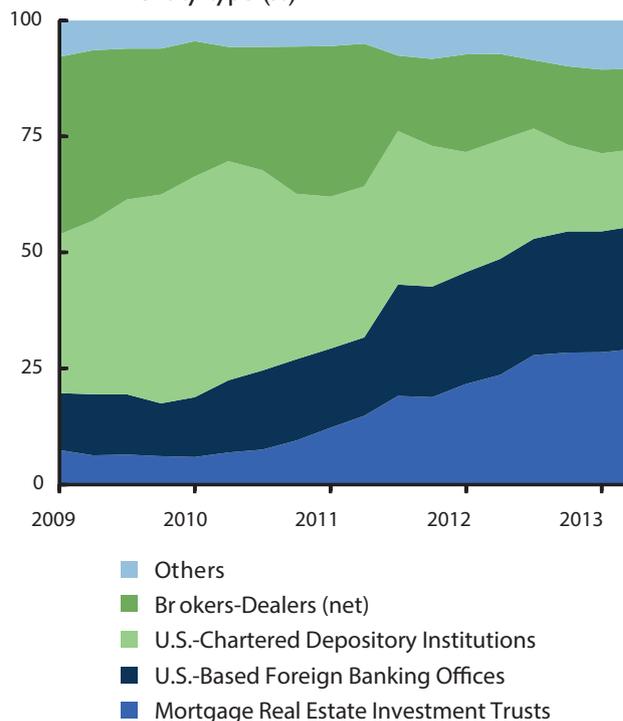
Any reform to the shadow banking funding model should take into account its favourable effects on asset liquidity and credit in normal times. Yet the scale of the contingent liquidity risk in the shadow banking sector is not at present controllable (nor it is well measured!). There is an academic consensus that a balance has to be struck (Acharya et al. 2011, Brunnermeier et al. 2012, Gorton and Metrick 2010, Shin 2011). Appropriate tools are also necessary to align capital and risk incentives in banks and shadow banks (Haldane 2010). Security lending may also undermine Basel III Liquidity Coverage Ratio rules.⁹

Since the crisis, many shadow banks have either been absorbed by banks, gained a state guarantee, defaulted, or massively deflated. Though measurement of security lending against illiquid collateral is still very imprecise, it seems to have abated. Yet the powerful liquidity promise allowed by safe harbour status creates a permanent channel for a build-up in systemic liquidity risk.¹⁰

⁹ A simple rolling 30-day collateral swap enables banks to (temporarily) transform illiquid assets into Liquidity Coverage Ratio-compliant holdings. As a result, resilience to runs is ensured for a month, but completely vanishes afterwards (since in distress the swap counterparty will close out). Liquidity Coverage Ratio implementation rules need to contain such window-dressing, which is hard to detect without any registration of encumbrances.

¹⁰ So-called real estate investment trusts have emerged as a novel category of shadow banks. These are funds invested in mortgage-backed securities, and rely on repo financing to leverage returns. Although at present much better capitalised than structured investment vehicles, they are subject to sudden liquidity needs, especially when rates rise (see Figure 3).

Figure 3 Evolution of Fed Funds and repo liabilities by entity type (%)



Sources: Federal Reserve, Haver Analytics, OFR analysis.

The privileges enjoyed by secured credit are now fully appreciated by market participants. Traditional long-term unsecured lenders to banks are now demanding considerable financial collateral, with pernicious consequences on access to stable funding for many intermediaries – undermining the traditional interbank and long-term funding markets. But this awareness only reinforces the desire for superpriority. It does not solve the simple problem that not everyone can be first in line, nor the simple fact that not all bank funding may be secured. In particular, insured deposits will end up having no assets left to cover the claim, shifting the entire problem to the taxpayer.

At a time when all lenders seek security, questioning the logic of safe harbour provision may seem unwise. Yet at the system level, it is simply impossible to promise security and liquidity to all. Uncertainty about the stock of pledged assets may create a self-reinforcing effect, feeding a frenzy among lenders to all seek ever-higher priority. This is already taking place, and is ultimately unsustainable at the individual and aggregate level. Control over either the volume of potential fire sales or the money supply becomes lost to private choices.

References

Acharya, V, A Krishnamurthy and E Perotti (2011), “A consensus view on liquidity risk”, VoxEU.org, 14 September.

Acharya, V V and T S Öncü (2012), “A proposal for the resolution of systemically important assets

- and liabilities: the case of the repo market”, CEPR Discussion Paper 8927, April.
- Adrian, T and A B Ashcraft (2012), “Shadow Banking: A Review of the Literature,” Federal Reserve Bank of New York Staff Report No. 580.
- Brunnermeier, M K, G Gorton and A Krishnamurthy (2012), “Risk Topography”, in D Acemoglu and M Woodford (eds), *NBER Macroeconomics Annual 2011* 26, pp. 149–176.
- Devos, D (2006), “Legal protection of payment and securities settlement systems and of collateral transactions in European Union legislation”, BIS Legal Department Paper.
- Duffie, D and D Skeel (2012), “A Dialogue on the Costs and Benefits of Automatic Stays for Derivatives and Repurchase Agreements”, Rock Center for Corporate Governance Working Paper No. 108, Stanford University.
- Haldane, A G (2010), “The \$100 Billion Question”, speech at the Institute of Regulation & Risk, North Asia, Hong Kong, 30 March.
- Gai, P, A Haldane and S Kapadia (2011), “Complexity, Concentration and Contagion”, *Journal of Monetary Economics* 58(5), pp. 453–470.
- Gorton, G and A Metrick (2010), “Regulating the Shadow Banking System”, *Brookings Papers on Economic Activity* (Fall), pp. 261–297.
- Pagano, M and P Volpin (2014), “Securitization, Disclosure and Liquidity”, *Review of Financial Studies*, forthcoming.
- Perotti, E (2010), “Targeting the Systemic Effect of Bankruptcy Exceptions”, CEPR Policy Insight No. 52 (published in the *Journal of International Banking and Financial Law* 2011).
- Schwarcz, S L and O Sharon (2014), “The Bankruptcy-Law Safe Harbor for Derivatives: A Path-Dependence Analysis”, *Washington and Lee Law Review* 71(3).
- Shin, H S (2011), “Macroprudential Policies Beyond Basel III”, BIS Papers No 60.
- Stein, J C (2012), “Monetary Policy as Financial Stability Regulation”, *Quarterly Journal of Economics* 127(1), pp. 57–95.
- Stein, J C (2013), “The Fire-Sales Problem and Securities Financing Transactions”, speech at the Federal Reserve Bank of Chicago and International Monetary Fund Conference, Chicago, IL, 7 November 2013).
- Tarullo, D K (2013), “Shadow Banking and Systemic Risk Regulation”, speech at the Americans for Financial Reform and Economic Policy Institute Conference, Washington, DC, 22 November.
- Tucker, P (2012), “Shadow banking: thoughts for a possible policy agenda”, speech at the European Commission High Level Conference, Brussels, 27 April.
- Tuckman, B (2010), “Amending Safe Harbors to Reduce Systemic Risk in OTC Derivatives Markets”, Center for Financial Stability Policy Paper.

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