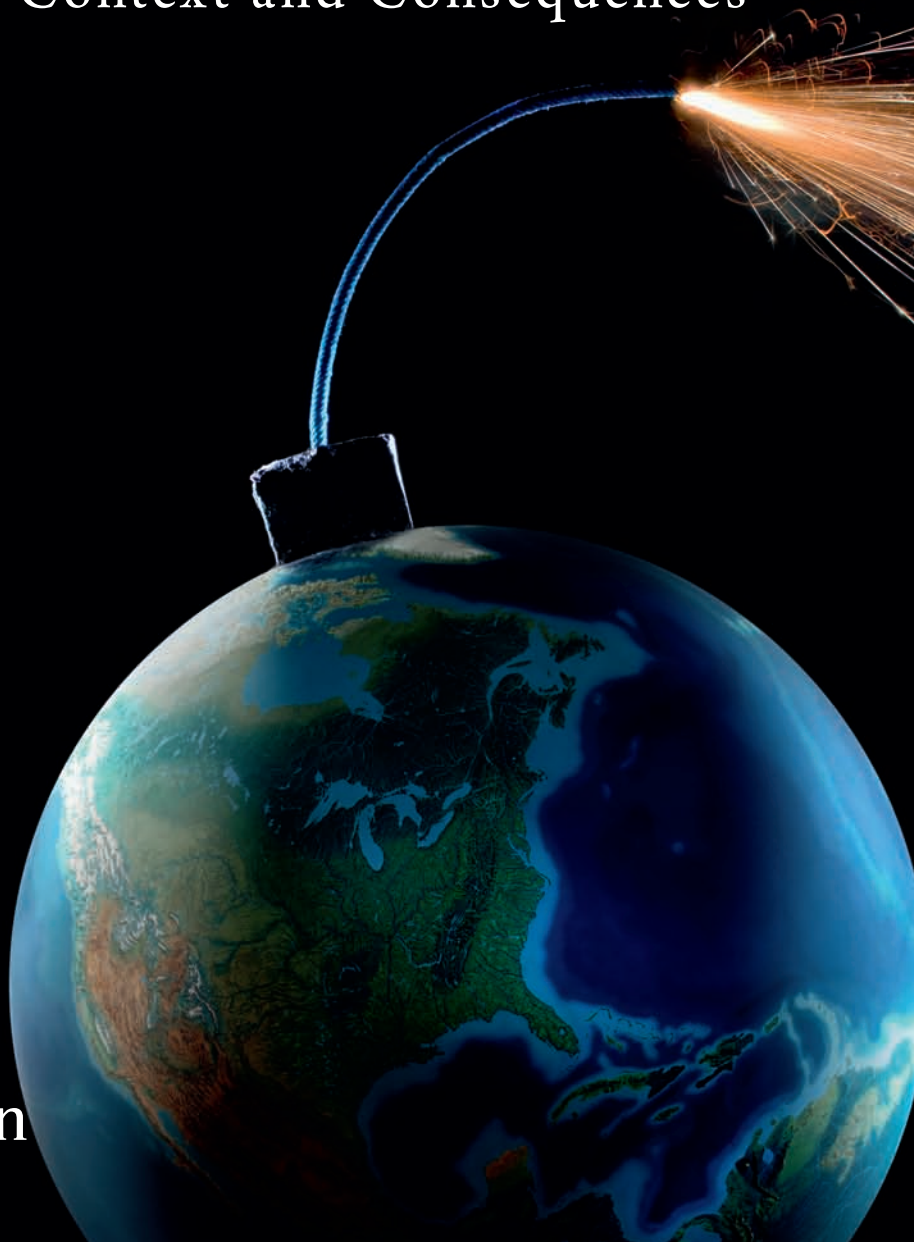
ADRIAN BUCKLEY

FINANCIAL CRISIS

Causes, Context and Consequences



Pearson

FINANCIAL CRISIS

Note that it advocates a move from control-orientation and compliance-orientation. Unfortunately it is very much in these areas that banks have to excel.

Hammer and Champy suggested the following BPR principles:

- organise around outcomes, not tasks;
- integrate information processing work into the real work that produces the information;
- treat geographically dispersed resources as though they were centralised with IT playing its part;
- link parallel workflow activities instead of just integrating their results;
- put the decision-making point where the work is performed and build control into the process;
- capture information once – at the source.

All very well, but for banks this obviously means dilution of loan appraisal and control systems. And this is just what happened at a number of banks. But the directors and top executives in the banks themselves were cavalier on this point. After all, the loans were being sold on to third parties under the originate-to-distribute model (as opposed to the originate-to-hold model where the loan would remain on the bank's books). Thus the securitised packages of loans were to become collateralised debt obligations and if they were to become triple A rated and these were being sold on outside the bank, spending time and money on credit analysis would not add value. The flaw in the argument was that the banks themselves became both creators of CDOs and purchasers too. In this latter role they were buyers of debt which had not been subject to the credit analysis discipline.

Worse still, some banks, notably new arrivals on the scene and those in less-sophisticated banking markets, decided to follow suit – even though they remained committed to the originate-to-hold model. They spurned credit analysis and serious control of their loan books basing their decisions on qualitative assessment only. Such a friendly and amateur-style of banking has attracted the description of crony banking and it always ends in tears.

Lending control systems

Managing credit risk begins with a clear credit philosophy in order to set management priorities. Banks' credit philosophies may range from emphasis on the highest quality loan portfolio, based on highly conservative low-risk standards, to an emphasis on aggressive loan growth and market share with highly flexible risk standards. A bank's lending philosophy is frequently articulated in a formal loan policy. The credit philosophy and loan policy should be consistent with the credit culture. This is reflected in the organisation's loan systems and procedures.

Figures 7.2 and 7.3 show expected returns and risk profiles for a possible range of credit philosophies. Figure 7.2 is straightforward and merely suggests a linear (in truth, it may not be a straight line trade-off) relationship between risk and return. The implication that a business (banks included) can increase return by carrying greater risk is clear. Figure 7.3 reinforces the idea that expected returns increase when banks emphasise growth with

more risky and flexible standards. But, most importantly, note that the volatility of returns increases as bank style shifts from a conservative, asset quality, low-risk profile through to a growth orientation with a sales-driven aim at increased market share. A priority that emphasises loan quality is low risk and produces stable earnings. The growth and marketing orientated choice is a high-risk strategy and is associated with relaxed loan quality, a risky portfolio of loan assets and unstable earnings, albeit with higher peaks in the good times but with lower outturns in bad times. This kind of bank is clearly courting operational leverage (profit volatility with high ups and downs through the cycle) and, in our opinion, should be balanced with lower financial leverage – its ratio of debt to equity within its capital structure should be lower than competitors. Unfortunately this was not always so in the run-up to the financial crisis of 2007/8 – a lesson here for the whole banking industry.

To some extent, loan authorisation in banks is devolved. Most bank control systems involve some level of decentralisation – but with loan committee approval required for larger loans. Traditionally, there are committees such as an officers' loan committee, a directors' loan committee and, for banks with a number of troubled loans, a special assets committee. These committees are authorised to approve only those loans that conform to loan policy. Loans above certain minimum sizes are proposed by individual loan officers before the officer's loan committee, usually consisting of the most experienced loan officers.

Again, traditionally the directors' loan committee reviews major loans approved by the officers' committee. It is often composed of the bank's chief executive, the most senior loan officers, and two or more external members of the board of directors. This committee makes final judgement on the officers' loan committee decisions, giving particular attention to the largest credits. It is particularly concerned with congruence with bank loan policy and law and policies that control insider loans. This committee also reviews significant overdue loans and other credit problems.

The special assets committee is usually concerned with troubled loans. This committee monitors the progress of such problem loans and tries to determine how to achieve repayment through creative co-operation with distressed borrowers and use of other collection possibilities.

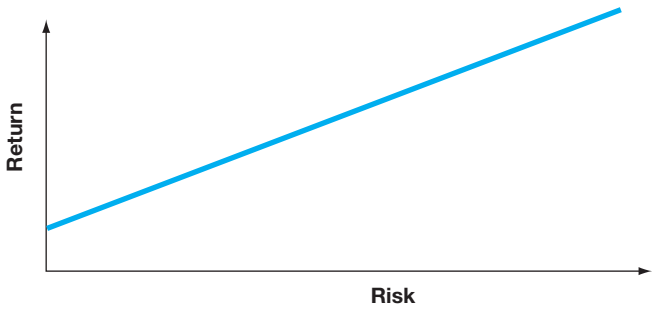


Figure 7.2 **The risk and return trade-off**

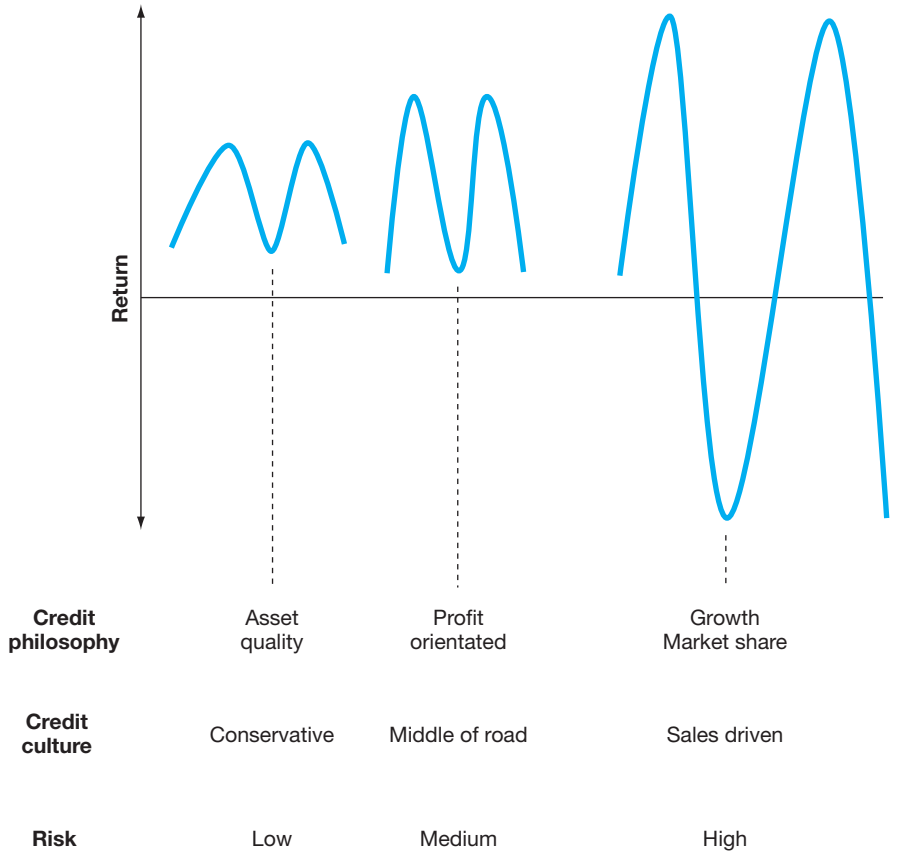


Figure 7.3 Returns and risk through the credit cycle

The scope for cost cutting in the traditional system of loan controls would have been mouth-watering under the move from the originate-to-hold style to the originate-to-distribute style. Having said this, of course, not all loans were securitised and therefore cost cutting was not at a 100 per cent level in this area.

One of the biggest control problems in banking is keeping tabs on positions that the bank dealers may have entered into. Although all bank dealing personnel have levels of maximum transaction authority, the problem remains a massive one because dealers are entering into positions all of the time all around the world. Of course, electronic reporting has improved this but the task can be seen to be gigantic. Not only is the task of bank control and monitoring vast, so is its complexity. This is a very important point. It has ramifications far more extensive than many realise. If successful, the bank treasurer really earns their weight in gold.

Value at risk and risk management

One of the many tools available and one of the most-used prior to the crisis was value at risk (VaR). Value at risk is a single number estimate of how much a firm can lose due

to the price volatility of the instruments it holds – for example, a fixed-rate bond or an unhedged currency payable/receivable or a credit default swap or subprime mortgage. It indicates the likelihood of potential loss not exceeding a particular level, given certain assumptions. These assumptions may involve time horizon, holding period, confidence limits, distribution of probabilities, correlation and the potential for shocks to the system.

VaR has been widely used by financial institutions and features strongly in the rules contained in the Capital Adequacy Directives for banks. Its development owes much to bankers J. P. Morgan whose past chairman demanded a one-page report at the end of business each day summarising the bank's exposures to losses because of possible market movements in the coming day. J. P. Morgan's 'Riskmetrics' (a system of measuring VaR) evolved from this request.

VaR's popularity with banks lay in the fact that it holds out the prospect of aggregating risks across a range of diverse activities and articulated well with the banking industry's interest in installing group risk management systems.

VaR is conceptually and practically a powerful tool and its workings and shortcomings need to be understood by bankers and treasurers alike. It falls far short of providing a complete panacea for group risk measurement, particularly for banks. It does, however, provide a moderately useful estimate of possible losses over a short period under normal market conditions for investments and other instruments which are liquid; in other words, assets and liabilities that can be marked-to-market (valued at objective market prices) and traded freely, not therefore in respect of credit default swaps and subprime mortgages.

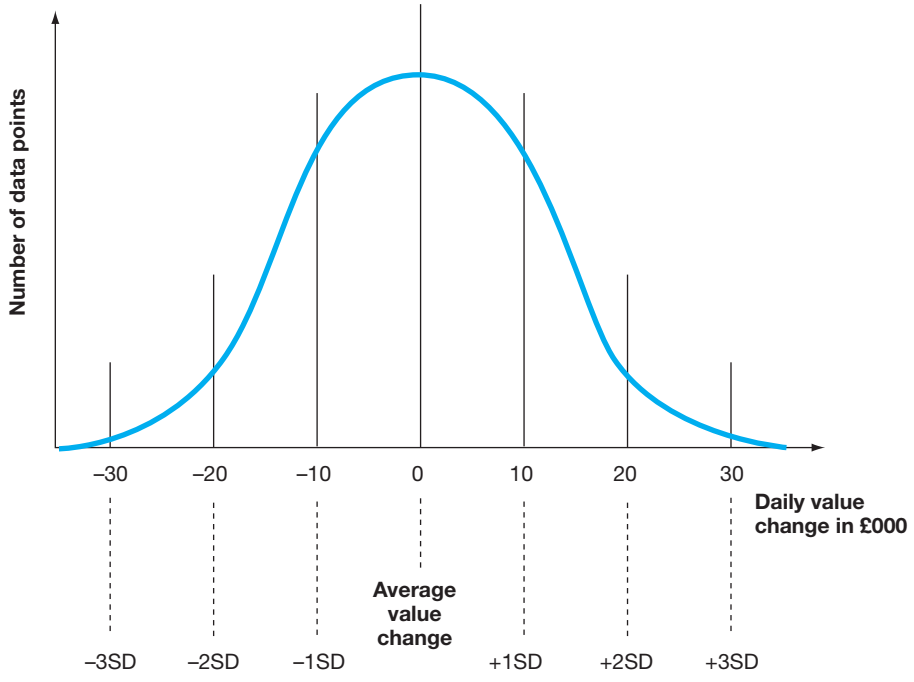


Figure 7.4 Change in portfolio value using the normal distribution*

*Which is very dangerous at times of crisis – see text.

To explain the concept, assume that a financial institution holds a portfolio of fixed interest bonds. The portfolio is unhedged and its value today is therefore based on the current term structure of interest rates – the yield curve today. If we have comparable historic yield data, then we can calculate the value of the portfolio under a wide range of past interest rate scenarios in order to get a distribution of values and of potential changes in value. Most VaR models assume that changes in the value of the portfolio are, on average, random and that their frequency distribution can be estimated using a normal curve – see Figure 7.4. For the normal curve, the standard deviation (σ) is the measure of volatility and data points will be distributed as follows

68.3% within $\pm 1\sigma$
95.5% within $\pm 2\sigma$
99.7% within $\pm 3\sigma$

If one believes in the applicability of the normal distribution to such situations (which is highly dangerous – see later in this section) this means that if one standard deviation in Figure 7.4 is USD100,000, then 95.5 per cent of the time the change in value of the portfolio value will be within ±USD200,000. So, the VaR at a 95.5 per cent confidence level is USD200,000. Note that in excess of one day per year the value will be outside ±USD300,000. If the data are at daily intervals, then this would give the 24-hour VaR. Note the word 'if' as the first in this paragraph. The fact is that at times of financial crisis or stress the real world does not behave in accordance with the normal distribution. We return to this topic again in Chapter 10. Its importance cannot be overemphasised. The fact is that banks were using an inappropriate model for control when the need for risk management was at its highest.

It is easy to see how the concept can be applied to exchange rate exposure or interest rate exposures that banks may hold. And, bank capital adequacy regulations require measurement of market risk on bank open currency positions via the VaR at 95 per cent confidence limits based on five years' daily data or at 99 per cent confidence limits based on three years' daily data. The bank is then obliged by regulations to support that VaR by a specific amount of capital – equity and subordinated debt. If the bank's view of risk differs from the regulators, then the bank is left with a dilemma. It would need to alter its portfolio and select a portfolio of activities such that, in aggregate, the economic capital requirements and the regulatory capital requirements coincide.

As mentioned above, like most management techniques, there are problems with VaR. The following are some of the caveats concerning VaR.

- Empirically, at times of financial crisis, changes in value do not follow the normal distribution. This is true for options, credit default swaps and subprime mortgage values, to say nothing of equity shares. Outturns display fat tails rather than the 4.5 per cent tails in the normal distribution. In other words, in the real world of financial markets, unlikely events occur far more frequently than implied by the normal distribution. Although we take the topic further in Chapter 10, the key iconoclasts in this area have been Mandelbrot[3], Taleb[4], and Triana[5]. Their message has taken a long time to filter through but, at last, it has – but that is not to say that there won't be other financial meltdowns.

- As mentioned above, shocks to the system may occur with greater frequency than the normal curve implies. Because of this, VaR may be used for normal market conditions and supplemented by stress testing and scenario analysis as modelling devices to quantify the potential impact of large future shocks.
- For portfolios of risks, some may be correlated, for example, exposures to the housing market and to bond markets. Thus, for other than very simple portfolios, other methods must be used. These include:
  (i) Methods involving statistically adjusting data for such correlations.
  (ii) Computer simulations using past historic portfolio returns including past crisis inputs.
  (iii) Monte Carlo analysis, which involves a large run of scenarios, say 10,000, to generate a distribution, using assumptions about volatility and correlation and stressed for crisis conditions.
  (iv) Stress testing for crisis shocks to the system
- An appropriate holding period for each type of risk needs to be established and corresponding data captured. One key factor is the degree of liquidity for selling on an exposure – that is, how fast can the position be liquidated? The assumption in many parts of finance theory is that markets are continuous – in other words (well almost) one can sell as much as one wishes into the market. This was patently not the case in September 2008 when the financial crisis was at one of its worst points as far as market liquidity was concerned.
- The first two of these bullet points cannot be overemphasised. It is a fact that VaR performance, as well as stress testing and other risk measurement techniques, failed to indicate magnitudes of loss in the 2007/8 crisis. To reiterate, VaR is calculated using the normal distribution of outturns and the standard deviation of past results. This is often inadequate. When? Well, when there are crises. In other words, just when VaR is needed most, it seems to fail. Financial market behaviour exhibits fat tails. It may appear to conform to the normal Gaussian distribution a lot of the time but those fat tails can only be ignored at one's peril. For massive critiques of the inappropriate use of the normal distribution, the three books mentioned in the first bullet point cannot be recommended too highly.

We now turn to some of the practical problems which make risk management so difficult to implement. Risk management involves the measurement and management of exposure to risk. Financial risk management requires identification of its sources, measuring it, and devising and implementing plans to address it. Risk management may be qualitative and/or quantitative. Financial risk management focuses upon when and how to hedge exposures to risk. Worldwide, the Basel Accords (see Glossary) are adopted by banks for tracking, reporting and managing operational credit and market risks.

One of the big problems at regulators and in banks is that, according to Smith[6], they 'have weak risk management discipline. Even if they could assess the dangers accurately, risk managers typically have insufficient authority to rein in producers'. Referring to the