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Is Basel II any use?

What drives retail credit risk in the UK? Will Cook searches for some answers and says behavioural scores are just not accurate enough and historical data does not go back far enough

Just over four years ago, in a small town in Switzerland, the Bank of International Settlements (BIS) gave birth to a whole new set of international risk regulation, Basel II. The goal of this new framework was simple: to create a global standard for banking regulators to follow, steering banks to better understand the true risks that underpin their business. This was intended to create a stronger basis for capital requirements – the money held by banks to cover the unexpected.

One of the core areas covered by the BIS guidance was retail credit risk – the unlikely event that you or I do not pay back our mortgage, loan, overdraft or credit card debt. It is this fundamental risk that kick-started the global credit crunch when sub-prime US mortgage lending started to turn sour back in early 2007.

Basel II beginnings

The original BIS documentation laid out a simple guide for measuring retail credit risk and how banks should calculate the amount of money to put aside for a rainy day, the so called 'capital'. It described in plain language the components it expected to see in the machines that banks use to measure the risk, also known as 'rating systems'. Taking mortgage lending as an example, the advice was clear - think about risk for different buckets of customers who had similar risk characteristics. Characteristics to consider for this bucket segmentation were simple variables such as loan-to-value ratio, credit score at application, age and the length of time the customer had been with the bank.

This was a relatively static view of the world. Customers would typically slowly improve and migrate upwards through the buckets, driven by merely getting older or alternatively would jump into an arrears or default segment were they to deteriorate. This static bucket view of the world provided a clear and simple framework for banks to track credit risk through time. In bad economic times, performance within each bucket would deteriorate and in good times it would improve. For a short while it looked as though the Basel box had been ticked... but not for long.

FSA 'gold-plating'

In 2005 the Financial Services Authority had started to add to the BIS documentation, providing their view on how the accord could best be implemented for the UK market. One specific area in which they saw an opportunity to refine the rating systems was through the use of behavioural scoring data, the information collated by credit reference agencies such as Equifax and Experian, as well as from the banks' own internal sources.

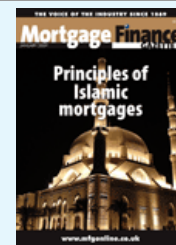
With up to date behavioural scores, the accuracy of the UK rating systems could theoretically be improved, capturing changes to individuals' personal credit risk profiles. In a perfect world this would now allow banks to be able to capture all changes to credit risk, including macro-economic as well as more customer specific non-economic impacts.

The FSA had raised the bar in terms of expectations for rating systems, and the banks duly obliged, purchasing expensive customer level information from the credit reference agencies and incorporating this new information into their models. For a while, it again looked as though calm had returned to the Basel rating, but soon a new problem was about to rear its ugly head.

Issues emerge

The problem, as the banks slowly found out, was that the predictions of customer behaviour started to drift away from the actual observations. The models in their rating systems were starting to break down.

The solution was apparently simple: re-do the calculations that were originally performed, and recalibrate the system. Far from being an inconvenience, this appeared to be a sensible thing to do, not least as in the intervening time even more useful customer


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characteristic variables had become available that would again improve the accuracy of the models. And so the recalibration went ahead, and the models were fixed. Problem solved... or perhaps not.

From small issues to one big problem

Suddenly, the banks find themselves with a new problem, and this one is slightly more complex. In order to explain, we have to go back to the roots of Basel II.

The purpose of these rules and of holding the capital is to cover large losses that would only occur in severe economic times, such as recession. The important aspect of this is that in your Basel calculations you need to estimate correctly the total size of capital needed, so that should the worst happen the bank has the correct amount safely stashed away. It is far less important to know the precise individuals from whom those losses will actually come, an almost intractable problem given that most of those potentially bad customers in good times show no sign of being any more risky than the average.

In order to make a reliable total estimate of your capital, the Basel capital formulae require what is known as long-run average estimates of risk. Long-run average estimates are exactly as they sound, averages taken over a long period of time, at least as far back as the last recession of the early 1990s. Typically, banks don't have good historic data going back this far. They perhaps only have data going back to the late 1990s or early 2000s. Under the original view of the world though, this problem can be addressed by benchmarking the performance of their buckets against longer run market data (such as that made available by the Council of Mortgage Lenders).

With a behaviourally driven system however, they do not have such a strong proverbial peg on which to hang their coat. Whilst the inclusion of behavioural scoring in the rating systems may be marginally improving the predictive accuracy on a day-to-day basis at a customer level, it transpires that the same behavioural data is unfortunately making it a lot harder to get to that crucial long-run average performance.

When the bank performs the recalibration, the new data is no longer directly comparable with the data from the rating system prior to the recalibration. The result is that unless banks think about risk at the aggregated portfolio level, they now can't actually tell if they are even moving in the same direction as the market data they would like to benchmark against. On top of this, it also turns out that behind the scenes, the credit reference agencies have also been 're-aligning' the data they provide to the banks, further compounding the problem. What a pickle.

The banks have been muddling on for a year or two, patching over the problems in their rating systems, confident that each time they have made improvements, when in actual fact they have been squeezing deeper and deeper down the rabbit hole. Little did they know the damage they were doing at the time, which is only now being forced to the surface as GDP starts to head South.

A quick summary

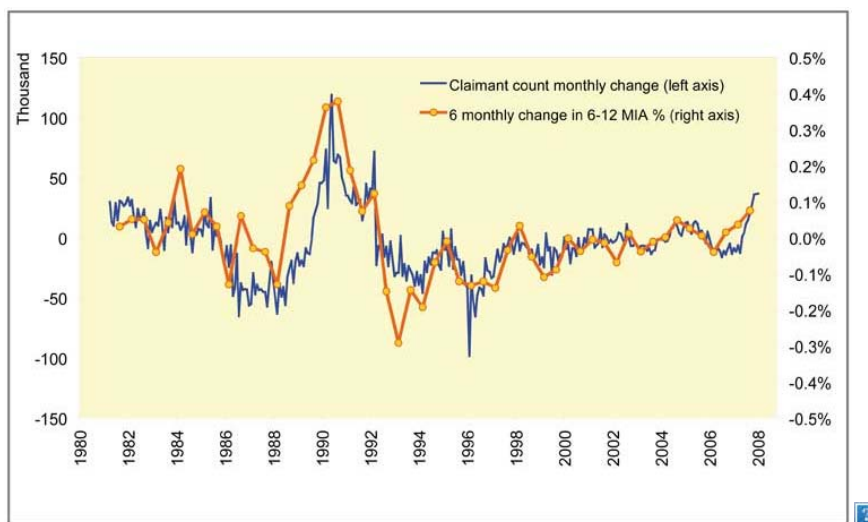
The series of events leading to the current position is therefore as follows:

- The credit reference agencies convinced the banks and the FSA that behavioural scoring was powerful for determining retail credit risk
- The FSA pushed for the inclusion of behavioural data in banks Basel II models
- The banks obliged and proceeded to put somewhat misplaced faith in their apparently more sophisticated models
- They unfortunately now cannot make reliable long-run average estimates required for capital calculation.

The real risk driver

So now we return to our original question, what does actually drive credit risk? Well to the banks it seems obvious, all of this rich credit risk data. But how true is this? Chart 1 helps shed some light on the problem. Here we have overlaid two time series on each other, covering the last 27 years. In the blue, on the left axis we have the monthly change in unemployment levels, in thousands, as measured by the Office for National Statistics' Claimant Count measure (widely recognised as the most consistent measure through time). On the right axis we have the six-monthly change in the percentage of mortgages in the UK that are between six and 12 months in arrears, as measured by the Council of Mortgage Lenders. Although the axes are clearly on different scales, they both hit zero at the same point, meaning that a rise in one is associated with a rise in the other, and conversely.

Chart 1. Movements in unemployment and mortgage arrears in the UK, 1981 to 2008



<!--[if !vml]--><!--[endif]-->

Sources:

Unemployment = Claimant Count, ONS, series BCJD, updated 17 October 2008

Mortgage arrears = 6-12 month in arrears, CML, updated 17 October 2008

The correlation between the series is striking, not just matching the peak of the last recession, but also other changes in direction over the time period. We can obviously note deviations from the relationship, but these we would expect to see, as this is only one variable, and the drivers of credit risk are clearly wider ranging. The point to make however is that unemployment is clearly a very important determinant of mortgage credit risk, as one would expect.

Back to the Basel models

For all the refinements to the rating systems discussed above, is unemployment actually captured? Well, the credit reference agencies would say yes. They will tell you that they pick up a job loss in their data immediately. But the reality is that they only pick up on it once the individual first exhibits poor credit performance, for example with the missing of a credit card payment. The provider of that credit card however did not have the benefit of the new information in their prediction of behaviour for that individual. Moreover, it is extremely unlikely that the agency will ever actually know when an individual has lost their job - they are only piecing together the patchy evidence after the event. After all, would you ring up Experian to let them know that you've just lost your job? Unlikely.

Further evidence of this problem comes from the banks themselves, who discover that when they examine carefully the movement of customers in their rating systems, they notice a problem. If risk was being captured in real time, those customers who will eventually end up defaulting on their loan should progressively appear to deteriorate in their rating system until they finally hit the wall. The reality however is that many customers simply jump from "Safe" to "In Arrears", skipping all of the other potential states such as "Pretty Safe", "Bit Risky" and "Very Risky". Those unemployment events are simply not being captured.

The blame game

So who's to blame for the problems? Well, the finger has to point back to the regulator, and not the banks. Unfortunately their hand was forced in this matter. One of the first Basel rating systems ever seen by the author did not include behavioural scoring data and was working just fine... until that bank was pushed to 'overlay' a behavioural element, at no small expense.

The problem is that around five years ago, when the Basel II Accord was first being considered by the FSA, it had its academic hat on, and not its business one. It knew about behavioural scoring and believed the story being sold by the credit reference agencies. Unfortunately, theoretical concepts were stretched beyond the empirical power of the data, and it was only a matter of time before cracks began to emerge in the theory.

With unemployment now rising at its fastest rate since the last recession, those cracks which last year were fine lines, are rapidly becoming gaping rifts, and the patchwork fixes that once worked are increasingly looking more unsustainable. As we progress into recession it will only be a matter of time before serious questions will be asked of rating systems' accuracy, and why they are not holding together quite so well.

The future

So where do we go from here? Well, evidence suggests that the FSA, as any other government agency, won't be wrong about decisions previously made. We may however find them a little more open to returning to a simpler world of rating systems after the current economic situation has unwound. After all, how are mortgage lenders reducing risk at the moment? Are they using behavioural scoring to act on risk in their portfolios? Not exactly. They have gone back to basics and they are requiring lower loan-to-value ratios, one of the core requirements from the original BIS guidelines.

A final observation to make about the success of Basel II so far in the UK can actually be gleaned from the FSA website. Looking carefully we can identify one of the earliest banks to be allowed to use their own models for capital calculation. To date that same bank is also one of only two to be given the gold standard for their work, the 'full waiver'. That bank was

Northern Rock.

It may have been liquidity risk that brought the Northern Rock's business model tumbling down, but the government and the public are now paying further for what appears to have been some fairly risky mortgage lending performed by the bank in the not so distant past.

Conclusion

On the face of it, it would seem that Basel II has given the banks an opportunity and desire to better understand the true underlying risks of their retail portfolios, and potentially to be able to better price products accordingly. However, more cynical spectators may argue that Basel II has to a greater extent been an exercise to keep the regulator happy and the banks' credit ratings strong. Either way, it is the regulator, the FSA, who has been directing proceedings with its interpretation of the Basel II Accord. Until the requirement to include behavioural scoring within rating systems is lifted, and better long-run average risk estimates can be calculated, retail credit risk in the UK is in for a bumpy ride.






A return to the philosophy behind the original BIS guide, with simple risk driven segmentations should enable better long-run risk estimation and therefore a more accurate determination of required capital. Let us hope, for the sake of future UK financial stability, that the problems led to by behavioural scoring will come to the attention of the FSA soon and that Basel II can be put back on its original track.

Will Cook is director at Volterra Consulting

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