The CRE Lending Black Hole: Steady gains followed by extreme pains

A report for the Property Industry Alliance Debt Group

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Chairman, Property Industry Alliance Long-term Value Working Group

An analysis of Commercial Property Lending Industry profits and losses in the 1992 to 2008 lending cycle, identifying financial characteristics and behaviours related to that and previous cycles, and establishing organisational strategies to reduce financial risks in future cycles.

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A Personal note from the Author

Having been a finance professional in the U.K. CRE industry for more than 35 years, I have spent the vast majority of that time advancing or raising debt and/or equity for CRE investment and development. Over that period I have seen and have been directly involved in two of the three major CRE lending market crashes that occurred in the last 50 years. Like other U.K. CRE finance and industry professionals determined to find ways that the industry can do things better next time, I have been keen to use my experiences and those of others to analyse and explain industry and organisational behaviours in order to identify strategies which could reduce CRE lending and financial risks in the future.

The analysis included in this paper supports and adds to the work already completed by the CRE industry. The paper follows on from the "Vision for Real Estate Finance in the U.K." paper published in May 2014 and the Property Industry Alliance "Long-term Value Methodologies and Real Estate Lending" paper published in June 2017.

The original objective of my research was to complete an industry analysis to support a personal hypothesis that CRE lending organisations that competitively lend at the end of a major cycle incur losses that swamp all the lending profits generated in the rest of that cycle. If the analysis could demonstrate that this was true not only for the industry in aggregate but for a majority of individual lenders, then it should inform and motivate responsible CRE lending organisations to put in place robust and effective strategies specifically focused on managing and limiting their exposure to future end of cycle risks.

Once the research and analysis was concluded, I found myself looking at a picture that showed that not only was the CRE lending industry loss making in aggregate in the last major cycle, it was also almost certainly loss making in each of the previous two major cycles, a total period of over 50 years. Whilst that experience certainly does not apply for all CRE lending organisations, it seems likely to apply for the majority.

This finding, and the related cause and effect analysis included herein, has been subjected to a significant amount of challenge and stress testing from industry stakeholders on both substance and form. Being fully aware of the likely challenge the findings of this paper will receive, the following points are worth mentioning:

- *The analysis is focused on the CRE lending market history and is intended to highlight the importance of having robust and sustainable end of cycle CRE lending strategies. It is not an attack on today's CRE lending industry nor the individuals within it.*
- *This paper is primarily about the behaviours and responsibilities of organisations rather than individuals. Lending organisations, and those that run them, invest in them, and regulate them need to be confident that CRE lending activities are well considered and sustainable and that appropriate governance and checks and balances are in place: not just so that lending activities are well managed and successful in the short term but so that they are also robust and sustainable through all stages of the lending cycle. This responsibility sits not only with lending organisations but also with their institutional shareholders/investors and the regulator who should expect and demand appropriate levels of governance of CRE lending activities.*

- *It is important to recognise that the CRE lending industry today is not exhibiting many of the behaviours that were widely prevalent in previous cycles. In the current market, the fallout from the GFC and CRE lending losses remains a strong positive influence on current industry and regulator behaviours.*

Notwithstanding this, it is not obvious that organisations have developed strategies that recognise the historic full cycle financial dynamics of the industry and which are designed to address and reduce future end of cycle lending risks.

Finally, a caveat. Whilst every effort has been made to ensure that the financial analysis at the centre of this paper is as objective as possible, the assumptions and outputs are certainly not black and white. As a necessity, the approach and a number of the figures are based on market assumptions and it would be entirely reasonable to adopt different figures, assumptions or approaches in a number of areas. However, whilst these differences will almost certainly produce different outputs, they are unlikely to materially affect the overall conclusions of the paper. In addition, it should also be recognised that this is a working paper based on market data and observations by a market practitioner – clearly I do not have a research or bank analyst background. There are many aspects of this analysis and the wider subject matter that could and should be developed and improved by CRE researchers and banking analysts, which would be welcomed. The more understanding that the CRE lending industry has of its own dynamics, the more likely it is to develop informed, robust and sustainable lending strategies.

Rupert J Clarke
Chairman of the Property Industry Alliance Long-term Value Working Group

1.0 Executive Summary

1.1 Overview

End of cycle "irrational exuberance" affects a large proportion of the Commercial Real Estate market as a whole. However, historically, the end of cycle impact of the CRE lending industry on financial stability in the wider economy has set it apart from the rest of the CRE market.

This paper focuses on the profitability of the CRE lending industry in the U.K. over the last lending cycle 1992-2008, comparing it with the reported (and unreported) end of cycle impairments and write offs on loans made in that period. The analysis demonstrates that the end of cycle losses of the U.K. CRE lending industry as a whole were significantly higher than the cumulative profits that the industry made during the rest of the 1992-2008 cycle. Full cycle profits were exceeded by end of cycle write offs and furthermore unrealised losses and other impairments exposed lending organisations to even greater latent losses, by multiple factors. Through discussions of the findings, a number of earlier papers gradually emerged that also support the possibility that CRE lending was unprofitable, namely McKinsey (2009)[1], CBRE (2013)[2] and Bank of England (2013)[3].

The paper goes on to identify and analyse the behavioural influences and strategic weaknesses within the CRE lending industry historically, which have resulted in catastrophic losses at the end of each major cycle, concluding that through the cycle losses were likely to be widespread and not just as a result of the behaviour of a limited number of irrationally exuberant banks.

Further analysis also shows that the CRE lending industry's "profitability Black Hole" was almost certainly experienced in previous U.K. property cycles, implying that, in aggregate, the industry has been loss making for more than 50 years. Given the similarities between the U.K. CRE lending market and other international CRE lending markets, it also concludes that it is very likely that many other CRE lending markets internationally have experienced similar through the cycle profitability challenges.

Against the backdrop of this historic analysis, it should be recognised that current lender and regulator behaviours seem generally prudent, with average loan to values below 60% and aggregate loan outstandings at around 65% of the 2008 high. The memories of the GFC have remained prominent in lender and regulator thinking. Notwithstanding this, CRE lending stakeholders seem unaware of the historic through the cycle "profitability Black Hole" dynamics of the market they operate in, and do not appear to have clear strategies to address end of cycle risks. Under the circumstances, the expectation and concern must be that memories will fade and unless clear strategies are in place, history will repeat itself.

This paper calls for all CRE lending stakeholders to consciously recognise and ensure that they put in place strategies to address the end of cycle specific challenges that need to be overcome in order to avoid future erosion of economic value and stability in their lending organisations, and in the financial markets and the economy as a whole.

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1 "Commercial Real Estate Lending: Finding economic profit in a difficult industry" McKinsey & Company, November 2009

2 "U.K. Debt prospects, Banking Edition": CBRE Q2, 2015

3 "Commercial Property and Financial Stability" part of the Bank of England 2013 Q1 report

Executive Summary (cont.)

1.2 Background

As part of the collective U.K. Property Industry Alliance initiatives to reduce the risks posed to financial stability by the CRE cycle, the PIA established a research work stream to explore the application and potential effectiveness of Long-term Value methodologies. The aim of the research was to help CRE lending organisations anticipate and address the well recognised problem of making excessive loans on inflated asset values towards the end of the cycle. In taking on the chairmanship of the "Long-term Value" Working Group, I had a long held hypothesis that overly enthusiastic end of cycle lending risk and behaviours result in excessive losses that are so large that they consume all the profits generated in the rest of the cycle i.e. as a general rule, banks and other CRE lending organisations that do not exercise restraint at the end of the cycle are systemically losing money for their shareholders and investors, in addition to threatening economic and financial stability in the wider economy. Expressing this view in the foreword of the final Long-term Value Report[4], the question was, could analytical research demonstrate the hypothesis that lending organisations made more losses at the end of the cycle than they made in the rest of the cycle?

1.3 Analysis of CRE Lending Industry Profits and Losses, 1992-2008

Trying to gather information on the profit and losses of individual banks was clearly going to be subjective and challenging. However, there is Bank of England CRE lending data that tracks the quantum of U.K. CRE lending over 1992-2008 (the CRE lending peak to peak) and which also tracks loan write offs since the beginning of 2008. In addition, there is relatively detailed data from De Montfort[5] covering most of this period, tracking margins and fees, as well as providing other useful quantitative and qualitative data. Using this data one could calculate the gross margin and fee revenues generated by the U.K. CRE lending industry as a whole. Alongside this, one had to assess and then deduct the costs of lending, being the business operating costs of the lending organisations and the cost of regulatory capital, both of which were assessed based on discussions with senior representatives of major lending organisations active in U.K. CRE, both U.K. and international banks. The feedback produced a range of answers from which a through the cycle cost/income ratio and weighted average regulatory capital cost was estimated. This produced a net profit figure for the cycle which was compared with reported loan write offs post 2007 to establish overall profits and/or losses. The final draft of the analysis was then shared with representatives of the organisations that compiled the source data and with CRE lending industry leaders to sense check all the assumptions and methodology. The final headline numbers for 1992-2008 are as follows:

Gross Revenue from Margin and Fees:	**£28bn**
Less Business Operating Costs[6]:	**£8.4bn**
Less Regulatory Capital Costs[7]:	**£12.6bn**
Gross Profit through the Cycle:	**£7.0bn**
Less Reported end of cycle Write Offs:	**£19.3bn**
Overall Cycle CRE Lending Loss:	**£12.3bn**

These figures paint a very negative picture of the CRE lending industry over the last cycle, with overall end of cycle write offs being nearly three times the cumulative profits made in the rest of the cycle.

Those looking for any potential good news in this otherwise depressing picture might take some comfort that

4 "Long-term Value methodologies and real estate Lending": Property Industry Alliance, July 2017.
5 The De Montfort University Commercial Property Lending Report, based on industry survey data begun in 1997, transferred to CASS Business School in 2018 and is now the "CASS Commercial Property Lending Report".
6 Based on a through the cycle cost income ratio of 30%
7 Based on a weighted average regulatory capital cost of 80bps

Executive Summary (cont.)

the analysis of industry profitability is certainly not black and white. Indeed, it certainly might be possible to convince oneself that the industry was in fact profitable by dismissing the regulatory cost of capital as not a real cost (to take the industry to break even after write offs) and then taking the much larger through the cycle surpluses and compounding them over the cycle, significantly increasing the end of cycle surplus. However, pursuing this line of thinking is not quite so straightforward and does not necessarily reach the conclusion that the industry is profitable, for the following reasons:

- **Regulatory Capital:** Covering this cost is seen as a pre-requisite for the industry to create value for the shareholders (rather than destroy value), so ignoring it is rather like saying that the shareholders return requirements are not important. Also it should be recognised that most analysts and many lending teams measure CRE lending profitability after deducting this cost.
- **Compounding Returns:** When going into the level of detail required to complete a sensible compounding analysis, the micro assumptions for cost/income ratio at different stages in the cycle, variations in cost of capital and the timing and treatment of provisioning together with mid cycle write offs, among others, come into question, making it very difficult to assess how significant the compounding effect might be.
- **Other direct and indirect Costs:** The "Additional Losses and Impairment Analysis" section below indicates that there are other costs and risks of lending which the straightforward analysis simply overlooks.

Certainly, there are different approaches that could be taken and assumptions that could be made which would result in different headline numbers, but these are unlikely to affect the main conclusions of this paper, particularly with regard to the need for lending organisations to understand the through the cycle financial dynamics and behaviours and to anticipate and put in place appropriate end of cycle strategies.

As the above analysis progressed and was shared with a wide range of leading CRE players, other authoritative related research on CRE lending profitability and write offs (McKinsey, CBRE, Bank of England) gradually emerged that was broadly consistent with the headline that the industry was loss making and that the CRE lending industry was loss making through the cycle as a result of end of cycle write offs.

1.4 Additional Losses and Impairment Analysis

In considering the overall risks of CRE lending, it should be recognised that write offs are not the only measure of impairment and risk. Because the above analysis only focuses on reported write offs, many of which were recognised well after the property market had started to recover, it is blind to the additional latent exposures that the industry was facing at the bottom of the market. In addition, the analysis of write offs excludes. Lender exposures to equity finance which reached £6.5bn immediately before the peak of the market, the majority of which would have been exposed to complete write offs.

The latent exposure to CRE losses at the bottom of the market in Q2 2009 would have been far greater than the eventual £19.3bn of reported write offs - logically, as much as £30bn. Of course, if it is possible for organisations to "hold on until things get better" clearly that is a very sensible strategy. However, that does not mean either that one should completely ignore the latent risk of the impairment in the meantime, nor imply that overly exuberant lending practices are not really a problem because values will come back eventually.

Also, the peculiarities of bank lending accounting ignore the mark to market of loans in their books - similar risk CMBS will have had a market value significantly below their nominal face value as a result of high loan to values and low margins relative to market, but mainstream CRE lending organisations generally hold loans at a face value that ignores this reality. Whilst the formulaic application of MTM principles can generate unintended and unwelcome consequences, awareness of the latent risk (and trying to avoid it) is important in the context of insolvency, exposure to distressed capital raisings and constraints on the wider business.

Executive Summary (cont.)

In aggregate, a conservative estimate of the latent negative impact on CRE lending industry balance sheets at the bottom of the cycle is that lending organisations had c.£50bn of capital at risk of absolute loss, dwarfing the cumulative whole cycle profits of £7.0bn. Of course, this c.£50bn of latent write off risk eventually resulted in write offs of £19.3bn, principally as a result of the recovery of CRE market values. Holding on to distressed loans until the market recovers is a very sensible strategy but is reliant on having sufficient capital base to ride through the storm. Extreme latent exposures in moments of financial distress are the main reasons why banks go bust and/or require emergency equity injections and certainly cannot be ignored or dismissed.

1.5 Three Factual/Mathematical Reasons why in the last cycle CRE Lending end of cycle losses exceeded full cycle profits:

i. **Lending book expansion through the cycle:** At the low point early in the cycle, loans outstanding were £31bn rising over 14 years to a peak of £255bn. Whilst margins and fees at the beginning of the cycle are high, loan books are small and so the absolute amount of profits is small. At the end of the cycle, when lending is at a peak, margins are low and the write offs, when they come, are a percentage of a much larger number: £255bn not £31bn. There is simply too small a volume of profitable lending through the cycle to offset even single digit percentage write offs of the large quantum of end of cycle CRE loans.

ii. **End of cycle lending volumes were excessive:** In spite of evidence that the market is overheating, around 65%[8] of the peak end of cycle loan book (£164bn of the £255bn) is generated from new loans originated in the last two years of the cycle (2006-2007). Having the majority of the loan book committed at around 75% value, against assets that could fall 42% in value, simply does not work, even if some of those loans were made when values were slightly below peak. In comparison loans that were made three years before the peak or earlier, when assets were less overvalued, experience a relatively low or no loss ratio. This was referred to as the "Peak Market Share Trap" by Fitch in their April 2017 paper on last cycle CMBS activity[9], a major conclusion of which was "All loan losses are from loans made during the peak valuation period, 2005-2007". A paper by BAML reached the same conclusion[10].

iii. **LTV's needed to be pro-actively managed, or be lower:** Lending 75% of asset values when the market could fall 42%, can only work if the lending organisation has a strategy to identify when assets are becoming overvalued and then proactively reduces loan to values on new loans accordingly. This is in addition to having a careful asset selection policy to ensure that the specific property being lent against will not underperform the market, increasing the lending exposure even further. Alternatively, lending organisations could adopt a strategy that does not require material end of cycle action, by permanently keeping Loan to Values at levels which afford sufficient protection - say 50%. Even then they still need to be very selective on which assets they lend against (because in distress, some asset values will fall far more than others.) Lending organisations are reasonably good (but by no means perfect) at being selective. However, historically, the majority of the market has demonstrably failed to materially reduce aggregate loan to values to sufficient levels to protect themselves when the market becomes over heated. If anything, as a result of competitive pressures the market has tended to increase LTV's in the second half of the cycle.

8 The exact percentage is difficult to establish since some of the new loans will have been repaid during that period
9 "U.K. CRE: Countercyclical Lending Boosts Loan Returns": Fitch &Co, April 2017
10 "Which European CRE Loans suffered and why?" BAML, February 2018

Executive Summary (cont.)

1.6 Is it possible that the majority of losses were restricted to a few overly exuberant lending organisations?

Market observation and research clearly identifies a number of major players, most notably the Scottish, Irish and Icelandic Banks, as having experienced significantly larger percentage losses than the average. Highlighting the difference between the outliers and the average lender experience, in early 2013 a Bank of England review identified U.K. bank median losses as being significantly lower than the major loss making U.K. banks, implying an extrapolated 3.5% of peak loans write off for median banks in the market as a whole to the end of 2017, compared with 7.6% for the market as a whole over the same period. However this lower loss ratio does not totally get them out of the profitability Black Hole: because of the relative loan book sizes through the cycle, losses for median banks would still have been c. 25% more than through the cycle profits, principally because they were still active at the end of the cycle. De Montfort data shows that at the end of 2006, 89% of lending organisations, the vast majority, were planning to increase their new lending in 2007 - less than 2 quarters before the market peaked and crashed. The fact that a record £84bn of new loans were then made in 2007, demonstrates that the de Montfort respondents were successful in their new lending ambitions. More evidence of the continued activity of the majority of lending organisations was that at the end of 2007 55% of lenders were still intending to further increase their new lending activities, in spite of clear evidence that the cycle had peaked and turned. The data clearly indicates that end of cycle irrational exuberance affected the vast majority of the banks, not just a limited number of high profile lending organisations.

1.7 Behavioural Reasons behind End of Cycle Lending Failures

i. **Peer Pressures:** Fear of moderating new lending “too early”: The financial markets are extremely competitive with direct and indirect peer pressure to grow profits and together with performance requirements and incentives, these are primary drivers to the natural behaviours of lending organisations. Reducing exposures (and profitability) when the market is performing well goes against the grain for all the stakeholders (individuals, lending teams, boards, analysts, shareholders).Even if one or more of these parties spoke out and proposed pulling back, they are very likely to face stiff opposition from the remaining stakeholders.

ii. **Organisational Inertia:** The best analogy is the fable of the “frog in the water pot” failing to notice the temperature gradually rising towards boiling point. The gradual and progressive heating up of the market lulls the stakeholders into a false sense of security, as do the many asset and loan specific lending criteria and organisational checks and balances. Historically, lending organisations’ traditional lending criteria and checks and balances have consistently failed to protect them against losses at the end of the cycle. Unless there are extremely clear and unambiguous warning alarm bells, lending organisations will generally keep on lending even if the market is looking overheated. Waiting for all metrics to emphatically signal that the market is overheated is definitely leaving it too late.

iii. **The Key Stakeholders have short term horizons and fail to look at the big picture:** Although the mathematics of the cycle should be obvious to anyone looking at the big picture, because the focus of the governance chain (lending team, risk committee, board, analysts, shareholders) is generally short term, CRE lending strategies and activities have seemingly been completely blind to the magnitude of end of cycle risks and their impact on full cycle profitability. There is no other obvious explanation why the CRE Lending Black Hole analysis is not a mainstream issue for all CRE lending stakeholders, including and especially, shareholders and investors.

iv. **Lack of clear End of Cycle CRE lending strategies:** Given the combination of the extremely negative business consequences of getting the end of cycle wrong and the natural behaviours of all the stakeholders to not only keep on going but accelerate lending activity towards the end of the cycle, one would have thought organisations would recognise that they need specific and well thought through strategies that anticipate and pre-empt these default organisational behaviours. But, with almost no exceptions, lending organisations have not had (and still do not seem to have) any specific end of cycle strategies, with many being of the view that because each cycle is different, it is simply too difficult to predict the end of the cycle.

1.8 Regulator Behaviours

If the lending industry has failed to regulate their end of cycle behaviours, why is it that historically the regulator has also failed to intervene sufficiently to prevent major market disruption and failure?

i. **Lack of clear guidelines combined with lack of CRE Specialists:** Whilst regulators have definitely regularly tested the temperature of the market they do not seem to have had a set of predetermined measures to determine when firm action is required and very limited specialist market ability or insight to allow them to act with conviction.
ii. **A micro approach to macro problems:** Generally regulator activity and intervention defaults to more detailed analysis and more detailed intervention. The biggest issue in CRE lending behaviours are macro not micro. Extensive detailed analysis in real time is coloured by evolving consensus views and produces mixed messages and almost inevitably misses the big picture.
iii. **Regulators should not be concerned about taking action "too early":** The market and the regulator should be educated to accept that early regulator action is preferable to no action at all. Whether the regulator is marginally "early" or not, it must be clear that everyone will be better off if the regulator acts when the market starts looking overheated than if they end up doing too little too late in the cycle, and then heavily intervening after the event, exacerbating the subsequent crash, which seems to have been the historic norm.
iv. **Clear roles and responsibilities:** Historically the responsibility for prudential oversight of the CRE lending market has not been clear, albeit in the current cycle, this seems to have been resolved, falling to the Prudential Regulatory Authority of the Bank of England.

1.9 Is the 1990-2007 U.K. CRE Lending experience a one off?

i. **Were CRE lending profitability outcomes different in previous cycles?** A number of factors point to the 1992-2008 profitability outcome being a repeat of previous U.K. cycles. Most obvious is the rapid escalation in lending activity and loans outstanding at the end of the 1974 and 1989 cycles. Rates of increase in both those periods were dramatically higher than in the period leading up to 2007. Annual loans outstanding increased 21% pa in the eight years leading up to 2008, 28% pa in the eight years leading up to 1990 and an extraordinary 92% pa in the three years leading up to 1974. Alongside these dramatic increases there were also significant levels of reported end of cycle losses – in the early seventies, the financial industry "Lifeboat" was required to intervene and support and/or assist some sixty secondary banks, and in the early nineties, three of the U.K. clearers reported 17.5% write offs in the four years after the crash, similar to the 2007/8 high profile clearer losses. Applying "lending book expansion through the cycle" mathematics (see above), the overall conclusion is that not only is it extremely likely that in these previous cycles the CRE lending industry as a whole was also loss making but, logically, that the industry has been loss making through cycles for more than 50 years.
ii. **Is this experience principally a U.K. phenomenon?** There have been similar patterns of rapid end of cycle escalation in CRE lending combined with catastrophic losses in most major developed CRE markets throughout the world through most cycles. Since organisational CRE lending failures arise out of a lack of clear end of cycle strategy, it should not be a surprise that many of the international lending organisations who have been active and loss making in the U.K., would not have had a strategy to protect themselves from similar end of cycle black holes in their home markets as well. Of course extrapolating extremes of the through the cycle profitability experience to every country and every cycle would be totally wrong, but given the similar characteristics of many of those markets, it is inconceivable that the U.K. experience has not been repeated elsewhere.

iii. **Is it possible it will be different next time?** Even though there are significant value and shock risks latent in today's CRE market, currently both lending organisations and regulators are demonstrating greater prudence. Average LTVs remain below 60%[11] and the overall volume of CRE loans has not escalated like it has in previous cycles, loan outstandings at £165bn remaining significantly below the peak £255bn 2008 high. Given the magnitude of the GFC and CRE lending's contribution to the instability of the major U.K. banks ("significantly important financial institutions") at that time, it seems likely that currently the institutional CRE lending risk memory half life is far longer this time than in previous cycles. However, without a clear understanding of the dynamics of property lending though the cycle and without specific end of cycle strategies in particular, it is difficult to conclude that previous experiences will not be repeated at some stage in the future, sooner or later.

1.10 Conclusion

In the build up to the end of every CRE cycle, with one or two exceptions, the whole CRE industry – investors, developers, borrowers, lending organisations (and the regulator) – gets swept along in a general tide of optimism. The inevitable crash inflicts significant pain on all these participants, but for structural reasons it is only the pain experienced by the CRE lending industry that threatens the stability of the wider financial system. The revelation that, in addition to threatening financial stability, the CRE lending industry is also consistently losing money through the cycle as a whole leaves one in no doubt that the historic behavioural status quo of all the stakeholders in the CRE lending industry has to change.

This paper seeks to map out a number of influences and behaviours that need to be pre-emptively addressed by lending organisations and the regulator in order to reduce the risks of history repeating itself. Although currently, post the GFC, CRE lending industry stakeholders generally seem to be behaving with appropriate restraint, and the market is also benefiting from far more attentive regulatory scrutiny and related regulatory capital requirements, it would be very presumptuous to assume that history is unlikely to repeat itself, unless lending organisations, shareholders/investors and regulators fully recognise and understand the end of cycle challenges and ensure there are clear strategies (and responsibilities) to overcome them.

11 "Commercial Real Estate Lending Report, year end 2017": CASS Business School, June 2018

The CRE Lending Black Hole: Steady gains followed by extreme pains

2.0 Background

In chairing the Property Industry Alliance "Long-term Value" Working Group, I have had the opportunity to spend time on and around a subject which has fascinated me from the beginning of my career in real estate – CRE lending industry behaviours through the real estate market cycle and consequential losses at the end of major real estate market cycles.

Not only have there been CRE lending busts at the end of every major CRE cycle in the U.K. for the last 100 years, there have been repeated end of cycle catastrophic CRE lending write offs in virtually all the other developed economy financial markets, the regular experiences of the CRE lending industry in the USA being the largest and most visible example, although other countries, such as Iceland, Sweden, Japan and Spain have had similar experiences.

Time and time again, the CRE lending industry has seemed unable to learn from its previous mistakes. Why is this?

In response to the post 2007 CRE market crash and the GFC, like minded professionals in the U.K. CRE industry, including lending organisations, investors and valuers, came together to identify and learn from the past and recommend ways to reduce the chances of a repeat CRE lending crash in the future. The result, after a number of years of hard work, analysis and debate, was the May 2014 report[12] "A Vision for real estate finance in the U.K."

Of the seven very specific recommendations in the Vision paper, two were prioritised, being recognised as capable of making a significant contribution to the way the U.K. CRE lending industry could identify market trends and avoid lending too much at the top of the market. These were:

- The creation of an industry wide CRE lending database, aggregating the lending data of the CRE lending organisations to better understand what was going on in the market place and
- The identification and application of a Long-term Valuation Measure which can help lending organisations understand and avoid lending against inflated market values at the end of the cycle

Official recognition that these recommendations were potentially important additions to the CRE lending market came in the form of Bank of England written and verbal support for the two separate initiatives.

Over the last four years there has been significant progress on the Long-term Value analysis: the PIA working group published a paper in June 2017 which does indeed demonstrate that it is possible to arrive at a long-term valuation measure which has reasonably accurately anticipated major CRE market falls in advance of them happening, offering lending organisations and regulators a valuable tool to prevent the lending market getting carried away at the end of the cycle. The next stage of this project currently involves further enhancing the research already completed and also engaging with lending organisations and regulators to establish how they can best incorporate Long-term Value methodologies into their approach to CRE lending so that they are better placed to understand when and how to moderate activity to minimise end of cycle write offs.

12 "A vision for real estate finance in the U.K.: Recommendations for reducing the risk of damage to the financial system from the next commercial real estate market crash"; May 2014

3.0 CRE Lending Black Hole Hypothesis

In an ideal world, Long-term Valuation methodologies will reliably anticipate a market that is becoming dangerously overheated, lending organisations will use them as a vital tool to limit CRE lending exposures, and wholesale catastrophic end of cycle CRE lending write-offs will become a thing of the past…...

That is the theory. How easy is it going to be to make sure that good theory translates into good practice? Even if Long-term Value methodologies are indeed predictive in a timely manner (and, realistically, whilst they are likely to be able to be reasonably good at anticipating traditional market overheating, they are certainly not going to be guaranteed to capture all macro market shocks), one also has the distinct feeling that unless lending organisations really believe in and commit to adopting a Long-term Value analytical approach, the information will become one of a number of general considerations to inform lending decisions as the market evolves. To some extent this is where the market has been historically. For many years, there have been a whole range of analytics that can and do give clear indications on what lending organisations (and the regulator) should and shouldn't be doing to ensure CRE lending is robust and sustainable over the long term. However, organisations have generally ignored these warning signs - behavioural issues have seemingly dominated what actually happens in practice.

How do lending organisations approach managing CRE lending risk? The tried and tested rules that lending organisations need to understand and adhere to in order to be a successful CRE lender are pretty well established. Most of these rules (Loan to Value, Interest Cover, Debt Yield, Adjusting exposures to reflect underlying risks, liquidity and sustainability of capital value and cash flow) are fairly well known to and used by the vast majority if not all of practicing CRE lending organisations.

However, for some reason, there is one rule that lending organisations do not seem to have had on their radar. The rule does not obviously appear on the traditional CRE lending check lists and even in spite of the experiences over 2008-2012, still doesn't. And this is not just a U.K. oversight but seems to be the principal Achilles heel of all developed CRE lending markets around the world.

The overlooked rule of CRE lending relates to the challenges and importance of managing end of cycle risk. The pressing need for organisations to identify and adopt the rule is founded on a relatively simple hypothesis:

For the majority of lending organisations, whether they lend through the whole lending cycle or just towards the end of the cycle, cumulative losses (write offs) at the end of the cycle will almost certainly be equal to or greater than total cycle cumulative profits.

The hypothesis has two very distinct strands – The Cause and the Effect:

1. **Behavioural Hypothesis (the "Cause"):** Whilst the CRE lending industry's continued historic failure to learn from previous market busts has been partly as a result of insufficient analytical and strategic rigour, combined with an understandable lack of certainty over future events (so it is difficult to be clear exactly when to moderate lending), the primary cause of accelerated lending at the end of the cycle is behavioural. Even when the market is looking "a little overheated", there are extreme stakeholder pressures that drive the market to continue to compete to lend, and that competition to grow market share reduces margins, increases loan book size and encourages the industry to take increasingly more aggressive exposures. Collective and individual lender behaviours and the frothiness of the market are somehow rationalised, with participants concluding that no major collapse is imminent. The CRE lending industry continues to roll forward.
2. **Financial Hypothesis ("the Effect"):** For the majority of CRE lending organisations, the huge losses suffered as a result of overenthusiastic lending at the end of the market cycle wipe out all the cumulative profits that

are made in the rest of the cycle leading up to that point. From a financial point of view, their shareholders and/or investors would almost certainly be better off if they avoided the CRE lending market completely.

If this hypothesis is correct, the most important rule in CRE lending must be:

For any organisation to be active in the CRE lending market, it is essential that it has an effective and well-articulated strategy that clearly sets out when and how lending activity and exposures are going to be moderated as the end of the cycle approaches. Most importantly, this strategy should anticipate that stakeholders will almost certainly argue against action when the market gets to this point.

If lending organisations are not clear in advance on the extreme importance of managing end of cycle risk and how and when they will start to moderate their activity, at precisely the time when the organisation should be taking action, there will be a whole range of stakeholders pressing for continued expansion of lending activity. The organisation will almost certainly fail to make the tough decisions required. And if an organisation leaves it too late, they and their shareholders will almost certainly lose as much as they have made in the whole of the rest of the lending cycle, if not more. In corporate governance terms, these lending organisations will have "destroyed shareholder value".

4.0 Analysis: Proving the CRE Lending Black Hole Hypothesis

Keen as I was to include this view within the Chairman's foreword of the Long-term Value paper, not unreasonably, the Working Group members asked whether there were any data and/or analytics to support the theory that the losses of end of cycle CRE lending organisations exceeded their whole cycle profits. Unfortunately, there were no obviously available analytics that one could reference to prove the point. It was just a theory.

However, it did make me question whether and how one could actually carry out analysis that could test the theory. There was certainly a significant amount of readily accessible historic data on the last lending cycle from sources such as the Bank of England and De Montfort Commercial Property Lending Report. The obvious approach would be to use this historic data to assess industry profitability in the last cycle and compare cumulative industry profits with the end of cycle write offs. And from that data it may be possible to come to some conclusions on the range of lending organisation experiences.

Combining the De Montfort and Bank of England data with informed views from senior and experienced CRE lending organisations, and putting it all down on a spreadsheet (see Appendix), eventually produced an estimate of lending profits for the whole of the U.K. CRE lending market from 1992 – 2008, the "profitable" period of the last cycle. From there, one could very easily compare these cumulative profits with the subsequent write offs and losses, not least because CRE lending industry write off figures have been collated and published by the Bank of England since 2007.

So, what do the figures for the last cycle show? The good news is that for c.90% of the CRE cycle, CRE lending is a consistently profitable business. Notwithstanding this, what the figures revealed was that the CRE industry as a whole failed to generate enough profitability during this period to offset the actual and latent losses created when the market crashed – with all the write offs being generated almost entirely from new CRE lending committed during the last two to three years of the cycle, as market values reached their peak, as highlighted by the research completed by Fitch and BAML.

Everyone knows that the CRE lending industry as a whole incurs substantial losses when the CRE market crashes, but for some reason, they don't seem to know that the losses swamp the profits made in the profitable period after the previous market crash.

Here is the analysis.

The primary commercial objective of CRE lending is to generate profits for shareholders and/or investors. For lending organisations to generate profits that are consistent with shareholder expectations, firstly revenues need to exceed the direct costs of lending (the people, premises and other costs of running the lending operation), and in addition, they need to cover the cost of equity capital related to the lending activity, being the regulatory requirement to set aside shareholder capital against each loan. Furthermore, the profits need to exceed any lending losses due to write offs.

So how much were the combined cumulative profits of the U.K. CRE lending industry in the "good" years of the CRE cycle, 1992 to 2008? The analysis of that profitability as follows:

- **Revenues:** Using the annual analysis of loans, margins and fees completed by De Montfort and backing this up with Bank of England data, it is relatively easy to establish that total revenues generated by CRE lending in the U.K. during this period were c.£28bn. These figures were checked with De Montfort and a number of lending organisations and there was general consensus that this was a reasonably accurate estimate of revenues generated by the U.K. CRE lending industry in this period.

- **Costs:** One can then derive an estimate of the aggregate annual and cumulative profits generated by the U.K. CRE Lending industry by deducting an estimate of the annual costs of running a property lending business:

    a. **Operating costs** (c.£8.4bn covering salaries, bonuses, premises, risk committees etc. representing a cost income ratio of 30%) and,
    b. As appropriate, **Regulatory Capital costs** (c.£12.6bn, based on 80bps being the weighted average implicit cost of the capital lending organisations were required to set to one side to reflect and support the underlying risk being taken).

    In cross-checking these cost assumptions with De Montfort, the Bank of England and a number of major CRE lending organisations, there was less consensus.

    On operating costs, the CRE lending organisations indicated cost to income ratios of between 25% and 40%, which seemed very low when compared with the macro data on lending organisations cost/ income ratio of c.55%-60%. Whilst figures closer to the lower end of this range might apply when lending organisations have a large loan book and are benefitting from economies of scale, for smaller loanbooks and at earlier stages in the cycle the ratio will undoubtedly higher. In addition, this figure completely ignores the huge amount of management time, resources and cost required to review, report and manage the whole operation when working out distressed loss making loans, an integral part of managing CRE lending through the cycle, both at book level and at the corporate level. Under the circumstances, whilst a 40% cost/income ratio seems a very reasonable through the cycle assumption, a more conservative 30% was assumed, not least to avoid accusations that a cost income ratio of 40% was definitely too high.

    On regulatory capital, this also varied, such variation depending on the domicile of the banks, with a range of 96bps (U.K.)[13] down to c.50bps (German). In order to reflect this, these figures were applied to the different types of lender in the market (U.K. and non U.K.) and weighted according to the size of their loan outstandings to produce the 80bps Regulatory Capital cost. As part of the discussions on Regulatory Capital cost, a minority of lending professionals questioned this cost as a deduction to calculate profit. This is considered further in section 5.0 "Stress Testing the Figures and Assumptions".

    In arriving at these costs, no allowance has been included for what the industry calls "risk", being the prudent requirement to set aside proportions of profit to cover general and specific loan loss provisions as an integral part of assessing likely end outcome cost and profitability. The reason behind this is that the analysis uses actual losses ("write offs") rather than provisions. If the provisions had been included, headline profitability through the cycle before losses would have been even lower, although, obviously, the end outcome after write offs and write backs (as appropriate) would remain the same.

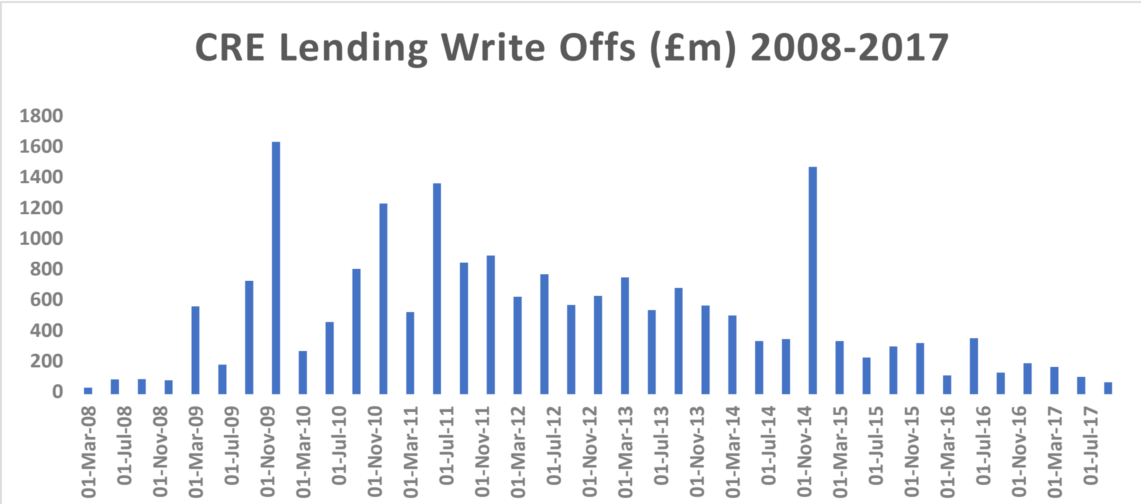
- **Gross Profits:** Revenues of c.£28bn less the estimate of costs of £21.0bn, implies a £7.0bn cumulative profit for the whole U.K. CRE market aggregated over the 1992-2008 period.

    How do the profits generated during 1992 – 2008 compare with post-2007 end of cycle write offs? Since the last market crash which started gathering momentum in mid-2007, U.K. CRE lending organisations have written off £19.3bn, representing 7.6% of high point loan book, all relating to loans made at or near the peak of the market. That £19.3bn is not an estimate, it is Bank of England reported figures[14], quarter on quarter up until the end of 2017.

13 This figure of 96bps relates to 100% capital weighting, an equity gearing ratio of 8% and a cost of equity capital of 12%

14 Bank of England database, reference RPQZ549

Write-offs of £19.36bn, representing 7.6% of high point loan book, compare with £7.0bn of cumulative profits, representing only 2.8% of high point loan book. The clear conclusion is that not only did the last CRE crash lose the lending industry all the profits made since the previous crash, the reported losses were many times greater than the cumulative profits – the CRE lending 'Black Hole". Even if regulatory capital costs are excluded, whilst the industry was nominally break even, it still did not make a material profit. A summary of the year by year analysis of CRE lending industry profitability is included in an Appendix at the end of this paper.



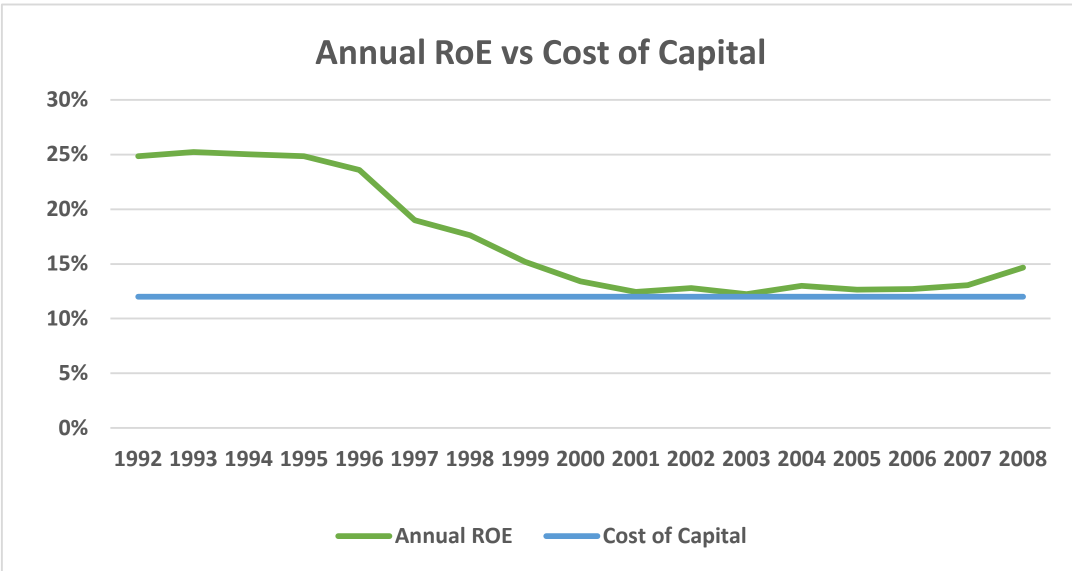
Source: Bank of England

5.0 Stress Testing the Figures and Assumptions

The analysis completed is subject to the limits of the information available and some averaging assumptions on costs in particular. In order to assess the reliability of the headline conclusions, one should recognise that there are a number of areas where the figures could be approached differently to produce different figures, as follows:

Adjustments, which if added into the base case analysis, would further increase stated industry losses:

- **Higher Cost/Income Ratio than 30%**: Commercial lending organisations' cost/income ratios average between 55 – 60% on their business as a whole. However, for various reasons (e.g. size of loans, accessibility of the borrowing market, speed of underwriting and loan completion process) the CRE lending part of their business seems to be run at a much lower level. Discussions with industry representatives and the related analysis came to the preliminary conclusion that a cost/income ratio of around 30% may be the most appropriate. Indeed the McKinsey analysis[15] (see below) concluded a cost income ratio of between 30.5% and 32% in its snapshot analysis of eight large European banks for 2006 and 2007 (excluding the Risk cost). However one should almost certainly arrive at a much higher cost/income ratio, taking into account the following considerations:
    - » Firstly, the McKinsey 30% ratio was being measured when banks had their maximum loan books and were undoubtedly benefiting from significant economies of scale. Earlier in the cycle and for lending organisations with smaller lending books, the cost/income ratio would have been significantly higher.
    - » Secondly, the 30% figure does not reflect the full cycle picture because it does not take into account the significant incremental costs of managing a distressed debt portfolio where resources at all levels in the lending organisation are preoccupied with the direct and indirect consequences of managing out those risks.
- **Variation of Cost/Income ratio through the cycle:** Using a straight line application of cost/income ratio through the cycle, banks yield high returns on capital early in the cycle but this falls later in the cycle when competition reduces pricing usually to levels very close to the cost of capital (see graph below and McKinsey report).



15 "Commercial Real Estate Lending: Finding economic profit in a difficult industry" McKinsey &Company, November 2009

Notwithstanding the straightline application of cost/income ratio illustrated above, in reality a lending organisation is not that likely to be that profitable at the beginning of the cycle because either it will be a new entrant, with start-up costs and no economies of scale, or it will be an established lender with major operational commitments to working out its previous cycle loanbook. At the end of the cycle, profitability for both new and established lenders will still be low - very likely below the cost of capital, as the Mckinsey paper concluded because increasing competition squeezes revenues and margins and, in addition, end of cycle profits are completely illusory because they come from loans that invariably generate the largest write offs.

- **Revenue assumptions are generous:** The lending figures produced by the Bank of England include up to 10% of Housing Association lending which would have been made at far lower margin and fee levels than assumed in the base case analysis. Indeed if one compares the assumed revenues of 155-160bps in 2006/7, these are c.15% higher than the 135-140bp figures included in the McKinsey analysis of 8 major European banks over the same period. Of course it is possible that this could also partly be explained by potentially lower margin continental European lending business, but there is insufficient data to prove that one way or the other.
- **Equity Exposures:** In addition to senior lending, in the few years leading up to the end of 2006, as an end of cycle flourish, the largest U.K. banks had also rapidly expanded into CRE mezzanine and equity investments, peaking at c.£8bn. Whilst the Bank of England figures for write offs post 2007 should include mezzanine, they exclude equity interests, which at the end of 2006 stood at c.£6.5bn for the U.K. banks alone. Virtually all this £6.5bn was likely to be of low or zero value at the bottom of the cycle with little or no chance of recovery, which would mean that the total actual write offs post 2008 are likely to have been closer to £25bn.

Adjustments which if applied to the base case analysis, could reduce the stated industry losses/improve the stated industry profitability:

- **Treatment of Cost of Regulatory Capital:** As indicated it might be reasonable to conclude that it is inappropriate to treat the cost of regulatory capital as a true cost of lending as it is only a measure of opportunity cost and the related returns are part of shareholder's returns. This exclusion increases through the cycle profits to c.£19.6bn, resulting in the industry more or less breaking even. That approach is very reasonable if trying to look at absolute losses, completely ignoring shareholder return requirements. However it is worth noting that a large number of the CRE lending teams include regulatory capital cost when being measured for profitability and many industry commentators also test profitability on this basis (e.g. McKinsey concluded that even in 2006/7, the banks had a negative "economic profit" as a result of a regulatory capital cost that they estimated at c.98-99 bps). The treatment of the cost of regulatory capital as a real cost has sound financial markets principles underlying it: the widely accepted definition of "Value Creation" is "delivering returns that are above the cost of capital". Anyone wanting to demonstrate that CRE lending market financial dynamics are not as bad as presented, simply by ignoring the cost of regulatory capital, is effectively saying that creating value for shareholders and investors is not how the industry should be measured.
- **Compounding returns/time value of money:** Taking an analytical approach, compounding profits to improve the CRE lending picture has far more weight, but is extremely complex for a number of reasons. It is very reasonable to conclude that profits are understated because they are not compounded – surpluses could and would be reinvested to generate additional returns, increasing the cumulative total. Compounded profits would be significantly higher. This is, of course, true but trying to develop that thinking and the related financial analysis throws up a number of questions which are very likely to severely dilute the positive analytical outcomes of the compounding effect as follows:

- Firstly, how large is the real reinvestable surplus year on year. An obvious further deduction from annual profitability would be the cost of "risk". Given the analysis within this paper, one could make a very strong argument that general provisions for real estate lending should be much higher than banks have traditionally assumed, significantly reducing annual reinvestable surpluses, even in the good years. In addition, valuable early cycle profits would very likely be swamped by previous cycle direct and indirect work out costs, even ignoring write offs.
- The analysis also takes no account of the surging cost of capital to hold the distressed loan portfolio post-crash (or the uncertain earnings from those loans over that time), which has proved extremely costly for those banks that had to seek additional equity at the height of their distress and which severely compromised lending activity and business for others. In the same vein, the amount of capital that would need to be set aside to provision for a high LTV distressed portfolio with a margin substantially below market would be substantially more than the steady state 8% Tier 1 implies and this increases the aggregate cost, and limits their ability to do new business at a time when market margins are invariably favourable to lenders.
- Finally, one should question the overall required return on capital for any investor who was just looking at this part of a bank's lending business and contemplating the risk return dynamics of the sector through the cycle. Given the history, an all-in rate of 12% return on equity would almost certainly not offer investors high enough a premium for the risk. On top of this, the lender's cost of capital becomes very high during the extended periods of real estate distress, even if in "the good times" 12% is deemed to be appropriate.

If one could somehow find a way of ignoring these analytical and, in some cases, philosophical challenges, then arithmetically the compounding effect of recycling profits into new business (into above trend escalation in the size of the real estate lending book would be the most logical destination given the history) would be large enough for the CRE lending industry to edge back into profitability, but the analysis still concludes that it still would not return its cost of capital, even if that remained at 12%. However, under all the circumstances, simply ignoring the question marks over the inputs to the calculation would be stretching credibility somewhat and it is very difficult indeed to conclude even marginal profitability with any confidence, yet alone the nominal 12% required by the shareholders.

- **Post-2007 write offs treated as losses related to pre-2007 lending:** Another concern might be that taking ten years of post-peak write-offs is too long a period – but having considered this carefully, it would be very difficult to argue that any of these write offs were linked to new lending at the start of the next/current cycle, particularly given the steady progression of value across the market since 2009 and indeed the analysis itself assumes that there were absolutely no write offs recorded in the period 1992 to 2008 (due to loans made during that period), which almost certainly is a very conservative assumption, particularly given market fluctuations over that period. Perhaps the one exception to this might be loans made in the last five years secured against retail assets given that retail property has been experiencing severe head winds. However, it is likely that any losses would have only emerged over the last few years, a time when reported industry write offs have been extremely low and continuing to reduce.
- **Other Income:** Whilst the analysis includes margin and fee income, it does not recognise any other CRE related sources of revenue. Interest rate swaps are the most obvious area, but the income was relatively small and in the last cycle, for a number of reasons, interest rate swaps became more of a liability than an asset. Some banks, principally major lenders and investment banks, do generate additional revenue from underwriting, but these are very much in the minority.

Many of the above items that might reduce losses, when looked at in detail, could of course allow one to conclude that actually costs were higher than the base case assumptions in the areas of regulatory capital cost, write offs and cost to income ratio.

Perhaps the most striking aspect of the above analysis is that the profits/value added of the CRE lending industry over the good part of the cycle would seem to be actually relatively small. This view is endorsed by the paper completed by McKinsey in November 2009 ("Commercial real estate lending: Finding economic profit in a difficult industry").

Covering around 40% of the European lending market, and taking a snapshot of activity at that time, McKinsey's main conclusion under the headline "A loss-making industry" was that "the industry as a whole does not return their cost of capital even at the best of times". It did highlight that "some CRE lending organisations do generate returns exceeding their cost of capital" and in addition, these lending organisations were more prudent justified by the statement that "some lending organisations grew concerned and pulled back in early 2007". However, this positive statement about the more prudent behaviours of one or two lending organisations was reached before the full extent of major write offs had become evident.

It is very clear now that pulling back in "early 2007" was leaving it rather too late given that values were already hugely overinflated and the market started its dramatic fall in mid-2007, a view backed up by the findings of the Fitch and BAML papers. "Pulling back" in lending terms is very difficult if you have made five year commitments. Setting aside the securitisation option – trying to pass the risk to someone else before the music stops - all you can really do is either stop new lending or more likely, reduce LTVs on new lending to levels that anticipate an imminent major market fall. In spite of this action, the existing book will remain largely unchanged. Under the circumstances, there is no question that even McKinsey's "more prudent" banks that generated returns exceeding their cost of capital in 2007 would have eventually experienced material write offs and a high percentage of non-performing loans, which would have almost certainly reduced their returns to below their cost of capital through the cycle.

6.0 Lending Industry Awareness of the "CRE Lending Black Hole"

In spite of the very clear messages in the McKinsey report, CRE lending industry stakeholders do not seem aware of or engaged with the challenging financial dynamics of CRE lending through the cycle. Perhaps a number of factors allowed the industry to overlook the McKinsey findings:

- the data was specific to McKinsey
- it was a point in time snapshot (2006-2008)
- the analytics only covered 8 banks, with the balance of the data from other lending organisations being through interviews
- the paper was "European" with no national breakdown
- there did not seem to be any major coverage or debate of the paper in the industry at the time it was published

In a similar vein, analysis completed by the specialist CRE lending research team at CBRE ("U.K. Debt prospects, Q2, 2015, Banking Edition"), also concluded that the long-term performance of the CRE lending industry as a whole was negative when analysed over 1988-2015. However, this conclusion was revealed in the middle of the report whose main headline was "Traditional lending organisations drawn back to senior CRE lending by RoRWA of 3-5%". Anyone reading the report would have been forgiven for missing this rather major "performance of the CRE lending industry as a whole was negative" conclusion which appeared on page 3, or perhaps if they did read it, they dismissed the finding because it clearly covered two write off periods but it was too early to include the full profits from the current cycle.

As an indication of how far removed the financial dynamics of CRE lending are from industry thinking, the McKinsey and CBRE analysis was only unearthed after the core analysis in this paper was completed. The subject of overall profitability was not raised in the Vision report, nor raised during the many discussions within the Long-term Value Working Group (consisting of CRE industry leading lending organisations, valuers, researchers and analysts), a good illustration that the issue is nowhere near the radar of the frontline CRE lending industry stakeholders. How can this be? Given the history, one would have thought that not only should everyone involved in CRE lending have thoroughly investigated and be fully aware of the financial dynamics of the industry by now, lending organisations should be prioritising the development of fully considered strategies to make sure that profitability is delivered on a sustainable basis and, in the process, that their efforts to generate returns for themselves and their shareholders do not threaten financial stability and the wider economy.

7.0 Reported CRE Lending Write Offs compared to the full risk position

There are a number of other costs and risk dimensions to be considered over and above simply comparing profits to write offs alone. A financial analysis just looking at reported write offs does not capture all the losses nor reveal the full risk picture.

In relation to losses, the Bank of England reported write off figures exclude any write offs of equity positions and the figures also do not capture many of the indirect expenses of working out loans to the point of crystalisation of the write off which are generally expensed through the P&L.

In addition, and from the perspective of examining risk, at the very bottom of the market, the CRE lending market's latent exposure to losses was actually far greater than the simple headline Bank of England figures for write offs. Comparing the latent losses to cumulative profitability results in an even more negative picture:

i. **Timing of Write Offs and Market Recovery:** The Bank of England figures show that write offs steadily emerged over the last nine years: 2008-2017. Those write offs are only recognised when the non-performing loans disappear from the lending book as a result of asset sales or some other form of disposal which, in the majority of cases, took place after CRE market values had substantially recovered: of the £19.3bn of CRE write offs reported by the Bank of England, substantially more than half were crystalised from 2011 onwards, by which time average market values had already recovered by around 20%. Clearly the latent exposure to CRE losses at the bottom of the market in Q2 2009 would have been far greater than the eventual £19.3bn of reported write offs – logically, as much as £30bn+. Of course, the longer banks can hold on to loans which are underwater, the probability is that the value falls will reverse. So if it is possible to "hold on until things get better," clearly that is a very sensible strategy. However, the potential, but still uncertain, ability to hold on until the impaired loans come out of the other side of the downturn, does not mean either that one should completely ignore the latent risk of the impairment in the meantime, nor imply that overly exuberant lending practices are not really a problem because values will come back eventually.

ii. **The Impact of Mark to Market:** In addition, one really cannot ignore the mark to market impact of holding large loan books at above market loan to values and below market margins. In 2011 banks were reporting c.£134bn of loans at LTVs in excess of 70%, of which c.£75bn of loans were at or above 100% LTV. And that is after average market values had recovered by around 20%. In addition, at that stage, market margins (and fees) were around three times what most of the lending book had been underwritten at and market LTVs (for the few loans that were available at all) had dropped to around 60%: the combination of which could easily justify additional substantial write downs of the market value of CRE lending organisations' loan assets, taking a further 15% to 20% off loan face values – say a further £25-£35bn. Using the short termism of Mark to Market as a means of measuring success in lending organisations that very clearly have a longer term objective and time horizon is not particularly healthy or helpful – it is exactly this kind of accounting logic and thinking that encourages short termism and exacerbates and perpetuates overall market volatility. However, the MTM is worth tracking not least because if CRE lending organisations do go to the wall at this point in the cycle (and RBS and Lloyd's could well have done so without the Government rescue package), their assets could have had a value of the prorata equivalent of c.£60bn less than face value (compared with the £7.0bn of profits that were made in the rest of the cycle) and even if they don't go to the wall, these latent liabilities will severely curtail their ability to do business until resolved.

Even being extremely conservative, one could convince oneself that, at mid-2009, being the market low point post the 1992-2008 cycle, the CRE lending industry in aggregate is likely to have been more than £50bn out of the money, a gaping black hole when compared with the estimate of £7.0bn of cumulative profits made in the previous 16 "profitable" years. Given the size of this black hole, it is not that surprising that a significant part of the £66bn of equity the U.K. tax payer was forced to inject into RBS and HBOS in October 2008, a time when

CRE market values had already fallen 35% and were nine months away from the bottom of the market), was CRE related. As the FCA/PRA November 2015 paper[16] highlighted; "A key feature of HBOS's balance sheet was its concentration in property, particularly commercial property... Exposure to property and property related interests accounted for 75% to 80% of all loans and advances to customers". An earlier FSA report on the failure of RBS[17], also reached a similar conclusion, "Significant loan losses were suffered in many areas of the business, with a particular concentration on commercial property". However, trying to do a straight read across between industry low point shortfalls and the equity injected into RBS and HBOS would be mixing apples and pears because although a higher than average proportion of industry losses were incurred by RBS and HBOS, U.K. banks overall made up just less than 50% of the U.K. CRE lending market, and the impairment of RBS balance sheet in particular involved a number of loss making areas, not least the consequences of the earlier acquisition of ABN Amro.

16 "The failure of HBOS": FCA and PRA, November 2015
17 "The failure of the Royal Bank of Scotland": FSA, 2011

8.0 CRE Lending Black Hole Dispersion

Is it possible that, with high profile distress in a few names, the majority of the CRE lending industry losses were restricted to a minority of "irrationally exuberant" lending organisations? Was the rest of the CRE lending market able to moderate their end of cycle behaviour and therefore be profitable through the cycle?

There is no doubt that a number of lending organisations were particularly over exposed, particularly the Scottish, Irish and Icelandic Banks, and similarly, at the other end of the spectrum, that there were lending organisations who successfully navigated their way through the market with very low market loss ratios.

The Bank of England 2013 Q1 report included an analytical section entitled "Commercial Property and Financial Stability" which highlighted the wide-ranging experiences of different lenders based on analysis of the major U.K. lenders, completed in Q3 2012. At that date, even though one U.K. bank had experienced 20% write offs, the median experience of large U.K. banks was of loan write offs of 2%. At Q3 2012, cumulative reported industry write offs were around £11bn which then went on to reach £19.3bn. If one uses this data to extrapolate the median U.K. lender experience to the market as a whole, median industry write offs would finally have amounted to 3.5% (rather than the 7.6% whole market average) or the equivalent of £9bn, with the logic being that the £10.3bn difference between £9bn and £19.3bn was largely attributable to the high profile names.

Given that the industry made £7.0bn of profits through the cycle, one still comes to the conclusion that the median banks were loss making (£7bn of profits certainly does not cover £9bn of write offs) albeit, ignoring the regulatory capital costs, they were actually marginally profitable rather than loss making even if they eroded value for their shareholders. However, as previously stated, the base case analysis does not tell the whole picture:

- For lots of reasons, the £7.0bn cumulative profits excludes a number of real additional costs which would further reduce reported industry profitability, affecting all banks with write offs not just the high profile banks.
- The Bank of England Q1 2013 paper goes on to state that around one third of the loan book was still either in negative equity or forbearance (defaulted but not called). Even though market values by that time (Q3 2012) had recovered by around 20%, all the banks were still looking at a high level of latent losses relative to through the cycle profits, a huge potential shortfall at the bottom of the market and still a major problem.
- In addition, applying the Bank of England findings in the context of the wider lending market it should also be recognised that large U.K. lending organisations are not necessarily representative – generally they should be more experienced than the rest of the lending industry and, with one or two obvious exceptions, showing lower write offs and impairments.
- It also seems likely that the two large U.K. banks who had obviously significantly over exposed themselves to the CRE market – RBS and HBOS – would have been under the spotlight to recognise their lending write offs early, and would be less likely to experience write offs post Q3 2012, increasing the write off share for less high profile (median) lending organisations, who would generally have preferred to maintain a strategy of forbearance until the market recovered.

Further insight into the ability of "median CRE lending organisations" to protect themselves from write offs by anticipating market overvaluation and the crash is clear from the De Montfort research which shows that the vast majority of CRE lending organisations were continuing to write large amounts of business at the top of the cycle and a far smaller number were lending in the early (profitable) years of the property cycle – a mathematically flawed combination if the objective is to be profitable through the cycle. Whilst industry commentators frequently express the view that most of the 2007 activity was led by RBS and HBOS, the figures simply do not support this – in fact De Montfort shows that U.K. banks market share actually fell over 2007.

As a further indication that end of cycle new lending activity was unchecked and widespread rather than concentrated, at the end of 2007, after a record year of new lending and after the market had started sliding badly, for some reason the majority (55%) of 59 lending organisations surveyed by De Montfort (representing over 90% of total CRE lending) stated that for 2008, they still intended to increase their CRE lending originations relative to 2007. The percentage wanting to increase their new lending was even higher at the beginning of 2006, two quarters away from the market peak, absolutely the worst possible time to be putting new loans on their books – 89% of lending organisations planned to increase originations during 2007. In considering the magnitude of this aspiration one should bear in mind that this proposed increase was to lend more than the £82bn of new lending in 2006 – a record high for new CRE lending. Given the obviously unstable market conditions during 2007, the fact that the lending industry went on to beat that 2006 high by lending £84bn of new loans in 2007 demonstrates that De Montfort research that indicated "89% of lending organisations plan to increase their new lending in 2007", was not just cumulative unrealistic responses to a theoretical survey – indeed the survey confirms that in 2007, 62% of the lending organisations actually succeeded in beating their 2006 volumes. Even the "more prudent" banks referred to in the McKinsey report, only started pulling back in "early 2007" which was leaving it rather too late. Under the circumstances, the phrase "more prudent" must be seen as very much a relative observation in this context.

The conclusion is very clear: No, the problem cannot be put down to just a few irrationally exuberant banks getting carried away at the end of the cycle. Towards the end of the cycle and at the end of the cycle, the majority of CRE lending organisations were still expanding their loan books at levels which were significantly larger than earlier in the cycle.

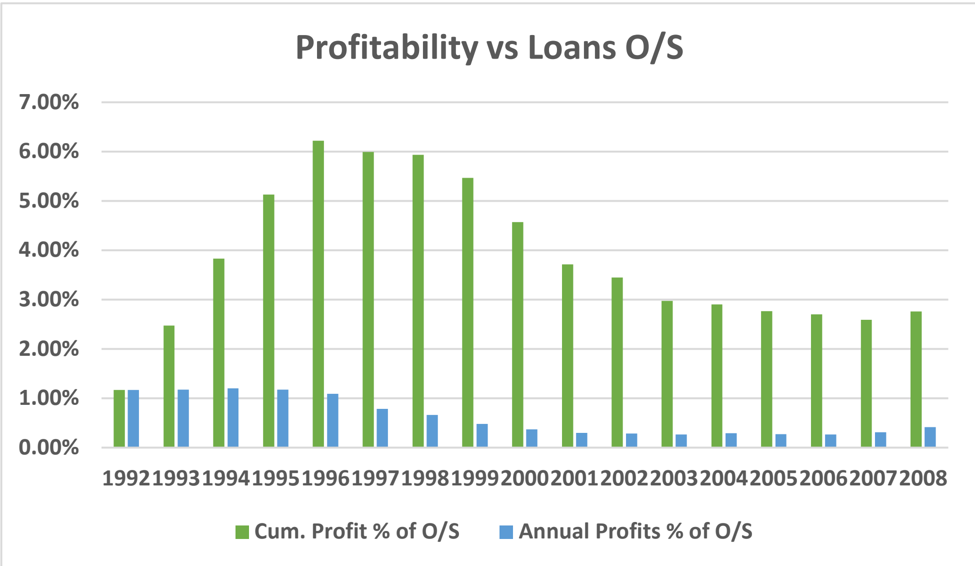
9.0 Understanding CRE Lending Industry Behaviours and Learning Lessons from the Past that can inform the Future

How can one explain this destruction of value, which clearly in certain cases was effectively "betting the bank" and, indirectly, betting tax payer capital, and how can CRE lending markets avoid making the same mistakes "next time", which is very likely to occur sometime over the next 10 to 15 years or possibly even sooner given current values, low interest rates and specific risks relating to Brexit and the wider European Union.

Historically there are three very obvious factual/mathematical explanations why historically CRE lending as a whole has been structurally exposed to generating no net profits through the cycle as a result of catastrophic write offs at the end of that cycle:

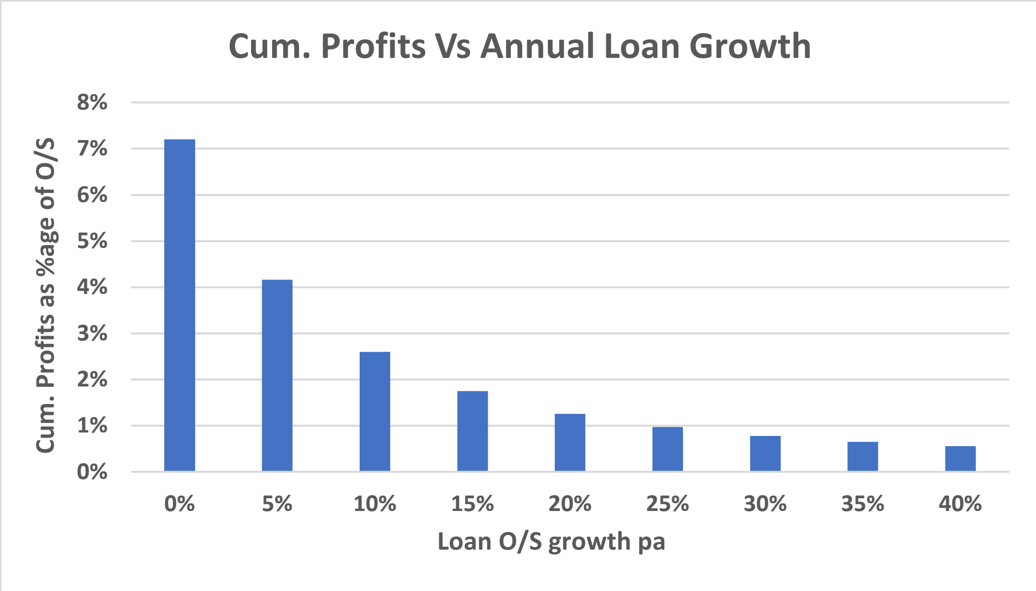
9.1 The consequences of significant lending book expansion through the cycle inevitably means that end of cycle losses dwarf rest of cycle profits

One of the main reasons that lending losses wipe out historic profits is that banks typically have the least exposure when lending is most profitable and least risky – when margins and fees are high and CRE values and loan to values are low. During the early stage of the cycle, in spite of high margins and fees, even very active lending organisations fail to make enough absolute profit to shelter the large end of cycle losses, which almost inevitably occur at the lending organisation's point of maximum exposure. In 1996, CRE loans stood at a low point of £31bn. By mid-2008 they had risen to a high point of £255bn, a compounded growth rate of over 17% pa over that period. Absolute profits in the good times, when margins and fees are high, are too small as a result of the relative sizes of the loan books, trough to peak. By the end of the cycle, cumulative profits were only 2.8% of peak loans, compared with write offs that were 7.6% of peak loans.



If the lending market had moderated the through the cycle expansion of the loanbook to match the average 5% pa capital growth of CRE values over the cycle, the cumulative profits as a percentage of peak loans would have been a higher 4.2%. If one then also recognises that slower new lending expansion reduces eventual end of cycle write offs, then it is very likely that the actual write offs would have been significantly lower than the 7.6%, and the full cycle would most probably have been profitable.

A simplistic illustration of the relationship of cumulative profits as a percentage of peak outstandings, using annual Loan Outstanding growth rates is as follows:



However this chart tends to understate the negative effect of high levels of annual loan growth on cumulative profitability because in most cycles the annual loan growth is lower in the early part of the cycle and ramps up significantly in the last quarter of the cycle, reducing early cycle profits and concentrating maximum lending into end of cycle loans which often struggle to meet equity return requirements (even before write offs) and are more prone to major write offs.

9.2 Loan to values either need to be kept below historic maximum impairment levels or lending strategy needs to be proactively countercyclical

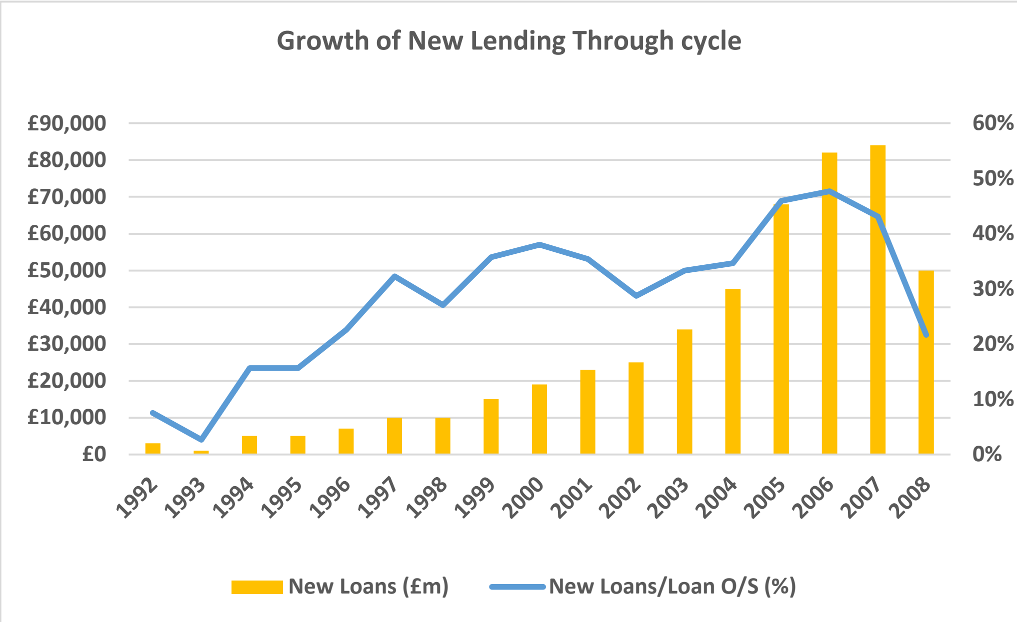
Either CRE loans need to be made at LTV levels which provide sufficient equity protection to insulate the lending organisations from a major market down turn, or highly effective mechanisms need to be in place to adjust LTVs downwards towards the end of the cycle.

Keeping LTVs low throughout the cycle: Historically the CRE lending industry has not only not restrained through the cycle maximum LTVs to a level which gives them sufficient protection in the event of a major crash, they have actually done the opposite - loan to values have generally been procyclical, tending to steadily rise to reach their maximum towards the top of the market. In contrast, if lending organisations wanted to substantially reduce exposure to end of cycle risk, they would need to restrict their maximum LTVs to around 50% (recognising that market values fell on average by 42% peak to trough 2007-2009 and slightly less than that in previous major crashes, albeit in a higher inflationary environment). For this strategy to be effective it would still require the usual micro controls on assessing the asset specific risks on each new loan, and adjusting the loan to value accordingly, recognising that certain types of assets and loans are more risky than others and require an even more moderated lending approach – not just blindly lending 50% of value on any and every asset.

Effective mechanisms to reduce LTVs at the end of the cycle: The CRE lending industry has consistently substantially increased their risk exposures towards the end of the cycle rather than reduced them. For a number of reasons the industry has found it very difficult to identify and call the end of each major cycle and lending organisations find it even harder to take the necessary actions to protect themselves even if they do recognise that the market is becoming or has become overheated. There is mountains of evidence that demonstrates that, for both lending organisations and regulators, calling and acting on the all the signals that indicate the market is overheating is extremely difficult. Not only does it require a highly effective and credible market barometer (such as the Long-term Value and other traffic light metrics) it also requires resolute discipline and a strategy to pre-empt all the behaviours of the stakeholders who at that time will be actively seeking to continue to increase exposures rather than reduce them.

9.3 The volume of new lending in the last few years of the cycle needs to reduce, not increase

At the end of the cycle lending organisations do not seem to be aware that they are in a top of the market bubble and not only are loan to values high but new lending activity also reaches a peak – of the £255bn CRE loans at high point, c.£165bn (65% of the total book) had been made in the previous two years, 2006/7, secured at high loan to values against assets with inflated market values. This compares with £17bn of new loans made 10 years earlier in 1996/97.



At the point of maximum risk, not only is the loan book at a record high (the issue highlighted in 9.1 above) but, even more seriously, the additional problem is that new lending is at a record high – in this case 10 times the levels of ten years earlier. Not surprisingly, research by Fitch[18] into the CMBS market and feedback from the Bank of England on observed losses, concludes that virtually all post-crash write offs related to new loans made in these last two to three years when lending organisations were committing large volumes of new lending secured against over inflated asset values. Obviously long-term value and other measures which are able to anticipate that a crash is very likely at least two years before it actually happens could go a long way to addressing this issue – but only if lending organisations and the regulator take them seriously and act on them without being distracted by other stakeholders' pressures.

However, as is very clear both from experience and from the in depth analysis, the fact that CRE lending industry as a whole is predictably loss making through the cycle is not just an arithmetical equation where one can simply reset the decision making inputs and arrive at an effective risk mitigation solution. Behind the figures, there have been significant historic individual and collective behaviours of lending organisations which have been remarkably consistent, which unless they are fully recognised and pre-emptively addressed, will continue to perpetuate systemic full cycle CRE lending losses, even if the analytics that tell lending organisations to behave differently are sufficiently clear.

18 "U.K. CRE: Countercyclical Lending Boosts Loan Returns": Fitch &Co, April 2017

9.4 The CRE Lending Industry Behavioural Drivers

In particular, there have been four core behavioural drivers behind CRE lending industry actions and inactions which have been the primary contributors to the repeated failure of CRE lending at the end of the cycle. These are as follows:

i. **Peer Pressures - Fear of moderating new lending activity "too early":** Financial markets are extremely competitive, with direct and indirect peer pressure influencing lender behaviours. Alongside this, a high proportion of measures and rewards are linked to growing profitability, so it is understandable that lender stakeholders are fearful of reducing new lending well before market peak. They are likely to look increasingly foolish and exposed sitting on the sidelines whilst their competitors continue to increase profits year on year. In addition, they would suffer individually and organisationally, exposing themselves to lower profits, loss of staff and redundancies. At a time when lender stakeholders (shareholders, analysts, board, lending teams and individuals) should be actively pressured and pressurising for a reduction in exposures, they tend to do the exact opposite. Pressures to continue to increase lending are exacerbated because the largest revenues in the cycle are usually being made in the last quarters of the cycle even though the analysis herein clearly shows that last quarter profitability is an illusion and it would be far more profitable to moderate market exposures too early rather than too late. If lending organisations are not absolutely confident they can get the timing of the cycle right and address perverse but totally predictable stakeholder behaviours, as previously indicated, they would be better off either permanently restricting their lending to the circa 50% maximum LTV level or, logically, not even be in CRE lending at all.

ii. **Organisational inertia:** The CRE lending environment encourages "frog in the pot of water" behaviours. In spite of being very aware that the temperature of the market is rising, for one reason or another lending organisations get carried along in the momentum, right up to the time the market peaks and crashes – the £84bn lent in 2007 is an excellent indication of this. Despite the reassurance of numerous lending policies, risk committees and monitoring processes, these give a false sense of security, convincing lending organisations that they are still making sensible new lending decisions, even though they appreciate that the market is overheating or overheated. Whilst this focus on the micro is an essential part of managing lending risk all the way through the cycle, it does not address what is clearly the biggest risk in CRE lending – hitting the end of the real estate cycle with record breaking levels of new lending at loan to values which leave insufficient equity cushion to insulate the lending organisations from major losses. Everyone should recognise that traditional and established lending policies have failed to prevent end of cycle losses

iii. **The key stakeholders primarily have short term horizons and fail to look at the big picture:** Like many modern businesses and the financial and investment industry as a whole, CRE lender shareholders, investors, analysts, board and employees look at and are incentivised over relatively short term horizons. One, three and five year plans and incentives are generally the limit of strategic and commercial considerations, with day to day pressures often narrowing down to a focus on meeting commercial targets within the financial year. CRE lending strategies generally fail to recognise the full cycle risks. Is this because key decision makers have never considered the kind of full cycle profitability analysis attached hereto and presented with this analysis and faced with the evidence, will lending organisations' attitudes change such that they adjust strategy and behaviours to make sure the latent strategic weaknesses are thoroughly addressed?

iv. **Lack of clear end of cycle CRE lending strategies:** Very few lending organisations have realistic and committed strategies that identify how they are going to avoid getting carried away at the end of the cycle. Whilst lending organisations and the regulator do keep an eye on the market with the expectation they will read the cycle, this very rarely converts into timely and appropriate action to moderate risk. This is because they have found it difficult to understand when the market is overheating such that lending activity is seriously at risk. Generally, lending organisations have had no predetermined traffic lights on the cycle nor any triggers to adjust behaviours - with every reason to carry on if they are not quite sure, even if the market is looking overheated.

This particular challenge is significant and should not be underestimated. Lending organisations and the regulator need unambiguous heat maps and alarm bells to prompt them to act before it is too late – which could well be at least two years before the end of the cycle. And lending organisations need to be firmly resolute to combat the internal and external commercial stakeholder pressures that will be exerted on them corporately and as individuals when they do try and restrain their new lending activity. Part of this will be not only to have a well-articulated end of cycle strategy, but also for that strategy to be communicated regularly to all the stakeholders well in advance of any problems looming on the horizon, so that when the time comes to act, the stakeholders are more likely to understand and accept such action. Even if lending organisations were to pursue this strategy including a proactive pre-emptive stakeholder engagement programme, it would be sensible to assume that when the time comes to act, the news is still unlikely to be welcomed with open arms, however sensible, and to be effective, any strategy needs to anticipate this and establish mechanisms to overcome stakeholder resistance.

It is worth noting that "Compensation Structures" has not made it to this list of top four core behavioural drivers. This omission goes against the grain of what seems to be the general consensus, which is a mix of the seemingly logical "individuals would be less aggressive if their rewards were long term rather than short term" and the more populist "this problem is caused by banker greed". This slightly contrarian position is taken herein for a number of reasons, not least that if this paper does not refer to compensation structures, it might allow some commentators to conclude that either the reasons stated above are not credible because they have missed the main problem ("compensation structures") or that the paper is in some way protective of the existing compensation status quo. Neither of those are the case, as the following should demonstrate.

Whilst it is important to create compensation structures to better align the board, the executive officers and the lending teams, it is very hard to convince oneself that the structure of compensation is the reason the industry continues to lend aggressively even when all the signals indicate that it would be prudent to do the reverse. Making that statement would give one the impression, that by simply changing and improving the structure of compensation one could solve the end of cycle problem. This is overly simplistic and potentially a misleading focus of everyone's efforts to "solve the problem". Increasing amounts of deferred bonus, clawing back bonuses and long dated equity schemes feel all very sensible but there is sufficient evidence that they on their own do not produce the correction of behaviour required – Lehman Brothers, with a bonus in deferred equity scheme, being the most obvious. Earlier research by Bloom and Milkovich found that there is almost no correlation between organisational performance and bonus structures. "Organisations subject to greater risk actually place less emphasis on short term incentives and those that de-emphasized incentive pay performed a lot better than those relying on incentives" (Bloom & Milkovich, 1997)[19].

The absolute amount of compensation does not present as compelling an explanation for over exuberance as the relative rewards argument, linked to the natural competitive instinct to do better and win, combined with peer pressure behaviours influenced by the fear of being seen to be losing on a relative basis. "Reduce lending and lay off staff when the rest of the industry is making increasing profits and bonuses? - *the fact that those bonuses might be deferred is not high on the irrational exuberance radar* - Surely you cannot be serious?".

19 "The Relationship Between Risk, Incentive Pay, and Organisational Performance": Matthew Bloom and George Milkovitch, September 1997

In coming to this conclusion, one is definitely not saying that pursuing better aligned compensation structures is not important, and indeed one could go further than that to question appropriate rewards in a CRE Lending industry that in aggregate seems to have destroyed value for its investors. However, the industry and the regulator would be in danger of misleading themselves if they felt that reward misalignment was the primary cause of the problem, and the area to focus on to find the potential solution.

10.0 The Role of the Regulator

What is difficult to fathom is why in the past the regulator also seems to have failed to act with a firm hand in a timely manner?

If you go back and read regulator reports to understand what they might have been thinking, it is clear that they spend much of their time analysing economic and market data. Surely a simple analysis of econometric and market data should make it clear when prudential action is likely to be required? For whatever reason, historically it hasn't. Why?

Reason 1: Lack of clear guidelines combined with lack of CRE market specialists at the regulator: While the regulators will certainly have been reviewing the market data, they generally did not have a clear set of predetermined measures and actions. These are almost certainly a vital ingredient for successful regulatory intervention, particularly given that regulatory custodians are generally not CRE experts, a point firmly made in recommendation 2 of the Vision paper[20]. For regulators to feel comfortable about taking action, their starting points of reference need to be straightforward. As argued in the Vision paper, the regulatory framework should be as automated and predictable as possible in response to clear, objective data, with human overrides permitted, but on the basis that there should be a real onus to justify an override that disregarded automated risk warnings. Without clear intervention guidelines it is very difficult for anyone to know when to act, particularly as they need to be seen to be acting with authority and good reason. Regulators are generally not welcome or popular with a number of the key stakeholders when they start constraining lender and economic activity. They have to explain themselves and sound convincing and convinced. However, there will always be a reason to conclude that, whilst the market is overheated, it is not yet at the danger point. In the absence of unambiguous warning signals, the consequential reluctance to act is totally understandable as the default position.

Reason 2: A micro approach to macro problems: Regulators have always seemed to be preoccupied with micro issues. However, whilst increased engagement generates a feeling of greater prudence and "control", an emphasis on micro supervision distracts attention away from identifying and addressing vital macro issues. Similarly, the natural regulator analytical reaction to markets moving into overheating territory has been to increase the intensity of micro analysis to understand and explain what is happening (and going to happen), generally using established market analytics and economic forecasting tools. The problem is that real time economic forecasts are inevitably coloured by the influences of the immediate environment and, consequently, economic forecasters have a relatively poor record. So not only are the analytical outputs unreliable, any indicators that seem to point towards significantly increased market risks are subjective and become easy to rationalise. A sure recipe to encourage the regulator to remain sitting on the sidelines.

Reason 3: Regulators should not be worried about taking action "too early": Given the historic profitability vs subsequent write offs equation, there seems no sensible commercial reason why the regulator (or the lending organisations for that matter) should have any concerns about the potential risk of being accused of acting too early. Taking away the punch bowl "too early" and/or preemptively reducing the alcohol content would not have a material impact on the economy, and certainly would not be harming the lending organisations or the economy in comparison with acting too late or not at all given that a high proportion of lending is related to investment property rather than new development. It is also not too difficult to subscribe to the theory that a stable real estate market is more likely to encourage long term investment than a violently cyclical market. Whether the regulator is marginally "early" or not, it is clear that everyone (lending organisations, the U.K.

20 Vision Report Recommendation 2 (Expertise and insight for the regulator): "The regulator should have access to expert interpretation and analysis of market information, particularly to give it insight into where in the cycle overall market and individual market segments are likely to be at any particular moment……"

economy and the U.K. tax payer) would be far better off if they act when the market starts looking as though it is overheating than if they end up doing too little too late, which seems to have been the historic norm. Alongside this, as for lender stakeholders, the market should be educated to accept that early regulator action is preferable to no action at all. The historic analytics both of Long-term Value and other metrics and the profitability cycle should make this easier. On this subject, the original industry Vision paper provided historical context, quoting JK Galbraith from his book "The Great Crash 1929", specifically discussing the predicament of the insightful regulator during a bubble: "A bubble can easily be punctured. But to incise it with a needle so that it subsides gradually is a task of no small delicacy. Among those who sensed what was happening in early 1929, there was some hope but no confidence that the boom could be made to subside. The real choice was between an immediate and deliberately engineered collapse and a more serious disaster later on. Someone would certainly be blamed for the ultimate collapse when it came. There was no question whatever as to who would be blamed should the boom be deliberately deflated." Obviously the longer the regulator leaves the market to boom, the more challenging their decision to act.

Reason 4: Clear roles and responsibilities, which include and recognise the importance of prudential oversight and action in the CRE lending markets: In the period leading up to and around 2007, the responsibility for prudential oversight was not at all clear falling somewhere between the FSA and the Bank of England, with neither seeming to give the subject their full attention. It feels as though this is an area which is now more adequately addressed: in the current cycle, the Prudential Regulatory Authority of the Bank of England seem to have oversight of the CRE lending market firmly on their agenda.

11.0 Is the 1992-2008 U.K. CRE Lending experience a one off?

The revelation that in aggregate the U.K. CRE lending industry was loss making over the last full cycle, raises some very obvious questions. Is the 1992 – 2008 U.K. CRE lending industry experience reflective of what has happened in previous CRE lending cycles? What has been the profit and loss experience in other countries? What is likely to happen in the next cycle?

Clearly many of the CRE lending experiences in the U.K. in the last cycle were reflective of the experiences in previous cycles and in other markets, but the research and analysis completed herein does not include a detailed analysis of the profitability of previous cycles and international markets in its scope, principally because there is insufficient granular data. However, although there is limited data, applying principles established from the more detailed analysis of 1992-2008, does lead to the conclusion that the last cycle "CRE Lending Black Hole" was not just a one off, but was a repeat of the experiences in the previous two major U.K. CRE lending cycles. Alongside this, it seems extremely likely that this is an experience which has been mirrored in other CRE lending markets through their major cycles:

11.1 Were lending profitability outcomes in previous cycles different to the 1992-2008 experience?

The above analysis only looks at the last CRE full cycle, principally because, without the De Montfort survey and Bank of England data, there is insufficient CRE lending market information to complete detailed analysis of previous real estate cycles. However, it is reasonable and relatively easy to conclude that the pattern of catastrophic losses is a repeat of previous cycles in the U.K..

In 1989/90, the pattern of aggressive lending increasing loan volumes and reducing margins was even stronger than in the 2000's. In Peter Scott's authoritative analysis of the history of the property market up to the mid 90's, "The Property Masters"[21], he states "the pressure of supply forced down margins. In 1984 banks were lending at 2-3% points over their own cost of funds….by 1987 margins for some projects had dropped to below 1%." Post 1989, officially reported U.K. CRE lending write offs of the three U.K. lending organisations who declared the data at the time were in fact 17.5% of book, relatively consistent with the 2007/08 main U.K. Bank outliers and more than double the reported write off ratio of the 2007/8 industry as a whole. At that time, Barclays and a number of the Swedish banks were unambiguously struck down as a result of over exuberant real estate lending in the U.K. and other countries.

In 1973/74 it was property lending via the secondary banks following the easing of planning restrictions on new office development in 1970 and deregulation of CRE lending in 1971 which was a key component of that cyclical crash and the need for a "Lifeboat" to bail out and/or "assist" some 60 secondary lending organisations to prevent a U.K. financial markets meltdown. JLL's analysis of the 1974 crash[22] explained: "Deregulation resulted in increased competition among banks for market share, which led to the erosion of underwriting standards and increased risk-taking through highly leveraged loans priced at margins that did not adequately reflect the riskiness of the exposures."….. "Due to over-lending to the property market and excessive gearing, the property market crash and ensuing loan defaults created a significant banking crisis. The Bank of England sponsored a rescue package dubbed "the lifeboat operation", wherein the major clearing banks, along with large insurance and pension companies, participated in providing funding to the troubled secondary banks that were overexposed to the ailing property market."

In addition to these headlines, which simply demonstrate that the market losses incurred at the end of the previous major cycles were likely to have been similar in relative scale to 2007/8, there is also the simple maths

21 "The Property Masters: A history of the British commercial property sector" by Peter Scott, 1996

22 "Mind the gap – the boom and bust of the London property market 1970 -1976". JLL 2016

involved in the rate of growth of lending as previously highlighted herein: **"Significant lending book expansion through the cycle inevitably means that end of cycle losses dwarf rest of cycle profits".**

CRE lending grew from an aggregate £40bn to £255bn over 17 years in 1992 to 2008 (actually the low point was £31bn at end 1996 so the annual growth trough to peak was even greater). This rapid growth in lending was one of the main reasons that through the cycle profits were insufficient to cover end of cycle losses. In the late 80's, the CRE lending growth rate was significantly greater (CRE lending grew from £8bn in 1986 to £37bn in 1990) and in the early 70's was even more acute (CRE lending grew from £343m in 1971 to £2.83bn in 1974).

The comparison of the equivalent annual compound growth in CRE lending between the cycles really emphasises that earlier cycles had even more extreme lending growth both through and at the end of the cycle:

a. 21% pa in the eight years leading up to 2008 (12%pa 1992 to 2008)
b. 28% pa in the eight years leading up to 1990 (19%pa 1976 to 1991)
c. 92% pa in the three years leading up to 1974 (full cycle lending growth not available)

It is worth noting that these comparative growth rates were not just a function of relative differences of rapidly accelerating CRE capital values: over the same periods, capital value growth rates of the underlying property market were:

a. 4.5% pa in the eight years leading up to 2008
b. 6.9% pa in the eight years up to 1990
c. 19% pa in the three years up to 1974.

In order to identify the likely cumulative profits from previous cycles, the growth pattern and quantums of outstanding were overlayed on the 1992-2008 detailed revenue and cost assumptions (assumed as broadly representative of the "normal" through the cycle reduction in margins and fees). This analysis concluded that in contrast to the cumulative profits for the cycle up to 2008 of 2.76% of peak lending, the 1990 cycle cumulative profit was only 1.60% and the 1974 cumulative profit was even lower at 0.97%. In order to conclude that the earlier cycles were profitable, one would need to reach the conclusion that losses/end of cycle write offs in those cycles were more than five times lower than post 2007 – extremely unlikely based on all the evidence.

Additional reasons that also point to the profitability experience in these two earlier crashes being negative are linked to the likely volume of write-offs and are as follows:

- The higher the annual rate of growth in lending, the higher the percentage of the end of cycle loan book will be made up of new loans. New loans at the end of the cycle are the ones which are most likely to experience major losses because they are underwritten secured against the most inflated property values. The higher the annual growth rate at the end of the cycle, the higher proportion of the peak loan book is made up of new loans, the higher the likely losses as a percentage of peak loan book when the market turns
- Rapid expansions in credit are also a strong indicator of falling credit standards driven by excessive competition and, consistent with this, the implication is that decisions are being made far quicker and/or by a growing number of real estate lending individuals and organisations who by definition are extremely unlikely to all be experienced at CRE lending. In addition to the imprudence of volume lending at high LTV's on over inflated assets, the quality of loans and underlying assets was almost certainly significantly diluted.
- Given that the 1990 and 1974 cycles experienced substantially higher lending growth leading up to the peak, and given the quantum of distress when the market turned down, the probability is that their percentage overall losses through the cycle were even greater than in post 2007/8.

The obvious conclusion is that not only was the CRE lending industry loss making in the major cycle to 2007/8, it was also loss making in the major cycle leading up to 1990 and in the major cycle leading up to 1974. In aggregate, it is very difficult not to conclude that the industry has been loss making through the last three major cycles, a period of over 50 years.

11.2 Is the "CRE Lending Black Hole" experience principally a U.K. phenomenon?

There is no reason to believe that other CRE lending markets that display the same regular cyclical liquidity driven extremes will be different, particularly when accompanied by a similar through the cycle escalation in the quantum of CRE lending industry exposure and a dramatic withdrawal of credit when the music stops, exacerbating the severity of the boom and the bust. Certainly, the US has experienced some very extreme periods of rapid escalation of real estate lending, excess liquidity, value bubbles and subsequent CRE lending meltdowns and there have been similar experiences in other established markets. Ireland, Spain, Sweden, Japan, Germany, Greece, Portugal, France are obvious markets where CRE lending organisations have experienced regular major real estate write offs following extreme market booms and busts.

Given that strategic failures are almost always organisational rather than down to the localised rogue behaviours of one or two individuals, the mere fact that many of the banks from those countries featured prominently in the write offs roll call in the U.K. market reinforces the conclusion that organisational weaknesses in strategic thinking and behavioural biases are just as likely to apply in other markets in which these lending organisations operated, including their own domestic markets: the principles of do's and don'ts to avoid cyclical losses are very similar, wherever you come from and whichever developed CRE lending market you are operating in. Of course, the extremes of the profitability experience will vary from one country to another, not least because there will be different regulatory environments and controls in each, so it would be wrong to conclude that all the countries listed above (and any other highly cyclical CRE markets not listed) have in fact suffered the same through the cycle losses, but it is totally implausible to imagine that the U.K. CRE lending market is the only one which has suffered this problem. Against the findings in this paper, international CRE lending markets should develop similar profitability and behavioural analysis to better understand the specific problems as they relate to those specific markets.

11.3 Is it possible that it will be different next time?

Post the GFC, everyone in the CRE lending industry knows that CRE lending can result in major losses if you get it wrong. Surely now lending organisations and regulators will be more aware and better prepared to take action, so the CRE lending consequences of the next major market crash won't be so bad? Maybe.

At the point of writing in Q3 2018, certainly regulators and lending organisations alike seem to be taking the risks involved in CRE lending far more seriously, principally in the form of much lower Loan to Value exposures (average LTVs were sub 60% at the end of 2017 according to the 2017 CASS Commercial Real Estate Lending Report) and higher regulatory capital requirements and, partly as a consequence, relatively modest rises in overall CRE loans outstanding, which unlike previous cycles at this stage, at c.£165bn remains significantly below the 2008 loan outstanding high point of £255bn. If the current status quo remains unchanged, the probability that the CRE lending industry will experience another catastrophic end of cycle loss is significantly reduced.

However there are areas where the current CRE lending industry is not quite so well placed as the figures imply, as follows:

- **Current Valuations are well above long term trend:** In the current financial markets low-yield environment, prime property yields are well below long term trend and exposed to an interest rate correction or some other failure of confidence, not least because the depth of the buyer market at current values is relatively thin. As a measure of over value, the Adjusted Market Value metric is currently trading at around 12% above long term trend, which is not as high as the historic 15-20% figure that has previously heralded an impending major crash. However, this figure is held at a relatively low level by the exceptional negative headwinds being experienced by the retail sector, making up over 40% of the index and trading at below long-term value trend. In contrast offices are trading at around 21% above trend and Industrial at about 29% above trend both of which feel very uncomfortable. Combined with low interest rates and Brexit risks, there is plenty of potential for CRE values to fall significantly.
- **CRE Lending activity not included in the headline figures:** There are a number of areas where loans are being secured against CRE but which may not be captured by the Bank of England or Cass figures such as:

    - Bond market issues, raised by the U.K. REITs in particular but also private bond placements
    - High levels of offshore leverage raised by overseas purchasers of U.K. CRE
    - Lending by challenger banks, including lending via peer to peer platforms
    - Lending by "Hedge Fund" and PE platforms who see secured lending as providing attractive returns.

    This is a cause for concern for a number of reasons, not just that the volumes of lending are opaque. The regulatory and governance environment of these organisations is very mixed and it seems likely that few of them have any U.K. CRE Lending track record or experience, even if they have made key hires of CRE lending specialists. In addition their ultimate sources of lender capital are attracted to the market returns and their return expectations are likely to result in lending organisations gradually moving up the risk curve to maintain those returns. The potential for a "secondary lender crisis", similar to the events of 1974, is not inconsiderable.

Aggregating these areas, it would still be reasonable to come to the conclusion that the core CRE senior lending industry activities are currently prudent, given the restrained new lending and relatively low LTVs, even if there is a macro shock triggered by interest rates, Brexit or some other event.

However, memories fade and when they do, history tends to repeat itself. In previous cycles, the risk averse reaction to a major lending bust has not lasted as long as it has done since 2008. Lending organisations and regulators around in the previous 1989 to 1992 bust should have been very aware of their experiences and should have been factoring them into their thinking as the 2007 peak drew closer and, similarly, those who were around in 1974 should have been factoring their experiences into actions leading up to 1989. For some reason incurring major write offs and financial distress through ill-considered lending in the late 80's did not stop the CRE lending industry doing it all over again 18 years later, nor fifteen years post the catastrophic crash in 1974. Unless efforts like the "Vision for Real Estate Finance in the U.K." are successful, there is no logical reason to believe that the behavioural failures outlined above will be any different next time, even if, in today's environment of significantly elevated CRE values relative to long term trend, currently mainstream CRE lending organisations and regulators are generally exercising reasonable levels of restraint.

12.0 Conclusions

The analysis of CRE lending data through the last cycle originally set out to explore the CRE lending market financial dynamics and provide greater insights that might back up the hypothesis that, for any individual lender, unchecked end of cycle CRE lending swallows up full cycle CRE lending profitability.

At the outset it seemed extremely unlikely that there was going to be sufficient granularity of information to reach any robust conclusions. As the extent and dynamics of the through the cycle aggregate industry losses emerged, it became apparent that not only was the market as a whole loss making but this experience was likely to affect a large number of CRE lending organisations, not just a limited number of overly aggressive lending organisations. This should not really have been that shocking a discovery given the history. However, the surprise was that not only was the analysis so emphatic but, seemingly, there was no obvious industry discussion or understanding of the extent and dynamic of the problem. The ensuing discussions with PIA debt group members eventually unearthed previous industry analysis pointing to losses through the cycle but, for a number of reasons, these revelations seem to have remained well below the radar of mainstream industry analysts, CRE lending stakeholders and the CRE industry as a whole.

There is no question that the main findings of the analysis provide very important reference points for any organisation in the CRE lending business and for the wider CRE lending stakeholders:

i. The market as a whole was loss making through the last major CRE cycle. Write offs at the end of the cycle exceeded profits made leading up until that point
ii. However, using write offs as the only measure of CRE lender distress, significantly underestimates the extent of the problem. At the bottom of the market, latent exposure to asset impairment could have been between 5-10 times the cumulative profits made from the whole of the rest of the cycle
iii. The aggregated industry losses cannot just be laid at the door of a limited number of irrationally exuberant high profile banks, even though some lending organisations undoubtedly did take a much higher proportion of losses than the average bank
iv. Early cycle industry profitability levels have been insufficient to cover major write offs at peak lending. In addition, in 2006/7, the majority of the CRE lending organisations continued to rapidly increase lending activity as the market reached its peak - lending 75% of value against assets that could fall 42% in value on average just does not work
v. The U.K. CRE lending experience in the last cycle cannot be dismissed as an isolated incident. Although it is not possible to complete a similarly detailed analysis, there are very strong indications that this pattern of end of cycle loses wiping out cumulative profits, was as bad if not worse in the two previous post war major U.K. CRE cycles, leaving the industry loss making for more than 50 years. Although the detailed analysis has not been completed in other markets, it is also likely that this kind of destructive lending boom and bust pattern was repeated in many other CRE lending markets around the world. Given the findings in the U.K., it would be sensible for any international CRE lender or regulator to carry out a similar analysis in their own markets to identify any lessons that might be learned
vi. Almost all the end of cycle losses were generated by new loans made in the last few years of the cycle as a result of excessive lending volumes at loan to values which were too high. This represents a huge opportunity and incentive for the industry and/or individual lending organisations to establish strategies that ensure that they moderate their lending activity before the market reaches its peak by using Long-term value methodologies and/or other relevant macro metrics to identify periods of over value and by reducing loan to values and/or amounts lent. If lending organisations can do this then there seems no reason why CRE lending should not be a profitable business on a long term basis, as well as over the short term
vii. In the light of this analysis, it is clear that every organisation that is in CRE lending and lending at Loan to Values in excess of conservative levels (e.g. loans in excess of c.50% of value) needs an end of cycle strategy which they are confident will work when stress tested by the market and internal and external stakeholder pressures. If they do not have a strategy, or they are not confident their strategy will work, then they really

should have a very good explanation why they are in the CRE lending market at all. From a shareholder and investor governance perspective, this is also something which should definitely be on their corporate governance checklist

This paper provides some very clear indicators as to what might be required for an end of cycle strategy to be effective. Essentially any lending organisation's end of cycle strategy should make it clear what action will be taken by whom when the indicators start to point to the market overheating. This should include measures at macro and micro level, and anticipate issues related to reducing loan amounts and their consequential impacts on all stakeholders. In particular, the end of cycle strategy will need to cover the following:

i. **Identifying when Action is Required:** History indicates that organisations need to reduce higher Loan to Value exposures two or three years before the end of the cycle. This is never that easy to do, particularly if the decision makers rely on econometric models and forecasts to identify when action is required. Whilst long term market trends are not totally reliable as a day to day read of where the market is, they are pretty effective at identifying increasing probability of major end of cycle bubbles. Long-term Value methodologies are an essential part of reading the cycle and can almost certainly be further enhanced as a tool when used alongside other key market indicators. Another essential component is recognising that fear of reducing market exposures too early should not get in the way of decisive action. Far better too early than too late.

ii. **Pre-emptively Managing Stakeholder Expectations and Behaviours:** Whilst identifying when action is required seems to be the most difficult challenge, the "Vision for Real Estate Finance in the U.K." paper makes it clear, and it is obvious, that default behaviours are the main reason why organisations have failed to act with sufficient restraint towards the end of the cycle. Organisations have to recognise and manage internal and external stakeholder expectations well in advance of starting to restrain new lending – because unless they manage expectations, the stakeholders are likely to actively resist leaving the party early. These stakeholders – lending team members, division heads, board members, risk committees, shareholders, investors, equities analysts – all need to understand both the historic industry financial dynamics and the irrational exuberance of their historic counterparts and buy into the need for and benefits of early action, well in advance of it taking place.

As an essential step to ensure this happens, the regulator really should insist that lending organisations have a clearly articulated, hard-wired strategy to limit excessive exposures at the end of the cycle, which recognises and addresses the causes of failures in the past. In addition, the regulator should themselves have a similar clearly articulated strategy and not be afraid to exercise their powers to start moderating lending activity when key indicators show that the market is beginning to get overheated even if there might be questions raised that they are acting "too early". If the Regulator fails to act clearly and with conviction, the lending organisations (and/or, more likely, the ultimate providers of lending capital), the market and, most likely, the tax payer will almost certainly find themselves on the hook once again.

And if lending organisations, together with their shareholders and investors and the regulator really do get on board, hopefully, the often implied sentiment that is "going to be different this time" will actually be true – for the right reasons.

Rupert J Clarke,
Chairman of the PIA Long-term Value Working Group

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7 Based on a weighted average regulatory capital cost of 80bps

8. The exact percentage is difficult to establish since some of the new loans will have been repaid during that period

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APPENDIX

Commercial Real Estate Lending Industry Profitability through the 1992 to 2008 cycle

1. Loans Outstanding £'m	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average	Totals
Start Year Loans	40,000	38,000	32,000	32,000	31,000	31,000	37,000	42,000	50,000	65,000	87,000	102,000	130,000	148,000	172,000	195,000	231,000	92,333	
New Loans	3,000	1,000	5,000	5,000	7,000	10,000	10,000	15,000	19,000	23,000	25,000	34,000	45,000	68,000	82,000	84,000	50,000	28,588	
Repayments	-5,000	-5,000	-5,000	-6,000	-7,000	-4,000	-5,000	-7,000	-4,000	-1,000	-10,000	-6,000	-27,000	-44,000	-59,000	-48,000	-26,000	-15,824	
End Year loans	38,000	34,000	32,000	31,000	31,000	37,000	42,000	50,000	65,000	87,000	102,000	130,000	148,000	172,000	195,000	231,000	255,000	98,824	
Annual growth in loan O/S	-5%	-11%	-6%	-3%	0%	19%	14%	19%	30%	34%	17%	27%	14%	16%	13%	18%	10%		12%
New Loans as % of previous year O/S	8%	3%	16%	16%	23%	32%	27%	36%	38%	35%	29%	33%	35%	46%	48%	43%	22%		
2. Revenue Assumptions																			
Average Margin New Loans	2.50%	2.50%	2.50%	2.00%	1.65%	1.40%	1.25%	1.10%	1.15%	1.20%	1.25%	1.30%	1.20%	1.10%	1.10%	1.35%	2.25%	1.58%	
Average O/S Lending Margin	2.50%	2.50%	2.50%	2.42%	2.25%	2.02%	1.83%	1.61%	1.48%	1.40%	1.37%	1.35%	1.30%	1.22%	1.17%	1.24%	1.44%	1.74%	
Average New Loan Arrangement Fee	1.00%	1.00%	1.00%	1.00%	1.00%	0.75%	0.75%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.60%	1.00%	0.71%	
Average Redemption Fee	0.50%	0.50%	0.50%	0.50%	0.50%	0.20%	0.20%	0.20%	0.20%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.24%	
Non Utilisation fee	1.25%	1.25%	1.25%	1.21%	1.12%	1.01%	0.92%	0.81%	0.74%	0.70%	0.68%	0.67%	0.65%	0.61%	0.59%	0.62%	0.72%	0.87%	
Non Utilised % of O/S	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	15.00%	15.00%	20.00%	20.00%	15.00%	12.06%	
3. Overhead Assumptions																			
Overhead Costs: Cost /Income Ratio	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%		
Regulatory Capital Cost % Ave Loans O/S	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%		
4. Revenues £'m																			
Margin	975	900	800	762	696	686	725	742	850	1,068	1,292	1,565	1,813	1,957	2,150	2,634	3,487	1,415	£23,101
Arrangement Fee	30	10	50	50	70	75	75	75	95	115	125	170	225	340	410	504	500	192	£2,919
Redemption Fee	25	25	25	30	35	8	10	14	8	1	10	6	27	44	59	48	26	23	£401
Non Utilisation Fee	49	45	40	38	35	34	36	37	43	53	65	78	136	147	215	263	262	99	£1,576
Gross Revenues	1,079	980	915	880	836	803	846	869	996	1,237	1,491	1,820	2,200	2,488	2,834	3,449	4,275	1,729	£27,997
5. Costs £'m																			
Overhead	324	294	275	264	251	241	254	261	299	371	447	546	660	746	850	1,035	1,282	519	£8,399
Regulatory Capital Cost	312	288	256	252	248	272	316	368	460	608	756	928	1,112	1,280	1,468	1,704	1,944	765	£12,572
Gross Costs	636	582	531	516	499	513	570	629	759	979	1,203	1,474	1,772	2,026	2,318	2,739	3,226	1,283	£20,971
6. Profits £'m																			
Annual Profits	443	398	385	364	337	290	276	240	237	258	288	346	428	462	516	710	1,048	412	£7,026

7. Profits and write offs £'m																			
Annual Profits	443	398	385	364	337	290	276	240	237	258	288	346	428	462	516	710	1,048	412	£7,026
Annual Profits excl. Reg. CoC	*755*	*686*	*641*	*616*	*585*	*562*	*592*	*608*	*697*	*866*	*1,044*	*1,274*	*1,540*	*1,742*	*1,984*	*2,414*	*2,992*		£19,598
Cumulative Profits	443	841	1,226	1,590	1,927	2,217	2,493	2,733	2,970	3,228	3,516	3,862	4,290	4,752	5,267	5,977	£7,026	3,538	£7,026
Cum Profits Exc. Reg. CoC	*755*	*1,441*	*2,082*	*2,698*	*3,283*	*3,845*	*4,437*	*5,045*	*5,742*	*6,608*	*7,652*	*8,926*	*10,466*	*12,208*	*14,191*	*16,605*	*19,598*		
Annual Profits as a % of O/S	1.17%	1.17%	1.20%	1.17%	1.09%	0.78%	0.66%	0.48%	0.36%	0.30%	0.28%	0.27%	0.29%	0.27%	0.26%	0.31%	0.41%	0.54%	
Cum Profits % of Loans Outstanding	1.17%	2.47%	3.83%	5.13%	6.22%	5.99%	5.94%	5.47%	4.57%	3.71%	3.45%	2.97%	2.90%	2.76%	2.70%	2.59%	2.76%	4.06%	
Cum Profits (ex RCoC) % of Loans Outstanding	*1.99%*	*4.24%*	*6.51%*	*8.70%*	*10.59%*	*10.39%*	*10.56%*	*10.09%*	*8.83%*	*7.60%*	*7.50%*	*6.87%*	*7.07%*	*7.10%*	*7.28%*	*7.19%*	*7.69%*		
Less Write Offs 2008-2017																			-£19,263
Write Offs as %age of high point outstandings																			7.55%
Total Surplus/Deficit																			-£12,237
Total Surplus/Deficit excl. Reg. CoC																			£335

Data Sources, Notes and Assumptions

Data Sources

De Montfort (Loans, Margins, Fees, 1999-2008)
Bank of England Database RPQZ549 (Write offs, 2008-2017)
Bank of England Database RPAAFUJ (Loans, 1990-1998)
Items in Italics are conservative estimates based on CRE lender views, rather than extracts from verified data

Notes and Assumptions

1. Lending Revenues are intended to be conservative
   - they exclude any assumption for write offs or provisions for the whole of the period 1992 -2007
   - where data was not available, fees and income have been assumed at higher levels to the most adjacent period where the data is available
   - redemption fees have been assumed but in the majority of cases there would most likely have been no redemption fees
   - a non-utilisation fee of 50% of the margin has been assumed on 10% of the portfolio rising to 15% at the end of the cycle, primarily reflecting undrawn development facilities
2. Overhead assumptions are believed to be conservative. “Normal” bank average across all activities cost/income ratios are around 55-60% of revenues - here 30% is assumed
3. Reg. Capital Cost: Rather than official figures for UK regulated banks of 100% weighting, 8% Tier 1 and c.12% cost of capital (96bps), the Regulatory capital assumption is based on 80bps derived from 96bps for UK lenders and 50bps for other lenders.
4. The Marginal Cost of Capital and LIBOR have been assumed as the same so there is no net gain (or loss) other than through margin and fees. Obviously for some lenders CoC will be greater than LIBOR, others lower.
5. Income from other products related to CRE Lending has been assumed as nil.
6. It has been assumed, conservatively, that there are no write-offs during the cycle itself, relating to lending in that cycle
7. All numbers £’m unless otherwise stated.