

Bonds and resilience in the financial crisis

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Key points

- The financial crisis was a real world shock test for bonds.
- Volatility in spreads reached multiples of 6+ standard deviations from the long-term average.
- Investment grade bonds proved relatively resilient through the crisis.
- Markets returned to more appropriate risk spreads than before the financial crisis.

Bonds, crisis and resilience: lessons for tomorrow

The financial crisis provided a real world credit shock of a magnitude most market investors had not anticipated, even in tolerance tests and risk analysis. Looking back, it is interesting to see how bond markets were affected and the resilience displayed by bonds during the crisis. And to ask, what lessons were learnt for tomorrow, and managing future shock events?

The onset of the financial crisis is generally tracked back to September 2008 with the collapse of the US Investment Bank, Lehman Brothers. However, for bond markets, troubles in the credit markets began much earlier with the emergence of the US sub-prime mortgage crisis, around mid-2007, when US mortgage lender New Century Financial filed for Chapter 11 bankruptcy.

The US sub-prime crisis followed years of unsustainably low interest rates, and consequent rises in rates lead to defaults from lending to sub-prime credit households, where borrowers simply could not afford to service the loans they were given.

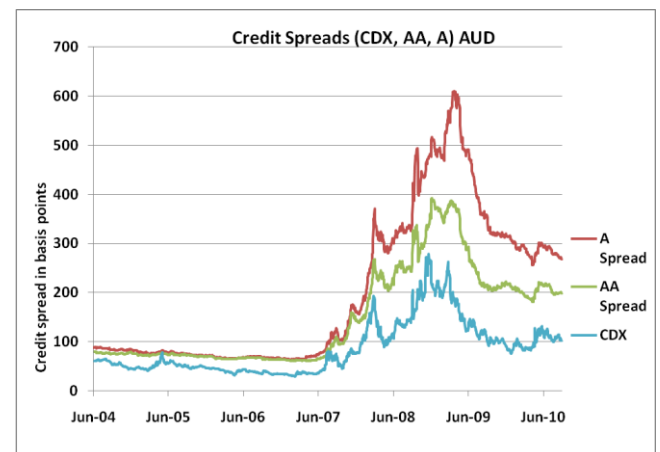
This sub-prime crisis led to a worldwide credit crisis, which at its worst became the financial crisis (or global financial crisis as it is sometimes called) from which the world is still in the process of emerging. The world's money and credit markets provide a fascinating and telling view on the last few years of crisis, together with some key lessons going forward.

Shocks to market relationships

The dramatic arrival of the sub-prime and eventually financial crisis - a real world shock event – lead to material changes in market variables far greater than experienced in previous decades.

In the lead up to 2007, freely available credit and competition for funding in the wholesale markets largely driven by sustained equity bull markets worldwide saw credit spreads fall and in some cases towards convergence without regard to the real underlying risks.

Chart 1: Shock to credit spreads from sub-prime and financial crisis



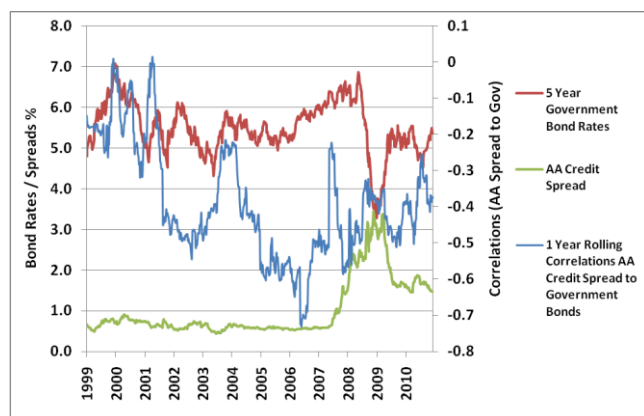
Source: Bloomberg, AMP Capital Investors (CDX refers to credit default swaps)

The onset of the sub-prime credit shock in early 2007 sparked material rises in credit spreads across the credit spectrum. Over the course of the financial crisis, as credit became tighter, bank and corporate failures occurred, and sovereign risk entered the equation, mostly from governments bailing out systematically important banks, spreads skyrocketed to historic highs. In Australia, A rated spreads reached some 600 basis points above treasury bonds, AA spreads reaching almost 400 basis points – well above the sub-100 basis point spreads that existed for a number of years before.

With the initial major shocks from the financial crisis stabilising around mid-2009, spreads seemed to reach new averages above those prior to mid-2007. Higher spread averages over the last couple of years reflect the re-rating of risk in the world's bond markets, where spreads had fallen below acceptable risk spreads in the highly geared and competitive markets that prevailed before the financial crisis.

Pricing credit correctly remains an ongoing challenge in markets going forward, especially as issuance increases and competition grows for deals.

Chart 2: AA spreads against government bonds, with correlation



Source: Bloomberg, AMP Capital Investors

Correlations between corporate spreads and government bond yields are generally negative, as illustrated in Chart 2. During the sub-prime and financial crisis, this inverse relationship played out dramatically where government bond yields fell on the back of economic concerns as central banks cut cash rates to stimulate the economy, whilst credit spreads on bonds increased on economic and credit concerns.

The effect on bond portfolios of these changes was that the fall in yields on government bonds translated into capital uplift in existing portfolios, providing at least an offsetting effect of capital value falls in existing corporate bond portfolios from rising corporate bond yields. As an example of this, despite the significant rise in credit spreads in 2008/09, the return on the AMP Capital Corporate Bond Fund was a respectable 8.9% (before fees and taxes) in calendar 2008, and 5.6% in the year to June 2009 (see end of this paper for returns before tax and after fees since inception).

In addition, worldwide sovereign intervention in the form of bank guarantees, and support for RMBS (residential mortgage backed securities) programs helped support the overall bond market, and its issuers. In Australia, the Australian Office of Financial Management (AOFM) purchased many of the RMBS programs in Australia, whilst in the United States, the Federal Reserve took over Freddie Mac and Fannie Mae.

With volatility and market uncertainty there was a flight to quality as investors increasingly sought to invest in AAA grade issues. Prior to mid-2007, AAA issuance accounted for over 40% of total issuance. Since mid-2007 AAA rated issuance accounts for 50%.¹

During the financial crisis, US shares experienced their worst bear market since 1937. Australian shares, their worst since 1973/74.

Worldwide corrections in stock markets, and in particular on Wall Street with American mortgages the source of significant concern alongside the US economy itself, highlighted the concerns about corporate balance sheets, and their ability to cover interest payments on their debts.

Moreover, falling share prices of bond issuers compounded the financial and psychological impact on the market, and breached critical covenants with lenders and bondholders, effectively triggering intense renegotiations, or calls on capital.

Coupled with collapsing investor sentiment, and concerns that corporates would breach their lending covenants, and did not possess appropriate interest cover, Australia in particular witnessed a severe correction in listed real estate investment trusts (REITs) which had borrowed excessively against rising property values in the years leading up to mid-2007. A number of prominent debt-driven collapses (Babcock and Brown, Allco and Centro Property Group) added additional pressure to credit spreads locally.

Quantifying financial crisis volatility in the bond markets

In financial markets, risk is generally quantified in terms of volatility in returns. The proxy for volatility is standard deviation. The amount a time series deviates from the mean can be expressed in standard deviations. The higher the multiple of standard deviations, the greater the volatility or wilder the swings are from the mean, either to the positive or negative.

Before the financial crisis, investment managers looked at the probabilities of deviations from average market variables of between ± 2 standard deviations.

Assuming a normal distribution, volatility in the order of 2 standard deviations from the average accounts for approximately 95% of potential outcomes. Movements of more than 2 times were not considered significantly probable, until the financial crisis.

Although the distribution of credit spreads are not normally distributed given their fat tails (low probability of a very large loss which can be experienced in a crisis), market practitioners commonly use this assumption for the ease of calculation, and when you assume a diversified portfolio, the normal assumption is fair to use most of the time. However, this should also be supplemented with scenario or stress testing for crisis events, and one might typically assume a 3-

¹ Black S, A Brassil and M Hack, The Impact of the Financial Crisis on the Bond Market, Reserve Bank of Australia Bulletin, June 2010, p60.

4 standard deviation move might be reasonable to assume in a crisis event given data up to 2007, before the financial crisis.

However, once the crisis struck, the shock to AA bond spreads was in the order of 6+ standard deviations from the historical average. Down the credit spectrum, deviations were even witnessed in higher multiples.

Table 1 illustrates the enormous change in volatility that occurred with the onset of the financial crisis, using the AA credit spread as a proxy for corporate bonds. The analysis uses market data for the 10 years to mid-2007 as a baseline for comparison. Over that 10 year period, the average AA credit spread was 0.63% and volatility was 0.18%.

Table 1: Volatility in AA rated bond spreads before, during and after the financial crisis

Period	Average spread	Volatility % pa	Standard deviation multiple compared to 10 year baseline before Financial Crisis
10 year baseline to mid-2007	0.63%	0.18%	-
5 years to mid-2007	0.58%	0.13 %	0.7
Sub-Prime / Financial Crisis: mid-2007 to March 2009	2.08%	1.01%	5.6
April 2009 to December 2010	1.83%	0.52%	2.9

Source: AMP Capital Investors

5 years to mid-2007: in the years leading up to the onset of the financial crisis, credit spreads had dropped to below their long-term averages across the risk spectrum, largely as a function of booming equity markets and high credit liquidity. The average spread in this period was 0.58%, 5 basis points below the 10 year pre-crisis average, and with a standard deviation of just 0.7.

During the Sub-Prime / Financial Crisis – mid-2007 to March 2009: in the crisis there was a sharp reaction with average AA spreads rising to 2.08%, over 3 times the long-term average. Volatility, however, rose to 1.01%, almost 5.6 times long-term volatility.

After the crisis – April 2009 to December 2010: after the crisis market spreads did not return to the pre-crisis lows where credit was significantly mispriced for risk. Average AA spreads for this period were 1.83%, with volatility of 0.52% or 2.9 times the long-term baseline average. The fact that AA credit spreads have not fallen back to pre-crisis lows suggests some return to sanity on the pricing of credit spreads relative to risk since the financial crisis. However, this also represent an opportunity as spreads are reflecting a significant liquidity premium which should provide extra comfort that the current spread should more than compensate for the eventual defaults (which are currently quite low) and give additional compensation for the liquidity

risk. Credit spreads have over-corrected on the upside and represent good long-term value for investors relative to government bonds.

Australian defaults experience

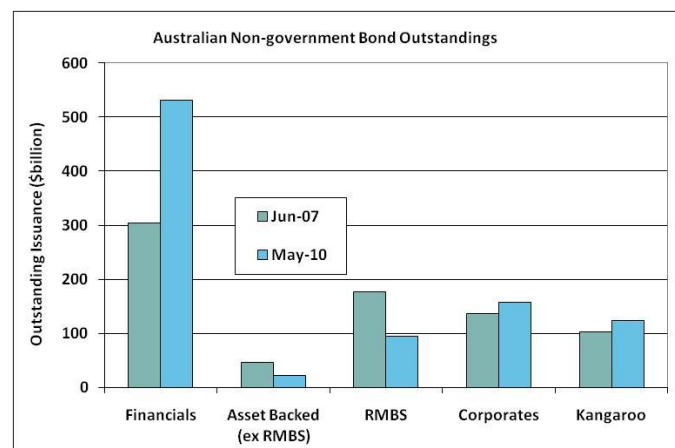
Though it may have felt otherwise, there were negligible bond defaults in A and AA rated bonds in the Australian market during the financial crisis, even though there were ratings downgrades.

However, it is important to note that by the time a bond defaults, it is most likely to have been downgraded by ratings agencies and hence it will default at a lower credit rating than its initial credit rating.

According to the RBA, there were negligible defaults of publicly rated financial or corporate bonds issued by an Australian during the financial crisis. By comparison, Kangaroo bond issuers (non-resident corporates issuing Australian dollar bonds in Australia) experienced a small amount of defaults – the first being Lehman Brothers and two banks in Iceland, representing just 0.1% of the Australian bond market.² Although it must be noted that Kangaroo bond defaults would have been higher if the governments did not bail out some of the systematically large banks post the Lehman's default.

There has also been some material downgrades in Australia on the public private partnership bonds, as global monoline insurers which were able to guarantee a AAA rating for these bonds (which typically would be BBB rated without this) came into difficulty in the sub-prime crisis so typically cannot offer this insurance anymore. But regardless of this, when the long-term effects have played out the eventual defaults experience in Australia should be quite small.

Chart 3: Australian non-government bond outstandings



Source: Reserve Bank of Australia, 2010

Additionally, there were no investor losses on Australian RMBS issues in the crisis, unlike international RMBS issues. RMBS issues are generally backed by first ranking residential mortgages in Australia, and RMBS issue outstandings amortise in line with their underlying mortgages.

² Black S, A Brassil and M Hack, p62.

According to RBA data³, bond issuance for the decade prior to 2007, before the onset of the financial crisis, was 20% per annum. During the crisis bond issuance growth slowed to 7% per annum.

The financial crisis by its nature saw major issuance by financial institutions, especially banks, as they shored up their balance sheets, and sought capital funding to support corporate and residential loan books while credit conditions tightened globally.

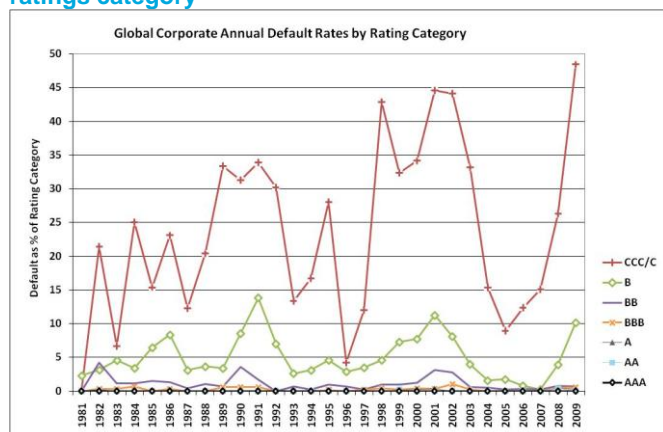
Issuance by financials, mainly banks, increased dramatically during the financial crisis, from \$304 billion in June 2007 to \$532 billion at May 2010, an increase of 43%.

Global default rates

Global corporate default rates during the financial crisis exceeded their long-term weighted averages in the A, BBB, B and CCC/C ratings categories, according to data from Standard and Poor's.⁴

It was at the higher quality end of the credit spectrum where bonds demonstrated resilience during the financial crisis. Default rates in the AA and BB categories remained below their weighted long-term average during the crisis. Moreover, default rates for the AAA rating category remained at zero through the crisis, consistent with the historic trend of zero defaults in the AAA rated category (again, note that a bond is likely to be re-rated out of the AAA category before it defaults).

Chart 4: Global corporate annual default rates by ratings category



Source: Standard and Poor's, 2010

Australian bonds remain highly rated compared to the global average with 85% of Australian bond issuers rated as investment grade, compared with just 60% of global issuers. Moreover, of all entities rated globally by S&P, 18% were downgraded in 2009, compared with just 4% of Australian entities (RBA, 2010).

Summary

The financial crisis was a real world shock test for bonds. Volatility in spreads reached multiples of 6+ standard deviations from long-term averages. Though there were defaults, the Australian bond market remained relatively resilient, partly because of Australia's economic strength and partly the strength of Australian financial institutions (in terms of capital and lending practices).

Following the financial crisis, markets moved back to more appropriate risk spreads than before the crisis, but appear to have overreacted to the high side, as spreads are reflecting a significant liquidity premium.

Bond investors and credit markets more broadly have experienced a real life shock event on which to develop tighter portfolio and credit risk mitigants for the future.

Fund History: AMP Capital Corporate Bond Fund Performance - Wholesale

	AMP Capital Corporate Bond Fund*	UBS Composite Bond Index
1 month	0.30%	0.03%
3 months	1.37%	-0.19%
1 year	10.24%	6.04%
2 years	7.72%	3.86%
3 years	7.98%	7.43%
5 years	6.11%	5.76%
Since inception**	6.53%	6.01%

Note: Past performance is not a reliable indicator of future performance. *As at 31 December 2010, before tax and after fees for the Wholesale Class and assumes income is reinvested. **Inception date: 19 November 1997 for the Wholesale Class.

³ Black, Brassil and Hack, June 2010.

⁴ Standard and Poor's, Default, Transition and Recovery: 2009 Annual Global Corporate Default Study and Rating Transition, 2010.

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