



Institute
and Faculty
of Actuaries

CP24/15: Implementing a UK Leverage Ratio Framework

IFoA response to the Prudential Regulation
Authority

12 October 2015

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Actuaries' training is founded on mathematical and statistical techniques used in insurance, pension fund management and investment and then builds the management skills associated with the application of these techniques. The training includes the derivation and application of 'mortality tables' used to assess probabilities of death or survival. It also includes the financial mathematics of interest and risk associated with different investment vehicles – from simple deposits through to complex stock market derivatives.

Actuaries provide commercial, financial and prudential advice on the management of a business' assets and liabilities, especially where long term management and planning are critical to the success of any business venture. A majority of actuaries work for insurance companies or pension funds – either as their direct employees or in firms which undertake work on a consultancy basis – but they also advise individuals and offer comment on social and public interest issues. Members of the profession have a statutory role in the supervision of pension funds and life insurance companies as well as a statutory role to provide actuarial opinions for managing agents at Lloyd's.



SII: CP24/15 Response
Capital and Leverage Team
Prudential Regulation Authority
20 Moorgate
London
EC2R 6DA

12 October 2015

Dear Sirs

IFoA response to CP24/15: Implementing a UK Leverage Ratio Framework

1. The Institute and Faculty of Actuaries (IFoA) welcomes the opportunity to respond to the Prudential Regulation Authority's (PRA) consultation paper on the implementation of a leverage ratio framework in the UK. A number of the IFoA's members work in the banking sector, where they have capitalised on their actuarial training to move into pricing and strategy roles. We have drawn on their experience through our Banking Member Interest Group (MIG), which has led the drafting of this response.
2. We believe there is an unarguable case for including the leverage ratio within the framework for prudential regulation. There is clear evidence that some banks increased their leverage ratios to very high levels ahead of the banking crisis, and that this may generally happen in 'booms' preceding 'busts'; there is also the related risk of model error.
3. However, we suggest that consideration should be given to possible 'gaming' and possible 'unintended consequences'. We think that such matters should be monitored carefully and considered in the intended review of the leverage ratio in 2017.
4. An advantage of the leverage ratio is its conceptual simplicity - capital divided by exposures (both based on CRR measures). However, the number of lines in the leverage ratio calculation, in FSA 083 and FSA 084 (Appendices 6 and 7), show that it may not be simple in practice. For example, investment banks may find it difficult to quantify exposures and understand how the capital requirements for different contracts will vary in the future. This will create pressure to find ways to shift activities around the wider financial system. Lines of business may move to less regulated areas such as hedge funds or other shadow banks.
5. Even so, the relative simplicity of the leverage ratio should make it less susceptible to 'gaming' than the risk-weighted capital measure, where some banks have engaged in risk-weighted asset (RWA) optimisation. The proposals in the consultation paper help address the risk of 'window dressing' around period ends. However, as for risk weights used by banks in their internal models, there may still be a drift over time in the input measures to enhance leverage ratios.
6. As recognised in the July 2014 consultation paper, using the leverage ratio may have unintended consequences.

7. One risk is that banks and the financial system adapt to this new constraint, causing the leverage ratio to lose part of its predictive power. The leverage ratio indicates the build-up of systemic risk when too much credit is created. It does not indicate when the severity, rather than the quantum, of this balance sheet risk is growing. Other metrics may be required to track this effect.
8. The density of balance sheet risk could increase simply because banks try to optimise their position between the twin constraints of the risk-weighted capital ratio and the leverage ratio. This may for example reduce the supply of capital for prime mortgages and/or increase their price. It may also encourage firms with low-risk assets to switch to offering higher-risk assets, while triggering a reduction in the overall market price of these higher-risk assets.
9. The proposed countercyclical leverage ratio buffer may further increase the density of balance sheet risk taken on by banks during an economic upswing. Despite floors and through-the-cycle modeling a countercyclical buffer is still needed. RWAs calculated by internal ratings-based (IRB) capital measures are influenced by actual loss experience, so as reported losses fall, RWA capital weightings reduce during benign periods. The countercyclical buffer offsets this effect by increasing the RWA target. The leverage ratio is insensitive to these economic effects; the denominator only reflects the quantum of lending. As a result, increasing the 3% minimum leverage ratio by 35% of the countercyclical buffer will increase the efforts by banks to optimise their balance sheets during the boom. It is likely that impacted banks will take on more risk, distorting the market for higher-risk lending just before a downturn.
10. As a result, we suggest that the FPC monitors early warning indicators of growing severity of balance sheet risk. This includes banks' risk appetite, the relative pricing of higher and lower risk debt and the overall market percentage of higher and lower balance sheet risk lending. This would be especially appropriate when the leverage ratio is first introduced or following the introduction of a countercyclical buffer.
11. A more systemic shift may occur as some investment banking activities and types of risk migrate to less regulated entities such as hedge funds. We suggest that this is also monitored.
12. Given the different asset mixes of building societies, challenger banks, commercial banks and investment banks, we think that 'one-size-fits-all' regulation of the leverage ratio is not appropriate, and suggest that consideration be given to bank-specific leverage ratio requirements. This would be consistent with risk-weighted capital ratio requirements; it would also be consistent with the approach set out by the PRA for stress testing and for assessing Pillar 2 capital requirements, a key aspect of which is proper analysis and judgement rather than reliance on 'tick-box compliance'.
13. The leverage ratio will help reduce risks from weaknesses in the RWA methodology, in particular the issue that the same assets would produce different RWA assessments for different banks. We suggest proposals to ensure greater transparency between the outcomes of each bank's internal model assessments of selected comparable assets should be considered, as a superior alternative to fix the underlying problem. This has already been put forward in a speech by Andrew Haldane in 2013. To avoid internal RWA models being designed to look prudent only for the selected comparative assets, we suggest that some year on year randomisation of the comparative assets be considered. Some uncertainty should encourage prudence in the overall RWA model design and testing.

14. We believe that the leverage ratio should strengthen the impact and quality of stress tests. This is beneficial as we believe stress testing (together with reverse stress testing) offers hope for better capital management as it highlights why capital is required. Multiple stress test scenarios further help reduce scope to game these tests. Management will be more easily held accountable if they game such adverse scenario modelling whose purpose is clearly to ascertain the real risks that impact a bank's on-going business.
15. Our Banking MIG has undertaken more detailed consideration and analysis to support this response, which is given in the Annex. The MIG is currently looking at research topics in banking relevant to our members, and this research may also support the work of the Bank of England – please let us know if this is of interest.
16. Should you wish to discuss any of the points raised in further detail please contact Steven Graham, Technical Policy Manager (steven.graham@actuaries.org.uk/0207 632 2146) in the first instance.

Yours sincerely,

A handwritten signature in black ink that reads "C. Wilson". The signature is written in a cursive style with a large initial "C" and a long, sweeping underline.

Colin Wilson
President-elect, Institute and Faculty of Actuaries

Annex - supporting observations for implementation of a UK leverage ratio framework.

1. Support for the leverage ratio.

1. The evidence put forward for the leverage ratio framework builds a compelling case for believing that it will lead to better-capitalised banks.
2. The reduction in RWAs from ~70% to less than 40% between 1993 and 2008 shows how powerful an effect capital drift can have through time. Banks may not deliberately seek to game the system, but pressure from boards and shareholders expecting management to optimise return on equity (ROE) may lead to reductions in prudent margins and factors of safety.
3. We agree that financial models have limitations and may be wrong, especially when used to predict extreme events in the real world. The actuarial profession recognises tail risk and has a working group looking at this for insurance.
4. In implementation of the UK leverage ratio framework, we support the proposal to average the on balance sheet assets daily and off balance sheet assets monthly. While this will involve extra work by banks in collecting daily data, we believe this is worthwhile to reduce the opportunities for banks to game the timing of contracts.
5. We believe the leverage ratio has an important role to play in stress tests. This should make it harder for banks to play with 'paper only' strategies to reduce the impact of stress tests such as switching into lower RWA assets. We think better and more rigorous stress testing is the best way to refocus management away from optimising ROE and back to capital's essential role to protect against unexpected events.
6. We considered the benefits of using the leverage ratio as a trigger for Additional Tier 1 (AT1) capital to convert to core equity if the leverage ratio fell below 2.45% (equivalent to the 7% RWA trigger * 35%). We agree with the FPC conclusions that this would have a more adverse effect of causing banks in this position to move out of low risk assets and hence leave a riskier balance sheet while running on a thin capital base. We therefore agree that the leverage ratio should not be used as a binding constraint.

2. The introduction of the leverage ratio framework may have unintended consequences

a. Using the leverage ratio as a constraint reduces predictive power

7. One argument put forward in support of the leverage ratio is how a simple, more stable metric would have tracked the build-up of systemic risk before the last crisis. We think it is very important when applying this argument to distinguish between a metric that tracks risk and a metric that becomes a binding constraint. Goodhart's law *'As soon as the government attempts to regulate any particular set of financial assets, these become unreliable as indicators of economic trends'* may be applicable here.
8. We believe using the leverage ratio as a managing rather than a tracking metric falls into this category. We believe the way banks respond will impair the leverage ratio's predictive power as they increase the severity, not the level, of balance sheet risk. Using the leverage ratio as

a constraint will open it up to optimisation and gaming. There is likely to be some drift in banks' capital management as they adapt to this new requirement. We believe that this will occur as banks optimise the intensity of balance sheet risk to compensate for the overall constraint on their level of lending.

9. The risks to financial stability may be better understood by monitoring indicators of increasing balance sheet risk as banks adapt their balance sheet structure.

b. The risk of unintended consequences may be higher than average statistics imply

10. We think the actual market distortion could well be greater than that implied by the evidence put forward. For example, the fact that the aggregate increase in requirements across the system would be 2%-3% of the level of tier 1 capital minimises any sense of risk. So too does the interpretation of evidence from prior (US) implementations of leverage ratio rules.
11. A well-known statistical analogy describes the possibility of drowning while crossing a stream that is 'only' 6 inches deep on average.
12. This is why we suggest monitoring indicators unintended consequences before the 2017 review.

c. How market risk appetite could increase while being mis-priced.

13. In banking, the market's risk appetite, the market price of risk and customer demand for higher-risk credit all interact. This interaction will lead to second order effects that impact the price of credit and risk appetite beyond the banks impacted by the leverage ratio.
14. We believe that the marginal cost of higher-risk credit offered by a 'swing' bank may have a disproportionate impact in overall market price. Going back pre crisis, this was seen when Northern Rock's aggressive growth strategy caused systemic mispricing across the mortgage market. The leverage ratio risks this happening in a more selected manner for higher-risk debt.
15. The competitive nature of banking ensures that banks and bank management seek to exploit areas where they hold a perceived competitive advantage. Management is influenced by the need to optimise returns on equity capital. Shareholders expect high ROE and incentivise senior managers through pay and longevity in the role.
16. When a bank is impacted by the leverage ratio, marginal new business will add 35% to RWAs regardless of the true underlying risk. This offers a relative pricing advantage when writing new higher-risk loans such as unsecured lending against which other banks would otherwise need to hold about 100% RWAs. Equally, having to add 35% RWAs offers a relative disadvantage if the bank tries to write low risk business with less than 35% RWAs.
17. The Bank of England estimated this price advantage in Table G on page 27 of the October 2014 policy paper). The Bank of England estimated the pricing impact of a 10% shift in RWAs as about 7 basis points (bps). This was based on equity funding costing 10% and debt funding 5%. Reworking our own analysis with a slightly higher blended Tier 1 capital cost of 15% and lower debt cost of about 3%, we get a slightly higher estimate for the pricing impact. We estimate the cost of a 10% increase in RWAs as about 10bps.

18. Given this, the pricing benefit for a bank impacted by the leverage ratio, when it writes unsecured loans that require ~ 100% RWAs is ~ +65 bps. Alternatively the pricing disadvantage for writing low risk mortgages of ~ 10% RWAs would be ~ -24bps.
19. This might be expected to set a bound on possible movements. In fact, we think the actual impact on market prices may be larger than such a simple estimate implies because at any given time the 'true price' for credit is not fully known by the market or its players. The minimum price comprises estimates for costs, for expected losses and for the required return on capital. Losses are not knowable in advance and normally more risky business carries an excess in price above its theoretical minimum to compensate for greater uncertainty and risk. This creates a pricing 'buffer' that we believe can be quickly eroded across the market when the swing banks start to compete for a larger share of higher-risk lending.
20. When banks, constrained by the leverage ratio, start to compete for higher-risk business we expect competitors to respond by reducing their price to retain market share. The price of more risky, unsecured lending could easily move more than the 65bps predicted by lower capital as the 'safety buffers' are eroded. From a purely income perspective, keeping cutting price will still make sense to a bank where the leverage ratio is biting. As well as pricing for greater risk, we would expect constrained banks to shift their risk appetite requirements, gradually changing their portfolio risk limits.
21. Considering Box 1 on page 26 of the July 2015 policy statement, our view of how market wide effects could develop offers an interesting interpretation of the Furlong study. When leverage ratios were introduced in the US in 1981, the riskiness of constrained and unconstrained banks increased but there was no difference between constrained and unconstrained banks. This is consistent with a market wide reduction in the price of more risky lending. Demand for credit is price dependent so as the market price of higher-risk lending falls, the demand will increase. Banks will respond by shifting their risk appetite to accommodate this demand.
22. It is possible that the fall in unsecured personal loan rates in the UK below 4% is already an early indicator of this effect.

d. The counter cyclical buffer could encourage banks to take on more risk before a downturn.

23. We believe the application of the counter cyclical leverage ratio buffer (CCLRB) may actually magnify the risk of the banking system taking on more mispriced higher-risk assets during an economic upswing.
24. The counter cyclical barrier (CCB) is designed specifically in response to the procyclical nature of the IRB Basel RWAs. As the economy booms, bad debts fall and RWAs decline. The CCB allows the PRA to offset this process. However the leverage ratio is designed to be insensitive to the economic cycle. Including the CCB in the leverage ratio test seems to be intended to keep optical alignment between the two capital requirements. We believe this could create greater unintended consequences at the worst possible time.
25. Considering a very simple example:
 - a. We start with a swing pricing bank for which both the RWA and leverage ratio limit lending.
 - b. It has £100 of Tier 1 capital, 35% RWA weightings and £3,333 lent on its balance sheet. This gives it £1,166 in RWAs.

$$\text{RWA ratio} = \text{£}100 / \text{£}1,166 = 8.6\%$$

$$\text{Leverage Ratio} = \text{£}100 / \text{£}3,333 = 3\%.$$

- c. During an economic boom, the bank's IRB models reduce the RWA weighting to 30%. The RWAs reduce to £1,000

$$\text{Now its RWA ratio} = \text{£}100 / \text{£}1,000 = 10\%$$

- d. The CCB has to be 1.4% to ensure the bank does not start to increase its lending due to this procyclical capital effect.
- e. Applying 35% of the CCB to the CCLRB gives a new leverage ratio target of 3% + 35% of 1.4% = 3.5%.
- f. To achieve a leverage ratio of 3.5% including the CCLRB of 0.5% the bank has to reduce its low risk lending by £475 to reduce its balances to £2,857. In doing this, the bank is likely to sell lower-risk assets rather than higher-risk assets and, to offset the loss of income associated with the assets sold it may well try to switch some lower-risk assets into higher-risk assets with greater income. It will do so to ensure it optimises its new RWA and leverage ratio limits.

26. We believe that this will accelerate and deepen the pricing and risk appetite effects described earlier, and this will happen during a benign economic environment during which the bank's P&L losses on risky lending will be falling. Lower losses will encourage bank management to take on riskier lending at the exact moment the CCLRB creates an economic incentive to increase risk density. The consequence would be lower prices and increased risk appetite for all higher-risk lending, plus an increase in the overall market demand for high risk debt. When the inevitable economic downturn occurs this may trigger greater losses than we would otherwise have seen.

3. Suggestions to ensure a successful implementation of the UK leverage ratio framework.

a. Additional monitoring

27. Monitoring the pricing of and growth in higher-risk lending should help establish if a significant downward drift in higher-risk pricing and acceleration in volume occurs after the introduction of the UK leverage ratio framework. We suggest focusing on unsecured personal loans, credit cards and higher LTV mortgages, and that the Bank of England could monitor the market price of higher-risk lending categories such as these while using the overall cost of credit to normalise for changes in the cost of funding. We would also advise looking at bank's risk appetite frameworks to see if there is a general market move to accept higher proportions of higher-risk lending.
28. We especially encourage monitoring these risk metrics if a CCLRB is introduced.

b. Leverage ratios vary across different types of bank

29. We think the risk of unintended consequences is increased by efforts to keep optimal simplicity. We therefore suggest that consideration be given in 2017, when the framework is reviewed, to moving away from a 'one size fits all' approach. We think investment banks,

challenger banks and building societies operate such different business models that trying to squeeze them all into one simple ratio with a single hurdle goes against the improvements in regulation seen since the PRA moved to what we consider to be a more appropriate and effective regime than its predecessor's 'tick-box compliance' approach.

30. We are especially concerned that building societies will lack experience to manage greater levels of unsecured risks if they are encouraged to try and take on higher RWA business due to the leverage ratio biting. They equally lack the ability to raise additional capital resources quickly if they have increased losses in a downturn.
31. We suggest the goal of safer macro prudential regulation may be better served with flexibility that recognises difference in the banking market.

c. Publish comparative information showing the strengths of banks' RWA models

32. We share the FPC's concern about model accuracy and model arbitrage. Rather than using the leverage ratio (or capital floors) to fix problems with RWA models, we suggest the FPC and the PRA consider what more they could do to address these weaknesses within the existing framework. The October 2014 consultation papers described how the internal models of the most conservative bank gave a 50% higher capital requirement for hypothetical banking exposures than the least conservative.
33. We believe that this issue is better addressed by fixing the underlying RWA calculation. We support the ideas explored in Andrew Haldane's 9th April 2013 speech 'Constraining Discretion in Bank Regulation'. We think there is merit in publicly comparing the strength of banks' capital calculations for the same underlying assets. If banks were to compare their RWA outcomes for specified assets, we would propose that year on year randomisation of the assets chosen might reduce the ability of banks to game this comparison (by creating models that look strong in selected areas).

d. Role of stress testing

34. One helpful development for safer banking could be greater use of stress testing scenarios which we believe should lead to better capital management. Stress testing over multiple scenarios as the Bank of England proposes in its stress testing framework should encourage management and boards to focus on the fundamental role of capital – to protect depositors against losses caused by unexpected risks. It should be made clear to management and boards that accountability depends on whether stress testing has been used to improve judgement or whether it has been back solved to give the 'right answer'.

e. Possible shift to shadow banking

35. Outside the regulated banking environment we suggest that the FPC should consider how financial systems adapt to regulatory constraints such as the leverage ratio framework. We also suggest the Bank of England should track any migration of investment banking business lines impacted by these rules to less-regulated shadow banking entities such as hedge funds.