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SOLVENCY AS A FUNDAMENTAL CONSTRAINT ON LOLR POLICY FOR INDEPENDENT CENTRAL BANKS: PRINCIPLES, HISTORY, LAW

A little over 150 years ago, on Thursday 10th of May 1866, the Bank of England let one of the largest money market dealers in the world, Overend, Gurney & Co., go to the wall. Facing chaos in the markets, the Bank almost immediately made emergency liquidity available to all and sundry. The raw facts – idiosyncratic rejection, followed by system-wide support --- seem strikingly similar to those just over a decade ago when, in the autumn 2008, the Federal Reserve first let Lehman fail but then extended liquidity to Wall Street and beyond.

Indeed, 1866 remains *the* canonical lender-of-last-resort operation in modern financial history, memorialised in journalist and commentator Walter Bagehot's famous call, in *Lombard Street*, for the Bank's Governors publicly to codify their policy of extending liquidity to contain or forestall market panic.[1] Ever since, debate has focussed on just how explicit and how committed the terms of central bank assistance should be.

At one level the debate has revolved around the big issue of moral hazard: the proposition that liquidity reinsurance merely exacerbates future risk-taking, condemning capitalism to a never ending cycle of boom and bust. To contain those risks, should liquidity assistance be confined to markets rather than being made available, bilaterally, to individual ailing firms[2]; and should central

[1] Bagehot, Walter. *Lombard Street: A Description of the Money Market*. New York: John Wiley and Sons, Inc., 1999.

[2] This is sometimes termed the "Richmond view" after a series of papers and speeches by the Federal Reserve Bank of Richmond. As a universal constraint, I think it is silly given that the money markets can dry up, leaving

banks adopt a stance of studied opacity --- in the jargon, "constructive ambiguity" --- towards their emergency liquidity assistance (ELA) policy?[3] Meanwhile, closer to *terra firma*, officials remain preoccupied (rightly) with a host of technical questions such as what financial instruments should be eligible as collateral, how much excess collateral (haircuts) borrowers should be required to pledge, how high a penalty interest rate should be charged, whether non-banks should have access to central banks' facilities and emergency assistance, and so on.

All that is about the actions central banks take to provide liquidity assistance, following the 1866 precedent. I want to insist, however, that as much attention should be paid to what Bank of England did *not* do during that crisis: its decision to withhold assistance from Overends itself. Specifically, I am going to argue that that momentous act of policy embodied a principle that should be central to LOLR doctrine. Namely, that ***central banks should not lend to firms that they know to be fundamentally bust or broken***.

I have argued previously that this principle should be as fundamental to central banks' financial-stability role as "no monetary financing of government" is to monetary policy.[4] Somewhat to my surprise, however, it has been challenged --- as historically inaccurate and, much more important, normatively otiose --- in the contemporary debate about whether the US Federal Reserve could and should have lent to Lehman Brothers in late 2008.[5] The purpose of this paper is to defend what I am now going to term the *Fundamental LOLR Constraint*.

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market mechanisms incapable of distributing central bank reserves to those sound firms in greatest need. That is different from saying that central banks should use market-based facilities where they can. See Tucker, "The Lender of Last Resort and Modern Central Banking: Principles and Reconstruction." BIS Papers, No. 79, Bank for International Settlements, 2014.

[3] Corrigan, E. G. (1990), 'Statement before the United States Senate Committee on Banking, Housing and Urban Affairs', Washington, DC, 3 May 1990.

[4] Tucker, "Lender of Last Resort and Modern Central Banking" 2014. The argument is placed in a more general setting in *Unelected Power*, chapter 23.

[5] For example, Lawrence M. Ball, *The Fed and Lehman Brothers: Setting the Record Straight on a Financial Disaster*, Cambridge and New York: Cambridge University Press, 2018, p. 51 and 232n3. Ball says that I, among others, "misquote" Walter Bagehot in a 2009 speech, given while I was in office, by referring to a solvency condition. He is correct in so far as Bagehot does not make the point directly, and his use of "solvent" is somewhat ambiguous (see below). In subsequent papers (eg Tucker 2014), I was careful to say that I was paraphrasing Bagehot; I believe that to be accurate and, if I am mistaken on Bagehot, then I hold that Bagehot himself was mistaken, normatively and positively, about central banking principles and practice in mid-19th century Britain. As I discuss below, Bagehot being mistaken is not impossible given his record in other fields.

I have to recognise that it was insufficient to state, in the broad brush strokes of my 2014 presentation to central bankers, that:[6]

> *"First, it is quite simply wrong for anyone knowingly to lend secured to a firm with negative net assets, as the lender is making others worse off; short-term unsecured creditors escape as bankruptcy is deferred, but longer-term unsecured creditors end up as claimants in bankruptcy with a call on a smaller pool of assets...Second, if the state wishes to provide solvency support (which I am absolutely not advocating!), that is a decision for the elected government under the control of the legislature."*

That, it turns out, was too compressed. I need to set out the nature of the argument in rather more detail.[7]

In particular, the *Fundamental Constraint* flows from the values behind the separation of powers characteristic of constitutional democracy. When designing a regime for financial stability, we cannot think simply in terms of a benign sovereign addressing the externalities of bank runs and other financial-system pathologies. It is not only that we do not have a benign sovereign; our system of government is predicated on a deeply held belief that it would be a great mistake to concentrate state powers in a unitary sovereign, because they could turn out to be a *malign* sovereign, abusing their powers and the people in arbitrary ways. Thus, we separate taxation powers from the executive branch; and we insulate monetary policy from the elected executive precisely to avoid the monetary levers being used as taxation powers. This raises the bar in designing effective policy regimes because, for example, as I shall argue, an independent central bank can be the lender of last resort but not, since it entails fiscal choices, the capital-provider of last resort.[8]

[6] Tucker, "Lender of Last Resort and Modern Central Banking," 2014.
[7] While any errors are my responsibility, thanks for help on specific points go to Mike Anson (Bank of England archivist), Ulrich Bindseil (ECB), Mike Krimminger (ex-FDIC); for comments on earlier drafts of the paper to Steve Cecchetti and Doug Diamond; and for comments and research on US debates post-Lehman, Ryan Rossner (HLS).
[8] *Unelected Power*, chapters 8, 12, and 23.

Plan of the paper

The paper has five sections. The first two concern the general arguments. Section (1) opens with some of the background on the debate, before going on to articulate, in greater detail than I have before, why central banks should follow the "no lending to fundamentally bust firms" principle. (For those who know the debate, the meat begins in the subsection headed "time-subordination.") Section (2) explains where this leaves various parts of the scholarly and practitioner literature that I believe to be flawed, misleading or exaggerated. The subsequent section, (3), recounts how a striking feature of two specific historical episodes (Overend, Gurney, and the Barings 1890 crisis) bears witness to the *Fundamental Constraint*. Then, in sections (4) and (5), I show how the *Fundamental Constraint* could (and in my view should) inform the articulation and application of today's ECB and US regimes, and how it might help to make sense of the Fed's decision not to lend to Lehman in 2008.

(1) General principles: independent central banks should not lend to bust firms

The purpose of LOLR

I should make clear what I mean by the LOLR. I have advocated the following conception of central banking LOLR facilities and operations:[9]

- *Liquidity assistance provided by the central bank to a borrower that is not fundamentally insolvent, with the purpose of avoiding*
    - *the social costs that would follow from disorderly default or from distressed intermediaries withdrawing or heavily rationing services to the economy, or*

[9] *Unelected Power*, chapter 23.

- *contagion to other intermediaries via direct or indirect channels that would be likely to lead to such social costs.*

It is possible for reasonable people to frame the LOLR's social purpose in different ways. But what concerns us here is the *Fundamental Constraint* --- apparently absolute as I have expressed it previously --- barring the provision of assistance to fundamentally insolvent firms, because I want to insist that for constitutional democracies living by the rule of a law and a separation of powers, it would be a feature of any reasonable framework.

"No lending to fundamentally bust firms": not simple utilitarian calculus

Why is the "no lending to fundamentally bust firms" principle not obvious to everyone? I suspect that part of the problem is connected with the third reason for the principle I advanced in my 2014 paper:

> *"Third, solvency support creates moral hazard writ large. It undermines the incentives of bondholders and other unsecured, uninsured creditors to monitor, price and ration for bank riskiness. A market economy can't work properly if banking is subtly but substantively socialised."*

By including this in the precept's justification, I suspect that some readers associated it with what they think of as the moral-hazard police. That issue blew up in the late summer-autumn of 2007, when Bank of England Governor Mervyn King took a hard line, encapsulated in a public letter to the the key committee of Westminster's House of Commons (very shortly before overt LOLR assistance was disastrously extended to Northern Rock). Quoting selectively from Mervyn's letter:[10]

> *"..Is there a case for the provision of additional central bank liquidity against a wider range of collateral and over longer periods in order to reduce market interest rates at longer maturities?..*

[10] Mervyn King, Governor of the Bank of England, paper submitted to the Treasury Select Committee of the UK House of Commons, "Turmoil in Financial Markets: What Can Central Banks Do?", 12 September, 2007. https://notendur.hi.is/ajonsson/kennsla2006/mervynKing.pdf

> *..the moral hazard inherent in the provision of* ex post *insurance to institutions that have engaged in risky or reckless lending is no abstract concept. The risks of the potential maturity transformation undertaken by off-balance sheet vehicles were not fully priced. The increase in maturity transformation implied by a change in the effective liquidity in the markets for asset-backed securities was identified as a risk by a wide range of official publications, including the Bank of England's* Financial Stability Report*, over several years. If central banks underwrite any maturity transformation that threatens to damage the economy as a whole, it encourages the view that as long as a bank takes the same sort of risks that other banks are taking then it is more likely that their liquidity problems will be insured* ex post *by the central bank. The provision of large liquidity facilities penalises those financial institutions that sat out the dance, encourages herd behaviour and increases the intensity of future crises."*

Putting the other side of the argument, former US Treasury Secretary Larry Summers, shortly to return to office as part of the Obama administration, responded in an oped: [11]

> *"The world has at least as much to fear from a moral hazard fundamentalism that precludes actions that would enhance confidence and stability as it does from moral hazard itself."*

Arguably, some go further than that, placing no weight at all on moral hazard. In my 2014 paper I caricatured a doctrine sometimes associated with the New York Federal Reserve Bank:[12]

> *"Lend to anybody, solvent or insolvent, and sometimes on soft terms, where necessary to keep the credit system going."*

In fact, I do not think the New York Fed has lived consistently by that or any other settled doctrine. But that perception of its policy led me, nevertheless, to make this rather tough comment on the Federal Reserve's documented concern that too frequently sound banks decline to borrow from central bank facilities because borrowing would imply that they are in serious difficulty (known as the stigma problem):[13]

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[11] Lawrence H. Summers, "Beware moral hazard fundamentalists", *Financial Times*, 23 September 2007. http://larrysummers.com/commentary/financial-times-columns/beware-moral-hazard-fundamentalists-september-23-2007/

[12] Tucker, "Lender of Last Resort and Modern Central Banking" 2014.

[13] The 'stigma problem', which has especially concerned the New York Fed, is that liquidity-stricken but basically sound banks will hold back from using central bank facilities (until it is too late) for fear of its

> *"Let me put it brutally. Developing a reputation, whether valid or invalid, for being prepared to lend to insolvent firms undermines the purpose and effectiveness of the LOLR. This is the essence of the stigma problem."*

Again, although I stand by the sentiment, I think it distracted from the principled argument against central banks lending to fundamentally bust or unviable firms. That is because, like the moral hazard argument, it frames the policy question (weighing the pros and cons of a possible liquidity-support operation) purely in terms of welfare: in particular, welfare today (stability) versus welfare in the future (instability fostered by moral hazard and/or ineffective instruments). In fact, however, I believe the arguments for the *Fundamental Constraint* go deeper than simple utilitarian calculus.[14]

To start with, it is worth underlining that the different schools of thought evident during 2007/08 agree on the importance of solvency. First Mervyn (my emphasis):

> *"…central banks, in their traditional lender of last resort (LOLR) role, can lend "against good collateral at a penalty rate" to an individual bank facing temporary liquidity problems**, but that is otherwise regarded as solvent**."*

A similar sentiment was struck by Larry Summers in his 2007 oped (my emphasis):

> *"Prudent central bankers will make judgments during financial crises not on the basis of 'avoiding moral hazard' but rather by asking themselves three questions. First, are*

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becoming known that they have turned to the central bank and that they are perceived to be in serious distress or worse, with the upshot that only banks that really are very badly distressed will use official liquidity facilities; this would be a manifestation of the adverse-selection problem famously discussed in Akerlof, George A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *The Quarterly Journal of Economics* 84, no. 3 (1970): 488–500. On the Fed's concerns, see Bernanke, Ben S., *Courage to Act*, New York: Norton & Co., 2015, p.249. On how this bears on LOLR regimes and policy, see Tucker, "The Lender of Last Resort and Modern Central Banking," 2014.

[14] Where I am going is not inconsistent with a higher-level version of Welfarism, which would hold that the separations of power inherent in constitutional government are valuable only because of their longer-term benefits for welfare, the associated values being merely epiphenomena. But one does not have to hold that view; for example, if one attached intrinsic value to constitutional democracy (for a related argument see chapter 9 of *Unelected Power*).

> *there substantial contagion effects?* ***Second, is the problem a liquidity problem where a contribution to stability can be provided with high probability or does it involve problems of solvency?*** *Third, is it reasonable to expect that the action in question will not impose costs on taxpayers? If the answers to all three questions are affirmative, there is a strong case for public action."*

Neither King nor Summers explained *why* the liquidity/solvency distinction matters. The reason goes to the proper responsibilities, under constitutional democracy, of independent agencies insulated from day-to-day politics, and more practically the reason will bring out the connections between judgments about solvency and decisions on the adequacy of collateral.

Why LOLR policy can sometimes work

To grasp the distinction's significance, we need to look at what can be achieved by the provision of last-resort liquidity assistance. This will also help us get to a more precisely articulated version of the *Fundamental Constraint*.

While the LOLR objective of helping to maintain monetary-system stability (or, as is often the case with emergency assistance, to contain *in*stability) is obvious enough, it does not tell us how LOLR operations and facilities can work to deliver that objective. They can do so in essentially two ways:

1) By dispelling panic by signaling that a crisis of confidence is unwarranted given the superior information available to the authorities; or, more germane for our purposes,
2) By providing a *bridge* to a more permanent solution that addresses the problem(s) afflicting specific ailing firms (or the system as a whole).

The first is apt when market participants have imagined there is a fundamental problem with a particular firm(s) but they are quite wrong. In those circumstances, the monetary-authority LOLR might want to state publicly that the firm is absolutely fine. But neither the LOLR nor the prudential supervisor (nor, I would suggest, the finance ministry) should make such a statement unless they know it to be true. Such reassuring statements are difficult to make when a run has become self-fulfilling, pushing a stricken firm (and even sometimes the economy as a whole) onto an inferior path.[15]

The second case is of more interest here, and is more frequent in practice. Where a specific firm is ailing because of impaired solvency, the fundamental solution to which LOLR assistance provides a bridge might involve:

- recapitalisation by third parties, together with whatever other reforms are needed for the firm's viability to be restored
- carefully controlled deleveraging (so as to minimize social costs), aimed at keeping the firm alive; or if the firm has no future
- orderly wind down of part or all of the book, followed by closure, resolution or bankruptcy.

But the LOLR operation *cannot* itself be *the* solution when the prospective borrower is fundamentally bust. Why not? And, in what sense "cannot"? The answer is partly technical (given bankruptcy law)[16] and partly political (given the norms of constitutional democracy).

The nub of it is that financial stability is not the only thing that matters; various property rights matter too. A stable financial system is a means to an end: for example, to enable a market economy to work tolerably efficiently and without random injustice. Well, property rights are another necessary condition for market-based exchange and production to work tolerably. How this potential clash arises and how it must be resolved, given our deeper political values, lies at the heart of this paper, as I shall now discuss.

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[15] Diamond, Douglas W. and P. H. Dybvig. "Bank runs, deposit insurance, and liquidity." *Journal of Political Economy* 91, no. 3 (1983): 401–19.

[16] For legal specialists, I should stress that I am using the terms "bankruptcy" and "liquidation" as general labels to describe the process where a business goes into a formal proceeding under which it is no longer a going-concern but, instead, an officer of the court or a special administrative authority has the responsibility of realizing assets for the benefit of creditors or achieving some reconstruction that can bring the firm back to life. Thus, "bankruptcy" and "liquidation" are not being used precisely in the sense of, for example, the US's Chapters 11 and 7 procedures, or of their analogues in other countries. Nothing in the argument turns on this.

Time-subordination in life and death

A vitally important distinction arises between fundamentally sound and unsound borrowers because what I shall call "time subordination" exists between otherwise equally ranked creditors while a firm is alive but *not* when it is in bankruptcy.[17]

Let me explain. When a firm is alive, long-term claims fall due after maturing short-term claims, exposing long-term creditors to the risk that the firm deteriorates before their claims approach maturity: this is time-subordination. Upon entry into bankruptcy or liquidation, however, things are different. Some debt claims are accelerated by their contractual terms and, more generally, liquidators/bankruptcy trustees are generally not permitted to pay out to short-term creditors if longer term creditors of the same seniority would be left worse off as a result.

In consequence, liquidity assistance to a bust bank allows short-term creditors to be repaid at the expense of long-term creditors of the same rank. Imagine a firm with no equity, a short-term debt of 100, a long-term debt of 100, and assets of 100. Under liquidation (and assuming no costs of execution), each creditor receives 50, i.e. 50% recovery. If liquidity assistance is initially provided but the firm then goes into liquidation/bankruptcy, the short-term creditor will be repaid in full, but the longer-term creditor receives nothing.

Alternatively, if a central bank carries on lending until it has paid out all liabilities and then discovers that the assets it took as collateral are inadequate, the central bank incurs a loss, because it has lent 100 against assets worth only 50. Its loss is transferred to tax payers. If the central bank knew or should reasonably have known that it would lose money, it has effectively abrogated to itself the responsibilities of the fiscal authority.

A central bank LOLR cannot decently make discretionary tax policy

[17] This is the essential point that I had not grasped would not be intuitive to everyone.

In both cases, then, the central bank's choice amounts to a fiscal measure. Either:

(A) Resources are transferred from long-term creditors to short-term creditors. The central bank does not have the (fiscal) authority to make good any consequential losses incurred by longer-term creditors. (This is narrow redistribution by the central bank.) Or,

(B) Where the central bank lends until all creditors are repaid, losses are transferred to the general taxpayer. (Broad redistribution via the imposition of a general tax at the monetary authority's discretion.)

These are not choices that an *independent* central bank can decently make in a constitutional democracy. That is because one of the elementally defining features of our system of government (constitutional democracy) is that tax policy should be determined by an elected assembly, precisely so that citizens are represented in distributional choices imposed by the state.[18]

Arguably, central banks could be freed from this constitutionalist constraint if elected law-makers were explicitly to give them discretion to impose losses on long-term creditors or on the general tax payer of up to a certain amount where they believed doing so was essential to preserve system stability. This would be, in the jargon, *constrained* discretion. There are problems with such an approach, however. First, it is not clear how a central bank could be held accountable *ex post* for its judgment that a particular problem posed a sufficiently grave threat that it should exercise a delegated power to redistribute resources. Second, this possible solution implicitly assumes that the *elected* executive would be unconstrained, but it is not clear that the executive is in fact free to impose discretionary losses on longer-term creditors, as I shall now discuss.

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[18] *Unelected Power*, chapters 9 and 11. The point here is about *independent* central banks. Although the degree of political control varies (and, in the past, varied) from case to case, *non*-independent central banks are/were essentially the financial-market operational arm of their jurisdiction's finance ministry. Consistent with that, they were occasionally used for essentially fiscal interventions when, for reasons of parliamentary procedure, transparency or raw politics, the finance ministry did not or could not step up to the plate. Thus, in the UK, this is evidenced by at least two of the Bank of England's post-WWII interventions: rescuing Burmah Oil in 1975, and underwriting the private underwriters to the BP equity flotation in 1987 (so well before the Bank's independence). In close consultation with government ministers and officials, both were conducted on the Bank's Issue Department, from which losses and profits automatically go to HM Treasury, and where risk appetite is constrained by a 1928 accord.

Corroboration: even elected fiscal bodies are subject to constraints in their treatment of insolvent banks

The orthodox principles I have been describing are about lending by *independent* central banks, and so not under the day-to-day control or influence of the fiscal authority. But it would be facile to leap to the conclusion that elected government can do whatever it wishes, since we need to distinguish between the elected executive and the legislature.

This is apparent in the statutory regimes for resolving distressed or insolvent financial intermediaries without taxpayer solvency support. In many jurisdictions, including the US and EU, the legislature has constrained the executive (broadly defined) to operate resolution regimes in ways that do not leave any creditors worse off than they would be in a standard liquidation process (known as "no creditor worse off (NCWO)").[19] [20]

Even legislatures themselves are somewhat constrained by soft international law, as the NCWO constraint is an express feature of the international standard for resolution regimes. Specifically, the G20 standard requires that compensation be paid if the normal property right to equal treatment is violated:[21]

> *"Creditors should have a right to compensation where they do not receive at a minimum what they would have received in a liquidation of the firm under the applicable insolvency regime ("no creditor worse off than in liquidation" safeguard)."*

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[19] In the US, there are separate resolution regimes for operating banks and for non-banks (including bank holding companies). For banks, the Federal Deposit Insurance Act, 12 U.S.C. 1821((i)(2) stipulates a "maximum liability" of the FDIC, with the effect that every creditor is guaranteed to receive at least "equal the amount such creditor would have received if the Corporation had liquidated the assets and liabilities of such institution". For non-banks, Title II of the Dodd-Frank Act, 12 U.S.C. 5390(a)(7), guarantees that a creditor will not "receive less than the amount that the creditor is entitled to receive under" the Bankruptcy Code, Chapter 7 liquidation (or, for a broker dealer, a liquidation by the Securities Investor Protection Corporation).

[20] In the EU, it is not illegal for the resolution authority to exercise discretion, but any creditors left worse off than in the benchmark of a regular bankruptcy proceeding are entitled to compensation. *See* Directive 2014-59-EU (Bank Recovery and Resolution Directive), Recitals 5 and Articles 73-75 of BRRD.

[21] Financial Stability Board Key *Attributes of Effective Resolution Regimes for Financial Institution*, paragraph 5.2.

Now, the public-policy purpose of resolution regimes is, of course, the same as the social purpose of LOLR policies: maintaining financial stability and containing instability. That being so, it would be somewhat odd if the NCWO norm that applies, often in hard law, to resolution policy did not carry across in some form to official-sector assistance with funding. I would argue, indeed, that the principle of not acting to prefer short-term creditors over long-term but otherwise equally ranked creditors is a political norm, in the major jurisdictions and internationally, biting on all parts of government.

Against that background, it is easier to see that the distinctive feature of independent central banks as liquidity providers is that they do not have --- and, normatively, should not have --- the fiscal powers to compensate any longer-term creditors who lose out from a LOLR operation. That being so, something like a NCWO constraint needs to be incorporated into their decision whether or not to extend emergency liquidity assistance.

So, summing up thus far, I stand by the basic principle that independent central banks should not lend to borrowers that are fundamentally bust. Or, expressing the *Fundamental Constraint* a little more precisely:

> *An independent central bank should not lend where it knows or should know that there will be direct winners and losers from its assistance because the borrower is doomed to go into bankruptcy.*

The import and impact of this *Fundamental Constraint* will be fleshed-out in the following sections, as I review parts of the existing LOLR literature, history, and EU and US law. I believe that where it is not unambiguous in the law (see sections (4) and (5) on the EU and US), central banks should explain it in their published operating principles for LOLR operations and facilities.[22]

[22] The imperative for legitimacy of publishing *Operating Principles* setting out how an independent agency interprets its statutory powers and how it will exercise delegated but constrained discretion is the third Design Precept advocated in *Unelected Power,* 2018, pp. 119-20 generally, and especially 354-55, 476, and 510 in context of LOLR. Among other things, this would help to address the risk of speeches by central bankers being over-interpreted. The discussion of Lehman in section (5) illustrates this. Another possible example is then Bank of England Governor Mervyn King's comment in October 2010 that "*Central banks can offer liquidity insurance only to solvent institutions or as a bridge to a more permanent solution.*" This appears to mix up the matter of one particular constraint on LOLR (and so ELA) policy with the separate question of how ELA can work. A formal Bank of England paper published in late-2008 made clear that the Bank's liquidity insurance should be available only to intermediaries that are (a) solvent *and* (b) viable or that could be restored to

(2) Problems in the literature

In this section, I briefly review where, using the compressed version, the "no lending to fundamentally bust firms" precept leaves certain strands of the literature on LOLR.[23]

Adequate collateral is not enough

To repeat in order to underline a point made in my 2014 paper: a central bank cannot guard against the mischief the *Fundamental Constraint* is designed to cure simply by taking excess collateral. Precisely because banks are highly levered, they could be rendered insolvent by a relatively small proportion of their assets proving to be worthless. Even if the rest of their portfolio was high-quality and therefore acceptable to the central bank as collateral, that won't be enough to repay the firm's liabilities.

Imagine a bank with one unit of equity; a balance sheet of 100 units, ie 100 of assets and 99 units of debt liabilities; 10 units of risky assets and 90 of safe assets. Now imagine that all the risky assets prove worthless; and that the LOLR lends 30 against 30 units of safe assets, allowing 30 units of private debt liabilities to be repaid. In consequence, there are 60 units of assets to cover 69 units of unsecured liabilities (a payout of about 87%) rather than 90 to cover

viability through actions taken in the time provided by the provision of liquidity. This was expressed in terms of the Bank not extending facilities or assistance to firms suffering from serious problems of "solvency *or* viability" that warranted entry into special resolution rather than in-life liquidity assistance: *The Development of the Bank of England's Market Operations*, Bank of England, October 2008, paragraphs 22, 114, 120. http://paultucker.me/wp-content/uploads/2018/11/Development-of-the-BoE's-Market-Operations.pdf

[23] Some readers might want to jump straight to Sections 3-5 on Overend and Gurney, the ECB, and the Fed.

liabilities of 99 (payout of 90%). The central bank is repaid in full; that is not an indicator that the borrower was solvent when the loan was extended.

I am, therefore, rejecting *as a general rule* the propositions (a) that it is sufficient, *ex ante*, for a central bank to satisfy itself that a distressed firm can furnish collateral sufficient to cover its short-term (and so imminently runnable) liabilities, irrespective of whether it would cover longer-term liabilities; and (b) that, *ex post*, a conclusive test is whether the central bank avoided losing money.[24] We return below to the question of whether there are restrictive conditions under which the availability of collateral to cover only short-term liabilities might suffice.

Pre-positioning collateral, although important, is irrelevant to this debate

Related to this, I have heard it suggested that where a bank has pre-positioned collateral with a central bank, it is entitled to borrow against it. This is nonsense.

Have no doubt, pre-positioning is important. Regulatory requirements ensuring that a bank holds some unencumbered liquid assets, while useful, are *not* the same as requiring that some assets be pre-positioned *with* the central bank.[25] More pertinently for the central point of this paper, any requirement to pre-position instruments with the central bank does *not* entail that the central bank (or other authority) should or will in fact lend when a firm requests liquidity assistance. Pre-positioning is an operational measure taken to help ensure that the central bank is technically capable of lending rapidly where, as a matter of policy, it judges it should do so on the basis of criteria it

[24] For example, Ball, 2018, pp. 96-98. Ball refers to an argument that long-term debt can help to avoid disorderly failure. That is true but, crucially, because it can help to recapitalize a firm through resolution (or, under certain conditions, through contractually based conversions). An earlier (largely US) literature that advocated mandating subordinated debt issuance did not bring in resolution regimes and resolvability, and so implicitly assumed either that longer-term debt can absorb losses in a going-concern or that the signal from falling bond values would always lead to effective remedial action, neither of which is true.

[25] To my regret, none of the Basel or EU supervisory documents establishes a clear policy of eligible collateral having to be pre-positioned *with* the central bank. In particular, the Basel Liquidity Coverage Ratio does *not* require such pre-positioning. But some jurisdictions do require some pre-positioning, a practice initiated by the New York Fed.

has articulated and the legal constraints it is subject to. Pre-positioning might in some circumstances help the central bank make judgments about a potential borrower, but cannot exhaust the inputs to that judgment.

Telling the difference between solvency and liquidity problems

With that ground clearing out of the way, we can turn to a bigger issue: is it possible to distinguish solvency problems from liquidity problems? Numerous authors stipulate that it is not possible. For example, in a widely cited paper, Charles Goodhart says (my emboldening):[26]

> *"The first myth is that it is generally possible to distinguish between illiquidity and insolvency…[Bagehot's good collateral] test has really nothing to do with the question of whether…the applicant borrower…had a capital value below some lower limit (eg. zero or insolvency)…Almost by definition [an individual bank's application for ELA] must be because it is running out of good security for collateralized loans and other (bank) lenders will not lend to it on an unsecured basis in the quantities required (at acceptable rates). Again almost by definition this latter must be because there is some question about its ultimate solvency…the [central bank] must/should suspect that the failure of the bank to adjust its liquidity in the open market means that there is at least a whiff of suspicion of insolvency.* ***It is not, however, possible for the [central bank], at least within the relevant timescale, to ascertain whether such suspicions are valid or not; and if valid, what the extent of the solvency problem is."***

There is obviously some good sense in this, but it goes too far in two respects. First, in claiming that an inability to borrow must always signal idiosyncratic solvency problems: as the summer of 2007 put beyond doubt, sometimes it is hard for even sound banks to borrow if everyone is hoarding liquidity. Second, and more important, however, it goes too far in simply asserting that central bankers will not ever be able to tell whether a borrower is fundamentally

[26] C. A. E. Goodhart, "Myths about the Lender of Last Resort", in *The Lender of Last Resort*, Edited by Forrest H. Cappie and Geoffrey E. Wood, Oxford and New York: Routledge, 2007.

broken. Making a broadly similar point, the banking scholar Xavier Freixas is a little bit more nuanced (again the emboldening is mine):[27]

> *"The classical theory argues that this [LOLR] function is reserved for lending to illiquid but solvent institutions, using good collateral and at a premium price. In fact,* ***the reality of the use of the term Lender of Last Resort in many cases is quite different****, although politically justified... This is because although the LOLR facilities are supposed to solve a failure in the market provision for liquidity, banks in financial distress have often used them as a method to obtain a rescue package. This is the case because****, at times, it is nearly impossible to distinguish ex ante (and even occasionally ex post) whether a loan is to solve an illiquidity problem being experienced by the institution or a solvency problem****. Nevertheless, in a well-developed financial market, the Central Bank provides the necessary liquidity to such institutions."*

For the reasons already set out, this argument is badly wrong if it is taken to state or imply that, normatively, an *independent* central bank may, with impunity, lend to a bank that it knows or believes to be fundamentally insolvent. What matters, rather, is Freixas's nuanced statement that it is "at times…nearly impossible" to distinguish solvency from liquidity problems.

This avoids the mistake of saying or implying that it is almost always impossible to make judgments in real time about whether a distressed firm has fundamental problems of solvency or viability. That is simply not so.

Assessing solvency can sound like an abstruse and potentially massive exercise. But deciding whether a borrower has fundamental problems is more like a practical task. To see this, it might help to think about something slightly different: deciding whether to lend against a particular asset (or class of assets), and what value to put on the security. This is obviously not something abstract or high falutin; it is a task. Imagine further, then, that the borrower's need for assistance is liable to persist for a while, and so you decide how much you might lend against more and more of the borrower's assets. Well, you're on your way to making a solvency assessment. That is because if you conclude

[27] Xavier Freixas and Anthony M. Santomero, "An Overall Perspective on Banking Regulation", Federal Reserve Bank of Philadelphia Working Paper No. 02-1, February 2002, pages 19–20.

that the borrower has not got assets that would cover more than a modest fraction of its liabilities, it becomes likely that it has solvency problems. While having some good collateral is not a conclusive indicator of solvency (see above), unavailability of assets that would secure funding assistance does signal solvency issues.

None of the literature (I have seen) arguing that it is impossible to distinguish between solvency and liquidity problems says anything about what you *do* when deciding to provide liquidity assistance that might go on and on. It is, in fact, a prosaic task, requiring a team and good organization --- just as, when making monetary policy, assessing the economic conjuncture is a prosaic team-based task requiring disciplined processes.

As already noted, that task can be less difficult for central banks that require potential borrowers to pre-position collateral, but only where a large share of total debt liabilities have to be covered by (the discounted value) of collateral.[28] Even without routine pre-positioning, a central bank with a good team can sometimes tell fairly quickly when a potential borrower has got a badly impaired loan portfolio or that its business model is fragile.[29] (We will meet a canonical example when, in section (3), we turn to history.)

Experience suggests that sometimes it is easy to tell whether a borrower has solvency or liquidity problems; sometimes a robust judgment can be reached after some work; and sometimes, yes, it is very hard.

In the latter case, that can be for a number of reasons. For example, the books and papers of the borrower might be chaotic or their integrity put in serious

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[28] Since leaving office, both Mervyn King and, later, I have argued publicly for such a regime. Mervyn King, *End of Alchemy*: *Money, Banking and the Future of the Global Economy*. London: Little Brown, 2016, chapter 7, pp. 269-281. Tucker, "Is the Financial System Sufficiently Resilient?" BIS research conference, 2018. As discussed in that paper, I think 100% liquid-assets cover does not obviate the need to reach a judgment on whether or not a firm has fundamental problems of solvency. http://paultucker.me/wp-content/uploads/2018/07/tucker_paper.pdf

[29] On assessing collateral, during 2007 and 2008, the Bank of England had a terrific team led by Sarah Breeden and Graeme Danton. On assessing viability: in autumn 2007, Andrew Bailey's first visit(s) to Northern Rock left him very concerned about the viability of its business model, other than in a credit boom, given how thin its margins were.

doubt (eg if the prospective borrower has been pulled down by an internal fraud). In those circumstances, the viability of the business might be in question, justifying a decision to decline assistance.

Alternatively, the difficulty can be rooted in uncertainty about the economic outlook. For that reason alone, a firm might be judged to be solvent at the point at which a loan is granted, but later become insolvent. And sometimes the supervisors and central bank might have misjudged a borrower's initial position. In other words, a solvency/insolvency judgment is inherently forward-looking and probabilistic.

Forward looking solvency assessments: ELA as bridge finance redux

It would be sensible, therefore, for central banks to frame their assessments of solvency in terms of probabilities, and to up-date them in the light of news about a specific borrower and the broader environment.[30]

Such judgments would sometimes need to factor in the likely effects of the LOLR intervention itself. As we know from systemic crises, a liquidity crunch can push the economy onto an inferior path for activity and jobs, with lower asset prices, higher default rates, and so greater banking losses. Liquidity assistance to the system as a whole or to individual sound firms might improve things. This can come about in two broad ways:

- Liquidity assistance might help the economy as a whole onto a better path, raising asset prices etc.
- ELA to a specific borrower might provide time for --- a bridge to --- solutions to the ailing firm's underlying problems.

The first mechanism presents formidable forecasting challenges. But this is hardly foreign territory for central banks. When producing the economic forecasts that guide their monetary policy decisions, central banks have to make judgments that are similar in kind, including feedbacks from the credit system. The extra ingredient in forming probabilistic views on solvency is to

[30] How confident should the central bank be? in my view, the threshold. should probably be decided by elected representatives. See, on a related issue, *Unelected Power*, chapter 21.

cascade the macro forecast down, via asset classes, to the banking system. But that is what supervisors and macro-prudential authorities are committed to doing in their asset-quality reviews and stress tests.

While the making judgments about the efficacy of the first mechanism is formidably hard, the second mechanism raises more interesting issues at the level of principle and requires us to think more carefully about the *Fundamental LOLR Constraint*. Take the case of a bank with solvency problems where there is a prospect of a private sector rescue after X days but meanwhile a run is underway. I want to distinguish between two cases, assuming (for the time being) more or less perfect knowledge of the bank's current position:

a) The bank is clearly insolvent, ie a net assets deficit.
b) The bank is solvent but well below regulatory minima

In each case, the mooted private sector solution would recapitalise the bank and restore compliance with regulatory requirements, and will go ahead with probability *p*. If the central bank extends a loan with a maturity longer than X days and of a size equal or greater to all liabilities maturing or callable up to X days, then the firm can survive long enough to give the rescue a chance.

Should the central bank lend, bridging to the prospective solution? Consistent with the *Fundamental Constraint*, I want to argue that we should distinguish between cases (a) and (b), with the answers depending upon probability *p*.

Specifically, in case (a), where the bank is known to be net-asset insolvent, the central bank LOLR would need to know for certain that the rescue would happen (*p* =100%). That is because, otherwise, the central bank would be lending while knowing that there was some prospect (1-p) that they were, in effect, taxing longer-term creditors in order to redistribute resources to short-term creditors.

In case (b), I want to argue that, holding everything else equal, *p* would need to be higher, the closer to the solvency/insolvency boundary (and thus the further away from regulatory minima) the ailing firm was known to be.

Orderly open-bank wind-down: solvent, undercapitalised, and not viable

Relaxing "everything else equal", *p* can be lower (for case (b)) if open-bank orderly wind-down is available as a viable fall back strategy. That is because the *Fundamental Constraint* does not bite where a central bank lends for a period to an undercapitalised (or unviable) but solvent firm, financing a partial orderly wind-down in order to avoid some of the social costs of liquidation, provided that the operation does not put the borrower's solvency in jeopardy.[31]

So far, I have posited that the authorities have near perfect knowledge of the ailing firm's solvency position. Relaxing that, I would argue that the greater the central bank's (subjective) uncertainty about the margin of solvency, the higher should be *p* (the prospect of the rescue succeeding). More prosaically, this is to say that independent central banks should not extend ELA as part of a gamble for resurrection. That follows from the *Fundamental Constraint*: where central banking ends, the fiscal authority can step in if it wishes (as an alternative to resolution: see next sub-section).

There are two more things to be said. First, there is a good argument that elected politicians should set the *framework* under which the central banks make case-by-case judgments about the threshold probability *p*. Second, the various forecasts and probabilistic judgments I have been describing will obviously sometimes turn out to be wrong *ex post* even when they stacked up *ex ante*. There is nothing novel in that: it is a familiar feature of central banks' macro-economic forecasts and monetary-policy decisions. In today's world, central banks should support LOLR policy-making with the same kind of formality, rigorous analytical processes and transparency that transformed monetary policy practices during the 1990s.

The "don't lend to fundamentally bust firms" constraint lacks credibility

[31] As long as solvency is maintained, longer-term creditors are not left worse off, whether the firm goes into a bankruptcy proceeding when the central bank ceases lending or the bank remains open and residual claims are repaid as they fall due with cash from maturing assets.

Finally, there is the objection that the *Fundamental Constraint* might sound fine in high-falutin theory but is not credible, on the grounds that central banks will always strive to do whatever it takes when there is no alternative (to combine two clichés). There is a two-part response to this, only summarised here.

First, the credibility calculus is changed by the advent, following the 2008/09 crisis, of much richer statutory regimes and much more determined planning for resolving failed financial intermediaries in an orderly way without taxpayer solvency support.[32] In other words, when an ailing firm is fundamentally bust or broken, central banks are not faced with choosing between lending anyway (in order to save the world) or causing systemic disaster (by stepping away). Even if (as I would dispute) some commentators are right that the new bail-in resolution techniques could never cope with the simultaneous failure of multiple firms, I do not know of any expert in this field who denies that, for example, a firm the size of Lehmans could be resolved today without taxpayer solvency support.[33]

Second, if that is wrong, it does *not* follow that independent central banks should do the work of elected governments in bailing out firms to avoid systemic collapse. The argument that they can and should do so amounts to saying either that our system of government is broken (because elected politicians must hide behind unelected power when taking certain fiscal decisions) or, alternatively, that monetary authorities should not be independent. I reject both.[34]

(3) Overend, Gurney redux, versus Barings 1890

[32] Tucker, "The Resolution of Financial Institutions without Taxpayer Solvency Support: Seven Retrospective Clarifications and Elaborations." Paper presented at European Summer Symposium in Economic Theory, Gerzensee Switzerland, July 3, 2014. http://paultucker.me/wp-content/uploads/2015/05/Tucker-P-2014-LOLR-and-modern-central-banking-BIS-Papers-No-79.pdf

[33] On a proposal for handling multiple, simultaneous failures, see Tucker, "Resolution Policy and Resolvability at the Centre of Financial Stability Regimes?" IADI/BIS FSI conference, Basel, 1 February 2018. http://paultucker.me/wp-content/uploads/2018/04/Resolution-Policy-And-Resolvability.pdf

[34] As I argue in *Unelected Power*, I do not think it is at all realistic for central banks to be independent in monetary policy but under *day-to-day* political control for LOLR policy. *Unelected Power*, chapter 20.

It is time to return to specific cases and regimes, starting with Overend, Gurney. Known as the "Corner House" – memorializing its offices at the junction of Lombard Street and Birchin Lane --- it was an offshoot of the wider trading concerns of the Gurney family, East Anglian Quaker merchant gentry. Rising to become the largest bill trader in London, it became increasingly aggressive in the decade or so prior to its collapse, effectively challenging the Bank of England's potency, and hence its authority, in the money markets.[35] More important, Overend, Gurney became reckless, providing leverage to other traders rather than confining itself to providing finance backed by real-economic activity.[36]

Four things, then, seem to make a salient connection between the Overend, Gurney case and the demise of Lehman a century and a half later. The Lombard Street dealer was seriously big in core markets, it was unpopular with the authorities, it was let go in its hour of need, and chaos ensued. On 11 May 1866, Black Friday, *The Times* (of London) declared that the shock "will, before this evening closes, be felt in the remotest corners of the kingdom."[37] At a somewhat different point of the political spectrum, meanwhile, Karl Marx, at the time working on *Das Kapital*, lamented to Friedrich Engels that "it appears to me to be merely a premature, specifically financial crisis." To which Engels responded "The panic has…come much too soon and may possibly spoil a good solid crisis for us which would otherwise have occurred in 1867 or 1868."[38]

While the foundations of Britain's constitutional government held, some 200 other financial firms failed, and Bagehot brought the LOLR problem into public

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[35] Margaret Ackrill and Leslie Hannah, *Barclays: The Business of Banking, 1690-1996*. Cambridge: Cambridge University Press, 2001, p. 45. **(**My colleagues and I experienced something not dissimilar from National Westminster bank in the mid-1990s, leading to a major shift in the Bank of England's sterling monetary framework, including widening the class of eligible collateral to include gilt repo and allowing many banks to become counterparties rather than operating via the funnel to the market provided by the historic discount houses, which by then were weak and not independent actors. Those reforms did curb oligarchic power in the core sterling money markets: "The Bank of England's operations in the sterling money markets." Bank of England Quarterly Bulletin: May 1997.)

[36] Ackrill and Hannah, pp. 45-46.

[37] Quoted in Kynaston, David. *The City of London: A History*. London: Chatto & Windus, 2011, p.83.

[38] Quotes from Takenaga, Susumu, 2016. "Marx's *Exzerpthefte* of the later 1860s and the Economic Crisis of 1866." Marx-Engels Jahrbuch 2015.

view. So it is not surprising that scholarly debate on the 1866 crisis has persisted without interruption. On one not uncommonly held view, the Bank sacrificed the bill broker at the altar of moral hazard.[39] On another view, the true public interest was set aside by self-interested central bankers wishing to make an example of egocentric bankers who had dared to snub their leadership.[40] Today, versions of both narratives feature in the post-Lehman crisis disputes.

At least in the Overend case, however, the facts, so far as they are known, seem to support another interpretation. As City of London historian David Kynaston records (my emphasis):[41]

> *"Once it became clear* ***that spring*** *that Overend Gurney required assistance to survive, it appointed a committee ([a former Governor] and two private bankers) to scrutinize the books. The three wise men determined the business was rotten beyond redemption, and no helping hand was held out."*

This draws on a much earlier market history, in which a footnote tantalizingly states (my emphasis):[42]

> *"Assistance was refused after a confidential report by G. G. Glyn [scion of Glyn's bank], R.C L. Bevan [from one of the Quaker Barclays bank families] and J. K. Hodgson [a former BofE Governor], who had been deputised by the Bank* ***to examine the books*** *and decide whether assistance from the Bank, or from London commercial banks, was merited."*

The literature typically mentions this part of the 1866 crisis only in passing, before economists and historians get on to the supposed real business of the Bank's subsequent ELA to the market at large and its handling of the drain on its own gold reserves. But, in fact, for modern eyes it is --- and for central bankers should be --- by far the most interesting part of the Overend, Gurney

[39] For a very interesting recent review of those debates and other issues, see Sabine Schneider, "The Politics of Last Resort Lending and the Overend & Gurney Crisis of 1866", *The Economic History Review*, forthcoming.
[40] Kynaston, 2011, pp. 82-83.
[41] *Ibid*.
[42] W. T. C. King, *History of the London Discount Market*, Routledge, 1936, footnote 1, pp.242-243. For reasons I hope the main text makes clear, it is deeply frustrating that records of this seem not to survive. My thanks to Mike Anson, Bank of England archivist, for checking.

story. Writing as a former practitioner, I am powerfully struck by an interpretation that goes unremarked.

Simply, if the policy decision on whether to lend turns only on whether the situation is "systemic" and/or on the availability of good collateral, as a central banker you do not --- repeat, do *not* --- need to go and have a look at the books of the ailing bank. In fact, then as now, you wouldn't need to leave your building at all: the borrower can present to you in your office the securities it wishes to offer as collateral against the loan it desires, and you can decide what value to put on them, and how much excess collateral to demand.

That the Bank examined the books of Overend is, by contrast, exactly what I would expect them to do if they wanted to assess whether it was, in my modern terms, basically solvent and viable. The historians of Barclays record that one of the Bank's three wise men "Robert Bevan, the senior partner [of Barclay, Bevan, Triton, & Co., and so a Quaker cousin] sternly recommended to the Bank of England that no rescue should be attempted since the firm was so rotten."[43] Bevan advised, and the Bank acted, in line with the *Fundamental Constraint*.

Barings 1890

A quarter century later, another titan of British finance turned to the Bank. Alongside Rothschilds, Baring was perhaps the most famous of London's merchant banks. More than that, its dynasty sat at the heart of the Empire, accumulating five separate peerages, and becoming known as old Europe's Sixth Great Power.[44] That an overly exuberant foray into Latin American railway finance should bring it to its knees was as ironic as it was tragic, the very idea of a lender of last resort having first been aired by the house's founder, Francis Baring, at the close of the 18th century.[45] Seized of the gravity

[43] Ackrill and Hannah, pp. 47.
[44] Memorialized in Philip Ziegler's *The Sixth Great Power: Barings, 1762-1929*. Harper Collins, 1988. (Disclosure: during 1985 and '86 I worked at Barings, in corporate finance, on secondment from the Bank of England.)
[45] Baring, Francis. "Observations on the Establishment of the Bank of England. And on the Paper Circulation of the Country." 1797.

of the bank's position, the Chancellor of the Exchequer recorded in his diary, after seeing the Governor, that "1866 would be a trifle to [a Barings failure]".[46]

In fact, however, Barings was not sustained by classic LOLR assistance. Rather, it was supported by a guarantee provided by a syndicate of London banks assembled by and including the Bank of England (which was itself partly indemnified by the Treasury), followed by an operation that split Barings into a 'good bank' and 'bad bank'.[47]

Much about that is very interesting. First, the Bank's indemnity from government was novel, and decided by Prime Minister Salisbury, consulting Cabinet.[48] Second, in contrast to government guarantees of bank bond issuance in 2008/09, the guarantee was not provided to Barings itself, but to the Bank in order, in effect, to reduce its risk from providing funding to Barings. Third, the good/bad bank restructuring was what today we would call a resolution.[49]

But fourth, and more important for this paper, exactly as in 1866, the Bank appointed leading City figures to have a look at Baring's books. Messrs Buck and Currie reported that the bank had a margin of solvency, and this is almost universally viewed by historians as a pre-condition for all that followed.[50] Recent archival work has thrown doubt on the accuracy of the reviewers' reassuring conclusion, although there is no evidence that Governor Lidderdale knew that.[51] For my purposes, however, what matters is *what* Lidderdale and his colleagues wanted to know. It was not just a matter of Barings' leaders turning up at the Bank with a bundle of securities to pledge. Threadneedle

[46] Quoted in John Clapham, *The Bank of England: A History, Volume Two, 1797-1914*, Cambridge University Press, p.329.
[47] Clapham, pp. 332-335. (The Salisbury Government's written tribute to Governor Lidderdale and his Bank colleagues, p.334, will mean something to central bankers.)
[48] Only after the gravity of the situation had been conveyed to Salisbury personally by Lord Rothschild, and with CX Goschen out of London: Andrew Roberts, *Salisbury: Victorian Titan*, Phoenix Orion Books, 2000 paperback edition, pp.551-2.
[49] Clapham, p. 335, seems not to have grasped that the good/bad bank solution was, and is, an important part of the history of the financial stability part of central banking.
[50] Clapham, p. 331 on the report of solvency. For the significance of this in terms of debates about Too Big to Fail, see Geoffrey E. Wood, "The Lender of Last Resort Reconsidered", in Cappie and Wood, *op cit*, pp. 382
[51] Eugene N. White, "Censored Success: How to Prevent a Banking Panic: The Barings Crisis of 1890 Revisited", unpublished ms, January 2018 version. Among other things, this paper demonstrates that research into past LOLR operations needs to get into the nitty gritty.

Street wanted to know what they were being asked to sustain. Again, it is as if they were guided by the *Fundamental Constraint*.

Don't get too hung up on Bagehot's exact words

To round off this historical interlude, it is worth noting that some respected commentators maintain that Bagehot's LOLR doctrine does not stipulate a solvency pre-condition.[52] It is fair to say that Bagehot is slightly vague on the issue, if not muddled. Why otherwise would former Governor Hankey have thundered that an implied promise of support was a threat to "any sound theory of banking"?[53] Here is a key passage:[54]

> *"No advances indeed need be made by which the Bank will ultimately lose. The amount of bad business in commercial countries is an infinitesimally small fraction of the whole business... The great majority, the majority to be protected, are the 'sound' people, the people who have good security to offer. If it is known that the Bank of England is freely advancing on what in ordinary times is reckoned a good security—on what is then commonly pledged and easily convertible—the alarm of the solvent merchants and bankers will be stayed. But if securities, really good and usually convertible, are refused by the Bank, the alarm will not abate, the other loans made will fail in obtaining their end, and the panic will become worse and worse."*

Of course, the first sentence is brave, and the second reckless. But it is striking that it is the 'sound' people, who are 'solvent', that are to be protected. I read this as stipulating that it is only the solvent --- the majority as Bagehot

[52] See the preface, by Jaime Caruana, to the Spanish edition of *Lombard Street*. In the English draft of the preface (with thanks to Claudio Borio): "The distinction between illiquidity and insolvency is, at best, only implicit and, at worst, not part of the maxim… The terms "solvent" or "insolvent" are mentioned only twice. In both cases [Bagehot] seems to treat insolvency as synonymous with default (failure to repay according to contract terms). On this basis, it would not be possible to distinguish between failure to repay owing purely to illiquidity (ie, a temporary inability to raise the necessary cash to meet commitments) and to underlying insolvency (ie, a condition in which, absent the short-term liquidity difficulties, assets are worth less than liabilities)."
[53] Kynaston, *City*, p.85.
[54] Bagehot, *Lombard Street*, p.198.

perceives them --- who are to receive liquidity assistance from the Bank. Mistakenly, he equates solvency with the ability to deliver good collateral. As I have demonstrated above, that is not true in general, and I see no reason why it would have been true in Bagehot's day. Even without an accounting measure of 'net assets', 19th century bankers were familiar with the question of whether they would be lending into an abyss. And if Bagehot did not mean to confine the LOLR to fundamentally viable firms, then I have set out in this paper why, normatively, I disagree. We must not be too hung up on Bagehot's analysis and precepts, as opposed to the issues and ideas he injected into public debate.[55]

Which brings us, finally, to the LOLR regimes of the two most significant currency areas today, the US and the euro area. There is much of interest in both of them.

(4) ECB policy statements

In 2014 the ECB published Principles on emergency liquidity assistance. They was cast, simply, in terms of ELA being granted "to a *solvent* financial institution, or group of *solvent* financial institutions, that is facing temporary liquidity problems" (my emphasis).[56]

The term "solvent" was not defined at that stage. But in 2017 it was, and in an interesting way.

[55] While researching for *Unelected Power*, I came across some fairly severe judgments of Bagehot's tendency to exaggerate or approximate for effect in commentary on his *The British* Constitution (1867), which remains in print and is still widely read. In an acclaimed scholarly treatise on constitutionalism, Bagehot's account of the mid-19th century system is described as "taken to extremes", "too easily accepted", "better written than earlier discussions of British government, but…also misleading and exaggerated", "distorted and unhistorical approach", "complete misrepresentation of the theory of the Constitution as it had developed in the first sixty years of the nineteenth century", and so on, all set out in the context of other writings during the relevant period. Vile, M. J. C. *Constitutionalism and the Separation of Powers*. Indianapolis: Liberty Fund, 1998 (second edition), pp. 234, 235, 236 (in chapter 8). I am not aware of an equally careful assessment of the accuracy of Bagehot's account of London's money market institutions in *Lombard Street*.

[56] The document also recorded that euro-area national central banks would need to tell the ECB "the prudential supervisor's assessment, over the short and medium term, of the liquidity position and solvency of the institution receiving the ELA, including the criteria used to come to a positive conclusion with respect to solvency". ECB, ELA Procedures, 2014, page 2.

The 2017 policy statement

The 2017 Principles stipulate that "ELA provision to insolvent institutions and institutions for which insolvency proceedings have been initiated according to national laws violates the prohibition of monetary financing."[57] This is interesting for two reasons. First, the prohibition on monetary financing is in the EU treaty on monetary union and so very deeply entrenched. Second, it would seem that lending to a fundamentally bust firm is regarded as economically (and, perhaps, legally) equivalent to lending to government, which would be a relative of this paper's the normative argument that lending to bust firms is an act of fiscal policy.

The document goes on to define what will count for these purposes as being "solvent" (emboldening by me):[58]

> "A credit institution is considered solvent for ELA purposes if:
>
> > (a) its Common Equity Tier 1, Tier 1 and Total Capital Ratio as reported under CRR on an individual (if applicable) and consolidated (if applicable) basis comply with the harmonised minimum regulatory capital levels (namely 4.5%, 6% or 8%, respectively); or
> >
> > (b) ***there is a credible prospect of recapitalisation*** - in case (a) is not met, i.e. the Common Equity Tier 1, Tier 1 and Total Capital Ratio, on an individual and/or consolidated basis, do not comply with the harmonised minimum regulatory capital levels (namely 4.5%, 6% or 8%, respectively) - by which harmonised minimum regulatory capital levels would be restored within 24 weeks after the end of the reference quarter of the data that showed that the bank does not comply with harmonised regulatory minimum standards; in duly justified, exceptional cases the

[57] ECB Agreement on emergency liquidity assistance, 17 May 2017, paragraph 5.4.
[58] ECB Agreement on emergency liquidity assistance, 17 May 2017, page 5.

> Governing Council may decide to prolong the grace period of 24 weeks."

In other words, the ECB test is that a recipient of ELA must either have capital ratios above the minimum regulatory requirements or, if not, be *credibly* heading back above the regulatory minima.

The emboldened words could seem to challenge the absolutist position I might seem to have advocated in Sections (1) and (2), because ECB's condition of a "capital shortfall" does not distinguish (as we do) between, on the one hand, fundamental insolvency and, on the other hand, a bank that is solvent but falls short of some regulatory capital requirement. The ECB might seem to be saying that liquidity support can be provided by central banks to fundamentally insolvent banks provided that there is a credible remedial plan for restoring the borrower to solvency.

My response will be clear from section (2) of this paper. As drafted, the ECB text is silent on the probability threshold for assessing whether any such recapitalization plan is "credible". I have argued that the test would have to be more onerous (p closer to 100%) the further an ailing bank was below the regulatory minima and, so, the ECB would have to be especially confident (effectively certain) that minimum capital ratios would be re-achieved if a potential recipient started with a net assets deficiency (or was barely solvent).

I propose that the ECB should make this clear in a revised version of its ELA Principles. Otherwise, the mischief associated with time-subordination could still occur if, against expectations, a remedial plan did not come to fruition.[59]

(5) Federal Reserve constraints: encoded in law

[59] To reprieve earlier sections of the main text, the mischief is that if ELA were granted but the plan unraveled or turned out never to have been well-grounded, short-term creditors would get repaid but (equally ranked) longer-term creditors would end up worse off than if the firm had gone into a bankruptcy proceeding immediately.

The case of the Federal Reserve is equally interesting. Earlier I noted that some commentators, including I might have added central bankers, associate the New York Federal Reserve Bank with a LOLR doctrine I caricatured as "lend to anybody, solvent or insolvent, and sometimes on soft terms, where necessary to keep the credit system going."

This is obviously not the complete story, as the Fed declined to lend to Lehman Brothers in late 2008, letting the group go into a bankruptcy that triggered systemic collapse. But it certainly informs some scholarly commentary on the Fed.[60] And a perception that the Fed lent to fundamentally bust firms at other points during the 2008/09 phase of the crisis prompted Congress to amend the law in 2010, putting beyond doubt that the Fed should not (because, now, legally it cannot) lend to *non*-banks that are insolvent.[61]

In fact, the Fed is subject to an interesting set of statutory constraints, varying in their clarity between banks and non-banks.

The law: secured the Fed's satisfaction

The Federal Reserve Act constrains loans, and so emergency liquidity assistance, to *banks* to be "secured to the satisfaction of the Federal Reserve."[62] Since there is no *express* statutory bar on lending to fundamentally insolvent or unviable banks, a great deal turns on how those statutory words should be construed.

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[60] For example: Humphrey, Thomas M. "Lender of Last Resort: What It Is, Whence It Came, and Why the Fed Isn't It." *Cato Journal* 30, no. 2 (2010): 333–64. Posner, Eric A. and Adrian Vermeule, *The Executive Unbound: After the Madisonian Republic*. New York: Oxford University Press, 2010, pages 37-41, 44, 58-59; Wallach, Philip. *To the Edge: Legality, Legitimacy, and the Response to the 2008 Financial Crisis*. Washington, DC: Brookings Institution Press, 2015, chapter 3; Eric Posner, *Last Resort: The Financial Crisis and the Future of Bailouts*, Chicago: University of Chicago Press, 2018, e.g. pages 59-67.

[61] Federal Reserve Act, Section 13(3) (B)(ii); 12 U.S.C. 343(B)(ii).

[62] Federal Reserve Act, Sections 10B (in respect of banks) and 13(3) (for non-banks). In the case of section 13(3) loans to non-banks, the Federal Reserve Act stipulates that the Fed's credit exposure must be "indorsed or otherwise secured" to the Fed's satisfaction. The word "indorsed" --- endorsed in English English --- is the language of the old bankers' acceptances market, and traditionally meant essentially that a debt has been guaranteed (endorsed) by an unrelated third party, so that if the primary obligor defaults the creditor can claim recovery from that third party. I ignore this variant in what follows, except to note that it would be a mistake to regard indorsed lending as unsecured lending: in economic substance, it is secured by the guarantee and, therefore, the credit worthiness of the guarantor matters.

I suggest that it should be thought about like this:

- Take a firm that the Fed believes, correctly, to be balance sheet insolvent (negative net worth), and
- where the Fed believes, again correctly, that providing liquidity assistance will not stem the outflow of funds, or bridge to a fundamental solution (takeover, equity issuance, or whatever), or lift the economy on to a higher path that, by raising asset prices (reducing loan defaults), would cure the prospective borrower's insolvency,
- then if the Fed were to provide liquidity assistance, it could find itself carrying on until there was no collateral left.
- In those circumstances, any further lending would not be secured at all, and so could hardly be secured to the Fed's satisfaction (except on a pretty weird reading of "secured")[63]
- So when it embarked on lending against good collateral, it would know/expect that it was destined to face lending against no collateral.

To unpack the third tiret a bit, if the Fed embarked upon lending with a view to ensuring orderly repayments until the collateral ran out, it would be on a course that it knew would leave some creditors (longer-term ones) worse off, possibly much worse off, than other equally ranked creditors lucky enough to be repaid in full thanks to its temporary liquidity assistance.

The legal question is whether the Fed has legal authority to do that when it knows (or should know) that a prospective borrower is fundamentally insolvent or when, probabilistically, that is its central expectation. Certainly,

[63] I once heard a former Fed legal official argue at a conference that lending against commercial paper could be regarded as "secured" because the Fed's claim was backed by the underlying cash flows of the borrower plus the fee/interest charged. Unless the cash flows were hypothecated to the Fed's claim (an exclusive floating charge) or the Fed's was the only claim on the legal entities in question, this view of the meaning of the term "secured" stretches the imagination beyond decent credulity, and I am somewhat surprised that Fed policymakers did not run a mile from it. In his book, Larry Ball cites a Fed memorandum, published by the US Congress's Financial Crisis Inquiry Commission, that says, among other things, (a) it can be acceptable for the current market value of collateral to be less than the amount of credit extended; and (b) that the relevant test is whether collateral secures the repayment of the credit. Ball, 2018, pp. 52-53. Provision (a) is merely saying that there are circumstances where the Fed will look at fundamental values (eg if holding to maturity) rather than market values that reflect liquidity-risk premia.

there is nothing in Congress's statutory framework that says in terms that Fed policy makers can simply disregard the public policy principles that underlie some of the basic elements of bankruptcy/liquidation law and practice (as enshrined in other statutes passed by Congress).[64]

The kernel of my argument can, I think, be found in an interview given by former New York Federal Reserve Bank President Tim Geithner ten years after the Lehman crisis:[65]

> *"To have lent up to the limit of even a generous valuation of Lehman's collateral would not have prevented failure, it would have just have financed the exit of some creditors at the expense of others."*

A not inconsistent point was made by the New York Fed's general council in testimony to the Congressional inquiry into the Great Financial Crisis when Commissioner Wallison suggested that Lehman had been suffering a "liquidity crisis" and, thus, that the Fed should have lent to "send a signal" of support in

[64] There is, it seems to me, a subtle question for lawyers here. The Federal Reserve Act (section 10B. (b) 3) specifies that where the Fed lends to a bank classified as "critically undercapitalized" and the bank later goes into liquidation, it must compensate the FDIC if, broadly, the FDIC ends up with greater losses from liquidating the bank and paying out to insured depositors than it would have done if the Fed had decided not to provide liquidity assistance and, thus, the ailing bank had gone into liquidation earlier. There are two things to be said about this. First, it might help to explain why the Federal Home Loan Banks, which are not subject to a similar constraint, are sometimes more likely to act as a liquidity provider to mortgage banks than the Federal Reserve. Second, and more important here, since the legislation does not provide that the Fed should compensate any uninsured creditors who suffer additional losses because of liquidation being delayed by Fed lending, it can perhaps be inferred that Congress has granted the Fed discretionary authority to impose such losses if, it judges, it should lend temporarily in pursuit of its statutory purposes. That points in a different direction from the inference drawn in the main text from the NCWO constraint imposed up the FDIC itself.

[65] Geithner, Timothy and Metrick, Andrew, "Ten Years after the Financial Crisis: A Conversation with Timothy Geithner", 5 September 2018. Yale Program on Financial Stability Working Paper No. 2018-01, page 10. Bernanke, 2015 records Geithner, in a direct quote, making a substantively similar point over the Lehman weekend: "I asked Tim whether it would work for us to lend to Lehman on the broadest possible collateral to try to keep the firm afloat. "No," said Tim, "We would only be lending into an unstoppable run." He elaborated that, without a buyer to guarantee Lehman's liabilities and to establish the firm's viability, no Fed loan could save it.", p.267. All this also suggests that the Fed thought they could not justify temporary ELA to help manage an orderly wind down of parts of Lehman's book so as to contain the spillovers, presumably because they thought various legal entities were insolvent. The New York Fed to provide temporary ELA to the US broker dealer after the group as a whole went into bankruptcy, presumably to assist a partial orderly unwinding of the book of an entity they believed was solvent.

order to bring the run to an end. Thomas Baxter responded: "We saw no end to the run."[66]

This was, essentially, repeated by the then Fed Chair, Ben Bernanke, in a written submission to the inquiry: [67]

> *"In addition, it did not appear that a loan from the Federal Reserve would be sufficient, by itself, to prevent the failure of Lehman. Rather, given the market's loss of confidence in Lehman, liquidity from the Federal Reserve would simply have allowed Lehman's counterparties to continue to demand and receive repayment from Lehman, reinforcing the advantage of running on Lehman and increasing exposure to the Federal Reserve had it lent. Moreover, without a potential buyer for Lehman, the Federal Reserve could not be certain how long it would be required to fund Lehman or what the ultimate source of repayment, if any, would have been."*

While I judge that Geithner's later remarks get to the nub of the issue, the contemporaneous submissions by Federal Reserve officials are not inconsistent. As it happens, they also accord with how the UK perceived (or inferred) the US's authorities' view and predicament.

The UK and Lehman

That is evident from the way that the UK authorities responded over the Lehman weekend to the US idea that the UK-domiciled bank Barclays purchase Lehman and guarantee its liabilities. As is well known, the then UK financial services regulator, the Financial Services Authority, declined to waive a legal requirement that Barclays formally consult its equity holders on what would have been, under UK law, a large transaction, and that killed the proposal.

This episode has led some US policymakers to blame the UK authorities for Lehman's failure and the subsequent systemic meltdown.[68] The point is

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[66] U.S. Financial Crisis Inquiry Commission Hearing, Day 1 (Sept. 2, 2010), Official Transcript, 255:4.

[67] Letter from Ben Bernanke, Chairman of the Board of Governors of the Federal Reserve, to Mr. Philip Angelides, Chairman, and Mr. William Thomas, Vice Chairman, Financial Crisis Inquiry Commission, November 4, 2010, *Re: Financial Crisis Inquiry Commission Hearing on September 2, 2010*, at 13.

[68] Perhaps most graphically, Hank Paulson records in his memoir of the crisis that at one point he shouted to a room of CEOs that "The British screwed us." Henry Paulson, *On the Brink*, 2010, p.213. Although the U.S. Financial Crisis Inquiry Report does not explicitly blame UK regulators for Lehman's failure, it records the testimony of other US officials: "Baxter told the FCIC that Barclays had known all along that the guarantee was required, . . . [and that] he believed that the real reason Barclays said it could not guarantee Lehman's obligations was the U.K. government's discomfort with the transaction. . . Two years later, Darling admitted

misleading, mistaken and, more important for future policy, obscures the central point about constraints on ELA that I am trying to stress in this paper. I and others have explained this at conferences, but it seems timely to make the points in writing:

- My view (shared, I think, in the Bank of England) was that if, of all central banks, the New York Fed was not prepared to lend to Lehman then it must believe that it was fundamentally bust (in the sense analysed above)[69]

- There was no reason to think, given the nature of colleagues' exchanges with US officials, that they had a sense of how large the hole in Lehman's balance sheet was

- Therefore, if Barclays was permitted to acquire Lehman and/or guarantee its liabilities, there was a reasonable likelihood that the combined group would go down some time later
- Given that Barclays was a significant UK retail bank (and that, at the time, there were no resolution regimes that could cope with the failure of vast banking groups), the UK government would end up having to bail out the group
- If that happened, it seemed extremely unlikely that US policymakers and Congress would agree to share the burden (!).[70]

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that he had vetoed the transaction . . . Following that decision in London, Lehman Brothers was, for all practical purposes, dead." *Financial Crisis Inquiry Report* (2011), p.336. In his memoir, Geithner said that the "British regulators had legitimate concerns," but notes that "I tried to emphasize that global stability depended on the deal, that delay was tantamount to a veto. 'Good luck, McCarthy replied.'") Geithner, Timothy F. *Stress Test: Reflections on Financial Crises*, New York: Broadway Books, 2015, p.186.

[69] This is corroborated in Bernanke, 2015: "As Saturday [of the Lehman weekend] went on, it became evident that Lehman was deeply insolvent...Lehman's insolvency made it impossible to save with Fed lending alone." p.264.

[70] Hank Paulson records that going into the Lehman Weekend, partly with a view to increasing the chances of a rescue by a private consortium, he told his press secretary to tell journalists that there would be no public bailout: Paulson, *On the Brink*, pp.186–87. Geithner records that he disagreed with this policy: "I worried that all the anti-bailout rhetoric was jeopardizing our ability to find Lehman a buyer. Neither Bank of America nor Barclays seemed interested in an unassisted deal." Geithner, *Stress Test*, p.180. See also Bernanke, 2015, p.258. (I am struck that the President seems not to have been leading this debate/decision.)

More to the point here, the UK's response to the US proposal was predicated on a view that, by revealed preference, the Fed must think that Lehman was bust (as Chair Bernanke's memoirs later confirmed).[71] I have never given credence to the view sometimes advanced that the US authorities did not grasp that Lehman's bankruptcy would be systemic.[72] That much was obvious (which is not to say that the extent of the financial-market and economic unravelling was foreseen). Rather, the Fed could not lend; and, through some kind of process, the US political/fiscal authorities had decided that they should not to bail out the firm. It is vitally important to separate that political decision from the LOLR's both in understanding the episode and in framing principles for central bank ELA. On the information available, the Fed acted in line with the *Fundamental Constraint* advocated in this paper, and the UK authorities drew strong inferences from the Fed's decision about the condition of the distressed firm.

Overend, Gurney redux

[71] "Both Bank of America and Barclays had found losses in Lehman's balance sheet to be much bigger than expected. They were looking for the government to put up $40-50 billion in new capital…As Saturday wore on, it became evident that Lehman was deeply insolvent, even allowing for the likelihood that fire sales and illiquid markets had pushed the values of its assets to artificially low levels…Lehman's insolvency made it impossible to save with Fed funding alone." Bernanke, 2015, pp.263, 264.

[72] For corroboration, see Bernanke, 2015: "horrific consequences we knew Lehman's failure would bring" p.259; "We had little doubt a Lehman failure would massively disrupt financial markets and impose heavy costs of many [third] parties" p.262. (After Bear Stearns' failure and rescue in March 2008, I told the Court of the Bank of England that there would have been "mayhem" if it had gone into bankruptcy, a judgment I was asked by one of the non-executive directors to defend at the subsequent meeting.)

Finally, before concluding, I want to touch on a mystery about the Lehman episode. Why after the failure and rescue of Bear Stearns in March 2008 did the US authorities not have the floor boards up at each of the US broker-dealer groups to assess their solvency or, at least, the precise population of collateral the Fed would have been prepared to lend against (if it judged it could and should do so)? It can seem as if, somehow, a key lesson from 1866's canonical crisis underlined in this paper had not been passed down through the oral history of central banking: take a careful look at the solvency and viability of firms that are ailing or coming under pressure (section (3)).

While the Fed did not have regulatory jurisdiction over the dealer groups, it did have some leverage over them since they (not the banks) are counterparties in the Fed's open market operations. In any case, it could turn to the dealer groups' supervisors in the US (SEC) and UK (FSA) for help. Ben Bernanke records that Fed staff did collaborate with the SEC, but that the process was strained.[73]

The "missing six months" between Bear and Lehman pose big questions about crisis-management *strategy*, and not only for the US. They go beyond the scope of this paper but, very broadly, point towards the need for robust resolvability assessments, robust solvency and viability assessments, and large amounts of pre-positioned collateral.

Conclusions: Summing up

This paper has defended a conception of the lender of last resort (LOLR) that places material constraints on independent central banks. The LOLR is not simply one facet of a public-good-producing and externality-remedying benign sovereign imagined in some of the economics literature. Rather, precisely because our system of constitutional democracy seeks to protect us from a malign sovereign, powers are separated; fragmented even. Taxation and

[73] Bernanke, 2015, pp. 250-251

distributional choices are reserved to the legislative assembly. And because, under fiat money, the monetary levers are latently instruments of taxation, the monetary authority is insulated from the day-to-day politics of both elected branches.

This governmental architecture means that the various elements of the state's role as *insurer of last resort* are not all in the same hands. In particular, for financial-stability regimes, any capital-provider of last resort (KoLR) cannot be the same as the LOLR: they are separated.

That separation entails various constraints on the LOLR, not in the interests of efficiently combatting financial externalities but as a corollary of the higher level separation of powers. Taking that as a starting point, this paper has articulated (and distinguished between) two precepts for the LOLR regimes of independent central banks in constitutional democracies:

1) They should not lend, even when adequately secured, to firms that they know (or should know) are fundamentally insolvent (the *Fundamental Constraint*)
2) They should lend to basically solvent but unviable firms only where doing so would either:
    a. bridge to a solution to the firm's fundamental problems (with a higher probability of success required, the thinner the firm's margin of solvency); or
    b. finance the orderly wind down of part or all of the firm in a way that would contain social costs without leaving any creditors worse off than they would have been if the firm had gone into a liquidation procedure.

In more technical (or positive law) terms, both precepts are driven by a LOLR version of resolution policy's No Creditor Worse Off (than under liquidation) constraint. Namely, that independent central banks should not lend when they know (or reasonably should know) that doing so would (certainly or most likely) leave longer-term creditors worse off than they would be if the bank went into a bankruptcy/liquidation process.

In the US especially, this is sometimes met with skepticism, even alarmed incredulity: paraphrasing, "of course the Fed needs to step in whenever needed to preserve stability, because Congress won't, and Treasury often can't." I would respond that while, arguably, in Europe the ECB has little choice at moments of existential crisis to step in as the *de facto* economic sovereign, there is no need for the US to give up on its system of government, and it should not rely upon the people acquiescing if it does. This points to reforms of various kinds beyond the scope of this paper.

More narrowly, in a number of respects the analysis of this paper points towards the need for a more carefully designed statutory framework for LOLR regimes. First, the severity of the *Fundamental Constraint* would be relaxed somewhat if banks' (and shadow banks') longer-term claims were all subordinated to short-term claims *in law* as well through the informality of time. This provides an illustration of a more general need for the authorities to establish a more prescriptive and proscriptive policy on the whole capital structure of banks (and shadow banks).[74]

Second, whether or not that happens, the *Fundamental LOLR Constraint* should be part of what it means to implement the conception of central bank liquidity-reinsurance facilities and operations set out towards the beginning of this paper:

- *Liquidity assistance provided by the central bank to a borrower that is not fundamentally insolvent, with the purpose of avoiding*
    - *the social costs that would follow from disorderly default or from distressed intermediaries withdrawing or heavily rationing services to the economy, or*
    - *contagion to other intermediaries via direct or indirect channels that would be likely to lead to such social costs.*

[74] Tucker, "Is the Financial System Sufficiently Resilient?" 2018, which argues, among other things, that not only should bail-inable bonds be structurally (or super-)subordinated to operational liabilities but that (other) pure-financial liabilities of operating banks should be subordinated too, in order to cater for circumstances where the volume of bail-inable bonds is not sufficient to recapitalize a distressed group.

If, as I propose elsewhere[75], something like that were enshrined in primary legislation, central banks would lose their discretion as to whether to activate their LOLR powers depending upon their particular view of moral hazard costs. Instead, they would stand accountable for, among other things, their assessment of the facts they confronted, including whether a potential borrower was fundamentally bust. The LOLR would also be incentivized to combat moral hazard through the terms and conditions of their lending facilities and through the regulatory regime.

This might all seem rather distant from the day-to-day concerns of central banks. But it is not. Never again should major central banks find themselves unable to rebut accusations of "You bailed out firm X".

[75] *Unelected Power*, chapter 23.