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Banking reform

Edited by

Patricia Jackson

Contributions by

Sir Howard Davies • David Miles • Charles Goodhart • Harald Benink • Patricia Jackson • David T. Llewellyn • Thomas F. Huertas • Dame Colette Bowe • Mike Power • Clément Wyplosz

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Introduction

1. INTRODUCTION

Patricia Jackson and Clément Wyplosz

On 3 December EY hosted a SUERF conference on banking reform with Sir Howard Davies, the Chairman of RBS, and Dame Colette Bowe, the Chairman of the Banking Standards Board, as the two keynote speakers. Professor David Miles (Imperial College) gave the SUERF 2015 Annual Lecture on Capital and Banks. The conference focused on core aspects of banking reform: the amount of capital required, the design of capital requirements (complexity versus simplicity), proportionate regulation, recovery and resolution, and risk culture.

1.1. OVERALL

There was consensus that the period since the crisis had seen necessary changes to diminish both the probability and severity of further crises. Sir Howard Davies in his key note speech on banking reform (p. 15) started with a stock-take of the weaknesses prior to the crisis (banking sector complexity and interconnectedness, insufficient capital) and the advances made to date in terms of increases in capital and liquidity.

However, there was much less agreement regarding the future path of reform of the banking sector. The area where there was the least agreement was in terms of the appropriateness of requiring banks to hold even higher levels of capital than they currently do, including both higher levels of equity and the new Total Loss-Absorbing Capacity (TLAC) standard. There were contrasting views between on the one hand David Miles and Harald Benink (Tilburg University), who thought the industry could and should hold significantly more capital with the extra cost being small, and, Charles Goodhart (London School of Economics) who, in comments on Miles' contribution (p. 25), argued that given the incentives for shareholders, the transition to much higher required equity would drive significant further deleveraging, to the detriment of the real economy. The distortionary effect of capital requirements that are too high for particular portfolios was discussed by William Perraudin (Risk Control Limited).

Another area of controversy was the simple versus complex capital requirements debate. Simple requirements like the leverage ratio are attractive, but Patricia Jackson's (EY) paper, "Simpler Capital Requirements versus Risk-Based – the evidence", (p. 36) shows that, to date, papers looking at this question have compared the risk insensitive capital requirements in Basel 1 to the leverage ratio,

not the risk-sensitive Basel II requirements. She sets out new evidence on Basel II requirements versus leverage as predictors of default, indicating that risk-based requirements are effective.

David T. Llewellyn (Loughborough University) and Thorsten Beck (Cass Business School) looked at the issues around the need for proportionate regulation, which included weighing up the need for complexity. David T. Llewellyn, in his paper "Proportionality and Bank Regulation" (p. 59) recommends that following one of the "biggest-ever reforms in the international regulatory regime", authorities take stock and consider the proportionality of the new regulatory framework. Thorsten Beck highlighted the trade-off in capital regulation between growth and stability; and Sir Howard Davies suggested that given the distance already travelled, further regulatory change "is likely to yield diminished returns".

The challenges of structural reform were discussed by Charles Goodhart, Thomas Huertas (EY) and Simon Gleeson (Clifford Chance), with the consensus being that it is unlikely that proposals for ring-fencing will bring added financial stability. Sir Howard Davies set out the substantial diversion of resources required to implement the ring-fencing schemes. On the regulatory agenda, one repeated message was that the industry needs time to absorb the changes to date, and that a halt to regulatory-driven change was needed.

A further topic was the pressure on banks' business models emanating from a range of sources (including shadow banks, fintech and lower cost challenger banks). Banks are also struggling to produce high enough returns to satisfy investors given the higher capital required under Basel III – despite the industry now being safer. This was discussed in a panel including Andrew Bailey (Prudential Regulation Authority, Bank of England), Richard Portes (London Business School), Anthony Thomson (Atom Bank), Desmond McNamara (Barclaycard) and Jacob de Haan (De Nederlandsche Bank, University of Groningen). An aspect of the pressure on banks that was emphasised is the conduct failings which have come to light and have affected the industry reputationally and financially through fines. In terms of shadow banking, Richard Portes highlighted the growth of the shadow banking sector, and Sir Howard Davies asked how regulators should think about these players as part of the overall banking reform agenda.

The issues around ethics and culture in banking were discussed by Dame Colette Bowe, Allard Bruinshoofd (Rabobank), Mike Power (London School of Economics) and Roger Steare (The Corporate Philosopher, Cass Business School). A number of speakers recognised that while substantive action has been taken, more work remains to be done in the industry on areas such conduct and governance. Whereas Roger Steare conceives culture as a reflection of power

relations, Mike Power, in his remarks on "Risk Culture and Information" (p. 96), makes the case for information being central to risk culture.

1.2. CAPITAL

Most controversial was the question of the composition and calibration of capital requirements. All the speakers recognised that an important element behind the financial crisis was a regulatory system that allowed banks to operate with minimal amounts of equity (particularly since the move in 1998 to allow hybrid capital into Tier 1), enabling banks to use debt to finance risky and hard-to-value portfolios. David Miles argued that what lay behind this was the widespread notion that higher equity capital requirements would significantly increase the cost of funding. However, he set out calculations to show that, in theory at least, doubling equity would only lead to a small increase in overall funding costs. On this basis, and assuming that banks' equity is not costlier than in other industries, he suggested that an optimal level of equity capital would be around 20% of RWAs. However, Charles Goodhart pointed out that these calculations look at two different equilibrium states – a low capital state (say 10%) and a high capital state (20%+) – but they do not consider the process of transition from one to the other. The move to much higher capital would impose significant costs on the economy because current shareholders would have incentives to avoid dilution and would therefore favor deleveraging as the means to achieve the higher requirement. Indeed, banks are deleveraging; but with home authorities leaning on banks to keep domestic lending unchanged, deleveraging is focused on non-home markets, affecting global financial links.

In his paper, "Raising Bank Capital and the Implications for the Cost of Capital" (p. 31), Harald Benink highlights the gradual decline in bank capital-to-total asset ratios over the past 150 years, whereas the figure has been higher in other industries. He sees the cause lying in implicit government guarantees, including deposit protection, tax incentives for funding through debt and so on. He suggests that in order to reduce moral hazard, banks' capital should be much higher – for example, the leverage ratio should be gradually increased to 15% over 10 years. He believes the burden on the industry could be reduced by allowing banks to use other instruments besides equity – though TLAC is not a substitute for equity because it is only effective in resolution.

One area of focus since the crisis has been complexity versus simplicity of capital requirements. In the past, some papers such as Haldane and Madouros' "The Dog and the Frisbee", have concluded that the pre-crisis leverage ratio was a better predictor of survival or failure in the crisis than risk-based capital requirements.[1] Regulatory thinking has now turned towards having the leverage ratio as

a backstop to risk-based capital requirements, but the debate about simple versus risk-based requirements is also coloring discussions on the repositioning of some credit portfolios from modelled capital requirements to standardised.

In her paper, Patricia Jackson shows that because the risk-based approach to credit risk under Basel II was introduced in 2007/ 2008, with most large banks implementing in 2008 (and US banks not implementing it at all), research conducted to date has in fact compared the leverage ratio to Basel I (which was like a quasi-leverage ratio), rather than to Basel II risk-based requirements. She shows that the results on leverage versus Basel I reflect the large trading book positions held, which in turn reflected the arbitrage of the simple Basel I rules. The requirements were risk insensitive because loans could be warehoused in the trading books, creating much lower capital requirements than were warranted. She tests the risk-sensitive Basel II capital ratios against the leverage ratio as a predictor of default, using failures simulated by the EBA 2014 stress test. In this test the risk-based requirements perform far better than the leverage ratio. She also tests the two metrics (Basel II risk-based requirements and the leverage ratio) as explanatory variables for CDS spreads (as a measure of default likelihood) and again finds that Basel II risk-based requirements are significant whereas the leverage ratio is insignificant. This calls into question the conclusions that have been reached that simple is preferable to risk based in the world of capital requirements.

The future path of capital regulation, with the greater use of regulatory floors going forward within the risk-based requirements, was seen by William Perraudin as a wrong turn. The floors are often arbitrary, and with standardised approaches depending on capital look-up tables and risk-weightings for which no justifications have been provided, they tend to distort the playing field as the resulting requirements create uneven capital increases across different banks and portfolios. In any case, the belief that regulators can devise appropriate risk-weight calibrations for all banks in all jurisdictions may be "hubris". If so, a more appropriate response to concerns about comparability would be to encourage more industry benchmarking exercises, and put in place a stronger supervision of these exercises. Another point made was that regulators should not distort the risk-based models because this would affect the risk signals in the banks – the introduction of the Internal Ratings Based models for credit risk under Basel II (the IRB) had substantially improved the risk information in banks.

[1] HALDANE and MADOUROS (2012).

1.3. PROPORTIONALITY

There was a discussion of proportionality in regulation. David T. Llewellyn's paper discusses how regulation imposes costs on banks through compliance (which are passed on to customers), and resource costs on the regulatory agencies. Regulation can also induce changes in bank business models beyond what is necessary to promote safe and sound banks and financial stability. Disproportionate regulation can send the signal that regulators are taking over banks' management by restricting executives' discretion – which can also limit supervisors' independence. It can also create regulatory arbitrage and affect small firms more, thereby hurting competition in the banking sector.

Raising a concern about the increasing complexity of regulation across a broad front, David T. Llewellyn argues that the lack of proportionality in banking regulation post-crisis was due to the perception of regulation as a free good, and a failure to recognise the trade-offs between growth and stability. He presents "five pillars of proportionality", which, going forward would help ensure that banking regulation is more holistic, less complex, and more differentiated to reflect differences in business models, size, risk profile etc.

In a similar vein, Thorsten Beck also stressed the trade-off for capital regulation between growth and stability, and suggested that the main areas /solutions to focus on in terms of capital regulation are:

- complexity v simplicity: simple measures are harder to evade, but more complex ones can better capture risk;
- macro-prudential regulation to ensure that the system itself is stable;
- a dynamic regulatory perimeter to capture new players taking risks, not just trying to prevent the last crisis;
- focus on resolution.

1.4. STRUCTURAL REFORM

The impact on financial stability of various proposals for structural reform in the banking sector were discussed. Ring fencing proposals (e.g. Vickers, Liikanen) were seen as problematic. Charles Goodhart thought that by concentrating housing finance in the retail ring-fenced banks, ring-fencing proposals tend to exacerbate, rather than alleviate, liquidity risk and therefore potential financial system instability. Thomas Huertas questioned whether the separation of commercial and investment banking activities would bring more stability. The assumption that commercial banks are safer than investment banks is not always warranted. Ring-fencing is also likely to introduce greater complexity in the structure of banks, which may enhance resolvability of individual units, but not

necessarily of the group as a whole. He also suggested that the "balkanisation" of banks (for example through the Fed's requirement that foreign banking organisations (FBOs) form an Intermediate Holding Company (IHC), or the proposal in Vickers that ring-fenced banks cannot have foreign branches or subsidiaries) is misguided. Not only does it wrongly assume that foreign activities are necessarily riskier than domestic activities, it also risks creating a home country bias, such that the resolvability of home entities may be enhanced, but global resolvability could be compromised.

Among the other structural reforms assessed by Thomas Huertas in his paper "Six Structures in Search of Stability", are bans on proprietary trading, which may not be a panacea for improved stability. The Volcker rule, for instance, is too complex to be useful: the distinction it draws between proprietary trading and market-making is fuzzy, and legislation to address this is likely to be so complex as to be largely ineffective. Likewise, the blurring of the distinction between bonds and loans makes bans on proprietary trading ineffective (if the ban applies only to securities) or counterproductive (if it applies to any instrument that trades).

While commending proposals to increase the personal liability of senior managers, Charles Goodhart suggested that these do not go far enough, and that the potential liability for meeting losses should be conditional on decision-making powers" – for officers and, to a lesser extent, board members.

Opinions were more divided concerning regulatory developments around resolution. Thomas Huertas argued that giving preference to depositors in resolution is inadequate, as it may reduce the risk of deposits, but not necessarily of the bank as a whole. Similarly, while it facilitates resolution for deposits via a bridge bank, it still leaves the rest of the assets and liabilities in the rump to be liquidated over time – a process that is likely to increase losses to creditors and could disrupt financial markets and damage the real economy. Diverging arguments have been made concerning bail-in during a resolution. Charles Goodhart thought the limitation of bail-out could be dangerous as it concentrates losses "on a small number of pension funds and insurance companies rather than a large band of taxpayers". By contrast, Thomas Huertas made the case that the reordering of the creditor hierarchy through bail-in could be seen as the most promising structural reform, since it reduces risk and enhances resolvability of the whole bank (as opposed to the ring-fenced bank only) – if so it is not clear whether separation would still make sense.

1.5. CHALLENGE TO BANK BUSINESS MODELS

It was recognised that there are clear challenges currently to bank business models. Pressure from non-bank financial institutions, challenger banks, and fintech firms are likely to transform the banking sector, and in so doing will change banking but also pose challenges to the financial system. Richard Portes discussed the sharp growth in shadow banking in Europe and the US. While regulators are becoming more familiar with these participants, their activities remain comparatively under-regulated and opaque. Not enough data are available to estimate the financial health of these firms (or traditional banks' exposure to them), and therefore to determine the potential systemic impact of the failure of some non-banks. Richard Portes pointed to the fact that we do not know how to measure (and compare) leverage in shadow banks. As these firms grow in importance, they will become more involved in the broader banking system, and banks' exposure to them will increase. They will also increasingly be assuming critical functions, for example becoming leading suppliers of credit in some areas – which could create macro-prudential risks if they suddenly withdraw from making credit available.

In his key note speech on Banking Reform, Sir Howard Davies asks how regulators should think about the new shadow banking landscape in the context of the banking reform agenda. If fintech really starts providing a large volume of credit, it will in turn become a critical economic function, forcing the authorities to consider how the channels could be preserved in the face of problems – in the same way as bank resolution.

Anthony Thomson made the point that digital transformation and disruption of traditional banking is creating an unprecedented environment for change in the banking sector. Established banks could disappear but competition would not lessen because of the emergence of banks with new business models. Non-traditional institutions have distinct advantages over established banks, particularly since they do not have to contend with legacy real-estate, legacy infrastructure and systems, and legacy balance sheets. Others thought that while incumbents will feel the pressure, it is worth noting that the improvements in risk management that traditional banks have made in response to the post-crisis regulatory environment now put them in a better place to drive change and innovation. Likewise, the competition from non-traditional banks could also initiate a trend of established banks becoming more like utilities.

In the face of higher capital charges since Basel III, banks are exiting areas of activity in both lending and trading/market-making. The latter is decreasing market liquidity. One question posed was why European investment banks are struggling more than US investment banks and whether this was because US banks had a much larger home securities market. Another view was that

European investment banks faced greater challenges because of their business models and the pressures on European economies. Wholesale banks were in general seen by some as facing difficulties in the conduct space.

1.6. RISK CULTURE

The importance and difficulty that banks face in trying to change their culture was emphasised by several speakers and participants. Risk culture change is key to banks regaining the public trust that has been lost with the financial crisis and the conduct problems since. By satisfying regulators that the banks have grasped the importance of culture and ethics, cultural change may also give the industry a chance to influence the rising tide of increasingly prescriptive regulations.

In the UK, the Banking Standards Board (BSB) has asked the major banks what they are doing to define culture, how they intend to deliver a change in culture and how they will determine when a new culture has been implemented. Dame Colette Bowe in a key note speech set out the BSB's objectives (see p. 94). She says that "it aims to help the banking industry to help itself by providing challenge, support and scrutiny" given the "litany of serious financial scandals the industry has faced since the crisis." One important area of the BSB's work is providing independent assessment of individual firms. Another is exploring professionalism in banking and areas where new industry standards could be beneficial.

Because culture is ultimately carried by individuals, efforts to bring about cultural change must be effective at the level of the individual. Some key areas to be addressed are incentives, going beyond compensation to promotion and hiring, leadership and openness, culture in the round and ethics.

Two very different conceptions of risk culture were discussed. Mike Power in his paper "Risk culture and information" focuses on the need to consider the "organisational plumbing" in terms of information flow, as well as the psychology of behaviour. He sees knowledge, and particularly the appetite for knowledge and information, at the centre of the culture debate. The information environment conditions and influences groups and their every-day actions. He cites the example of HBOS where he suggests that the bank had given priority to growth over risk and the quality of risk information was a symptom of this culture. From this perspective, a key task for banks is to create cross-functional networks to coordinate information throughout the organisation. Inadequate information damages the governance structures – the role of the board for example. An important problem is that information is typically put together by relatively junior people, who have disproportionate influence.

Roger Steare presented a different view of risk culture. He believes that culture is a reflection of power relations and in this sense it is created and shaped by leaders. Therefore to improve culture it is necessary for leaders down through the organization to display the right values. An important obstacle is that, whereas in home life individuals are driven by compassion and caring for others, at work, there is a widespread idea that compliance with rules and targets comes first, and caring for others is of secondary importance. In turn, the focus on compliance, on respecting the rules, on "doing the numbers", instils a culture of fear. Accordingly, changing culture in banks requires an acknowledgement that values in the workplace should be the same as those in life, such that professional behaviour should be driven by integrity rather than fear. In turn, this requires that leaders have the courage and character to "do the right thing" – and to put humanity and integrity as the route to sustainable profit.

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2. Keynote Speech – Banking Reform

Sir Howard Davies[1]

2.1. Introduction

Eight years ago this week, the financial crisis was getting under way, with Fannie Mae announcing a $7 billion rights issue to cover losses in the housing finance market and RBS reporting losses of £1.25 billion on its credit market exposures. There was a lot more to come, but since the acute phase of the crisis we have come a long way and made a lot of progress. So it is somewhat disconcerting that, eight years later, we are still talking about banking reform. Even more disconcertingly, it seems a fairly safe bet that we will still be talking about it eight years from now; the Financial Stability Board term sheet on TLAC, or total loss absorbing capital, does not reach fruition until 2022.

Against that backdrop, I will speak first about how far we have advanced on the regulatory agenda; then I will discuss how much further we need to go; I will try to place this in the context of the rapidly changing strategic environment within which banks are operating, with increasing non-bank competition; and finally, I will consider some of the challenges these non-banks pose to regulation.

2.2. How far have we advanced?

We can all agree that, in the years before the financial crisis, banks in general operated with too little capital; with inadequate levels of liquidity; with overly complex organisational structures; and with low standards of conduct towards their customers (some of which carried on after the crisis had passed through its acute phase and banks had begun restructuring). And we can also agree that, when crisis struck, taxpayers bore far too much of the risk of bank failure, and shareholders and bondholders far too little. The balance of risks between banks and society was opaque. The banking sector had developed a complex super-structure, with far too much interconnectedness. At end-2008 UK banks had £1.3trn of regulatory large exposures to other banks, bigger than the stock of mortgages in the UK at the time. The link between much of this activity and customer needs was unclear. We can, probably, also agree that we have made considerable progress since then, at least on capital (where the equity capital ratios of UK banks have doubled or tripled since the crisis), on liquidity (where

[1] Chairman, The Royal Bank of Scotland Group (RBS).

dependence on unstable short-term wholesale funding has fallen sharply), and on interconnectedness (where large exposures between banks are now a sixth of what they were).

On structure, the UK has opted for a particular model of ring-fencing, and the banks affected are getting on with it. I will not pretend that it is easy; RBS, for example, has had to divert many of the lawyers, technology specialists and project managers who would otherwise be available for other projects that would more directly benefit our customers. The deadline of 1 January 2019 may have seemed a way ahead when John Vickers first proposed it, but when the legislation you are working with is as complex as the Banking Reform Act of 2013, and when the PRA still has not yet published the detailed regulations, implementation is not straightforward.

I will not pretend to be an enthusiast for ring-fencing. Its contribution to the future stability of the UK financial system will, I suspect, be marginal at best, One obvious drawback is that the correlation of banking crises with lending to real-estate has a long and rich history, and ring-fencing does not obviously tackle that. Ring-fencing also imposes a limit on challenger banks' growth ambitions. There are a number of banks who are currently just below the limit of £25 billion of eligible deposits – if they grow, they will put themselves into scope for ring-fencing.

Andrew Tyrie's recent speech to the Centre for the Study of Financial Innovation (CSFI) berated bankers for trying to water down the ring-fencing rules – but then went on to agree with most of the specific areas banks have been pressing for clarification on, such as governance[2]. So I should emphasise that RBS is simply getting on with the practicalities of putting fences in place, not seeking to re-trade on the principle.

One strand of the regulatory agenda that is arguably less advanced is conduct – within banks and within financial markets. Conduct is harder to legislate for and harder to measure until it is too late. Some of the worst habits have, nevertheless, been stamped on, with their true cost being observed ex-post. If nothing else, bank boards are now acutely aware of the financial and business consequences of poor conduct; and the industry has been catalysed to develop initiatives to raise professional standards and behaviours across all staff, congruent with regulatory change which significantly increases individual accountability[3]. As for the balance of risk between taxpayers and shareholders, we may not yet have reached a point where a large bank could confidently be allowed to pass into resolution –

2 Rt. Hon. Andrew TYRIE MP, *A Speech on Banking Reform*, CSFI/Allen & Overy, 16 November 2015.

3 An example of industry-level action is creation of the FICC Market Standards Board (FMSB), independent of, but supported by, leading market participants and working to raise competence and behaviours amongst participants in FICC markets.

indeed, we may never reach that point – but the balance has decisively shifted towards bank shareholders and bondholders, who now expect to be on the hook when a bank encounters (non-fatal) distress.

2.3. HOW FAR DO WE STILL HAVE TO GO?

The question of whether this progress is yet sufficient is a difficult one for a banker to answer. It is absolutely clear that the benefits of reducing the probability and severity of future banking crises are potentially very large; not just the cost of future bail-outs and their fiscal ramifications, but, much more significantly, the economic output lost.

Nevertheless, eight years on from the start of the financial crisis, it does not seem unreasonable to suggest that a degree of certainty is overdue. Sabine Lautenschläger, from the European Central Bank (ECB), put it this way: "After nearly a decade of regulatory reforms the public, the media and policy-makers are weary. Regulatory fatigue is spreading; the pendulum is swinging back from widespread pressures for regulation to a preference for lighter banking regulation and supervision. We therefore have to carefully channel what is left of the original momentum."[4].

I would echo that: we will get better value now from properly embedding the reforms that have already been set in train, rather than from thinking up new layers of reform. That, I think, is consistent with Mark Carney's rebuttal of suggestions that a Basel IV is emerging. It is also consistent with the spirit of reviews recently initiated by the BCBS and the European Commission into the cumulative impact of regulatory change. All told, we need to view this as an opportunity to complete the implementation and optimisation of regulatory change.

Of course, financial crises can inflict great damage on the economy. As John Vickers's Independent Commission on Banking, put it: *"it would be worth paying a large insurance premium to reduce the likelihood, scale and damaging impact of financial crises"*[5].

Large, but not, I would suggest, unlimited – and for two principal reasons.

The first is that further regulatory change is likely to yield diminishing returns. Strengthening bank capital from where it stood in 2007 to where it stands today (which is already significantly higher than the levels recommended by the Vickers Commission) has brought great benefits, including removal of contingent liabil-

4 Sabine LAUTENSCHLÄGER, Closing remarks at the ECB Forum on Banking Supervision, 4 November 2015.
5 Independent Commission on Banking (2011).

ities from the sovereign's balance sheet. It is far less clear that incremental strengthening would bring commensurate gains. A requirement to hold total loss absorbing capital (TLAC) amounting to at least 18% of RWAs would have been enough to absorb even the most extreme bank failures seen in the last 25 years[6].

The second is that banks' boards and managements need to do more than simply seeking to comply with regulators' requirements. They need to meet their customers' needs, they need to play a role in supporting the wider economy; and finally, in order to deliver those two elements on a sustainable basis – without betting the bank – they also need to generate returns to their shareholders and owners. The expected rate of return on bank equity should logically fall as banks become safer, but that transformation in investor expectations will take time, and even utilities, as banks are sometimes touted to become, yield respectable shareholder returns.

2.4. THE STRATEGIC CONTEXT FOR BANKS

Even if there is no more regulatory change and the focus remains on implementation of what has been agreed, all of this presents quite a business challenge, on three fronts:

1. We are operating in an economic environment where margins on our deposit book are compressed as never before, and where many of our sources of non-interest income have also been squeezed – in some cases, such as PPI premiums, rightly so. From 2004 to 2008, the spread between business sight deposits and the interbank rate averaged 1.34%; since then, it has averaged 0.3%, a full percentage point less[7]. Banks have sought to compensate for reductions in deposit spreads by increasing the spreads on their lending. But they have not been able to do so in full, maybe because of the shadow the crisis casts across their reputation – or perhaps because the market is a lot more competitive than its critics like to suggest. This position could, of course, change if interest rates begin to rise again, but after six years at these levels, banks are having to get used to the idea of "lower for longer".

2. Banks have, as a group, underinvested in their core systems and infrastructure over a long period, and face a very substantial programme to update, upgrade and simplify these systems. RBS has suffered a number of well-publicised service failures that highlight the urgent need to improve system resilience, and we have not been alone.

[6] The Financial Stability Board's (FSB) analysis of historical losses and recapitalisation needs showed an interquartile range of between 3 and 6% of total assets and between 6 and 15% of RWAs. FSB (2015a).

[7] Source: Bank of England (BoE) statistical database: Private Non-Financial Corporations (PNFC) sight deposits spread to 3 month interbank.

What is more, a very large proportion of our scarce investment budget is already spoken for by mandatory programmes such as compliance with new reporting requirements, industry-wide schemes such as new payments mechanisms, and of course ring-fencing. Our ability to invest directly in improvements to our business and competitive position is constrained.

3. None of this is happening in a competitive vacuum. The last seven years have seen the arrival of a wave of new challengers. Some have quite similar business models to the banks they are seeking to compete with; some have quite different banking models; and others, often within the generic label of "fintech", are not banks at all but seek to disintermediate or otherwise displace more traditional banking models.

2.5. NON-BANK COMPETITORS

How should regulators be thinking about these competitors in the context of the overall banking reform agenda?

Charles Goodhart has written eloquently about the "boundary problem": if conditions within the perimeter of banking regulation are painful, then it must be expected that activity will flow outside that perimeter, where better returns can be achieved; but that unregulated activity can then be expected to grow, perhaps to the point where it gives rise in itself to systemic or public policy concerns[8].

This issue is, of course, familiar to the authorities, here and elsewhere. I recently chaired in Beijing a meeting of the International Advisory Council of the Chinese securities regulator, the CSRC. One of their major concerns is the explosion of non-bank credit, which fuelled the stock market boom earlier this year – a boom which quickly turned to bust. The Financial Stability Board has been working on "shadow banking" for some years, and last month published an update on its activity. The FSB notes that non-bank financing can provide a valuable alternative to bank funding and help support real economic activity. "It is also a welcome source of diversification of credit supply from the banking system, and it provides healthy competition for banks"[9].

If, the FSB adds, non-bank finance is involved in bank-like activities, transforming maturity/liquidity and creating leverage like banks, then it can become a source of systemic risk, both directly and through its interconnectedness with the banking system.

[8] GOODHART, (2008).
[9] FSB, (2015b).

But while I hear an appropriate note of caution in official comments on shadow banking, I hear no such caution in discussions of fintech. On the contrary, the government is open about its ambition to turn the UK into the fintech capital of the world. And the ground is clearly fertile; despite our best efforts, banks like RBS recognise that their efforts to compete are handicapped by a legacy of customer mistrust, and IT complexity.

There are a number of valid reasons why that ambition need not be at odds with the desire to encourage safer and more stable business models in banking. For a start, though fintech segments such as peer-to-peer lending are growing fast, they are still small in relation to the size of bank-provided credit. Moreover, as intermediary platforms, peer-to-peer companies are not yet gearing themselves up or formally engaging in maturity transformation. And even if they were doing those bank-like things, the existence of lots of smaller players poses a smaller risk to stability than the seven or eight systemically important UK banks, though the experience of the savings and loan crisis in the US showed clearly that lots of small financial institutions can create just as big a mess as a few large ones. Indeed even in the last years small bank failures have been more costly in the US than large bank support. Charles Calomiris, in *Fragile by Design*, has pointed to the instability of a banking system built on a high degree of geographical diversity[10]. So there are valid reasons for caution.

First, in a financial crisis, it can matter just as much what people expect as what the precise legal structure implies. There was no cast-iron reason why the Reserve Primary Fund – a money market mutual fund – should not "break the buck" and trade below net asset value in 2008 – it did not offer constant net asset value to its investors, although investors chose to believe that Reserve Primary and other money market funds would always do so. But when the buck was broken and constant net asset value was revealed as a chimera, the damage to that unwritten rule and the revelation of the true balance of risk undermined trust in the financial system.

I am nonetheless supportive of peer-to-peer finance, which in my view has the potential to fill some important financing gaps in the real economy to which bank finance will never be well suited. But in some cases, retail investors are implicitly being sold – or think they are buying – a form of deposit, when the reality of their investment is that it is closer in risk profile to an equity stake in a small corporate. The true nature and balance of risks is potentially obscured, hence if that is revealed in a disorderly manner in future, it will, if the sector has grown large enough, create its own case for political protection.

[10] CALOMIRIS (2015).

As the Geneva Report argued in 2009:

> *As soon as a significant body of voters has an interest in the preservation of a class of financial intermediaries, they will demand, and receive, protection. Witness money market funds and "breaking the buck" in the USA*[11].

Second, if fintech businesses grow to become real sources of diversification from over-reliance on bank credit, or major suppliers of payment services then they will themselves perform critical economic functions, and the authorities will start to worry about their preservation, just as they do about the preservation of the supply of lending in the event of a bank resolution, or about the continued functioning of the BACs payments system. That raises real questions about substitutability between providers of critical economic functions, and the location of the regulatory perimeter.

Third, they may also become a concern for macro-prudential regulators, if they grow sufficiently to blunt the authorities' efforts to act counter-cyclically. They are relatively small competitors today. But you don't have to expect alternative credit sources to match bank credit in size across the board to conceive that they might easily become the leading supplier in specific segments.

One final thought on fintech: some technology companies have made more extensive use of their customer data than has been the norm among banks. That may reflect the IT constraints that many banks face, and the fact that customer permissions around data use were typically much narrower in the past. But it may also reflect a different view of the trust customers place in financial institutions to safeguard their personal data. Sensitivity to the use of personal data is growing fast. If fintech businesses are to succeed, they will need to make sure they maintain their customers' trust. And part of that trust will lie in appropriate use of personal data.

I hope this does not sound like an incumbent asking for protection. My point is to argue for competitive neutrality in regulation. If an entity carries out bank-like functions, it should be regulated as a bank would be.

Even if you think that these new challengers will make me a dodo, there is still a critical role for banks to play in serving their customers, and the economy more widely; and it is a role that is not going to disappear overnight. That makes it vital that banks retain the ability to adapt and invest in their services, to continue to compete.

[11] GENEVA REPORTS ON THE WORLD ECONOMY (2009).

If we are to do that, we need to see a prospect that the wave of regulatory change we have been responding to since 2008 will draw to a close. That will open the way for banks to follow through on implementation – and there is plenty to do on that front. More importantly, it will allow banks to focus fully on setting strategies that are about more than just regulatory compliance. Shareholders will certainly welcome that, but I believe that governments and regulatory authorities should, too.

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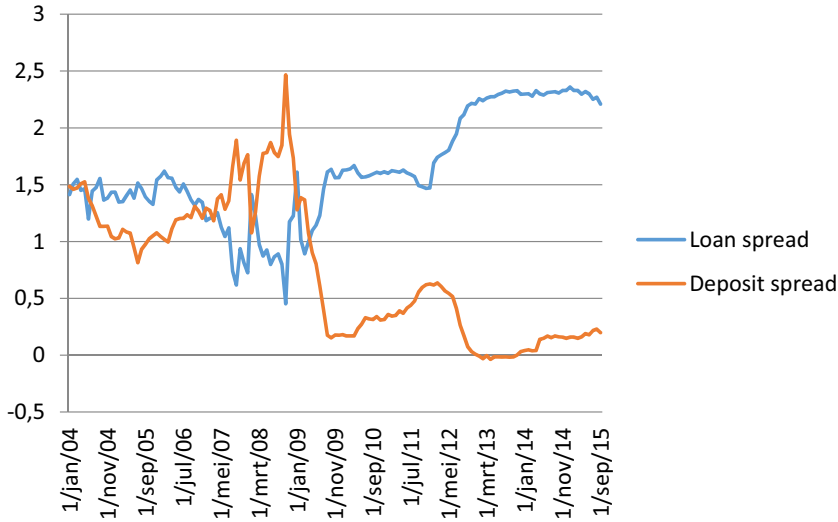
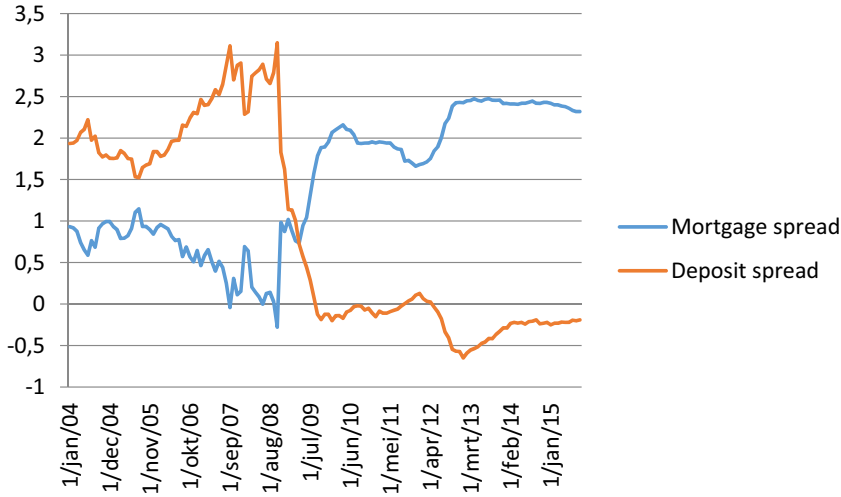
APPENDIX: EVOLUTION OF LOAN AND DEPOSIT SPREADS

Figure 1: Private sector non-financial corporations



Source: Bank of England database, RBS calculations. Loan spread = monthly average interest rate on floating rate loans to PNFCs – 3 month interbank rate. Deposit spread = 3 month interbank rate – monthly average interest rate on interest-bearing sight deposits from PNFCs.

Figure 2: Households



Source: Bank of England database, RBS calculations. Loan spread = monthly average effective interest rate on floating rate loans to households secured on dwellings – 3 month interbank rate. Deposit spread = 3 month interbank rate – monthly average interest rate on interest-bearing sight deposits from households.

Capital

3. Regulatory Failure and Regulatory Change

David Miles[1]

3.1. Introduction

In this short note I make some simple points about what went wrong with regulation of financial institutions before the financial disasters of 2007-08 and what has happened – and what should have happened – since. The problems were largely with banks and so most of what I will say is about them. I will make some general points, but at times I will say things that are somewhat more specific to the UK.

3.2. What was wrong before the crisis?

One common view is that the failure to prevent the financial train wreck of 2007-08 was because regulators adopted a "light touch approach" to regulation in general, and for banks in particular. If you believe this you probably think the answer to the problem is that regulation needs to be much more detailed, intrusive and prescriptive; you may believe rule books need to be long and weighty.

I think this set of views is largely misconceived. In the UK, the Financial Services Authority – which had responsibility for pretty much all financial regulation until it was laid to rest in 2012 – had a rule book that ran to thousands of pages. It is bizarre how so many people have come to believe after the crisis that the FSA adopted something called "light touch regulation" when before the crisis the overwhelming criticism of the FSA (and indeed of regulators in most countries) was that they were far too intrusive and that their rules held back one of the most successful sectors of the economy. I can recall very few people who before the crisis thought that more hands on regulation – more rules – were needed. Indeed the then Prime Minister Tony Blair said publicly before the financial crash that it was a shame that the FSA in the UK seemed to be holding back our most dynamic sector.

[1] Professor, Imperial College, London; former member of the Monetary Policy Committee at the Bank of England.

What was wrong before the crisis broke was that a rather detailed and prescriptive set of rules governing bank capital – the Basel II rules on capital adequacy – allowed banks to operate with a tiny sliver of equity capital, and a mountain of debt, to finance portfolios of assets which were both risky and often rather hard to value. That means that it was entirely rational for providers of debt (particularly of uninsured wholesale debt) to run once it was thought at all likely that assets might be worth just a few percentage points less. When a bank has leverage of 50 – 2 units of equity and 98 units of debt for every 100 units of assets – you only need to think it might lose 2% of the value of its assets for it to be rational to withdraw your debt funding. In essence that it was happened to a lot of banks in the crisis.

So the big mistake was that regulators acted as if they believed that it was appropriate for banks to have very little truly loss absorbing capital (that is equity) and that reflected a belief that equity was exceptionally costly and that having banks use more of it to finance their assets would substantially increase their cost of funding.

This belief is not supported by economic theory or empirical evidence. What the evidence does show all too clearly is that an under-capitalised banking sector that becomes subject to widespread runs as people see how fragile it is can cause enormous damage.

3.3. WHAT IS THE ANSWER?

It follows from this that banks need to use substantially more equity than we used to think adequate. Anat Admati and Martin Hellwig make the case persuasively[2]. Miles et al. quantify what "adequate" might mean and find that Basel III is not likely to have gone far enough for banks[3]. They summarise their argument and the evidence for it like this:

> The cost to the economy of the financial crisis and the scale of public support to the financial sector has been enormous. One way to reduce such costs is to have banks make greater use of equity funding. It is far from clear that the costs of having banks use more equity to finance lending is large. It is certainly not clear that the decline in banks' capital levels and increase in leverage had improved economic performance prior to the financial crisis.
>
> Our estimate of optimal bank capital is that it should be around 20% of risk weighted assets (RWAs). If RWAs are between one half and one third

[2] Admati and Hellwig (2013)
[3] Miles, Yang and Marcheggiano (2012)

> of total assets then even with equity at 20% of RWAs debt would be between 90% and 93% of total funding. The notion that this is insufficient debt to capture any benefits from debt discipline seems unlikely.
>
> Were banks, over time, to come to use substantially more equity and correspondingly less debt, they would not have to dramatically alter their stock of assets or cut their lending. The change that is needed is on the funding side of banks' balance sheets – on their liabilities – and not their assets. The idea that banks must shrink lending to satisfy higher requirements on equity funding is a non-sequitur… At the risk of stating the obvious: equity is a form of financing; other things equal a bank that raises more equity has more money to lend – not less. Nor is the capital in any sense 'tied up'; it represents funding available to a bank to lend or to acquire other assets.
>
> In retrospect we believe a huge mistake was made in letting banks come to have much less equity funding – certainly relative to un-weighted assets – than was normal in earlier times. This was because most regulators and governments seem to have accepted the view that 'equity capital is scarce and very expensive' – which in some ways is a proposition remarkable in its incoherence.
>
> We believe the results reported here show that there is a need to break out of the way of thinking that leads to the 'equity is scarce and expensive' conclusion. That would help us get to a situation where it will be normal to have banks finance a much higher proportion of their lending with equity than had been assumed in recent decades to be acceptable. And that change would be a return to a position that served our economic development rather well, rather than a leap into the unknown.

Progress has been made. But the new – and admittedly much tougher – rules on bank equity seem overly complicated with multiple different (but all small) capital "buffers" added to one another. A simpler system with a higher bottom line would seem to be called for to create a genuinely more robust system.

And indeed the new proposals on overall loss absorbing capital that are suitable for banks use figures closer to what seems needed to have a more solid banking sector. The Financial Stability Board has recently proposed that total loss absorbing capital (TLAC) should be around 20% of risky assets. Most of that loss absorbing capital would not be equity – and instead be debt that is available to absorb losses once the crisis has hit. That is re-assuring from the point of preventing losses falling on tax-payers; but less so as a means to stop institutions getting into trouble in the first place. Were there a convincing case that using the most reliable loss absorbing capital – that is equity – is truly costly (in an economic sense) then it might make sense to use predominantly debt-like instruments to build up loss absorbing capacity. But in the absence of such evidence it

might make more sense to rely much more on the ultimate loss absorber – equity capital.

This view – which could crudely be described as "just have banks use a lot more equity to fund their assets" – may seem all rather simplistic. It says nothing about liquidity. And was not the problem for many banks really about liquidity? I am sceptical about that. The ultimate reason why banks could not hold on to funding, or persuade new lenders to step in, was that people were worried that debt supplied to a company with a sliver of equity behind a large quantum of risky assets might not be repaid. Banks that are almost certainly solvent almost certainly do not have liquidity problems. Sort out solvency and liquidity takes care of itself.

But to be clear – it makes no sense to require that *any* large financial institution must finance its assets with a heavy slug of own equity. Many institutions investing in risky assets issue claims whose value naturally moves in line with fluctuations in the worth of the assets. Fund managers control trillions of dollars of assets. By any measure the largest are amongst the behemoths of financial institutions. But for most of them the value of the claims on them move naturally in line with the value of their assets – unit trusts are an obvious example. In a sense they have a naturally hedged balance sheet structure which means insolvency risks do not need to be controlled by the institution running the fund putting in a large amount of its own equity. But banks are not like that – the great majority of their liabilities are types of debt whose value does not fluctuate in line with movements in the assets. That is precisely why they do need equity from the owners of the bank. That is the big lesson of the crisis.

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COMMENTS BY CHARLES GOODHART ON DAVID MILES' CONTRIBUTION

Everything that David wrote was correct within the context of a comparison between two banking systems, both in equilibrium, with one having an equity ratio of 18%, compared with another with a ratio of, say, 6%. In comparing two such equilibrium states, there is no question that the state with the higher equity ratio would be much more stable, and the cost in higher interest rates, lower lending and slower growth would be small, if not minimal. The problem, however, is that such a comparison of equilibrium states does not reveal a number of the problems of transiting from a much lower equity ratio to one that is much higher. In particular, given the present governance system for banks, what are the likely implications of requiring the banking system to raise its equity ratio from the prior lower level, say around 3 or 4%, to a much higher level, say 18 to 20%, in the course of a short time period, perhaps 4 or 5 years?

The basic problem is that, under our present governance system, there is a ratchet problem, whereby it generally benefits existing equity holders to issue more debt, and harms them if more equity is issued instead. Moreover, under our present governance system, existing equity holders have an ability to control management – and indeed, if they want to, to sack the current management. David Miles' example was one in which equity was issued in order to buy back debt. But if you analyse that, one can show that that would provide a massive transfer of value from the equity holders to the holders of such debt, because it makes the debt holders much safer, while at the same time diluting the equity holders. Indeed, what we have currently in most developed economies, is enormous pressure on CEOs, in virtually every industry, to do exactly the opposite. Buying back equity and issuing more debt transfers value from debt holders to equity holders. Naturally equity holders want that to occur. Moreover, senior management in any bank, or public company, is, almost always, also a very large shareholder.

If the authorities require banks (or companies) to raise the ratio of equity to assets, by a large amount, how will they respond? The answer is that they will seek to delever, i.e. to reduce the volume of assets, rather than issue new equity. And that has been what has been happening, particularly in Europe. Furthermore, the governments of each country have been undertaking a form of covert blackmail, whereby they have effectively said to their own banks, "Yes, proceed to delever, but do not do it at home." The result has been that almost all the banks have been reducing their lending and assets held abroad, so cross-border lending has gone down quite sharply. The result has been, in general, that banks headquartered in a particular country have increased their lending into their home country, but total bank lending in that country has stagnated and gone down. Why is that? It is because banks in every other country have been

withdrawing their money from it, so total bank lending has stagnated, even though the domestic banks have increased their lending. In my view, insufficient consideration was given to the transition problem of moving from a low to a higher equity system, and the incentives that bank managers would have on how to do this. The Americans did this exercise much better than the Europeans, both because they felt able to force-feed their banks with public sector TARP money, and also to require their banks to achieve a required total of equity, rather than an equity ratio.

To summarise, everything that David Miles has written in terms of comparative equilibria is correct, but I fear that the (European) authorities simply did not give enough thought to what may be described as a transitional problem.

4. Raising Bank Capital and the Implications for the Cost of Capital

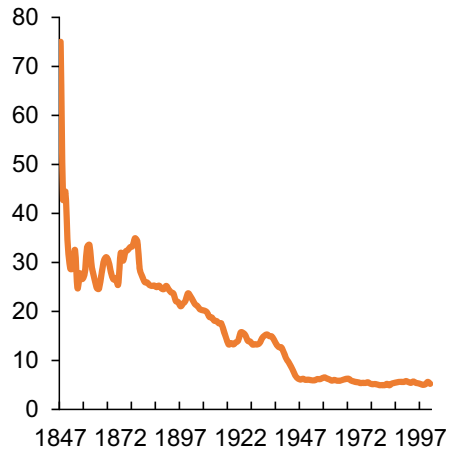
Harald Benink[1]

4.1. Bank capital ratios still close to historically low levels

In spite of a recent modest recovery, bank capital ratios are still close to historically low levels. Empirical studies for both Europe and the US on the historical evolution of commercial banks' book capital ratios show that average capital-asset ratios (on a non-risk weighted basis) were around 35% in the nineteenth century, gradually declining towards a level of around 15% in the early 1930s and, just before the financial crisis started in 2007, towards a level of around 6% in Europe and 10% in the US. By contrast, industrial (non-financial) companies still today have capital ratios of 30 to 40%[2].

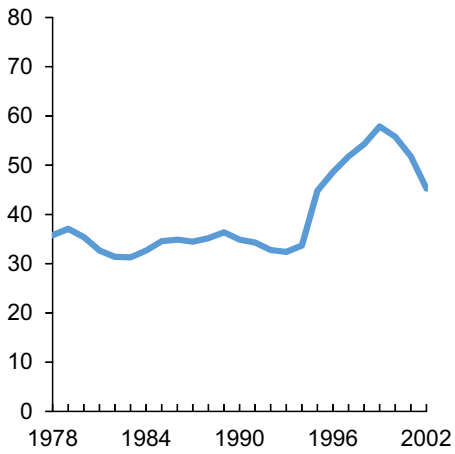
Figures 1 illustrates the historical evolution of capital ratios of commercial banks in 10 European countries since the 19th century. Figure 2 illustrates the capital ratios of non-financial firms in 10 European countries in recent history.

Figure 1: Average Capital/Asset Ratio of Commercial Banks, Europe 1847-2001.



Source: Benink and Bentson (2005)

Figure 2: Average Capital/Asset Ratio of Non-Financial Companies, Europe 1978-2002.



Source: Benink and Bentson (2005)

[1] Professor of Banking and Finance at the European Banking Centre, Tilburg University; Chair, European Shadow Financial Regulatory Committee.

[2] On Europe see Benink and Benston (2005); on the US, see Greenspan (2008).

The rapid depletion of banks' capital buffers during the recent financial crisis of 2007-2009, and the massive recapitalizations of the banking sector by taxpayers that followed, indicate that the required levels before the crisis were inadequate. It is encouraging that the Basel Committee on Banking Supervision (BCBS), the Financial Stability Board (FSB) and leaders of the Group of 20 economies (G20) have started to recognize that bank capital levels need to be increased. But, in a view shared by most of the world's leading academics in the field, the Basel III Accord (2010) for raising bank capital standards seems to be too modest and insufficiently ambitious.

4.2. SHADOW EQUITY

The current low levels of capital in a historical perspective are accepted in financial markets because there are expectations of government assistance in case of financial distress, the so-called "too big to fail" argument. In fact, these expectations have contributed to the relatively low levels of capital. This expected government assistance is sometimes referred to as "shadow equity". Hence, total "economic" capital of a particular bank consists of the amount of capital reported on the bank's balance sheet plus the value of the shadow equity. However, this shadow equity comes at a cost since it is a subsidy to a bank's risk taking which is ultimately borne by taxpayers[3].

In order to address the moral hazard problem it is necessary to reduce the value of banks' shadow equity by reducing the need for government bailouts for large as well as small banks. Already in 2005, George Benston from Emory University in the US and I advocated that the required capital-asset ratio on a non-risk weighted basis – known as the leverage ratio – should be increased to 15 percent, including certain so-called "debt capital" instruments, as defined below[4]. It should be raised gradually during a transitional period of up to 10 years. The assets side of the equation should include off-balance sheet items expressed as the asset equivalents of contingent liabilities, as presently calculated for the Basel capital requirement. This non-risk weighted ratio should be specified along with the risk-weighted ratio, as calculated under the Basel rules. Both of these two ratios should be binding.

Although the banking community claims that an increase in the required capital ratio of this magnitude would be a substantial burden on the banks, it need not be. The burden could be partially reduced by allowing banks to increase their regulatory capital without having to resort fully to equity markets.

[3] BENINK and WIHLBORG (2010).
[4] BENINK and BENSTON (2005).

4.3. INCLUSION OF CERTAIN DEBT INSTRUMENTS AS PART OF REGULATORY CAPITAL

One proposal is to include, in the definition of regulatory capital, long-term bank debt which mandatorily converts to common shares when the capital ratio reaches a pre-determined low level (contingent convertibles or CoCos). A related proposal is to include long-term bank debt containing a write-down mechanism which allocates losses to the debt holders at a pre-specified trigger point. Just like common equity, these hybrid debt capital instruments (referred to as "contingent capital") have the ability to absorb losses while the bank remains a going concern. The Basel III Accord allows these instruments to count as additional Tier 1 capital (AT1) but only to a limited extent. The relative share of AT1 as part of Tier 1 capital should be allowed to be higher. In a way, the Basel Committee has been overly conservative in limiting the potential use of contingent capital instruments while being much too timid in increasing capital requirements.

Another proposal, as advocated by Benink and Benston, is to include long-term debt which is explicitly and credibly uninsured and may not be redeemed except from funds that were obtained from new issues that replace the debt capital, or, if otherwise redeemed, the bank would fully meet its regulatory capital requirement. In this way, the debt would be as permanent as equity and be available for absorbing losses. Because of this feature, it should be allowed to count as part of Tier 1 capital.

The examples given above of certain debt instruments to count as part of Tier 1 capital (or "going concern capital) are very different from current international proposals which advocate the absorption of losses by the holders of bail-in debt (as an important component of Total Loss Absorbing Capacity, or TLAC). Bail-in debt is part of Tier 2 capital (or "gone concern" capital) and can only be made available for absorbing losses when a bank is put into a procedure of resolution, i.e., bankruptcy or financial restructuring. The problem is that such a procedure may not be feasible during a systemic banking crisis, with the largest banks at risk, due to concerns related to contagion and the stability of the financial system. The EU's Banking Recovery and Resolution Directive (2014) contains important exemption clauses in this respect. Also, the Federal Deposit Insurance Corporation Improvement Act (1991) in the US introduces a prompt corrective action scheme where the FDIC can invoke a legal closure role and commence a least cost resolution as capital is approaching zero[5]. However, during the recent financial crisis of 2007-2009 the closure role was implemented for small and medium-sized banks but not for the larger, systemically important banks.

[5] KAUFMAN (2005).

4.4. MODIGLIANI-MILLER (MM) AND THE COST OF CAPITAL

In 1958 Franco Modigliani and Merton Miller published their famous article on the irrelevance of the capital structure in a world without corporate taxes. The weighted average cost of capital, which is the weighted average of the cost of debt and the cost of equity, and the market value of the firm are not influenced by changes in the financing mix between debt and equity.

In a follow-up paper in 1963, Modigliani and Miller extended their analysis by allowing corporate taxes. Increasing leverage lowers tax payments due to the fact that interest payments can be deducted from gross income. Dividend payments are non-deductable. The consequence is that raising debt financing (and reducing equity financing) as part of the capital structure of the firm will increase the tax benefits. Therefore, the market value of the levered firm equals the market value of the unlevered firm (100%-equity financed) plus the present value of the tax benefits on the paid interest on debt. The tax benefits become larger, and the weighted average cost of capital becomes smaller, when the relative share of debt in the capital structure becomes larger. Consequently, the optimal capital structure is one with close to 100% debt financing. In such a case the market value of the firm is maximized and the weighted average cost of capital is minimized.

After the publication of the two seminal papers by Modigliani and Miller an extensive literature emerged highlighting that, in reality, the MM propositions cannot hold due to the fact that many of the theoretical MM assumptions do not hold in the real world[6]. A notable deviation from MM is the existence of bankruptcy costs. The risk of bankruptcy rises with more debt, which leads to a higher required rate of return by debt holders, thereby raising the weighted average cost of capital. Even in a world with corporate taxes, the optimal capital structure is not close to 100% debt financing but one with at least 30% to 40% equity financing.

In banking, however, there is the well known "too big to fail" guarantee which implies that debt holders, even the unsecured ones, reasonably can expect a bail out rescue operation by the government in case a large, systemically important bank is facing financial distress. Because of this, bankruptcy will not take place and expected bankruptcy costs are nihil. This would suggest that, for such large banks, the standard MM proposition with corporate taxes is valid and the optimal capital ratio is close to 100% debt financing. Indeed, this is what we observed before the financial crisis of 2007-2009 where many of the largest, systemically important banks were reporting capital ratios, on a non-risk weighted basis, in the range of just 2% to 4%.

[6] See, for instance, BALLING (2015).

4.5. RAISING BANK CAPITAL AND THE IMPLICATIONS FOR THE COST OF CAPITAL

Higher capital requirements will diminish the amount of debt, receiving a tax subsidy on a bank's interest payments, in the capital structure of a bank at a given moment in time. Moreover, the value of the too-big-to-fail guarantee is reduced given the fact that the risk to taxpayers of a bail out is mitigated. The two effects will lead to an increase of the weighted average cost of capital of the bank.

A higher cost of capital for banks should not be seen as a negative thing. It is a market-conform improvement mitigating distortions. The current subsidization of debt created a misallocation of capital through perverse incentives of banks to shift risk to taxpayers. Furthermore, an important factor causing the financial crisis of 2007-2009 was the fact that too much and too cheap liquidity was available, leading to a credit bubble and unbalanced economic growth. Higher capital requirements would make bank lending more expensive and more restrictive for the sake of a more sustainable economic growth path. But, as noted earlier, the 15% capital requirement, consisting of equity and debt capital, should be implemented during a transition period of up to 10 years. This will smoothen the adjustment towards a new equilibrium for the capital structure of banks.

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5. Simpler Capital Requirements versus Risk-Based – The Evidence

Patricia Jackson[1]

5.1. Introduction

Much of the debate on capital requirements over the past few years has been centred on the question of whether simple rules such as the leverage ratio (which are intuitively appealing) have a closer link to solvency risk of banks than more complex risk-based requirements. These papers have led to the suggestion that the internal-model-based approaches for credit risk introduced in Basel II made the system less safe. This paper examines the evidence for this conclusion and shows that none of the papers to date have in fact tested the Basel II risk-based requirements against leverage – the papers, which use the failures of banks in the crisis, test the leverage ratio against the quasi leverage ratio in Basel I as a predictor of failure. To try to redress this gap, two tests are set out in this paper of the Basel II risk-based requirements against the leverage ratio as a solvency indicator. Both point to an important role for risk based requirements. This paper also looks at what drives the results in the earlier papers on leverage versus Basel I.

The belief that simple capital requirements are better than those that are risk sensitive cuts across the received wisdom in the years running up to the crisis. The Basel Committee had conducted a lengthy study in 1999 of the effects of the simple Basel I rules on bank behaviour (JACKSON et al 1999), which showed that the limited risk differentiation in the Basel I rules had encouraged banks to move higher on the risk spectrum – higher risk exposures could be taken without changing a bank's capital to risk weighted assets ratio. This had led the Basel Committee to create a new Basel standard, Basel II (agreed in 2004 and implemented in 2007/8), with risk sensitive credit risk requirements.

The papers written since the crisis, which have shown a greater link between the leverage ratio and later failure during the crisis than the Basel capital ratio, have led to calls to replace risk sensitive capital requirements in Basel II with the leverage ratio. It has not been well understood that because the Basel II risk-based requirements were not in force pre crisis these papers tested Basel I. Current

[1] The views expressed are mine and do not necessarily reflect those of EY. I thank Dominic La Terriere for support with the research and the participants of the SUERF conference on Banking Reform for their comments as well my colleagues in EY, particularly Cian Cunningham. I also thank Vikranth Lokeshwar for support with data analysis. Needless to say any mistakes are mine.

thinking in the regulatory community is that leverage ratios should be a backstop to the risk-based requirements rather than supplanting them. However, the debate about simple versus complex capital rules remains important. It is clear now that for many banks the leverage ratio will be a front stop (EBA 2016). This will be exacerbated if the current policy debate over whether systemically important banks should have higher leverage ratios results in an increase for many banks. The simple versus complex debate also influences thinking on whether basic floors should be used for parameters within models and beneath the modelled approaches, making the requirements less risk sensitive (BCBS 2016). It is therefore worth exploring further whether the conclusion that simple is preferable to risk-sensitive is well based.

5.2. WHICH BASEL REQUIREMENTS HAVE BEEN TESTED?

The early papers on capital ratios versus leverage (for example ESTRELLA 2000) explicitly looked at the Basel I requirements and their relationship to bank failure or survival. Basel I was the standard in force at the time and had very limited risk sensitivity. Estrella uses a data set covering all FDIC insured banks in the period 1989 to 1993 and finds that, over longer time frames, the Basel I risk asset ratio was more predictive of failure than the leverage ratio.

More recent papers have been interpreted as an assessment of the newer risk sensitive capital requirements in Basel II, agreed in 2004, against a leverage ratio. HALDANE (2012) refers favourably to the Basel I requirements which were 'only 30 pages long' and used only 'five different risk weights.' He contrasts this with the Basel II 347 pages, with the 'primary complexity in the Basel II document (being the) model-based risk weighting'. To test whether more complex risk weighting is sub optimal, Haldane takes a sample of 100 large complex global banks, defined as those with assets of over $100billion at end 2006, and considers the performance of a leverage ratio in 2006 versus the Tier 1 risk weighted assets ratio, also in 2006, in predicting survival or failure in the crisis. However, because the Basel II credit risk requirements were only introduced in 2007/8[2], with most major banks moving to this approach in 2008 (and the US not fully adopting it), the paper actually assesses whether the risk-insensitive Basel I requirements, which were like a quasi-leverage ratio for credit (because almost all private sector loans except mortgages carried a fixed 8% capital requirement), were more or

[2] The 2006 Basel II Accord (BCBS 2006) shows the advanced approaches for credit risk only being implemented from year-end 2007. Earlier years were just a parallel run phase. Regulators in Accord (risk-net 2008) has a useful summary of the actual implementation date in different countries which reflected local legislation – Canada, EU, Japan, Switzerland, Australia all brought in the advanced credit risk approaches (AIRB) in 2008. The BCBS Progress report on Basel II adoption (per country updated March 2013) shows that although some US banks were by 2013 parallel running the Basel II credit risk requirements, they were still subject to Basel I capital requirements.

less predictive of bank failure than a leverage ratio. Haldane finds that the leverage ratio is a better predictor than the quasi leverage ratio in Basel I. Key features of the Basel I capital requirements are set out below.

Table 1: Basel 1 requirements – summary of the main elements BCBS (1998).

Asset class	Capital requirement	
All claims on private sector except mortgages	8% capital[a] held against outstanding	Very limited allowance for collateral – cash or equivalent
Residential mortgages	4% capital held against outstanding	
Domestic currency denominated claims on governments and OECD (foreign and domestic currency) claims on governments	0%	
Claims on OECD banks and under one year claims on non-OECD banks	1.6%	

a. Made up of Tier 1 and Tier 2 capital, of which Tier 1 had to be at least 50%.

Demirguc-Kunt, Detragiache and Merrouche (2010), using a large multi-country panel of banks and data covering 2005-2009, find that the Basel ratio pre crisis (i.e. Basel I) is positively related to stock market returns during the crisis. However, if only the largest banks are included in the sample (banks with assets above $50bn), the leverage ratio is significant but the Basel I ratio is not. Blundell-Wignall and Roulet (2013) look at the relationship of distance to default, calculated using a Black Scholes model, in the period 2004-11, to a number of contemporaneous factors including the Tier 1 capital ratios and leverage. Both are significant but only leverage is significant at the 5% level. This period covers both Basel I and Basel II data but given that the failures and major equity swings were concentrated in the period 2007/8 the results will have been dominated by the Basel I distance to default relationship.

A more recent Bank of England paper Aikman et al (2014) acknowledges that all the pre-crisis data on capital ratios represents the Basel I limited risk differentiation because Basel II had not been introduced before the crisis. They test Basel I against the leverage ratio using a data set of 116 banks across 25 countries with assets of more than $100bn at end 2006. Of this sample, 74 banks survived and 42 failed during the crisis – failure is based on the definition and classification of failure in Laeven and Valencia (2010), which includes provision of a substantial amount of government assistance as failure. Aikman et al find that the balance sheet leverage ratio performs better at predicting failure than the Basel I ratio.

The table below summarises the findings from the different papers, highlighting the capital ratio which was actually tested – Basel I or Basel II.

Table 2: The capital ratio tested by the different papers

Author	Data	Findings	Risk asset ratio tested
Estrella, Park and Peristiani 2000	US banks – all FDIC insured banks – data covering 1988 to 1992	Risk weighted capital ratios, leverage and gross revenue are all significantly related to subsequent failure – with the former most predictive over longer time frames	Basel 1 – Tier 1 ratio
Demirguc-Kunt, Detragiache and Merrouche 2010	Multi-country panel of banks – 381 banks in 12 countries Q1 2005 – Q1 2009	The Basel ratio pre crisis is positively related to stock market returns during the crisis and marginally significant. The leverage ratio is not significant	Basel 1 – Risk weighted ratio (Tier 1 plus Tier 2)
	91 banks with assets above $50bn	The leverage ratio pre-crisis is positively related to stock market returns in the crisis and is strongly significant. The Basel ratio is insignificant.	As above
Haldane and Madouros 2012	Sample of 116 large, complex global banks, defined as those with total assets over $100 billion at end-2006.	Little correlation between the Basel capital ratio and subsequent bank failure was found. However, there is a statistically significant relationship between the pre-crisis leverage ratio and failure.	Basel 1 Tier 1 ratio
Blundell-Wignall and Roulet 2013	94 US and EU internationally active commercial banks and broker dealers with equity market capitalization in excess of $5bn all publicly traded 2004-2011	Distance to default in the period 2004-2011, is strongly related to the contemporaneous leverage ratio but not the contemporaneous Tier 1 ratio.	For US banks and all other banks up to 2008, Basel I. From 2008, Basel II for non-US banks.
	31 GSIFIs	Leverage ratio is positively related to the distance to default and significant at the 5% level, the Tier 1 ratio is also positively related and significant at the 10% level.	As above
Aikman et al 2014	116 banks which had more than $100bn of assets at end 2006	The leverage ratio tends to perform better than the Basel capital ratio in predicting failure, but the leverage ratio performs less well for the US banks in the sample.	Basel 1 Tier 1

5.3. A LEVERAGE RATIO VERSUS BASEL I, A QUASI-LEVERAGE RATIO

The question these results raise is why, given that Basel I had many of the characteristics of a leverage ratio, do a number of the papers find it performs worse in predicting failure than a true leverage ratio for major banks.

The most likely reason is related to the results of the Basel Committee study on Basel I (JACKSON et al 1999). The authors find that the risk insensitivity in Basel I was leading to regulatory arbitrage, with banks increasing risks relative to the capital held and was most prominent in the largest banks, particularly through the use of securitisation. The paper states that 'banks in a number of countries are using securitisation to alter the profile of their book. This may make a bank's capital ratio look artificially high'. Aikman et al (2014) also suggest that the regulatory arbitrage of Basel I may have driven their results which show a greater link between leverage and failure.

The most important factor resulting from the regulatory arbitrage was the size of the trading books relative to capital, enabled by gaps in risk coverage in the rules. In one area Basel I was not like a leverage ratio; there were lower requirements for trading-book assets than loans reflecting the far shorter presumed holding periods and therefore lower risk. This treatment had been introduced in a market risk amendment in 1996 (BCBS 1996). A flaw in the market risk rules, which made them risk insensitive, was that they did not prevent illiquid positions (where the holding periods and risks would be higher) from benefiting from the lower trading book requirements. Jackson et al (1999) note that under Basel I a bank 'can reduce its regulatory capital requirement merely by originating and holding credit risk positions through its trading account.' US banks in particular were warehousing large illiquid loan positions waiting to go into securitisations. In addition, globally, banks were placing large quantities of illiquid securitisation exposures in the trading books.

The 1996 trading book requirements had also allowed internal models (VaR) to be used in the calculation of position risk. The rules had, however, mistakenly only required one year's past price history for the VaR calculations. This meant that VaR contracted in periods of low volatility, creating too small a buffer for the next period of high volatility. This regulatory treatment cut across the research at the time – see Jackson, Maude and Perraudin (1997), which showed that long data histories were necessary for the VaR to capture the risks. However, this was not as important a driver of low capital requirements as the arbitrage of credit positions into the trading books – when the VaR price history was addressed post crisis, VaR estimates increased but remained a small part of total capital required.

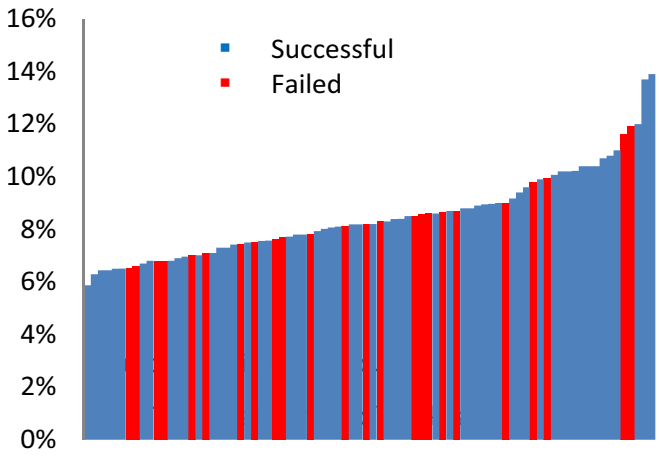
These deficiencies in the market risk regulations were corrected post crisis with the Basel 2.5 amendments (with stress VaR) (BCBS 2011) and since then the

fundamental review of the trading book recommendations (BCBS 2013) have been agreed, introducing liquidity adjustments and also moving to expected shortfall instead of VaR.

5.4. TESTING WHETHER "SIMPLE VERSUS COMPLEX" RESULTS REFLECT TRADING ACTIVITY

To test what is driving the results on Basel I versus the leverage ratio the calculations in Haldane (2012) have been reworked. The research uses the same data set as Haldane[3] with a few differences. The sample of 116 banks with over $100 Billion in assets at end-2006 has been reduced by removing the state owned banks and state cooperatives which have a different solvency dynamic. Likewise the US broker dealers were removed given their special nature. Some other banks were removed because of limited data. The leverage ratio for Northern Rock was adjusted to exclude the Granite securitisation vehicle captured in their balance sheet assets (and therefore leverage) but not capital requirements. This gives a sample of 82 banks of which 24 finally failed – the definition of failure is the same as in Haldane. The charts below plot the leverage ratio and the Basel 1 Tier 1 ratio in 2006 showing which banks survived and which failed.

Figure 1: Risk-based capital ratios of major global banks (excluding broker-dealers), end-2016[a] [b]

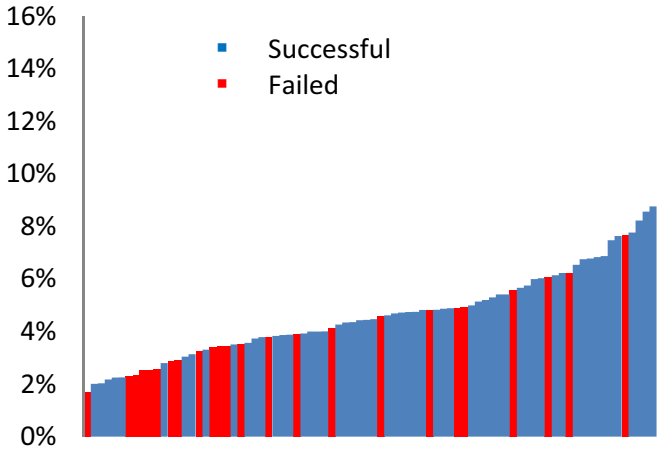


Source: Published accounts

a. The classification of bank failure is based on Laeven and Valencia (2010), updated to reflect failure or government intervention since August 2009.
b. Risk based capital ratio defined as Tier 1 capital / Risk weighted assets at end-2006.

[3] Analysis based on AIKMAN et al (2014), VASQUEZ and FEDERICO (2012) and LAEVEN and VALENCIA (2010).

Figure 2: Leverage ratios of major global banks (excluding broker-dealers), end-2006[a] [b]



Source: Published accounts

a. The classification of bank failure is based on Laeven and Valencia (2010), updated to reflect failure or government intervention since August 2009.
b. Leverage ratio defined as Tier 1 capital/ Total assets at end-2006.

As in Haldane, there is a cluster of banks with low leverage ratios (defined as Tier 1 capital/total assets) which later fail. A logit regression is conducted to show the relationship of the leverage ratio and the Basel I ratio in 2006 with later failure. This produces the same result as Haldane that high leverage is a significant factor in failure but the Basel I ratio is not.

Table 3: Basel 1 capital ratio versus leverage ratio as a predictor of failure for major global banks with total assets over $100 Billion (Excluding Broker-dealers), end-2006(a)

Variable	Model 1	Model 2	Model 3
Basel 1 – Tier 1 capital ratio	-0.1175		-0.0543
	(0.1583)		(0.1571)
Leverage ratio		-0.4334**	-0.4270**
		(0.1789)	(0.1816)

Notes: For all models, the dependent variable is "failure". Standard errors are shown in brackets.
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

One way to test whether it is the loan books or trading books which are influencing the leverage versus Basel I capital ratio results, is to include a loan leverage ratio rather than the full leverage ratio. A credit-risk leverage ratio of Tier 1

capital[4] over total loans and advances was calculated using data extracted from bank balance sheets[5] and this was tested as a predictor of bank failure. The Tier 1 capital was adjusted to reflect the proportion of capital required to back the loan books. The results indicate no significant correlation between the loan book leverage and bank failure.

Again logit regressions were conducted to test the relationship between the different leverage ratios and the Basel 1 ratio and later failure. The loan book leverage ratio is not significantly related to later failure, whereas the full leverage ratio is significant at the 5% level. This shows that it is the trading book assets which are driving the leverage ratio link to later failure.

Table 4: Basel 1 capital ratio, leverage and loan book leverage ratio as predictors of failure for major global banks with total assets over $100 Billion (excluding US broker-dealers), end-2006(a)

Variable	Model 1	Model 2	Model 3	Model 4
Basel 1 – Tier 1 capital ratio	-0.0904 (0.1651)			-0.0294 (0.1709)
Leverage ratio		-0.4287** (0.1800)		-0.4118** (0.1909)
Loan book Leverage ratio			-0.1004 (0.0814)	-0.0184 (0.0571)

Notes: For all models, the dependent variable is "failure". Standard errors are shown in brackets.
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

These results highlight the importance of the changes in the trading book capital requirements post crisis, to address the concerns about the original 1996 trading book requirements. Far from being risk sensitive, the 1996 Market Risk Amendment to Basel I had brought in requirements that did not enable risks to be effectively captured. The results also point to the usefulness of a backstop leverage ratio if there are gaps in the capital requirements enabling regulatory arbitrage as there were with Basel I and the market risk amendment.

Larger banks tended to be more engaged in regulatory arbitrage using the trading books. If asset size of the banks is included as an extra variable it is significant on its own. But when included with the leverage ratio it removes the significance of

[4] Tier 1 has been adjusted to reflect the percentage of RWA's covering credit risk – for most banks 80% or more.
[5] The 40% of loans and advances contained in Northern Rock's balance sheet associated with Granite has been removed.

both. This is probably because both the total assets and the leverage ratio are reflecting the regulatory arbitrage.

Table 5: Basel 1 capital ratio, leverage ratio, loan book leverage ratio and total assets as predictors of failure for major global banks with total assets over $100 Billion (excluding US broker-dealers), end-2006

Variable	Model 4	Model 5
Tier 1 capital ratio		-0.0393
		(0.1765)
Leverage ratio		-0.3063
		(0.2147)
Loan book Leverage ratio		-0.0376
		(0.0856)
Total assets	0.1048**	0.0722
	(0.0538)	(0.0576)

Notes: For all models, the dependent variable is "failure". Standard errors are shown in brackets.
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

5.5. LEVERAGE V BASEL II RISK-BASED REQUIREMENTS

The discussion above shows that none of the papers to date have effectively tested the Basel II changes, with the introduction of the risk-sensitive capital requirements for credit, as a predictor of later failure. The crisis provides a large sample of bank failures not available since but Basel II (introduced for most major banks in 2008 and not introduced at all for credit in the US) cannot be used as a lead indicator for these.

However, what the crisis did was to stress the banks' exposures and balance sheets, with consequences for P & L and capital, causing some banks to fail while others survived. To find similar data post crisis it is necessary to look at the simulations of crises, which have been carried out by the authorities post crisis. The EBA conducted an extensive stress test on 123 EU banks, accounting for 70% of EU banking assets, in 2014 (on the end 2013 books). This not only required the banks to carry out thorough assessment of the losses that would be seen in the stress period but also (through the asset quality review process – AQR) ensured that already problematic loans were provided against. This mirrors the process that would be seen in a crisis where loans to borrowers in distress, for which forbearance had been exercised, would be winnowed out, and other loans would be stressed resulting in higher provisioning.

The EBA set the stress test, with a common methodology, whilst the regulators across Europe, including the ECB, were charged with overseeing the quality of the stress test and asset quality review. The stress test was broad based covering both real economic and market variables.

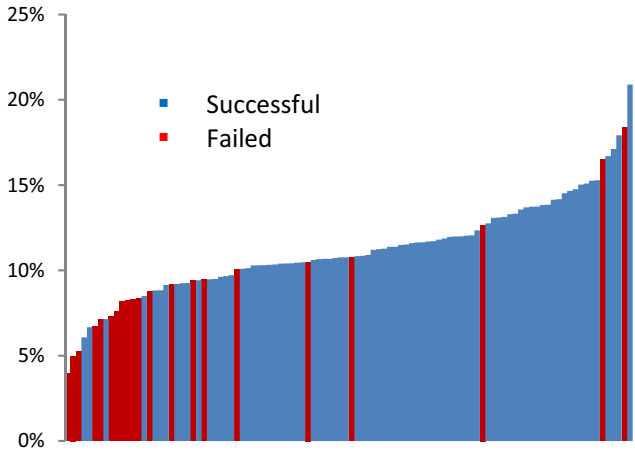
Table 6: Selected features of the 2014 EBA stress test scenario, ESRB (2014)

	2014	2015	2016
% Cumulative deviation in nominal GDP from baseline	-2.2	-5.6	-7.0
Implied EU real GDP growth	-0.7	-1.5	0.1
% deviation in unemployment from baseline	0.6	1.9	2.9
Implied EU unemployment rate (%)	11.3	12.3	13.0
% deviation in house prices from baseline	-8.7	-14	-14
% deviation in equity price shocks from baseline	-18.6	-16.6	-19.2

This data set of banks, which passed or failed the 2014 stress test, has been used to test the predictive capacity of the risk-based capital requirements versus leverage against simulated failure. A sample of 104 banks from the123 banks included in the stress test has been taken, reflecting data availability. The charts below show the Core Tier 1 ratios (which are calculated using the Basel II rules for credit risk which are still in force but Basel 2.5 for market risk) and leverage ratios at end 2012. The red bars show which banks later failed the EBA stress test in 2014 on end 2013 data. Failure was defined by the ECB as falling below a Core Tier 1 ratio of 5.5% during the 3 year horizon of the stress test. Twenty of the sample of 104 banks failed the stress test.

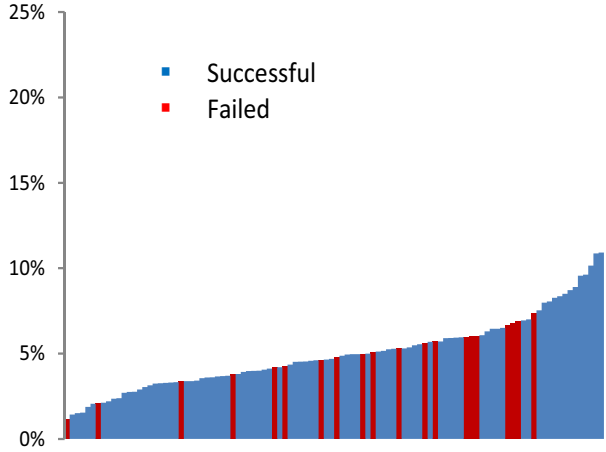
The charts show a clustering of low Core Tier 1 banks (at end 2012) which later failed the 2014 test. This shows a clear pattern of low core Tier 1 ratios being related to later simulated failure and little pattern for the leverage ratio versus later simulated failure. One criticism of this test might be that it could be self-fulfilling if banks use the same estimates of future loss for the capital requirements as for the stress tests. In fact the depth of the recession imposed and breadth of different factors makes a complete new estimation of the forward arrears rates necessary, and wholesale re-pricing of other elements of the portfolio, rather than simple utilization of the risk based capital requirement mechanisms. Also the test included the AQR process which mimics a winnowing process of actual failures. It is of course a more limited stress than a full crisis because it is focused on loan book and trading book loss. It does not take into account systemic pressures and confidence effects (other than through the solvency channel for an individual bank) causing runs or generalized liquidity pressure. This makes it a more limited and stylized test than a full blown crisis.

Figure 3: Risk-based core Tier 1 capital ratios of EU banks participating in the 2014 EBA stress test, end-2012(a)



Source: Published accounts

Figure 4: Core Tier 1 leverage ratio of EU banks participating in the 2014 EBA stress test, end-2012(a)



Source: Published accounts

A logit regression confirms the significance of the Core Tier 1 ratio as a predictor of simulated failure a year later and the lack of significance of the leverage ratio – see below.

Table 7: Risk-based core Tier 1 capital ratio versus leverage ratio of EU banks (end 2012) and later 'survival' or 'failure' in the 2014 EBA stress test[a] [b]

Variable	Model 1	Model 2	Model 3
Core Tier 1 capital ratio	-0.3469***		-0.4013***
	(0.1151)		(0.1280)
Leverage ratio		0.0128	0.1784
		(0.1187)	(0.1446)

Notes: For all models, the dependent variable is "failure". Standard errors are shown in brackets.
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

a. The classification of bank failure is based on a banks predicted CET1 ratio. If during the 3 year horizon period of the exercise the bank's CET1 ratio falls below 5.5% it is deemed to have failed the test.
b. Regression based on a sample of 104 banks, 84 who successfully passed the stress test and 20 who were considered to have failed.

Another way of looking at the importance of the Tier 1 ratio against leverage as an indicator of default likelihood is to look at their explanatory power for the credit default swap spread for individual banks. Chiaramonte and Casu (2012) look at various explanatory factors for the credit default spreads of 57 banks globally. They followed the literature on structural models to explain CDS. They find that the capital ratio and leverage ratio are important explanatory variables in the post crisis period when Basel II was in force but not in the pre-crisis period when Basel I, which did not reflect the risks, was being used. The pre-crisis results may well at least in part reflect too big to fail considerations pre 2007 – there does seem to have been limited differentiation in credit default spreads pre crisis.

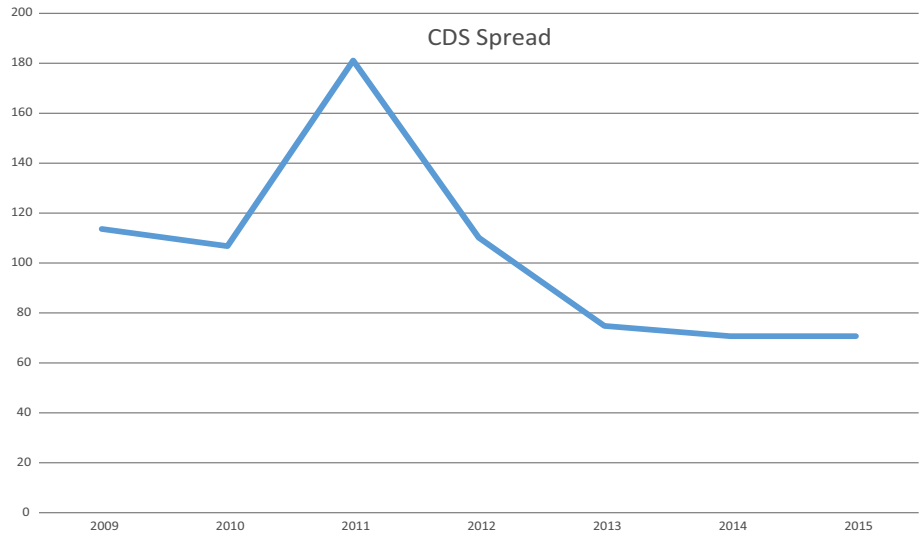
Chiaramonte and Casu have, however, not presented a clean test of the Basel II requirements in the post crisis period. Their data set includes 7 US banks for which the Basel II requirements for credit risk, the largest part of the risk profile, were not implemented. Also they present results for the combined crisis and post crisis period 2007-2010, therefore including in the results 2007 when Basel I was still in force for most major banks.

Building on the work of Chiaramonte and Casu, and using a panel data set covering 30 large banks globally, for which CDS data was available for the whole or most of the period, (but excluding the US banks) and covering only the Basel II period starting at end 2008 (up to 2015), spreads of 5-year Credit default swaps were regressed against a constant, the leverage and Tier 1 capital ratios. The additional balance sheet variables which were found to be significant for the 2007-2010 period by Chiaramonte and Casu were also included – loan loss reserve/gross loans and ROE. The dependent variable is the average of the CDS spread in the three months post March and the balance sheet variables are included for the end of the previous year. This gives the effect of the

announcement of the balance sheet metrics on the CDS – most full disclosures are in the March following the end year. ROE is the figure disclosed in the end year accounts. CDS values were taken from Reuters' database and other balance sheet data was taken from the SNL database supplemented by the annual accounts of the banks.

In addition a measure of the Eurozone crisis was included. The average CDS value is volatile over the period 2008 to 2015 with the sovereign debt crisis in Europe impacting confidence in the international banks – because of exposures to government debt and the potential fallout from a possible Greek exit from the euro.

Figure 5: Average CDS 2008-2014.



Note: CDS Spread for each year is taken as the average Q2 CDS spread.

The yield to maturity of 10 year Greek sovereign bonds from S&P Dow Jones indices has been included as a measure of the crisis. The results of this regression (equation 1) are shown in table 9 in the appendix – the Tier 1 ratio is significant at the 5% level whereas the leverage ratio is insignificant.

The two additional Chiarmonte and Casu variables (loan loss reserve/gross loans and ROE) were both insignificant and excluding these improved the fit. Higher loan loss reserves impact the Tier 1 ratio and therefore are probably not needed as well as the capital ratio. Likewise earnings also impact the Tier 1 ratio. The results are shown as equation 2 in table 10 in the appendix. In this equation the Tier 1 capital ratio is now significant at the 1% level whereas the leverage ratio is wrongly signed and insignificant.

One question is whether it is just the latest Tier 1 ratio and leverage ratio which are important or whether lagged ratios are important as well. Using capital ratios lagged one year again improves the fit of the equation – the lagged Tier 1 ratio is highly significant but the lagged leverage ratio is not significant. It is not possible to run the regressions with both the latest and the lagged Tier 1 and leverage ratios because of the correlation between the current and lagged values. The results of this regression (equation 3) are shown in table 11 in the appendix.

These results do point to the importance of the risk based requirements (brought in in Basel II) as indicators of default likelihood.

5.6. CONCLUSIONS

This study highlights the fact that none of the papers which have tested risk-based capital requirements against the leverage ratio in terms of the power to predict failures during the crisis actually tested the risk sensitive Basel II credit risk requirements. This was because, although these requirements were agreed in 2004, they were not introduced for most major banks until 2008 and were not implemented in the US. All the papers therefore tested the Basel I requirements against the leverage ratio, or in one case tested a mix of Basel I and Basel II.

This creates the puzzle why the Basel I ratio, which for credit was itself akin to a leverage ratio, with a flat 8% (4% Tier 1) ratio for most private sector claims, performs so much worse than a full leverage ratio. The answer lies in the trading books of the banks and the regulatory arbitrage enabled by the simple Basel I requirements. Under the Basel I market risk amendment loans could be moved into the trading book to avoid the credit risk requirements. They were covered instead by much lower trading book requirements which assume short holding periods.

This study confirms that it is the trading book arbitrage of the simple Basel 1 requirements which is driving the Basel I versus leverage results. If the logit regressions of Tier 1 capital requirements and leverage against failure are rerun, including a loan leverage ratio, the latter is not significant. The deficiencies in the trading book requirements have been dealt with by changes brought in with Basel 2.5 and further changes to be made following the Fundamental Review of the Trading Book (BCBS 2013).

These results support the view that a leverage ratio as a backstop to risk based requirements is appropriate to provide a fall back if there are gaps in the requirements. But it does not provide evidence of the superiority of leverage to risk-based requirements. Indeed it highlights the potential dangers of simple non-risk based requirements.

The superiority or otherwise of simple versus risk-based requirements continues to be an important question because although the regulators have settled on the formulation that the leverage ratio would be a backstop to risk based requirements there is evidence that the leverage ratio may become a front stop for many banks (EBA 2016). There is also pressure to water down the risk-based nature of the Basel II credit risk requirements by imposing sub-floors on parameters and floors under the total capital requirements of different books – see BCBS 2016. This use of multiple simple floors again raises the spectre of risk arbitrage driven by lack of risk sensitivity.

It is therefore important to test whether simple requirements for credit risk under a leverage ratio are preferable to the risk-based requirements under Basel II. Using a test based on the predictive power of the leverage ratio versus the Basel risk-based capital ratio (based on the Basel II requirements for credit risk) and later simulated failure in the EBA stress test, the paper shows that the Basel capital ratio is significant while the leverage ratio is not. This provides some support regarding the importance of risk-based requirements. It is not of course as full blown a test as a complete crisis, with many different first and second line effects.

The study also tests whether CDS spreads as a measure of default likelihood are influenced by the risk-based Tier 1 ratios (in the period of risk sensitive credit risk requirements under Basel II – 2008-2015) or the leverage ratio. The results show that the Tier 1 ratio does have an important influence on the default expectation and the leverage ratio is not important as it is insignificant in all models. This does call into question the current widespread belief that simple is preferable to risk based requirements.

Another important conclusion is that studies of the efficacy of bank capital measures must distinguish between the pre 2008 Basel 1 period and the period from 2008 of risk based Basel II requirements. It is also necessary to recognise that the risk-based credit risk requirements of Basel II were not introduced for the US banks even post 2008.

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APPENDIX

Figure 6: CDS spread by bank for 2008-2014

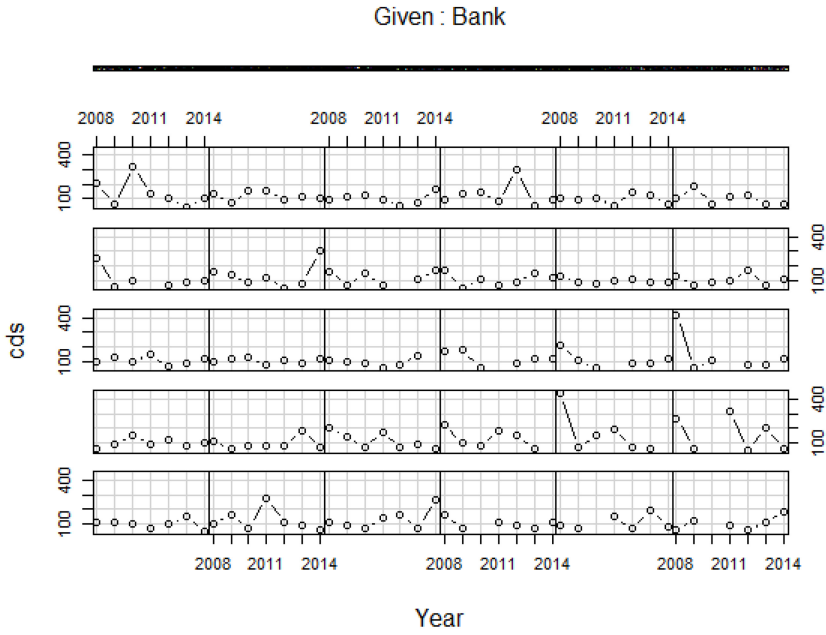


Figure 7: Tier 1 ratio by bank for 2008-2014

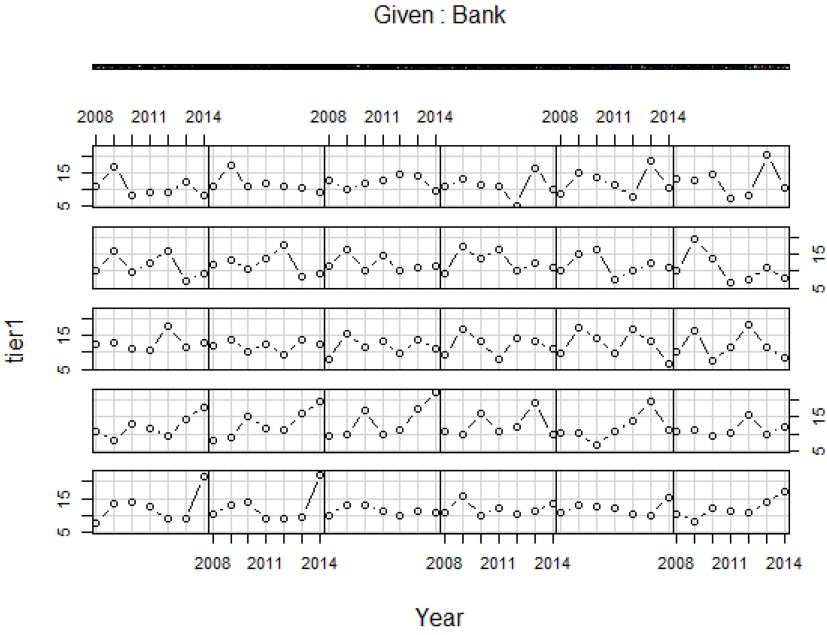


Figure 8: leverage ratio by bank for 2008-2014

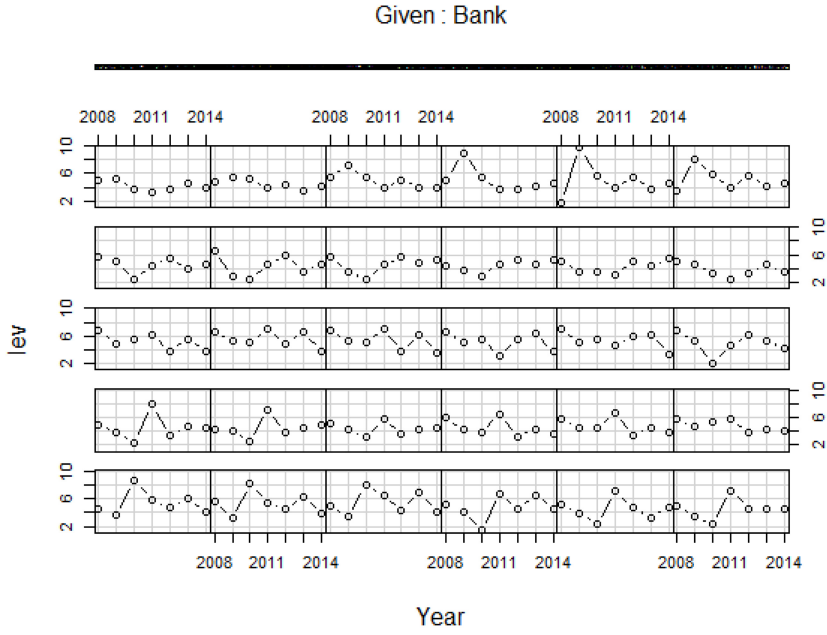


Table 8: Summary statistics on the four balance sheet indicators, Greek sovereign bond YTM and CDS spreads for 2008-2015

Variable	Mean (Std. Dev)	Min	Max
Tier 1 ratio	11.764 (3.04)	5.345568	21.50242
Leverage ratio	4.7421 (1.38)	1.411809	9.7434
Loan loss reserve/gross loans	1.604019 (1.30)	0.184677	8.70043
ROE	8.427569 (7.64)	-25.5197	21.08198
Greek sovereign bond YTM	0.526247 (1.00)	0.046252	2.744787
CDS Spread	109.2441 (59.25)	46.21108	443.6033

Table 9: Equation 1 Panel Regression – Fixed Effects

Variable	Model 1
Tier 1 capital ratio	-5.40659** (2.03421)
Leverage ratio	-4.11388 (7.34289)
Loan loss reserve/gross loans	-6.62704 (4.36665)
ROE	-0.62332 (0.60744)
Greek sovereign bond YTM	31.62156*** (2.74515)
Number of observations	170
Number of banks in sample	30
Adjusted R-squared	0.44812

Notes: The dependent variable is the average CDS spread in Q2 each year, which is being used as an indicator of default likelihood (the spreads reflect probability of default and loss given default but there is no reason to believe the latter varies across the banks in the sample). The explanatory variables are 4 balance sheet ratios two related to capital (Tier 1 capital /risk weighted assets, i.e. the Tier 1 ratio, and Tier 1 capital /total assets i.e. the leverage ratio. The remaining two explanatory variables are the loan loss reserve /gross loans and average ROE. All the balance sheet variables are those disclosed in the end-year accounts preceding the CDS spreads The Greek sovereign bond YTM is the average in the Q1 preceding the CDS spreads.
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

A fixed effects regression was used because it was indicated by the Hausmann test.

Null hypothesis: Fixed effects model is not acceptable

Alternative hypothesis: Fixed effects model is acceptable

phtest(model1fixed,model1random)

Hausman Test

data: CDS Spread ~ Tier 1 + Leverage + Loan loss reserve/gross loans + ROE + Greece sovereign bond YTM

chisq = 28.534, df = 5, p-value = 2.862e-05

Null hypothesis fails proving that the fixed effects model suits the data better than the random effect model.

Table 10: Equation 2 Panel Regression – Random Effects

Variable	Model 2
Intercept	148.5107*** (24.4093)
Tier 1 capital ratio	-6.5983*** (2.6355)
Leverage ratio	5.4065 (3.9396)
Greek sovereign bond YTM	31.9247*** (2.6355)
Number of observations	172
number of banks in sample	30
Adjusted R-squared	0.50584

Notes: The dependent variable is CDS spreads taken as the average in Q2 each year. The explanatory variables are the Tier 1 ratio, the leverage ratio (at end-year preceding the CDS spreads) and the average Greek sovereign bond YTM in Q1.
Standard errors are reported in parenthesis
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

A random effects regression was used because this was indicated by the Hausmann test.

Null hypothesis: Fixed effects model is not acceptable

Alternative hypothesis: Fixed effects model is acceptable

phtest(model2fixed, model2random)

Hausman Test

data: CDS Spread ~ Tier 1 + Leverage + Greece sovereign bond YTM

chisq = 3.1171, df = 3, p-value = 0.3739

Null hypothesis accepted proving that the random effects model suits the data better than the fixed effects model.

Table 11: Equation 3 Panel Regression – Random Effects

Variable	Model 3
Intercept	142.7038*** (15.1336)
Tier 1 capital ratio lagged 1 year	-6.7741*** (1.2791)
Leverage ratio lagged 1 year	6.0719 (4.0606)
Greek sovereign bond YTM	32.3025 *** (3.8051)
Number of observations	180
number of banks in sample	30
Adjusted R-squared	0.5167

Notes: The dependent variable is CDS spreads taken as the average in Q2 each year. The explanatory variables are the Tier 1 ratio, the leverage ratio (at end-year preceding the CDS spreads), the two capital ratios Tier 1 and Leverage have been lagged one year, and the average Greek sovereign bond YTM in Q1 is not tagged.
Standard errors are reported in parenthesis
(*) Significant at the 10% level
(**) Significant at the 5% level
(***) Significant at the 1% level

Random vs Fixed Effects Model

A random effects regression was used because this was indicated by the Hausmann test.

Null hypothesis: Fixed effects model is not acceptable
Alternative hypothesis: Fixed effects model is acceptable

Data: CDS Spread ~ Greece sovereign bond YTM + Leverage ratio (lagged) + Tier 1 ratio (lagged)
chisq = 2.6077, df = 3, p-value = 0.4561

Null hypothesis accepted proving that the random effects model fits the data better than the fixed effects model.

Random vs Simple OLS Model

Lagrange Multiplier Test – (Breusch-Pagan)

Data: CDS Spread ~ Greece sovereign bond YTM + Leverage ratio (lagged) + Tier 1 ratio (lagged)
chisq = 81.295, df = 1, p-value < 2.2e-16

Null Hypothesis: No Panel Effect(Simple OLS regression can be used)
Alternative hypothesis: significant effects

The Breusch-Pagan test proves the presence of panel effects and provides the reason for using random effects panel data regression.

Test for Homoskedasticity:

Null Hypothesis: Homoskedastic Test

Breusch-Pagan test

data: CDS Spread ~ Greece sovereign bond YTM + Leverage ratio (lagged) + Tier 1 ratio (lagged)
BP = 115.05, df = 3, p-value < 2.2e-16

The adjustments for Heteroskedastic on the standards errors of coefficients have been done and a (Quasi-)t test of estimated coefficients have been done.

Augmented Dickey-Fuller Test

Data: model3random$residuals
Dickey-Fuller = -4.858, Lag order = 5, p-value = 0.01
alternative hypothesis: stationary

From the ADF test, it can be seen that the residuals of the model are stationary.

Box-Pierce test

Null Hypothesis: The series is White Noise

Data: model3random$residuals
X-squared = 18.359, df = 1, p-value = 1.829e-05

The Box-Pierce Test on the residuals of model3 shows that the residuals are not white noise.

An MA model of order1 fits the residuals.
modelres<-arima(model3random$residuals, order=c(0,0,1))

Box.test(modelres$residuals)

Null Hypothesis: The series is White Noise

Box-Pierce test

Data: modelres$residuals
X-squared = 0.01813, df = 1, p-value = 0.8929

The residuals of this MA model makes the residual series a white noise showing no additional information can be obtained.

Proportionality

6. PROPORTIONALITY IN BANK REGULATION[1]

David T. Llewellyn[2]

6.1. INTRODUCTION

Our starting point is that one of the most serious and costly banking crises in history has led to the biggest-ever change in the regulatory regime. Post-crisis regulatory reform has been both *strategic* and *incremental* implying that regulatory reform has focused on both Objective 1 (to reduce the *probability* of bank failures) and Objective 2 (to lower the *social cost* of failures). Historically, the focus of the regulatory regime has been on reducing the probability of failures rather than minimising their costs and in many countries the second issue has only been addressed in a serious way since the current crisis. However, a feature of the post-crisis regulatory reform programme has included resolution arrangements to address the second dimension.

The regulatory pendulum has a long history as bank regulation swings between more/less intensity, coverage and complexity. There are several reasons for this not the least being the bargaining and lobbying power of regulated institution as they seek to minimise regulatory costs. Prevailing ideology also plays a part as views change about the efficiency of markets and institutions to make rational decisions. There was a clear ideology in the years running up to the crisis based on rational expectations and efficient markets paradigms that was supported not only in mainstream academia but by banks and regulators. This spawned "light touch" approaches to regulation. There is also a tendency for approaches to regulation to be based disproportionately on recent events and trends with risk-averse regulators under pressure to respond substantially to a recent problem but gradually to ease off as judgements are made that perhaps the initial reaction was excessive.

Several structural features of the pre-crisis environment proved to be unsustainable and themselves contributory causes of the crisis. A basic perversity in the regime was that bank profits were privatised while risks were socialised with the tax-payer effectively acting as an "insurer-of-last-resort" on the basis of an inefficient contract as no *ex ante* premia were paid. Overall, as there was a reluctance to require creditors to absorb a proportionate share of the costs of bank distress

[1] This paper draws heavily on a recently published report (*Proportionality of Bank Regulation*) issued by the Banking Stakeholder Group (BSG) of the European Banking Authority (EBA). The current author is Chair of BSG and co-author of its report.

[2] Professor of Money and Banking, Loughborough University; Council Member, SUERF; Chair, Banking Stakeholder Group, European Banking Authority.

and failures, burden-sharing was disproportionate with an excessive share borne by tax-payers. In the absence of pre-determined resolution arrangements, the perception of banks being "To Big Too Fail" (TBTF) weakened the incentives for private monitoring of banks.

Banking crises inevitably bring forth more and different regulation of banks, and the recent global crisis is no exception. There are many reasons why a comprehensive review of regulatory, supervisory, and intervention arrangements have been, and are being, made in the wake of one of the most serious banking crises ever. Firstly, given the enormity of the crisis, there were evident fault lines in regulatory and supervisory arrangements: the rules enshrined in thousands of pages behind the Basel Capital Accords did not prevent the crisis. Secondly, the crisis imposed substantial costs and risks on tax-payers in several countries. Thirdly, it became evident that reform strategy needed to be framed in terms of a risk matrix which considered measures both to lower the probability of bank failures and the cost of those failures that do occur. Fourthly, there is the important issue about whether the focus should be on individual banks or the system in aggregate because, *pace* the *fallacy of composition*, it does not follow that regulating individual nodes in a network is necessarily the optimal approach to ensuring the stability of the network as a whole.

As a result, in the years after the crisis there has been one of the biggest-ever reforms in the international regulatory regime (most especially with respect to the EU) and also in the basic regulatory architecture. The regulatory regime has changed substantially since the crisis: it has become both more extensive and intensive. Major changes have been introduced to capital and liquidity requirements. In addition, the concept of the regulatory regime has been extended to include measures to lower the probability of bank failures and other structural measures to minimise the social costs of those bank failures that do occur (e.g. the resolution regime). More intensive and detailed supervision and reporting requirements have been imposed. The introduction of Living Wills (Recovery and Resolution Plans), and various structural measures such as Ring Fencing requirements, have taken regulation in new directions. Banks have also become subject to rigorous stress testing and more intense supervisory scrutiny of internal models' outcomes.

The Banking Stakeholder Group (BSG) judges that it is now time for regulatory authorities to take stock of how regulation has evolved since the onset of the crisis in 2007[3]. It is especially recommended that a high-level task force be established by the European Commission to further elaborate on the issues within the concept of proportionality and propose specific actions and recommendations for

[3] BSG (2015).

implementation in the financial industry. In addition, there should be regular independent reviews (requested periodically by the Commission) of the issue of "excess complexity", and of the application of the Principle of Proportionality and its balance with other objectives of financial regulation, in particular fair competition and a level playing field.

It is a formal mandate of the European Commission and other regulatory authorities that regulatory requirements should be "proportionate". The Treaty definition of the Principle of Proportionality is that the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties[4]. According to settled case-law, the Principle of Proportionality requires that Community measures:

1. do not exceed the limits of what is appropriate and necessary in order to attain the objectives legitimately pursued by the legislation in question;
2. when there is a choice between several appropriate measures, recourse must be had to the least onerous; and;
3. the disadvantages caused must not be disproportionate to the aims pursued[5].

The BSG's report is intended to be a constructive contribution to this important issue. The report presents several case studies to illustrate where it is judged that the Principle of Proportionality has not been followed to the full extent possible.

The BSG emphasises at the outset that it is in no way antagonistic to regulation, and that it is fully committed to regulation's core objectives of: enhancing the safety and soundness of banks; systemic stability; and consumer protection and welfare enhancement. It also fully recognises that, given past regulatory failures and the costs imposed by the crisis, there has been a need for a major reform and intensification of the regulatory regime both in terms of lowering the probability of bank failures and minimising the social costs of those failures that might occur in the future (the new resolution regime).

However, in the interests of effective and efficient bank regulation, the Principle of Proportionality needs to be recognised and applied at every step of the legislative and regulatory process so that existing and new legislation and regulations are applied to banks and financial institutions in a proportionate way. The overall administrative resources and cost of new regulation – such as supervisory costs and new IT systems – have a substantial impact on all banking institutions, and

4 Treaty of the European Union, Article 5(4).

5 This 3-pronged formulation derives from Case C-331/88 R v Minister of Agriculture, Fisheries and Food, ex parte Fedesa [1990] ECR I-4023. Recent authorities include Case C-343/09 Afton Chemical [2010] ECR I-7027, paragraph 45; Joined Cases C-581/10 and C-629/10 Nelson and Others [2012] ECR I-0000, paragraph 71; Case C-283/11 Sky Österreich GmbH, paragraph 50; Joined Cases C-293/12 and C-594/12 Digital Rights Ireland Ltd and Others, paragraph 46.

an even more severe impact depending on criteria such as the size and complexity of institutions and their business models. As a result, disproportionate regulation could inhibit small banks from providing finance to the real economy to support innovation and growth.

The intention of the report is to make a constructive contribution to this issue for the benefit of all stakeholders. In particular, the objectives are to:

- clarify the dimensions and nature of proportionality: what the report terms *The Five Pillars of Proportionality*. The Five Pillars paradigm suggests that the concept of proportionality is wider, and encompasses a wider set of issues, than is often assumed;
- construct an analytical framework for considering the five pillars;
- indicate a *prima facie* case that the Principle of Proportionality has not always been applied to the full extent possible;
- outline the costs of non-proportionality;
- identify six case studies illustrating where the Principle of Proportionality may not have been applied to the full extent possible, and;
- offer a set of high-level and more detailed recommendations.

6.2. THE IMPORTANCE OF PROPORTIONALITY

There are many reasons why proportionality in regulation is an important requirement:

- Regulation imposes costs: resource costs of the regulatory agencies, compliance costs imposed on regulated firms (IT, employees in the compliance area and their training, use of regulatory consultants, etc.), customer costs to the extent that the costs of regulation are passed on to customers, and also broader economic costs.

- Regulation might induce changes in bank business models which are not necessary for the achievement of the regulatory objectives. Of course, some regulation may be designed specifically to change the way banks do business. But there may also be unintended impacts in this area. A member of the Financial Stability Board's enhanced disclosure task force has argued that new regulation imposed on European banks make "huge swathes of traditional bank lending unprofitable…..the profitability of European mortgages will now fall by about two-thirds while the profitability of lending to the strongest corporate customers will fall by three quarters… European banks will have to shrink dramatically…"[6].

[6] SAMUELS (2015).

- An impression can be created that disproportionate regulation means regulators are effectively taking over the management of banks by limiting bank managers' discretion and *de facto* limiting the controlling role of the Board of Directors. While being potentially detrimental to competition, such an overlap between supervisors and supervised entities may limit the independence of the former which is needed to carry out an effective assessment of the banks' vulnerabilities.
- Disproportionate regulation may induce arbitrage within the banking system if, for any reason, regulation impacts disproportionately on some types of bank. It is also likely to induce a process of disintermediation towards less-regulated institutions and the capital market. Whilst this is not necessarily to be condemned, the potential for such disintermediation to occur because of disproportionate regulation needs to be monitored.
- Disproportionate regulation may compromise competition in the banking system. An important study by the European Commission (EC) has argued as follows: "there is a risk that the rule will increase barriers to entry for market entrants. Regulation tends to impose a disproportionate burden on small players in the market and new entrants, which can make it harder for them to compete with more established players"[7].
- Furthermore, regulation tends to be particularly costly for small institutions, partly because of the fixed costs that compliance systems involve. This may compromise the competitive position of such institutions and, to the extent that this induces more mergers in the banking industry, competition can be reduced. As put by Goodhart *et al.*: "To the extent that regulation enhances competition and, through this, efficiency in the industry, it creates a set of markets that work more efficiently and through which consumers gain".[8] However, the converse of this might also apply as a result of disproportionate regulation.

Disproportionate regulation may also generate wider costs on the economy whenever some of the basic functions of the financial system (financial intermediation, optimal risk shifting, etc.) are compromised or made unnecessarily costly. The potential dangers of inhibiting financial innovation, and making lenders unnecessarily more risk averse, may also be mentioned in this regard.

In the final analysis, proportionality is about balancing the costs and benefits of regulation: if regulation is disproportionate in relation to its objectives, the cost-benefit calculation is likely to be worsened.

7 EC (2014a).
8 GOODHART et al. (1999).

6.3. POTENTIAL FOR DISPROPORTIONALITY

Several economic, political and psychological pressures can produce disproportionate regulation. Such pressures that need to be guarded against include:

- Regulation is sometimes mistakenly perceived by stakeholders (and notably consumers) as a free good. This may happen because, whilst regulation has a cost, it does not have an observable price attached to it. This will tend to raise the demand for regulation which, combined with risk-averse regulators who may be induced to over-supply it, leads to disproportionate regulation.
- A further factor in regulatory escalation relates to the symbiotic relationship between bank behaviour and regulation, where regulation may cause different bank behaviour which in turn induces new regulation.
- Another possible source of disproportionate-regulation may lay in the inability to recognise the trade-off between, on the one hand, regulation that is designed to lower the probability of bank failure and, on the other hand, regulatory measures (including the bank resolution regime) that are designed to lower the costs of bank failures. If the costs of failure are lowered (for instance through effective bank resolution arrangements), regulation to lower the probability of bank failures could be less intensive. Policy makers may prove slow in understanding this new equilibrium.
- After a costly crisis, there can be strong public and political pressure for more regulation. In this regard, the swing in political sentiment between the periods before and after the recent crisis is marked. Thus, while the 1980s and 1990s were decades of liberalisation of banking markets and operations, they have been replaced by a period of intensive regulation in the post-crisis era. In this "pendulum effect", the pendulum tends to swing alternately too far in both directions.
- The potential for excess harmonisation in the EU (supposedly in the interest of establishing or consolidating a common market in financial services) may also produce an environment leading to disproportionate regulation.
- Finally, some areas of duplication may exist between different regulatory authorities: (e.g., between the European Supervisory Authorities (ESAs) and the national authorities).

The argument being made is that these pressures may push towards disproportionate regulation and, for this reason, need to be guarded against.

6.4. FIVE PILLARS OF PROPORTIONALITY

The Principle of Proportionality has several dimensions each of which raises different issues with respect to costs and benefits for all stakeholders (including banks and consumers of banking services). Five pillars are identified:

1. **Objectives**: whether a particular regulation that is designed to apply to all regulated institutions is disproportionate in relation to the objective sought. Although the total cost of regulation may be regarded by society and customers as an insurance premium for avoiding the negative impacts of bank failures, the issue arises as to whether this implicit insurance premium has become excessive. It follows that any particular regulation (or regulation in aggregate) that is not proportional imposes excessive costs on firms, consumers and other users of banking services, thereby implying an excessive insurance premium.

2. **The totality of regulation**: whether the totality of regulation (as opposed to each regulation taken alone) is disproportionate for the key regulatory objectives, given the possibility of diminishing marginal returns that may emerge if regulation is taken beyond its optimal level in terms of scope and intensity. This also includes whether CBA is applied to the totality of regulation, takes into account all relevant costs and benefits, and considers the costs and benefits of alternative measures.

3. **Excess Complexity**: whether regulation is excessively and unnecessarily complex for the objectives that are sought and whether the same regulatory objectives could be achieved, and with the same degree of effectiveness, with less complex regulatory requirements.

4. **Differentiations:** whether, in the application of a regulation, sufficient differentiations are made between different types of banks without compromising the regulatory objectives.

5. **Materiality**: whether a particular regulation either applies to institutions to which it should not be applied (the *materiality* principle) and/or to institutions which are subject to a costly new regulation when they are only marginally exposed to the risks that such regulation aims to control.

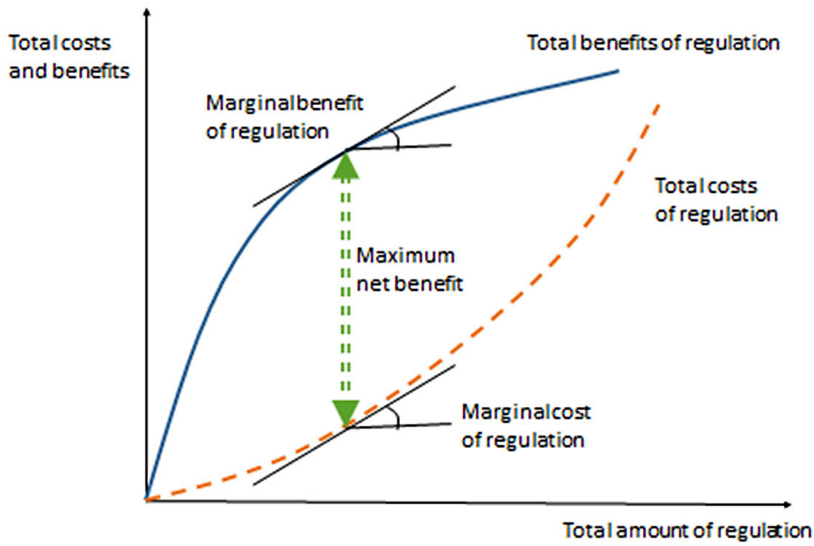
Although there is necessarily some degree of overlap among these five dimensions, some of them are briefly considered in the following sections.

6.4.1. The totality of regulation and diminishing marginal returns

The Principle of Proportionality usually relates to individual regulations. But, whilst difficult in practice, it needs to be related also to the totality of regulation. A situation can arise in any regulatory regime where each individual regulation might be justified on cost-benefit criteria and yet, due to a process of regulatory escalation, the totality of regulation might be disproportionate in terms of costs exceeding benefits. In other words, what applies to each individual regulation does not necessarily apply to the regulatory regime as a whole: the net cost/benefit may be more/less than the sum of the parts. With respect to EU regulation more generally, the European Commission recognises that "the entire stock of EU legislation" needs to be kept under review (COM(2014) 368 final, on "Regulatory Fitness and Performance Programme (REFIT): State of Play and Outlook")[9].

This may arise because of diminishing marginal returns as regulation is extended. As represented in Figure 1, the total cost of regulation rises as regulation is extended, while benefits increase at first, then peak and may begin to decline after some point is reached. The logic of this representation is that, at some optimal point, the marginal cost and marginal benefit of regulation are the same, but after that point the marginal cost exceeds the benefit. The key issue is that the costs and benefits of adding an additional regulation to the existing quantum of regulation should be measured at the margin.

Figure 3: Diminishing Returns?



[9] EC (2014b).

6.4.2. Excess complexity

Over time, finance has become increasingly complex and global in nature, with banks conducting an ever-wider range of business involving sophisticated and complex products and business models. This has been followed by ever-more complex and extensive regulation of banks which, it might be argued, is inevitable if regulation is to reflect the complexity of regulated firms. Whilst recognising this, the issue arises as to whether some regulatory requirements may still be excessively complex: we therefore refer to "excess complexity" rather than complexity *per se*.

In the case of the EU, the aim of creating a single market (and competitive neutrality between different institutions and jurisdictions) is an important consideration that introduces an additional dimension in the regulatory design that could add more complexity to many aspects of bank regulation. But this in turn raises the question of whether avoidable costs are being imposed by a degree of harmonisation that is more than is needed for the creation of a single market in financial services. Just as regulation might in some areas be disproportionate, so also might be the target degree of harmonisation.

There are several reasons for concern about the potential for excess complexity, some of which have been raised by some regulators and academic analysis. The consensus appears to be that complexity of regulation and its application results in excessive costs of compliance[10]:

- The arguments pertaining to the proportionality of regulation typically, but not exclusively, relate to the disproportionate costs of compliance to smaller organisations *vis-a-vis* their larger counterparts. The size of an organisation is a critical element in determining the cost burden.
- This may in turn have the effect of raising entry barriers in the industry and in the process compromise the competition objective.
- It can make compliance more superficial, turning it into a box-ticking exercise.
- Haldane and Madouras argue that complex rules often have high costs of information collection and processing[11]. Again, this is likely to be a particular burden for smaller institutions.
- Complex rules have the potential for regulatory arbitrage and greater gaming of regulation by regulated institutions making it more difficult to identify when rules are being gamed. As suggested by Aikman, *et al.*, "such

[10] EC (2014a), p. 269 (3).
[11] HALDANE and MADOURAS (2012).

arbitrage may be particularly difficult to identify if the rules are highly complex". By contrast, "simpler approaches may facilitate the identification of gaming and thus make it easier to tackle"[12].

- Complexity can add opacity to banking business, making it harder for outsiders to appraise risks: this is the case with, for instance, the internal models that many large European banks are allowed to use for market and credit risk (under the internal ratings-based (IRB) approach), where apparent inconsistencies across banks have emerged[13].

A more general feature suggested by Haldane and Madouras is that "the more complex the environment, the greater the perils of complex control"[14]. They argue further that "because complexity generates uncertainty, not risk, it requires a regulatory response grounded in simplicity, not complexity".

In some circumstances, and especially in situations of uncertainty (where knowledge and understanding is limited), simplicity may be superior which implies that, at least in some areas, there are elements of excess complexity in regulation. In such cases, the Principle of Proportionality should lead to adopting the simplest possible regulation. For instance, when ranking of riskiness cannot be made with confidence, assets should be aggregated.

Financial products and financial activity have become more complex, and regulation will necessarily have to reflect this fact. However, in many cases regulation has become more complex and detailed than the regulated business and products require. It is in this sense that the focus is on *excess* complexity. What level of detail is required to meet the purpose of the regulation seems to have lost the law-makers and regulators' attention in their efforts to avoid the repetition of the last financial crisis. Excess complexity adds to the cumulative cost of regulation.

6.4.3. Differentiation

A major dimension to proportionality relates to differentiation: the extent to which regulation applied to particular classes of banks should reflect their particular circumstances. This is clearly recognised in recital 46 of the CRR. The BSG report highlights in particular the issue of reporting to regulatory agencies and the burden that this imposes on smaller banks.

12 AIKMAN, *et.al.* (2014).

13 By increasing opaqueness, excess complexity may also weaken the value of market discipline. For instance, Barclays Capital (2012) reports that more than half of all investors do not understand, and do not trust, banks' risk weights.

14 HALDANE and MADOURAS (2012). A related point is also made by GIGERENZER (2010).

Such differentiations might relate to, for instance, size, business models, ownership structures, risk profiles and systemic significance, etc. Imposing similar requirements (the one-size-fits-all syndrome) on small and large banks in certain aspects of financial regulation may result in undesired effects, as the former would face proportionately higher costs while their systemic significance is low.

6.4.4. Materiality

In various papers issued by regulatory agencies (including the EBA and the European Commission) reference is sometimes made to the concept of *materiality* though, to the best of the author's knowledge, this concept has not been given a formal definition. For our purposes materiality is defined as the requirement that particular regulation should only be directed and applied to those institutions which are relevant to the issue being addressed by the proposed regulation. Thus, for example, a regulation that is intended to be addressed to systemically-significant banking institutions should not inadvertently also be applied to other institutions which are not deemed to be systemically significant. The BSG study indicates that this has not always been the case.

The concept of materiality can be seen as a special case of differentiation, where some rules are waived (rather than applied in a simplified or less prescriptive way) whenever an institution is only marginally exposed to the risks that those rules are designed to control.

6.5. RECOMMENDATIONS

On the basis of the analysis of the broad concept of proportionality, and the six case studies contained in the BSG report, a series of general recommendations are made in addition to those specifically related to the case studies:

- The principle of materiality and the definition of the Principle of Proportionality should be published in a harmonised, horizontal ESAs guideline and thus be consistently applied. This has become even more important due to the banking union and the work on single rulebooks and supervisory handbooks.
- Banks and financial institutions, to which the Principle of Proportionality should apply, should be defined with a flexible scope. As argued above, several criteria could be used, such as bank size, business models, degree of interconnectedness, availability of substitutes for services, the extent of global (cross-border) activity, complexity, liquidity risks, maturity mismatches, and group structure/ownership structures.

- A high-level Task Force should be established by the European Commission to comprehensively evaluate how the Principle of Proportionality is to be interpreted and applied in the regulation of the financial industry. Sufficient resources (manpower and financial) need to be allocated to secure a quick response to its mandate.
- Regulatory agencies could usefully establish within their organisations semi-autonomous Proportionality Review Groups accountable directly to the Chair and Chief Executive of the agency. In addition to making regular reports to the Chair and Chief Executive, these internal groups should also be consulted at an early stage, and become an integral part of the process when new regulations are being proposed.
- There should be regular independent reviews of the issue of excess complexity, and of the application of the Principle of Proportionality and its balance with other objectives of financial regulation, in particular fair competition and a level playing field. Such reviews should be requested periodically by the European Commission from third parties, such as major consultancies or academics, and their results should be made public and considered by the Commission and the ESAs in their future work plans.
- Cost benefit analysis should be applied not only to individual regulatory requirements but also to the totality of regulation.
- There should be a systematic review of supervisory reporting requirements with a view in particular to removing unnecessary duplication and introducing more differentiation as between different types of institution.
- A particular dimension to be considered is the extent to which a proposed regulation might not be competitively neutral. In particular, consideration should be given to making adequate differentiations between different types of institutions, and especially whether some regulations impose a disproportionate cost on different types of institution (in particular small firms) without generating any significant benefit in terms of regulatory objectives.

The need for rigorous cost benefit analyses to be made for all regulation underlies many of the recommendations made in the BSG report. It has to be recognised, however, that the precise quantification of costs and benefits is extremely difficult. The main purpose of cost benefit analyses in these cases is not so much to generate precise figures but to act as a discipline on regulators.

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Structural Reform

7. Six Structures in Search of Stability[1]

Thomas F. Huertas[2]

In the debate on financial reform there is an abiding faith that adjusting structure can strengthen safety and therefore promote stability. Is that faith justified?

We analyse six proposals: Liikanen, Volcker, the US rule requiring foreign banking organisations (FBOs) to establish an intermediate holding company (IHC), depositor preference, bail-in plus total loss-absorbing capital (TLAC) and Vickers. Each endeavours to restructure banks along one or more of the following lines: activity, geography and/or creditor hierarchy.

Table 3: Overview of structuring proposals

Proposal	Structuring Principle		
	Activity	Geography	Creditor Hierarchy
Liikanen	✓		✓
Volcker	✓		
US FBO/IHC		✓	
Depositor preference			✓
Bail-in/TLAC			✓
Vickers	✓	✓	✓

Do any of these measures make sense? Will they in fact enhance safety and/or promote stability?

7.1. Is assigning activities the avenue to safety and stability?

Perhaps the most persistent proposition in financial regulation is the hypothesis that segregating commercial and investment banking enhances safety and promotes stability. This lay behind the passage of the Glass-Steagall Act in the

[1] Paper presented at the LSE Financial Markets Group, July 2015. Any opinions expressed here are those of the author and not necessarily those of the FMG. The research findings reported in this paper are the result of the independent research of the author and do not necessarily reflect the views of the LSE.

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United States in 1933 in the aftermath of the Great Depression[3], and it lies behind today's measures and proposals to restrict the ability of banks to engage in trading activities.

Today's measures include:

- proposals in the EU ("Liikanen") to require banking groups to segregate their trading activities into separately capitalised subsidiaries[4];
- measures in the UK ("Vickers") to require banking groups to conduct retail banking (specifically taking deposits from individuals and small to medium sized enterprises) in a separately capitalised, "ring-fenced" bank[5];
- measures in the United States to prohibit insured commercial banks from engaging directly in trading activities and to limit the ability of such banks to affiliate with entities engaged in trading activities. Under the so-called Volcker rule, groups containing a US-insured commercial bank may not engage in proprietary trading[6]. Under the so-called swaps push out rule, banks are required to conduct derivatives trading activity in a non-bank vehicle and to clear standard derivatives through central counterparties[7].

Ultimately, these measures depend to a great extent on the assumption or belief that investment banking – specifically trading activity – is inherently riskier than commercial banking[8].

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3 On the rationale for the Glass-Steagall Act, see Benston (1990). It should be noted that the Glass Steagall Act (48 Stat. 162 §§ 16, 20, 21, and 32) did not mandate a complete separation between commercial and investment banking. Under the Act commercial banks were permitted and did extensively engage in the origination, underwriting, trading and/or distribution of US government and agency securities, general obligation municipal bonds, derivatives, foreign exchange and loans. Commercial banks could also affiliate themselves with investment banks outside the United States without limitation and inside the United States with entities that were "not principally engaged" in the underwriting of bank-ineligible securities. In practice this meant that commercial banks could engage – subject to certain restrictions – directly or indirectly in practically all aspects of investment banking. See CARPENTER and MURPHY (2010).

4 The original EU proposal (European Commission, 2014) was based on the Liikanen report (2012) and is under review by the European Parliament (Hökmark 2014). National versions of Liikanen have already been introduced in Germany (Gesetz zur Abschirmung von Risiken und zur Planung der Sanierung und Abwicklung von Kreditinstituten und Finanzgruppen [Trennbankgesetz] and France (LOI n° 2013-672 du 26 juillet 2013 de séparation et de régulation des activités bancaires).

5 The Independent Banking Commission (IBC) (2011). For a response by the government, see Her Majesty's Treasury (HMT) (2012). The government based much of the Financial Services (Banking Reform) Act 2013 on the IBC. For the consultation paper explaining the legislation, see HMT/BIS (2013). For the consultation paper outlining how banks should implement the ring fence, see PRA (2014)

6 For the final text of the Volcker rule see Joint US Agencies (2014). See also FSOC (2011)

7 Section 716 ("Prohibition Against Federal Government Bailouts of Swaps Entities") of the Dodd-Frank Act (2010). At the end of 2014 the swaps push out rule was substantially repealed.

8 As an example of the assumption that trading activities are inherently riskier, see the following statement (especially points [i] and [ii]) of the Financial Stability Board (FSB) (2014a), p.3:
"[P]roposals for structural reform have the objective of improving financial stability by:
(i) reducing the risk of cross-contamination between investment and commercial banking, achieved by separating the capital allocated to the two activities and dis-allowing blended funding;
(ii) acting on the 'risk culture' of firms either by reducing the extent to which the incentives and risk-appetite of transactions-based trading activities are spread to relationship-based commercial banking activities, or by reducing the risks to banking groups stemming from trading activities themselves; and
(iii) increasing the loss-absorbency capacity in the banking system and improving the resolvability of firms".

A simple thought experiment demonstrates that this need not always be so. Take the case where:

- The investment bank's assets are on-the-run, liquid short-term government securities issued by a country such as the US or UK with its own fiat currency. Such securities have a negligible risk of default and extremely limited market risk. The bank actively trades such assets and its portfolio may contain a proprietary position in such assets.
- The commercial bank's assets are long-term, fixed-rate commercial real estate loans to project specific entities (e.g. "Office XYZ, Limited"), each of which is secured by a mortgage over the building. Although each of the buildings is currently leased to tenants, the leases are due to expire well before the maturity of the loan. In addition, some tenants are in arrears on their rent, and others may soon go into arrears as their income and credit-standing come under pressure.
- Although the loan portfolio is well diversified with respect to specific projects (no single office obligor comes close to the bank's legal lending limit), the portfolio is exclusively in the bank's domestic market, concentrated in a limited number of metropolitan areas and dependent on tenants involved in a limited number of industries. Should "Office XYZ, Limited" default on its obligations under the loan, the bank must engage in a lengthy and costly foreclosure procedure before it can assume ownership and control of the building. Upon assuming such ownership and control, the bank might become liable (under the doctrine of lender liability) for claims on "Office XYZ, Limited"[9].
- The long-term mortgage loans are not tradable, and may not be assigned or transferred without permission of the borrower. Loans are valued on the bank's balance sheet in line with the accounting principles generally accepted in the bank's home jurisdiction.
- On the liability side of the balance sheet, the investment bank and the commercial bank have an identical structure. A leverage ratio determines capital: CET1 capital is 4% of the bank's assets. In addition, the bank has issued subordinated debt (T2 capital) equal to 4% of the bank's assets. The remaining funding (equivalent to 92% of the bank's assets) constitutes short-term deposits, payable on demand.

In this example, it is the commercial bank that carries the higher risk and it is the commercial bank that would be more difficult to resolve, if the bank were to fail.

[9] On lender liability see AHRENS and LANGER (2008).

The commercial bank carries more credit risk, entails more liquidity risk and poses more significant valuation issues. The investment bank is this case has minimal credit risk, minimal market risk and limited liquidity risk. Valuation is straightforward; indeed, such a bank could be continuously marked to market. In sum, this counterexample illustrates that a bank which engages in trading is not always and everywhere riskier than a bank which does not[10].

Suppose the investment bank held assets similar to those of the commercial bank. How would the form of the asset influence the substance of the risk? Take the case where investment-grade corporates borrow on an unsecured basis by issuing loans and bonds. The loans and the bonds rank *pari passu* with one another and have identical covenants and maturities.

Under separation legislation and regulation the commercial bank would hold the loans, whilst the investment bank held the bonds (pending onward sale of the bonds to end investors). Does this imply that the commercial bank is safer than the investment bank?

No. Take the case where the assets and liabilities of two different banks are identical in every aspect save one: the investment bank holds its claims on the corporate borrower in the form of a tradable bond; the commercial bank holds its claims on the corporate borrower in the form of a non-tradable loan. The only difference between the loan and the bond is the fact that the bond is tradable, whilst the loan is not.

Otherwise, the two banks are identical. Capital and funding are the same. The obligors are the same. For each obligor the loan and the bond have the same probability of default. If the obligor does default, the bond has the same priority as the loan, and should therefore have the same loss given default. Hence, the credit risk of the two banks is identical.

The principal difference between the two banks is liquidity risk. If the bonds are tradable, whilst the loans are not, the investment bank's bond portfolio is inherently more liquid than the loans held by the commercial bank. The bonds can either be sold to third parties or pledged as collateral to lenders; the loans cannot (as they are neither tradable nor transferrable without the consent of the borrower). All else equal, this would imply that the investment bank had lower liquidity risk than the commercial bank.

A second difference relates to how assets are valued and income is recognised. In concept, the tradable bonds are marked to market, and changes to the bond's value flow through the income statement of the bank. This in turn has an

[10] Indeed, the investment bank outlined in this example corresponds – except for the fact that it trades the securities rather than merely holds them – to the "narrow bank" advocated by many as the foundation for banking reform.

immediate impact on capital – positive if the price of the bond has increased; negative, if the price of the bond has fallen. Note that these effects on income and capital occur, regardless of whether or not the bank has actually sold the bonds. What counts is the estimate of the bond's fair market value. The greater the market liquidity of the bond, the more accurate will be this estimate.

In contrast, loans are valued at historic cost less any impairment the bank may be required to take under the applicable accounting standards. Under this method, the value of a loan is generally capped at par, or 100% of the principal amount that the bank expects to receive upon the maturity of the loan. Valuation therefore depends critically on how impairments are determined. This depends on current estimates of the borrower's future cash flows as well as current estimates of what future recoveries might be, if the borrower were to default. Note that to make such estimates the bank may employ models. In any event, the valuation of a non-tradable loan portfolio is likely to be more complex and less certain than the valuation of a frequently traded, highly liquid portfolio of corporate bonds.

Both the investment bank and the commercial bank are subject to the risk that the assets are overvalued. Such an overvaluation would exaggerate the level of capital, giving the appearance that the bank had lower leverage and therefore lower risk than is actually the case. If the investment bank has marked up the bonds in its portfolio, there is the danger that it will not be able to realise the unrealised gains, if it decides to sell the bonds. If the commercial bank has delayed taking impairments on its loan portfolio, there is the danger that it will have to do so all at once. If either of these dangers actually occurs, the stated capital would suddenly collapse toward the "true" value, possibly causing a run on the respective bank.

Separation of investment and commercial banking does not cure the risk of overvaluation. That requires changes to the way banks value their assets and liabilities and/or adjustments to the ability to count the full accounting value of the asset toward regulatory capital. Such changes are under consideration or already in implementation. With respect to loan impairments, a shift to an expected loss model under IFRS 9 should lead banks to reserve in a timelier manner against possible future loan losses[11]. With respect to valuation of the trading book, Basel III incorporates measures to require banks to effectively take a reserve against fair market value to offset uncertainty regarding the data and models underlying the estimate of fair market value as well as to account for possible future costs[12]. In addition, the fundamental review of the trading book

[11] IASB (2014) summarises IFRS 9. For a summary of how the shift to the expected loss method will affect capital requirements see BCBS (2015).

[12] d-fine (2014).

will in all likelihood scale capital requirements for trading book positions to market liquidity[13].

The third and final objection to separating investment and commercial banking is a practical one: it may not work. The difference between securities and loans is eroding. Bonds are becoming less and less liquid, and loans are becoming more and more tradable.

Over the past few years it has become more and more difficult to sell bonds in the secondary market in sizable amounts without moving the price. In other words, market liquidity has declined. This predominantly results from a decline in the number of market makers and a decline in the inventories held by banks that still make markets (both in turn caused to some extent by the significant increase in capital requirements for instruments held in the trading book). For all but on-the-run benchmark obligations, the primary market may become the only bond market, creating the prospect that the investor can buy only at issuance and may not be able to sell before maturity.

In contrast, over the past few years it has become progressively easier to buy and sell loans in the secondary market. Loan documentation has become increasingly standardised, and borrowers have largely dropped the requirement that lenders seek their approval before assigning or transferring loans. The infrastructure for loan trading has also developed: loan agents act on behalf of the holders of loan participations to disburse funds to the borrower; collect interest and amortisation payments from the borrower and disburse them to investors; and monitor the borrower's adherence to any covenants that the loan agreement may contain. And, for the largest loans, banks form syndicates to underwrite and distribute loans. Taken together, the loan market is evolving toward bond market practices[14].

As bonds and loans become more similar, does this not undermine the rationale for banning proprietary trading? If banks are to be prohibited from taking a proprietary position in tradable instruments, and loans become tradable, should banks be banned from holding loans that are tradable? If so, banks would be pushed into an ever more narrow space and play a decreasing role in financing the real economy. In contrast, if banks can continue to hold loans that are tradable, but face restrictions on holding bond positions, issuance, trading and ultimately market liquidity may well shift to the loan market. And, if that were to occur, what will the separation of investment and commercial banking achieve?

It will certainly not lead to greater simplicity. Corporate structures will become more complex, not less, above all relative to a universal bank, which can and

[13] BCBS (2014).
[14] MARSH and BASTA (2015). The advent of peer to peer lending platforms will accelerate this trend.

predominantly does operate as a single legal vehicle[15].

Nor will separation alone assure resolvability. It may enhance the ability of the authorities to resolve the entity that it is most concerned about (usually the domestic bank taking insured retail deposits), but it does not assure the resolvability of the group as a whole. In addition, separation leaves open the question of how investment banks can be resolved. Leaving these to normal bankruptcy proceedings (as was done in the case of Lehmans) could create financial instability. What assures resolvability is bail-in in accordance with the creditor hierarchy and the insistence that banks issue instruments to third-party investors (or to their parent holding companies) that provide the bank with a minimum amount of total loss-absorbing capacity (see below)[16].

Finally, separation alone will not necessarily improve culture. It is undeniably true that the current culture of investment banking differs from people's ideal of what commercial banking should be (and allegedly was in the past). But commercial banking does not currently conform to that ideal (if it ever did). Indeed, fines and settlements for transgressions in cash management/payments, mortgages and payment protection insurance all point toward culture being a generic problem rather than one restricted to trading activities[17], and toward revisions in governance as being the solution rather than separation of trading from non-trading activities. Indeed, such revisions are already underway: programmes such as the senior manager regime in the UK will serve to increase the individual manager's accountability, if the bank were to breach the rules[18].

7.2. DOES BALKANISATION BOLSTER THE BANK?

Most banking regulation has a distinct home-country bias[19]. This has increased in the wake of the crisis. Balkanisation is the likely result[20].

[15] Regulation will become more complex and compliance more difficult. Take for example, the requirements for mandatory clearing in the US and the EU. These are not exactly consistent with calls by regulators for greater simplicity, particularly when one takes into account the fact that the rules and requirements in the two jurisdictions are in conflict.

[16] According to Taylor (2015) separation was intended to prevent the implicit subsidy from taxpayers associated with deposit insurance and the access to the payment system from being applied to investment banking. However, the introduction of depositor preference, together with the GLAC requirement, effectively eliminates the implicit subsidy (see below). Separation is superfluous.

[17] The CCP Research Foundation (2015) documents the amount and cause of penalties attributable to misconduct by banks.

[18] For a description of the Senior Managers Regime see PRA/FCA (2014).

[19] Indeed, the laws allowing banks to establish foreign branches or foreign subsidiaries specifically refer to the ability of such branches or subsidiaries to promote the foreign trade and foreign investment of the home country. There are also greater restrictions on the flow of capital and/or liquidity from the home country to foreign subsidiaries or affiliates. For example, in the United States, bank holding companies are required to act as a source of strength to their domestic insured depository institutions, but not to foreign bank subsidiaries (indeed, injections of new capital into foreign subsidiaries requires prior approval by the Federal Reserve Board). See LEE (2012).

[20] GOODHART (2013), pp. 254-55.

Home country authorities have made proposals and in some cases taken measures to limit the involvement of domestic banks in foreign activities. For example, under Vickers the ring-fenced bank may not have foreign branches[21], or create foreign subsidiaries[22]. More generally, supervisors may restrict domestic banks from acquiring assets or issuing liabilities in foreign currency and/or booking assets originated outside the home country.

Host country authorities have made proposals and in some cases taken measures to force foreign banking organisations to operate as if they were a domestic bank. For example, under the US FBO rule, the US authorities have forced foreign banking organisations with large operations in the United States to form intermediate bank holding companies that will be subject to the same enhanced prudential standards as systemically important US bank holding companies[23]. With respect to branches, host country authorities have introduced in some cases a net asset requirement, and/or restricted the access of the foreign branch to the domestic central bank's lending facilities.

What is the rationale for such a home-country bias? It cannot be simplicity: relative to a bank with branches in host countries, a banking group with separate subsidiaries in each of the host countries is certainly more complex. If simplicity is the objective, Balkanisation is not the right way to achieve it, at least as far as the group as a whole is concerned.

Nor can reduced risk be the rationale for Balkanization. Foreign assets are not inherently riskier than domestic assets. A domestic non-recourse, high LTV mortgage to a borrower with little or no income is not inherently safer than short-term trade finance to foreign manufacturers. And, a domestic bank with solely domestic assets almost surely has more concentration risk than a bank with foreign branches. The former is likely to be exposed to a single economy or even a single line of business or market within that economy whilst the latter may be diversified across a number of different economies or lines of business.

If reduced risk is not the rationale for a home country bias, what is? Can resolution be responsible, at least to some extent?

Almost certainly. Indeed, in introducing the IHC requirement for US subsidiaries of foreign banking organisations (FBOs) the Federal Reserve Board (2014) expressed doubt regarding the ability of an FBO "to provide support to all parts of its organization."[24]. By requiring the IHC to adhere to the full heightened US

[21] For example, under Vickers the UK ring-fenced bank may not have branches outside the EEA (and may only have branches within the EEA since the Treaty grants – under the principle of freedom of establishment – banks incorporated in one EEA Member State the right to establish branches and provide services across the entire EEA).

[22] Under Vickers, the ring-fenced bank may not have subsidiaries located outside the EEA.

[23] See FRB (2014).

[24] Resolution also plays a role in the regulation of foreign branches. See discussion on depositor preference below.

prudential standards on solo basis, the rule effectively mandates that the foreign banking parent act up front as a source of strength to its US subsidiary[25].

In the view of the Federal Reserve, the IHC "reduces the need for an FBO to contribute additional capital and liquidity to its U.S. operations during times of home country or other international stresses, thereby reducing the likelihood that a banking organization that comes under stress in multiple jurisdictions will be required to choose which of its operations to support." In other words, the IHC rule makes it less likely that the US entity will fail. The rule also gives the US authorities the option to resolve the US entity separately from the rest of the group, even if the home country authority wishes to implement a single point of entry approach[26].

7.3. REORDERING THE CREDITOR HIERARCHY

The third principle looks at the structure of the bank's liabilities, rather than the banking group's legal vehicle structure. Reordering the creditor hierarchy attempts to make banks resolvable. If that can be done, it will go a long way toward assuring financial stability.

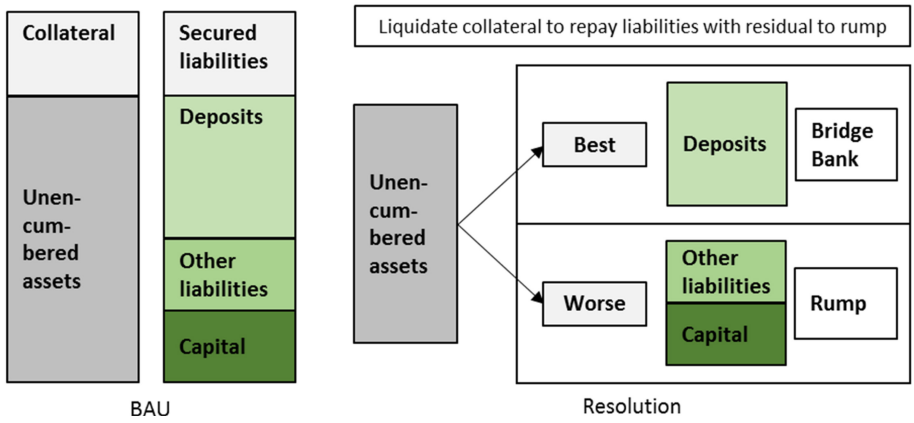
We examine two variants: a partial reordering (depositor preference) and a complete reordering (together with the introduction of bail-in and a requirement that banks maintain a minimum amount of total loss absorbing capacity [TLAC]).

Depositor preference gives deposits a first claim on the unencumbered assets of the bank. This facilitates resolution, for it enables the resolution authority to cherry pick the best and/or most easily valued assets to match the deposits that would be transferred to a bridge bank or sold to a third party via a purchase and assumption transaction. Such resolution methods generally enable depositors to retain access to their accounts. This assures continuity and enhances financial stability[27].

[25] In addition, the rule requires the IHC to have governance arrangements that give the US entity some measure of independence from its foreign banking parent. Taken to the extreme, this would effectively mean that the IHC was a US bank with a foreign shareholder.

[26] See HUERTAS (2015a).

Figure 4: Depositor preference facilitates resolution



However, depositor preference is not a complete solution. Creditors of the bank will seek to offset depositor preference via lending on a secured basis. If done through repurchase agreements such lending has what amounts to a super-senior claim on the assets sold to the lender. If the bank fails to repurchase the assets as and when agreed, the buyer [lender] has the right to sell the assets immediately and use the proceeds to meet the seller's [borrower's] obligation to repurchase. Similarly, covered bonds require the bank to pledge an amount of assets greater than or at least equivalent to the amount of the bond issue outstanding. These pledged assets are unavailable to meet obligations to depositors. Without limits on encumbrance or a requirement that banks issue unsecured debt instruments subordinate to deposits, banks and their creditors can effectively circumvent depositor preference.

Preference for insured deposits only (as in the UK ring-fenced bank) is even less complete as a solution. Uninsured deposits are subordinated and likely to suffer significant losses, if left behind in the "rump" created when insured deposits are either transferred to a bridge bank or to a third party in a purchase and assumption transaction. This makes such depositors more likely to run and the bank more likely to fail[28].

Nor is granting preference solely to domestic deposits anything more than a partial solution. From the vantage point of the host country, it is essential to be sure that the home country regards the bank's foreign branches as an integral part

[27] However, both the bridge bank and purchase and assumption transactions tend to leave behind a rump of lower quality and/or less easily valued assets, such as non-performing loans. If the rump is large and/or the primary source of credit to particular markets, communities or industries, liquidation of the rump may have adverse consequences for financial stability.

[28] Note that disclosure requirements may aggravate this prospect. Under the proposed UK secondary legislation banks are not required to disclose the degree of subordination to which the uninsured depositor is exposed.

of the bank not only before the bank has reached the point of non-viability, but in resolution as well. That cannot be the case where there is domestic depositor preference and the law requires the home-country resolution authority, in reaching its decisions, to have regard to *domestic* financial stability.

If a bank fails in such a regime, the home country resolution authority has the option to create a bridge bank and to transfer the bank's domestic deposits into the bridge bank, matched by an equivalent amount of assets[29]. As the domestic deposits have preference, the home country resolution authority may cherry pick the best assets from the bank's portfolio for transfer into the bridge bank. This process will assure continuity and enhance financial stability in the home country.

However, such a process could cause instability in foreign jurisdictions where the bank had branches, especially if such branches were systemically important in the foreign jurisdiction. The domestic cherry-picking process would not only subordinate the obligations of the bank's foreign branches to its domestic deposits, but could also lead to the liquidation of the foreign branch, interrupt the continuity of critical economic functions that the foreign branch may have performed in the host country and therefore adversely affect financial stability in the host country[30].

In contrast, the complete approach to the credit hierarchy offers more promise of making banks resolvable[31]. In this approach, legislation firmly establishes the

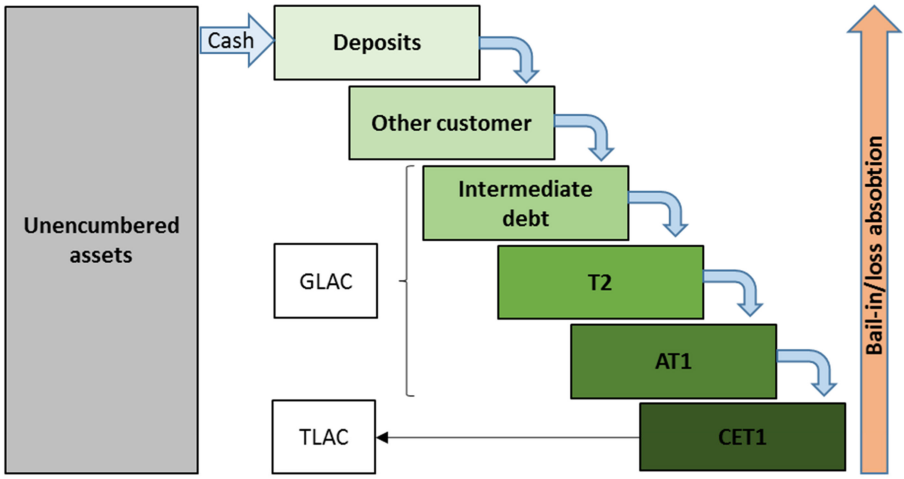
[29] Even if the home country does not explicitly grant domestic liabilities preference ex post, there remains the possibility that it will do so ex post via emergency legislation or executive order at the time the bank fails. From an economic perspective the home country is more likely to do so, if the liabilities of the foreign branch have primarily been used to fund assets in the home country.

[30] To defend against these possibilities, the host country may make its authorisation of the branch of a foreign bank depend on the resolution plan of the home country for the bank as a whole. The host country will authorise the branch of the foreign bank if and only if it is confident that the home country's resolution plan for the bank would not jeopardise financial stability in the host country. Additionally, the host country may impose a net asset requirement on the branch and/or limit the amount of funding that the branch may provide to the parent bank. These measures act effectively as shadow capital and liquidity requirements on the branch of the foreign bank, and turn the branch into a quasi-subsidiary.
Finally, host countries in jurisdictions that take a territorial approach to bank resolution have a further option, namely to resolve the branch of the foreign bank separately from the resolution process for the parent bank.
Under the territorial approach each jurisdiction first liquidates the assets in that jurisdiction and uses the proceeds to pay the off the liabilities of the bank in that jurisdiction. This effectively transforms the liabilities of the branch into what amounts to a covered bond secured by a claim on the assets of the branch. If the proceeds of the asset sales exceed the amount of the bank's liabilities in that jurisdiction, the excess is paid into the general estate of the failed bank. If the proceeds of the asset sale are insufficient to cover the bank's liabilities in jurisdiction A, those liability holders have a senior unsecured claim on the general estate of the failed bank. For a fuller discussion see Lee (2014).
Faced with such a possibility, the home country authorities may wish to consider whether they should allow banks to have foreign branches at all. From the vantage point of the home country, the resolution regime in the host country has a significant bearing on whether the home country should allow its domestic banks to have foreign branches. This is especially relevant for cases where the home country takes a unitary approach to resolution whilst the host country takes a territorial approach. In such a case, a decision of the host country to liquidate the bank's branch in the host country could effectively force the home country to put the entire bank into liquidation. This would almost certainly lead to higher losses for creditors in the home country as well as to an interruption in critical economic functions and hence to disruption in financial markets and the economy at large.

[31] Overall, the complete approach is similar to the structure that banks themselves have employed in creating securitisation vehicles.

order in which a bank's liabilities would bear loss (see Figure 2). This corresponds to strict seniority, so that losses are first borne by common equity, then by other capital instruments (additional Tier 1 and Tier 2), then by "intermediate debt", followed by customer obligations such as derivatives, and finally by deposits (if they are given preference). Furthermore, the complete approach envisages giving the resolution authority a "bail-in" power to impose such losses at the point of non-viability via conversion (to common equity) or write-down.

Figure 2: Bail-in plus TLAC creates the basis for resolvability



Bail-in should occur in line with the creditor hierarchy, and the TLAC requirement assures that there should be enough investor capital outstanding to restore CET1 to required levels, if a bank reaches the point of non-viability and enters resolution. This creates the basis for stabilising the bank in resolution so that it can continue critical economic functions without recourse to taxpayer solvency support.

Finally, the complete approach envisages imposing a requirement that banks maintain a minimum amount of total loss-absorbing capacity (TLAC). TLAC consists of the bank's common equity Tier 1 capital (CET1) plus Additional Tier 1 (AT1) and Tier 2 (T2) capital instruments as well as qualifying "intermediate" debt (collectively gone-concern loss-absorbing capacity [GLAC]). The GLAC instruments are effectively investor obligations. They should be subject to conversion (to CET1) or write-down at the point of non-viability and subordinate to customer obligations such as deposits and derivatives. That will certainly be the case for Additional Tier 1 and Tier 2 capital instruments[32], and it must be the

[32] Under Basel III such instruments must be subject to conversion or write-down at the point of non-viability, if they are to continue to count toward capital requirements.

case for unsecured debt instruments, if they are to count toward the TLAC requirement[33].

If there is enough GLAC available at the point of non-viability, the conversion or write-down of such instruments will restore common equity Tier 1 to a level at or above the minimum requirements for authorisation.[34] This is the foundation for what amounts to a "pre-pack" resolution procedure, one that requires investors, not taxpayers, to bear the losses associated with bank failures, and one that can assure continuity and preserve financial stability.

7.4. CONCLUSION

In sum, "bail-in + TLAC" is the route to resolvability and therefore the route toward financial stability. In contrast, segregation leads to fragmentation, be it segregation of activities (trading and non-trading) or segregation of locations (domestic and foreign). Segregation alone does not reduce risk, and segregation alone does not assure resolvability. Nor does segregation create simplicity. If anything, segregation will increase complexity.

Consequently, one may ask whether segregation is still proportionate. Take Vickers as an example[35]. In the original proposal, the ring fenced bank had [insured] depositor preference, higher capital requirements and stricter governance than the other components of the banking group. In the interim, law and regulation have changed so that the additional protection afforded to the ring-fenced bank now applies to the entire bank:

- Deposits have preference in the bank as a whole. Under the BRRD deposits are accorded preference. Together with the TLAC/GLAC and MREL requirements this practically eliminates risk to the deposit guarantee fund and therefore practically eliminates any subsidy that deposit insurance may have provided in the past.
- TLAC and MREL will apply to the bank as whole. TLAC corresponds to the concept of primary loss absorbing capacity contained in the Vickers proposal, and the calibration proposed for the whole bank is on the order of that proposed for the ring-fenced bank.

[33] In addition, the debt should be subordinated to deposits and other operating liabilities. Hence, the label "intermediate debt" in Figure 2.

[34] The current proposal for TLAC (Financial Stability Board, 2014) requires that one third of TLAC consist of debt. This effectively constitutes a GLAC requirement. Whether this will be sufficient to recapitalise the failing bank depends heavily on whether the authorities intervene whilst the bank has positive net worth or exercise forbearance; see HUERTAS (2015a).

[35] For further discussion see HUERTAS (2015b).

- Stricter governance applies to the bank as a whole. The senior manager regime introduced in the Financial Services (Banking Reform) Act 2013 increased accountability of executives and directors at UK banks, not just the ring-fenced bank. If a UK bank breaches rules or regulations, management and directors must show that they had taken all reasonable steps to prevent such a breach ("*reverse burden of proof*"). And, if a UK bank were to fail, senior executives and directors would be subject to criminal indictment and criminal penalties (unlimited fines and up to seven years' imprisonment), if the prosecution were able to demonstrate in court that the bank's failure were due to reckless misconduct by the individual concerned.

In sum, if the resolvability of the whole bank can be assured, segregation becomes superfluous.

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8. Structural Reform

Charles Goodhart[1]

Let me start with two structural reforms in the banking sector with which I strongly agree.

Decisions, including those about risk tolerance, are taken by humans placed in charge of banks, not by the impersonal institutions. So, if we want to influence the behaviour of those responsible for such decisions, we need to provide them with appropriate incentives. Banks need capital from a large range of outside, and less informed, investors. Limited liability is entirely appropriate for them. But having limited downside, and unlimited upside potentiality, is, in my view, inappropriate for large equity holders and, in particular, senior management. The claw back arrangements recently put in place are good, but they do not go far enough. Potential liability for meeting losses should be conditional on decision-making powers. So, for example, the CEO of a bank should have, in my view, unlimited liability. Similarly, the chairman of a bank has not got quite the same decision making powers, but I would like to see chairmen required to hold a minimum of equity with a liability equal to five times of that amount. Indeed, one could have a ladder of multiple liability strictly related to the extent of risk that that person can assume for the bank in which they work.

Next, banks fail because they run out of cash and liquidity, not because they have insufficient capital. There are remarkably few cases when a bank shuts, perhaps voluntarily, because it has insufficient capital but still enough cash to meet its immediate obligations. Indeed, many banks that failed, because they became illiquid, actually were subsequently found to be entirely solvent. I did my PhD thesis on the American banking system in the decade before 1913. This was punctuated by the 1907 crisis, which was triggered by the failure of a large Trust Bank, the Knickerbocker Trust; this failed because its National Bank refused to clear for it in the New York Clearing House. This decision may have been partially related to the fact that National Banks were jealous of the easier regulatory conditions under which the Trust Banks were operating.

If the banking system as a whole becomes illiquid, perhaps because of a crisis of confidence, then the availability of more capital may simply allow the authorities to stand aside, with fire sales of assets going on for longer, before the central bank finally steps in to backstop liquidity. Recall that one of the reasons why the Fed did not step in earlier in 2007-8 was that Ben Bernanke believed that never had

[1] Emeritus Professor, London School of Economics.

the American banking system had higher profitability and higher capital than in the summer of 2007. He did not realise that, once confidence in liquidity has been lost, the availability of capital may not suffice to save the system.

Concerns about liquidity are exacerbated when there is a worsening liquidity mismatch. In the 19th century expert commentators, like George Rae and Hartley Withers, were particularly concerned about avoiding liquidity mismatch. Indeed there is a nice quote from Walter Bagehot, whereby in the April 1861 edition of The Economist, in the article on "How to read Joint Stock bank accounts"', he warned against judging a bank primarily on the adequacy of its capital and reserves[2]. Rather, "we should add together all the liabilities of the bank – its circulation, its drafts, and its deposits: see what the total is carefully; and then we should compare it with the amount of cash, loans to bill brokers, Government securities, and other immediately tangible and convertible assets which the bank has in hand. If the available money bears a good proportion to the possible claims, the bank is a good and secure bank". On the question of "the specific proportion between the cash reserve and the liabilities of the bank to the public", Bagehot refused to "lay down any technical or theoretical rule upon it". The cash ratio must be allowed "to vary in some degree with the nature of the bank's business". Not for Bagehot the rigid control of the banking system through operations on the cash base and a stable multiplier.

That 19th century appreciation, of the need to avoid maturity mismatch, has been totally ignored in recent decades; but it remains valid. Many, perhaps most, of the recent crises have been related to a property boom and bust interacting with lending into that boom by the banking system. There have been three major financial crises during my lifetime in this country and all of them have had that same underlying cause. The system that we have now has banks being largely involved with financing mortgages on property, both commercial real estate (CRE) and housing, often largely based on uninsured short-term wholesale deposits. This syndrome has been thoroughly analysed in a series of papers by Jordà, Schularick and Taylor[3]. The proposed reforms that we have had in the banking system since 2008 have done nothing to mitigate this syndrome. Indeed, the Vickers report actually focuses housing finance within the retail banking system, and thus does not make the retail banking sector safer[4]. The Great Financial Crisis (GFC) was really a normal, though a rather extreme version, of the standard interaction between bad property lending and bank credit expansion. We have failed to take advantage of that crisis to reconsider the form of housing and CRE finance.

2 The Economist (1861).
3 See, for example, JORDÀ, SCHULARICK, TAYLOR (2010) and (2014).
4 Independent Commission on Banking (2011).

Instead of realising that the problem has been one of an inappropriate structure of housing and property finance, the common cry has been that it has been all about the culture of investment banks. Of course in some respects that culture has been poor; the exercises involving the manipulation of benchmarks were heinous – but not responsible for the GFC.

Again the current mantra is that there should be no more bail-outs, utilising taxpayer funds. Although my view is unpopular, I think that this is unfortunate. What is the advantage of focussing the losses that the bank has already made on a small number of pension funds and insurance companies, rather than on a large band of taxpayers? As is already apparent in some recent cases in Portugal and Italy, the focus of losses on a smaller number of creditors will have a much more devastating effect on them, than spreading such losses out, if losses do actually occur over the community as a whole.

The Volcker reform is also problematical. If a bank is going to be making markets for clients, do you not expect it to do so in a way that will best benefit itself? The result is, of course, that if you try to prevent proprietary trading, it will be extraordinarily difficult to distinguish that from the generality of making markets for clients. There is also a question whether banks have become too diverse and complex to manage effectively. While I have some sympathy with that view, one must remember that the diversity and complications of banks are nothing compared to the diversity and complications of running a country. Should we also break up countries because they have become too diverse and complicated to manage? If David Cameron can manage the UK and Barack Obama the USA, cannot a reasonably intelligent person become a bank CEO? Or is that analogy entirely invalid?

Let me end with a comment on the old Ricardian idea of establishing narrow banks, with the aim of separating money creation from intermediation between savers and borrowers. The 1844 Bank Act, the Chicago Plan, etc., are examples of that genre. However, if the risky, lending bank, (i.e. not the narrow bank), can issue short-term liabilities, then the exercise could become a total disaster, and even more pro-cyclical than the present system. Funds would flow into the risky bank during good times, and back to the narrow bank during bad times. To make this system work, it would be necessary to limit the liabilities of the risky bank to equity and long-term debt, perhaps with a tenor of over three months. That would make it very problematical for such a risky bank to offer overdrafts and short-term loans, facilities which the general public, and above all firms, value greatly.

To summarise, it was entirely right to seek to require banks to hold a much higher equity ratio, but we should have been much more careful about the transitional route to get from the starting point to the desired ultimate equilibrium state.

Moreover, there ought to have been much more concern about liquidity and maturity mismatch; and in particular whether our whole system of housing finance is appropriately structured.

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Risk Culture

9. The Banking Standards Board

Keynote Speech

Dame Colette Bowe[1]

I was delighted to be asked to give the keynote speech at the SUERF conference on Banking Reform in December and talk about the work of the Banking Standards Board (BSB) which I chair.

The BSB aims to help the banking industry help itself by providing challenge, support and scrutiny. Since the financial crisis of 2008-09 authorities worldwide have worked on an agenda to reform the regulatory and legal frameworks governing financial services – both domestically and internationally. With a litany of serious financial scandals following on from the immediate crisis, the scope for these frameworks expanded rapidly, with politicians, regulators and the public seeking redress through fines, tighter regulation and changes in the law in response to these multiple and shocking events.

However, as I think is now becoming more widely understood, there are limits to the extent to which changes in the law and in regulation can, of themselves, bring about deep cultural change. While robust regulation is essential, a culture that simply instils compliance and legality at the heart of values and conduct will not achieve ethical goals or enable us to move towards a trustworthy banking system.

The BSB is an independently-led, industry-driven initiative borne out of the UK's Parliamentary Commission on Banking Standards, which aims to respond to the collective challenge of rebuilding the UK banking sector's reputation. We are neither a regulator nor a trade association; we have no statutory powers and do not speak or lobby for the industry. Supported in our establishment by six of the UK's largest banks and its largest building society, membership is now open to all banks and building societies in the UK. While we are UK-focused, there is increasing international interest in our unique independent, voluntary approach.

One important area of our work is providing impartial and objective assessments of individual firms' and the industry's progress in raising standards of behaviour and competence. In 2015 we conducted an assessment exercise examining ten firms. Our conclusions will be described in our Annual Report in the spring, which will identify examples of good practice, areas of concern and areas where more progress still needs to be made, across and in specific parts of the sector. The

[1] Chairman, Banking Standards Board.

assessment will be widened to cover all eligible members of the BSB in 2016 and, over time, we aim to build up a picture of the industry's progress.

Beyond the assessment, the BSB is exploring the issue of professionalism in banking by engaging with both member firms and professional and industry bodies. We are examining how qualifications are currently used in banking, whether and how this is changing in the light of regulatory and other developments, and whether it would change if the qualifications themselves were different. We are also exploring with the industry, professional bodies and other organisations, areas of banking where new, cross-firm standards would be beneficial for customers, the sector and the economy.

Another area of our work is around the incoming Senior Managers and Certification Regime. The BSB is engaging with the industry to assess how we can provide practical support to use the SMCR as a catalyst for positive change. We have been working with the industry to use the new regime as an opportunity to encourage a cross-industry effort that goes beyond the regulatory compliance minimum; to try to establish and share what good practice might look like; and to ensure the SMCR ushers in genuine, beneficial and lasting reform across the sector.

A successful, dynamic UK economy needs a strong, stable banking sector that serves the best interests of its customers. For the sector to contribute fully to the economy and society it needs to be trusted; not only by its customers (in the UK and globally), but also by its staff, by potential employees, by regulators and by policy makers. The BSB is an important step in the industry's journey to becoming trustworthy again.

10. Risk Culture and Information

Mike Power[1]

10.1. Introduction

At the centre of the debate about culture and cultural change in financial services are concerns with values, conduct and behaviour. One effect of this emphasis has been a visible turn towards psychology by organisations and their advisers in order to understand the root causes of good and bad decision making. Another has been the considerable efforts to reengineer performance contracts so that the incentives of the individual are aligned with those of the company and its goals. And yet another has involved concerted endeavours to rediscover clients and rebuild trust in financial institutions, to rethink the social bonds which permeate corporate life. Yet, while all of these dimensions of change are interesting and worthy, one aspect of the culture debate is conspicuous by its absence: the role of information.

Information is no doubt an unglamorous avenue of exploration in the debate about culture – it is not something that members of public enquiries and public bodies feel that they can get their teeth into, and it is not very newsworthy. It is mundane, technical and part of the organisational plumbing which is largely remote from problems of trust and conduct.

But perhaps we should think again.

I recall my days as a philosophy undergraduate many years ago writing essays on how "ought implies can". In other words, our capacity for better behaviour (however that is defined) is necessarily conditioned to a greater or lesser extent by our capabilities, including what we know or can know. This view is reflected within the common law of the United Kingdom as the idea that we should judge the actions of individuals in terms of what it was reasonable for them to do in the light of their knowledge and circumstances, subject to the caveat of wilful neglect and deliberate ignorance.

All of this brings knowledge and, crucially, the *appetite* for knowledge and information, to the very centre of the culture debate rather than being on its periphery. If we are interested in reform and behaviour change, perhaps we should spend less time on individual behaviour and motive – the type of risky person an employee might be – and pay more attention to the information environment

[1] Professor of Accounting, London School of Economics.

which conditions and influences groups and their everyday actions. The arguments below outline how we might start to do this.

10.2. INFORMATION AND MAN-MADE DISASTERS

In 1976 Barry Turner published his classic study of 'man-made disasters'. This was the first systematic analysis of the common causes of a wide range of disasters and accidents and has had a big influence on more recent studies, such as the "Roads to Ruin" report on failures in risk management[2]. Turner identified common patterns of failing in what he called the "incubation period" prior to a disaster. One of his findings related to information, namely that it was rarely the case that knowledge of a risk factor did not exist in this incubation period. Rather, while the information existed either inside or outside the organisation, it did not get "assembled" in such a way as to be able to inform the decisions and actions which might have prevented the event.

Of course, even where information is assembled and presented to decision makers there may be other barriers and resistances to seeing what that information is saying, such as optimism bias, group think etc. However, even if not a sufficient condition for action, information quality and processing might reasonably be regarded as a necessary condition for the right action. Furthermore, Turner's work shows how we can think of how organisations do or don't gather, process and assemble information as a core cultural issue.

Two examples are suggestive.

In 2007 and in relation to the first quarter of 2008, UBS made several successive announcements regarding the losses incurred in its structuring, trading and investment activities in mortgage and asset-backed securities. UBS ultimately reported net losses of $18.7bn in relation to US residential mortgage sector exposures for the year ended 31 December 2007. Among many other features of the case, UBS lacked data to perform a fundamental analysis of its overall portfolio such as, for example, its exposure to asset backed securities. In addition, different parts of the organisation were trading instruments with similar risk characteristics but there was no consolidated picture of this activity.

In 2015, the HBOS report was published by the Bank of England. While it is long and wide ranging, it is striking that the organisation operated de facto as a federation of businesses with their own plans. Top down group strategy tended to be the outcome of a predominantly bottom up planning process. This affected the entire approach to risk management in two critical ways. First, the group risk

[2] See TURNER (1978) and ATKINS, FITZSIMMONS, PARSONS and PUNTER (2012).

appetite was a composite of the plurality of bottom-up approaches and could not be changed. Second, as in the case of UBS, there was no evidence of an aggregation process to consider how risks were correlated across divisions.

Culturally, HBOS, like many financial organisations at the time, had given priority to growth over risk. The quality of risk information was a strong symptom of this culture. Today there is a great focus on the challenge provided by the boards of banks, and their duty to inform themselves, but the HBOS report draws attention to weaknesses in the presentation of risk management information. Issues with the quality of the underlying data were known in 2006 but there was no committed strategy to improve it (para. 896). This is not to say that executives and board members could not have done better to challenge certain divisions whose risky profile was known in general terms. However, without high quality information it would have been hard to do this. With it that challenge might have been different, although we can never know that for sure.

In both the UBS and HBOS cases we can conclude that there were consequential risk information assembly deficits. These deficits tells us a great deal about the risk culture of these organisations. For example the HBOS analysis notes that risk and control MI was rarely mentioned in the CEO monthly report. Indeed the appetite for gathering and communicating high quality risk information is a proxy for the culture of the organisation in total. It follows that shifting the quality and flow of information in organisations may in fact be rather important to cultural reform.

10.3. RISK CULTURE, INFORMATION AND NETWORKS

In 2012 I began a research project on risk culture in financial organisations with my LSE colleagues Tommaso Palermo and Simon Ashby from the University of Plymouth. What surprised us in our initial engagements with banks and insurers was the emphasis on structural change and the creation or strengthening of central risk oversight units[3]. Questions of ethics, conduct and remuneration which were prominent in the public domain, were much less visible at the level of reform work processes. These organisations were determined to solve the UBS and HBOS problems described above: there would be no "risk invisible" silos and there would be strong central control over the group risk profile via high quality of information about trading in relation to risk limits. From the point of view of these organisations, the three lines of defence model was only useful in so far as it strengthened central oversight.

[3] Power, Ashby and Palermo (2014).

As our research progressed we noticed how banks and insurers were grappling with many different trade-offs as they sought to improve their culture of identifying and managing risks. In one case we observed a CRO engaged in trying to improve risk culture by building a network of allies across the organization in different areas – HR, IT, and trading. This CRO was interested in creating a risk culture dashboard from existing information in the organisation and recognised that this required the construction of a new network as an information feeder. While the network conferred political and status advantages for the CRO and his team, it was also valuable as an information flow and coordination process.

In a recent PhD thesis at the London School of Economics, Maria Zhivitskaya interviewed a number of very senior chairs and members of board risk committees charged with risk oversight in their respective organisations. She found, as one might expect, that NEDs must confront a number of trade-offs in making their oversight operable: they must mix challenge with executive support; and they must be engaged in the business but remain outside of it. These trade-offs are inherent in risk oversight and are always there. Risk Oversight is not some watered down form of risk management: it requires complex ability to construct a credible oversight practice across these trade-offs and their boundaries[4].

Information is at the heart of this oversight role and its tensions. It is widely recognised to be a critical enabler of the NED role. Yet we know very little, publicly at least, about how organisations enable the oversight role. Indeed, one proxy for the culture of an organisation is how well it facilitates its own oversight. Good NEDs will of course seek information from many different sources, from their own networks and experience, from other firms and so on. But it is the organisation they must oversee which provides the important data. From this point of view the editors and producers of information for oversight purposes have enormous cultural significance. We expend so much energy focus on boards and their qualities, yet these humble actors who enable and support boards receive little or no attention despite their critical role.

10.4. INFORMATION CULTURES: SOME CONCLUSIONS

As noted above, it is not usual in the debate about culture in financial services to discuss information quality. Yet even the few scattered examples discussed above suggest that the ways in which organisations create, gather and manage information, especially risk information for oversight purposes, are strongly indicative of their culture. This is not culture understood as the renewal of the ethics and self-respect of each member of an organisation. As laudable as such visions and

[4] See Zhivitskaya and Power (2016).

missions may be, they are likely to take many years to come to fruition. Furthermore, while such programmes of ethical change maybe bold and exciting, they often lose energy and are short-lived. Rather, it is a much more humble notion of cultural reform which is likely to be longer lived, namely changing the collective conditions under which organisational actors are enabled by information to be respectful of controls in a risk-taking business.

One implication of this view is that we should not imagine that culture and technology have little to do with each other. Rather, the nature and quality of the information infrastructure to control a business is profoundly cultural. One need only consider the issue of safety culture in airlines to see this[5]. It is also interesting that standards for Enterprise Risk Management pay little attention to the foundational information architecture that makes it work.

So, in conclusion, if we really want to understand and reform culture and risk culture, we need to pay more attention to the way risk information is produced, flows and creates an aggregate view of the organisation and its risk profile. This is not as glamorous as trying to change the "moral DNA" of financial organisations, but caring about information quality could be a more powerful agent of change. Finally, I have tried to suggest that the most important aspect of risk appetite in the financial sector may be the appetite for organisational self-knowledge itself in the form of a continuous search for high quality risk information.

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