

Cyclicality: Good times get worse, bad times get better

Risk models using countercyclicality take into account where the economy is going. **Dr Chris Marrison** of Risk Integrated explains

Most economic variables have a tendency to settle back towards a long-term average; for example, when stock markets rise above their long term trend, they may rise further, but it is a little more likely that they will fall. Similarly there is countercyclicality with commodities prices, oil, interest rates, GDP growth, property prices and rents. Countercyclicality is most significant for long term assets such as mortgages. Missing out the statistical effects of countercyclicality has a significant effect on the valuation of mortgages and the amount of capital to be set against them. As some financial institutions have found, correctly calculating the capital both before and after the crisis is a matter of survival.

Financial institutions most commonly have risk models that only account for the current financial ratios and do not look at where the economy is going. The alternative is to include countercyclicality in the models—as has been successful in forward looking financial institutions that have done this for their commercial real estate portfolios. This article will explain how countercyclicality, as applied to commercial real estate, could also help the wider financial market in its approach to risk management.

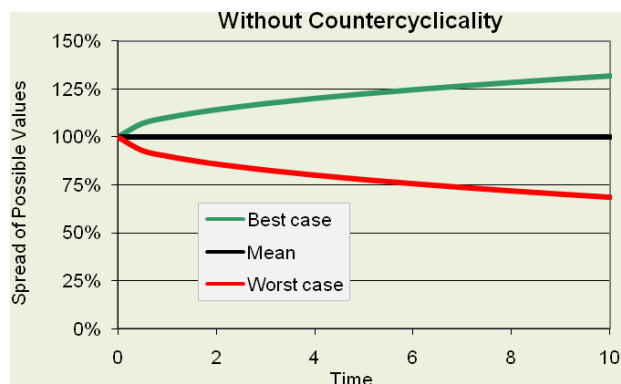
Countercyclicality occurs if, when something is above its long term trend, it tends to move back towards that trend. The higher above its long term trend, the more likely it is to fall rather than rise. Countercyclicality is found with commodities prices, oil, interest rates, GDP growth, property prices and rents. Its effects in economic variables tend to manifest themselves over several years. They are not noticeable in market price changes from day-to-day, but they become noticeable over several months. This means that countercyclicality is particularly important for long term assets.

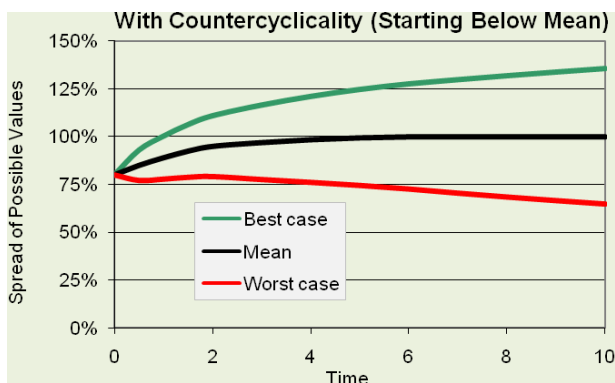
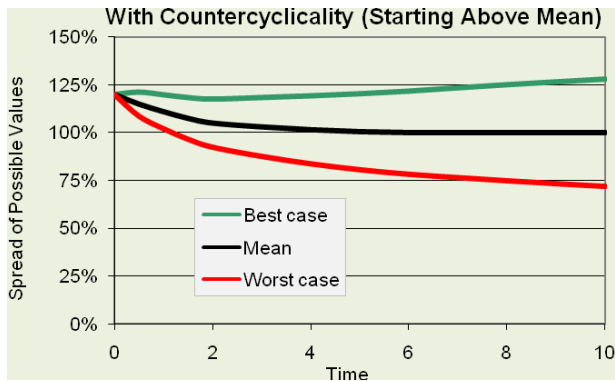
Good and bad times

Qualitatively, the inclusion of countercyclicality means that when times are good there is an

adjustment to say that conditions are more likely to get worse than better. Conversely, in bad times, things are more likely to get better, and less likely to get worse. In good times, borrowers look safe because they have good financial ratios and that leads to a reduction in the estimate of the probability of default. However, the inclusion of countercyclicality adds a factor that says that market conditions are more likely to get worse than better and, therefore, risk is higher than otherwise indicated.

On the flip side, in bad times, borrowers look risky because they have bad financial ratios. This drives up the estimate of the probability of default. However, if countercyclicality is included in the estimate, it adds a factor that says that things are likely to get better and therefore the assessed risk should be lower than otherwise indicated. As a practical example, consider the risk of refinancing commercial mortgages at maturity. The graphs below illustrate the projected possible outcomes for the property value at the maturity of a loan with and without countercyclicality (in this illustration the value could be considered to be in real terms, without inflation). The inclusion of countercyclicality skews the projection down if the starting point is a time when the market is above the average, and the projection is skewed up if the market is currently below the average.





Most of the risk models that have been implemented for mortgage lending over the last few years are either qualitative scorecards or regression models that do not include countercyclicity. Cashflow simulation models are a rigorous alternative. Simulation models naturally include countercyclicity because they are simulating future market conditions over the life of the loan and that simulation is centered around a forecast. That forecast naturally requires some consideration of where the markets are likely to go from this point.

Basel II

The consideration of countercyclicity has a large impact on the amount of capital to be held under Basel II. The Basel II regulations stipulate that the amount of required capital to be held against loans is to be calculated by assessing the Probability of Default (PD) and Loss Given Default (LGD), as estimated by the financial institution using its own risk models. Financial institutions are able to use whatever method they see fit to estimate PD and LGD, so long as they can convince their regulator that the method is credible.

The most commonly used models for mortgages rely on factors such as the Loan-to-Value (LTV) and debt

service coverage ratio (DSCR). These worsen in bad times, driving up the measured PD, LGD and, therefore, the minimum required capital. This sensitivity to financial ratios has been seen as a flaw in Basel II, but actually Basel II is deliberately agnostic about the approaches taken to estimate the PD and LGD. The problem can be traced more directly to the models commonly being implemented by the financial institutions.

Examples

As an illustration of the impact of neglecting the effects of countercyclicity, consider the table below.

This shows how the capital varies for a high quality, six-year, floating-rate mortgage, in conditions when property values are 15% above or 15% below their long term average (implying a 35% drop from the peak). The results are shown with and without the inclusion of countercyclicity.

	Basel Capital Ratio	
	Good times	Bad times
Without countercyclicity	1.06%	13.04%
With countercyclicity	2.65%	4.66%

Without countercyclicity, the capital increases by a factor of 12 (i.e., 13.04%/1.06%) from the peak of the market (good times) to the trough (bad times) because the worsening LTV and DSCR take the initial financial ratios of the loan from good to poor. By contrast, the capital is 2.5 (2.65%/1.06%) times higher in good times when countercyclicity is included because the higher possibility of a fall over the 6 years of the loan maturity is anticipated. However, with countercyclicity, in bad times the capital only rises by a factor of 1.8 (i.e., 4.66%/2.65%) compared with the good times because the effect of the worsening financial ratios is mitigated by the recognition that conditions are likely to improve over the remaining life of the loan.

A major conclusion of this analysis is that before suggesting changes to Basel II, financial institutions should look at the implications of how they choose to measure PD and LGD. **MFG**