

# The Sub-prime Crisis Down Under

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The sub-prime crisis which emanated from the USA in 2007 has had profound effects around the world and is providing new insights into financial interlinkages and risk management issues. This paper examines the effects of the sub-prime crisis on the Australian financial sector with three objectives in mind. One is to provide a concise, but comprehensive, overview of these effects for readers interested in understanding the impact of the sub-prime crisis on economies outside of the USA. The second objective is to identify the main channels of transmission of effects. The third objective is to some identify lessons learnt from the current experience for risk management strategies of financial institutions, corporates, and monetary/prudential authorities.

**KEYWORDS:** Sub-prime, Crisis, Transmission, Financial Distress

JEL Classification: G15, G18, G21

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## **Introduction**

The financial sector implications of the US sub-prime crisis which emerged in mid 2007 have been wide spread and profound. Financial institutions, corporates, investors, borrowers, and financial authorities in most countries have been affected – often significantly and dramatically. As the crisis has evolved, new channels of transmission of effects have become apparent, as have the undesirable implications of inadequate transparency arising from complex financial products and practices, and inadequate risk management.

In this paper we use the experience of the Australian financial sector to illustrate how the effects of the crisis have been transmitted internationally and to identify some general lessons for risk management practices and policy makers. Although the Australian economy (but not the stock market) has (to date) proven quite resilient to the international turbulence, there have been a significant number of high profile non-bank financial/investment companies experiencing severe distress induced by the sub-prime crisis. While the banking sector has emerged generally unscathed, the widening of credit spreads in international wholesale markets induced by the crisis is being gradually transmitted to retail loan markets through the relatively heavy reliance by Australian banks on wholesale market funding and the importance of securitization. Non-bank financial/ investment companies have been affected by the crisis, directly through lack of liquidity in traditional funding markets and indirectly through turbulence in equity markets. In fact, a major source of transmission has proven to be via equity markets, and the resulting turmoil in those markets has exposed the prevalence of a range of practices of dubious merit – prompting calls for a re-examination of the merits of delegation of market regulation by official regulators to the Australian Stock Exchange.

In section 1 we provide a brief taxonomy of possible channels of transmission of the sub-prime crisis internationally. Section 2 provides a brief overview of salient characteristics of the Australian financial sector in order to identify the likely importance of different channels of transmission. In section 3 macroeconomic aspects of how the sub-prime crisis has impacted upon the Australian financial sector to date are discussed. Section 4 provides more detail by providing a chronological outline of major events and information on specific cases of distress in major companies. Then in section 5 we assess the role of different transmission channels and in section 6 we conclude by briefly considering the nature of the risk management failures made evident by the crisis, some lessons to be learnt and policy implications.

## 1. The subprime crisis: its international transmission

Although the distinction is not watertight, it is common to distinguish two types of channels for international transmission of crises, such as has occurred with the US sub-prime crisis. One type is “common shocks” whereby financial sectors in different countries are concurrently affected by the same development. The other takes the form of “spillover effects” or “contagion” whereby the impacts of the shock on the US financial market and economy are subsequently transmitted elsewhere.<sup>2</sup>

The common shocks take two forms. One is the existence of exposures of both US and international investors and financial institutions to increased default risk of securities linked to the US sub-prime market. This has been of importance in the transmission of effects to Europe with many notable instances of write-downs of the market value of asset portfolios. The second common shock, reflecting the integrated nature of international investment markets, is the marked increase in risk aversion and liquidity preference of investors worldwide. Again, this was noticeable in European markets, both in interbank markets and in wholesale debt markets (Bank of England, 2007; European Central Bank, 2007).

Didier et al (2007) identify two types of spillover or contagion. One is via “real economy” effects such as international transmission of aggregate demand and trade flow effects from the impact of the crisis on the US economy. While this might be expected to involve lagged effects spread over time – “rational” expectations and resulting actions particularly of financial market participants may speed up the effects. For example, the sensitivity of equity market prices, and thus the cost of capital, to changed economic growth projections may be relatively rapid.

A second type of spillover effect arises from the interrelationships of global debt and equity markets. For example, changes in asset prices in one market will be transmitted to other markets internationally by resulting portfolio adjustments by intermediaries and investors. Similarly, shocks to liquidity and asset quality in particular markets will lead to balance sheet adjustments by banks, fund managers and others operating internationally. These effects may be transmitted by asset market adjustments or by financial institutions (banks). In the former case, changes in market prices provide rapid signals of effects, whereas the opacity of the banking sector means that public information about effects may be more delayed and reflected in announcements about asset value write-downs and provisioning. In general, interaction between adjustments in asset markets and actions of intermediaries plays an important role in generating and transmitting financial fragility and creating systemic crises because of the important role of liquidity (Allen and Gale, 2007, Chapter 5).

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<sup>2</sup> Stevens (2008) uses a similar dichotomy between common shocks and spillovers, while Didier et al (2007) distinguish between common shocks and contagion.

## 2. The Australian Financial Sector

A cursory look at the structure of the Australian financial system suggests that it would be significantly exposed to the effects of the US sub-prime crisis. First, there is a large securitization market, estimated to be \$270 (USD 240) billion at 30 September 2007. Comprising 78% residential mortgage backed securities and 8% asset backed paper, Australia was ranked as the second largest (outside the US) issuer of asset backed securities in September 2007.<sup>3</sup> Second, the funds management sector (driven by compulsory private pension contribution arrangements) is the fourth largest in the world, with \$1.2 trillion in funds under management at 30 September 2007. Virtually all of the funds under management are sourced domestically, and around 30% invested internationally<sup>4</sup>. Third, there is no special regulation of hedge funds, which are able to market their offerings to retail investors, and Australia has the largest hedge fund sector in Asia. As well as unlisted funds management vehicles, there were a number of hedge funds, as well as a number of CDOs, listed on the Australian Stock Exchange available to retail investors (including via self managed pension funds). Fourth, the domestic corporate bond and commercial paper markets (excluding securitization) are relatively small, with Australian corporate bond issuers relying relatively heavily on international markets. Fifth, the Australian banking sector, where the biggest four (five) have a market share of Australian resident assets of 65(70)%, has relied quite heavily on both offshore and domestic wholesale funding relative to domestic retail deposits. At 30 June 2007, the retail domestic deposits of the biggest four banks accounted for only 18.4% of assets on their Australian books.<sup>5</sup>

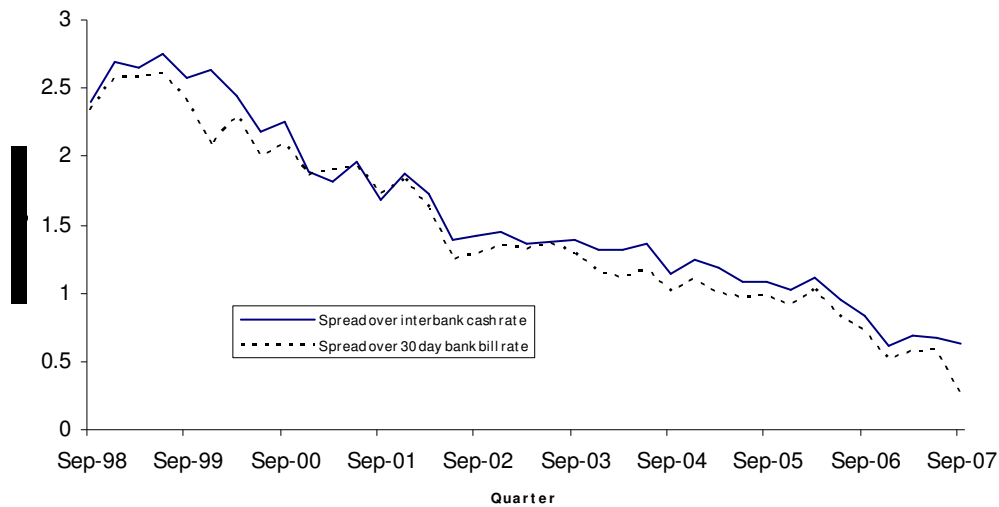
The potential for the Australian financial system to experience a financial crisis would also appear to have been substantial, based on the leading indicators identified from post-war crises by Reinhart and Rogoff (2008). Like the US, house prices had escalated quite rapidly for several years, with housing affordability declining to its lowest levels ever. Similarly, the Australian stock market had been on a bull run for 4 years with the S&P 200 accumulation index in June 2007, some 145% higher than 4 years previously. In the debt markets, credit spreads had declined markedly as shown for bank lending in Figure 1. In the corporate debt market the 5 year BBB credit default swap spread declined from over 100 basis points in mid 2003 to 44 basis points in June 2006.

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<sup>3</sup> [http://www.abalert.com/Public/MarketPlace/Ranking/index.cfm?files=disp&article\\_id=1044681048](http://www.abalert.com/Public/MarketPlace/Ranking/index.cfm?files=disp&article_id=1044681048)

<sup>4</sup> APRA Insight 2007, Issue 2, <http://www.apra.gov.au/Insight/APRA-Insight-Issue-2-2007.cfm>

<sup>5</sup> APRA monthly banking statistics.



**Figure 1: Large Business Credit Spreads:** Weighted average variable interest rate on bank credit outstanding

Source: Reserve Bank of Australia<sup>6</sup> Bulletin, Tables F01, F05

The economy was also dependent on a high rate of capital inflow to finance the long standing current account deficit which had run at over 5 per cent of GDP for the last five years. Unlike the US, inflationary pressures (another adverse indicator) were emerging, threatening the inflation target ceiling of 3 per cent p.a. used by the Reserve Bank of Australia. But other leading indicators of financial crises gave some cause for comfort. Output growth was strong and the government budget had been in surplus for a significant time.

Also different from the US was the exchange rate experience. Over June 2003 to June 2007, the AUD had appreciated some 27% against the USD from 66.7 to 84.9 (31% against the Yen and 8% against the euro). Underpinning this appreciation were two forces. One was the role of currency speculators engaging in “carry trades”, effectively borrowing at low Yen (or other currency) interest rates and investing unhedged in AUD assets. The second force was the development of the resources boom in Australia reflecting strong demand for resources from China and other emerging nations, and fuelling an appreciation of the currency.

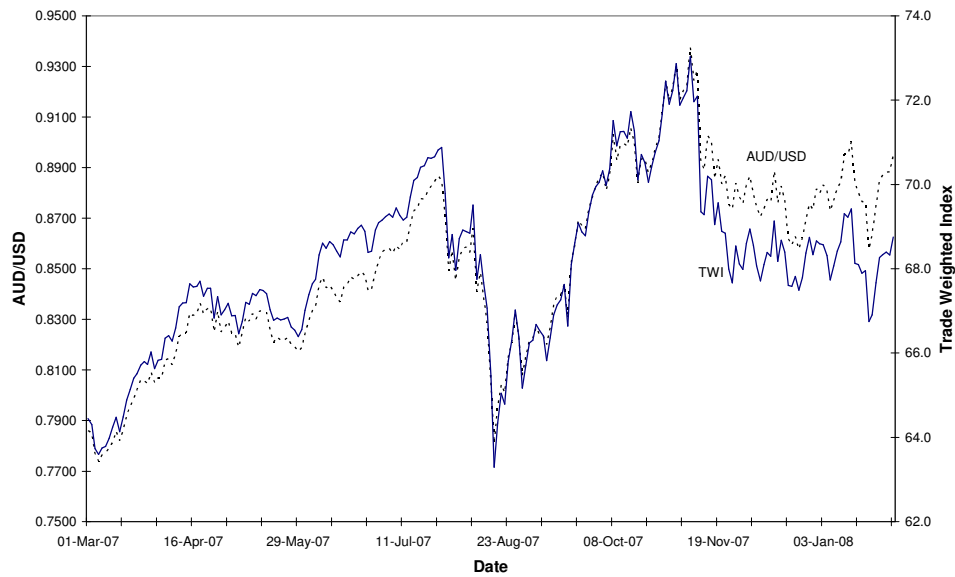
### 3. The Australian Experience

Although there was some immediate reaction in Australian financial markets to the emergence of the sub-prime crisis in mid 2007 reflecting a decline in confidence and increased uncertainty, the more noticeable effects have emerged gradually through the effects of corporate debt re-ratings, non-bank financial/investment company liquidity crises, an equity market collapse, and increasing credit spreads.

For some time, the “carry trade” (unhedged long AUD and short Yen, or other low interest rate currency, positions) had helped finance Australia’s current account deficit. Increased risk aversion, saw the unwinding of these positions lead to a dramatic fall in the AUD in early August 2007 shown in Figure 2, which was

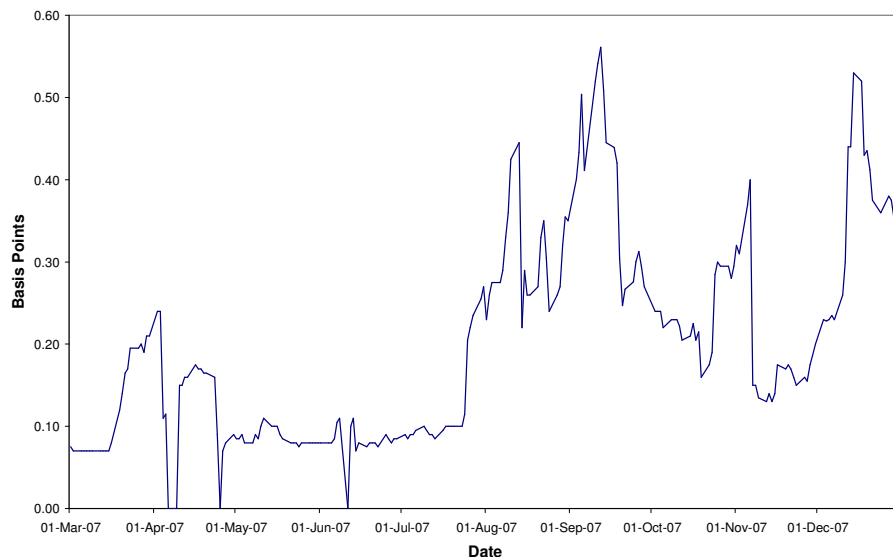
<sup>6</sup> Australia’s central bank is the Reserve Bank of Australia (RBA)

subsequently reversed over the next two months as confidence about the longer run strength of the AUD due to the resources boom re-emerged.



**Figure 2:** The Australian exchange rate (against USD) and Trade Weighted Index  
*Source: Reserve Bank of Australia Bulletin, Table F11*

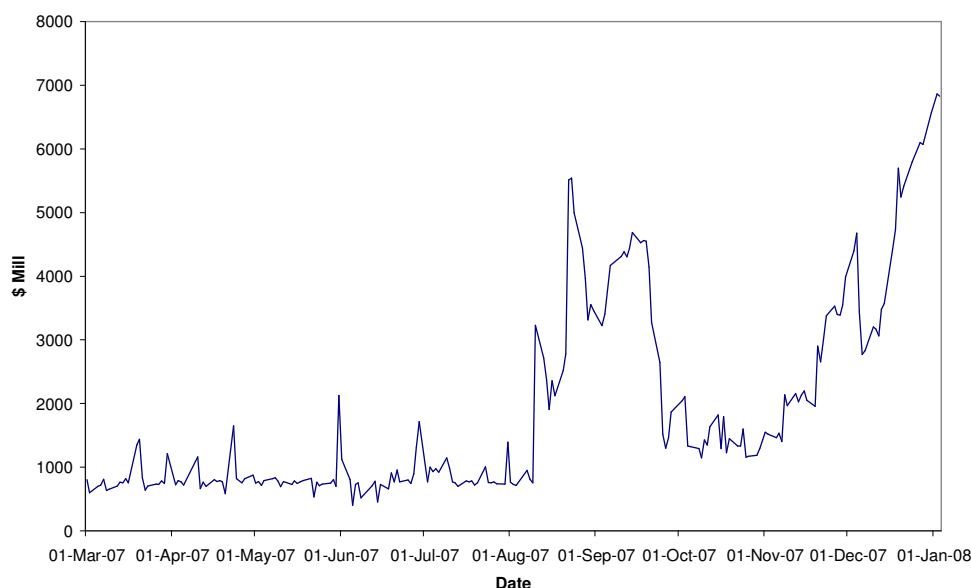
Concerns about the potential exposure of Australian Banks to the sub-prime crisis together with increased liquidity preference, led to a substantial increase in the interest rate on short term bank paper relative to the official overnight cash rate, with the spread widening from around 10 basis points to over 30 basis points in August 2007. Figure 2 shows the behaviour of the widening spread.



**Figure 2:** The 30 day bank-bill - cash rate spread  
*Source: Reserve Bank of Australia Bulletin, Table F1*

Increased demand for liquidity by banks saw substantial increases in their overnight balances in Exchange Settlement Accounts at the Reserve Bank of Australia as shown in Figure 3. Through repos in a wide range of already agreed acceptable

securities (including bank paper), the RBA was able to inject liquidity adequate to meet increased liquidity demand while consistently hitting its cash interest rate target.



**Figure 3:** Bank's Exchange Settlement Balances at the RBA

Source: Reserve Bank of Australia , Open Market Operations

[http://www.rba.gov.au/Statistics/open\\_market\\_operations.xls](http://www.rba.gov.au/Statistics/open_market_operations.xls)

The Australian commercial paper markets are relatively small. Much Australian corporate short term borrowing is done by way of bank bill financing – banks accepting/endorsing a bill of exchange drawn by the corporate. At June 2007, commercial paper issued by corporates totalled \$6 bill, contracting to \$4 bill at November 2007. In comparison, bank bills on issue totalled \$124.5 (\$132) bill at June (Nov) 07 (of which \$98 bill was for non-financial corporates).

The market for Asset Backed Commercial Paper (ABCP) market originating in Australia roughly doubled in size over three years to a peak of \$72 billion in July 2007, with around \$25 billion issued on-shore. In contrast to the USA, the underlying collateral was of high credit quality, with prime residential mortgages accounting for 44%, prime RMBS for 16%, and the rest spread over loans, leases, trade credit, receivables etc and very little in non-conforming/sub prime mortgages.

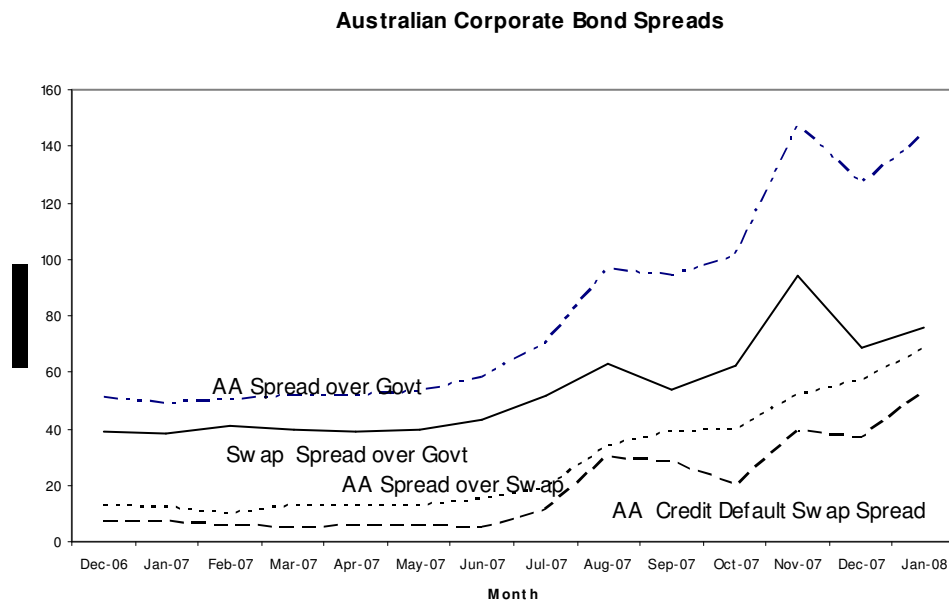
While Australian issues of ABCP into international markets fell following the seizing up of those markets, the domestic market increased in size from \$25 bill in July 2007 to \$34.9 bill at Nov 2007, having peaked in Sept at \$39.3bill. For example, between August and September 2007 on shore issues of ABCP increased by \$10 billion while off-shore issues decreased by \$18b.

Over the longer horizon, the effects on Australian financial markets have been felt through a number of indirect channels. One has been the flow on effect of higher funding costs in international wholesale debt markets. The Australian banks have for some years financed a significant part of their domestic lending from international borrowing relative to domestic deposit markets. Gradually, the increased cost of such debt finance is being filtered directly into higher lending rates, and indirectly as competition leads banks to increase the rates they pay on deposits.

A second effect has been via some transfer of corporate and securitization fund raising demands back to the domestic markets because of the higher cost and

disruptions in international markets. Short term liabilities of securitization vehicles on issue in Australia increased from \$25 bill at end June 2007 to \$39 bill at end September, while total liabilities on issue overseas fell from \$97 bill in June to \$84 bill at September and \$80 bill at November.<sup>7</sup> Long term asset backed securities issued in Australia increased from \$126 bill at June to \$135 bill at November

A third effect has been the gradual widening of credit spreads, in line with those observed overseas. Figure 4 illustrates how the spread over government debt on AA corporate debt has more than doubled from around 50 basis points in mid 2007 in line with developments overseas. Figure 4 also illustrates the increased spreads applying in interbank markets with the spread between swap rates and government rates increasing substantially.

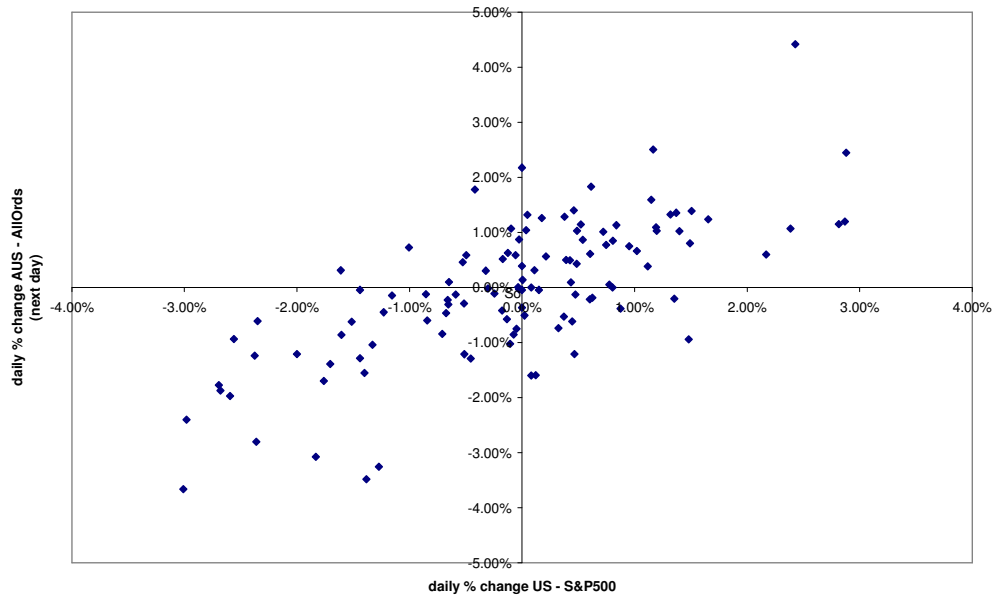


**Figure 4:** Australian corporate bond spreads

A fourth effect has been via the spillover of the sub prime crisis onto equity markets and increased linkages between international equity markets. Figure 5 shows the correlation between daily returns on the US market (S&P 500) and those on the Australian market (All Ordinaries Index<sup>8</sup>) the following day, for the period from the July peak of both markets at the onset of the crisis (19<sup>th</sup> and 20<sup>th</sup> July, 2007) till the end of 2007. (Both equity markets subsequently recovered to reach higher peaks in October and November 2007 respectively, prior to their more recent dramatic collapses).

<sup>7</sup> Reserve bank Australia Statistical tables. <http://www.rba.gov.au/Statistics/Bulletin/B19hist.xls>

<sup>8</sup> The All Ordinaries Index is a capitalization weighted index made up of the largest 500 companies as measured by market capitalization that are listed on the Australian Stock Exchange.



**Figure 5:** Post-peak stock index correlations: 19 July 07 – 31 December 07

The lagged US market price change explains over 50 per cent of the next day Australian price change (see Table 1). In contrast prior to the peak, only around one-quarter of the Australian price change was explained by the US price change and the sensitivity of response was significantly lower<sup>9</sup>.

**Table 1:** Regressions of daily stock price index movement: Australia on USA

Post-peak: July 20 – Dec 31, 2007	Pre-peak: Aug 3, 2005 – July 12, 2007
$r_A = 0.00027 + 0.73 r_{US,t-1}$ <p style="text-align: center;">(0.31)      (10.93)</p>	$r_A = 0.00052 + 0.54 r_{US,t-1}$ <p style="text-align: center;">(1.64)      (11.45)</p>
Adj R <sup>2</sup> = 0.52, N = 109	Adj R <sup>2</sup> = 0.22, N = 474

This table reports results of regressing the percentage daily change in the Australian All Ordinaries Index on the daily percentage change in the USA S&P500 Index of the preceding day (reflecting the time differential between the markets). t-values are shown in parenthesis.

#### 4. Headline Events and Cases

The Australian stock market had been riding on the back of a resources boom and while there was an initial downward response in August 07 to events in the US, initially it seemed as if stockmarket investors would be largely insulated from the effects of the sub-prime crisis. Early effects of the sub-prime crisis were felt by hedge funds Basis Capital and Absolute Capital which suspended redemptions in July 2007. In the equity market, the All Ordinaries Index reached a peak of 6456.7 on 20 July 2007 and a subsequent low of 5670.3 on 17 August 2007 and then rallied through November 2007. However in January of 2008 the Australian market fell 11 percent. In Table 1 we provide a chronological list of the headline events in the Australian financial sector related to the sub-prime crisis.

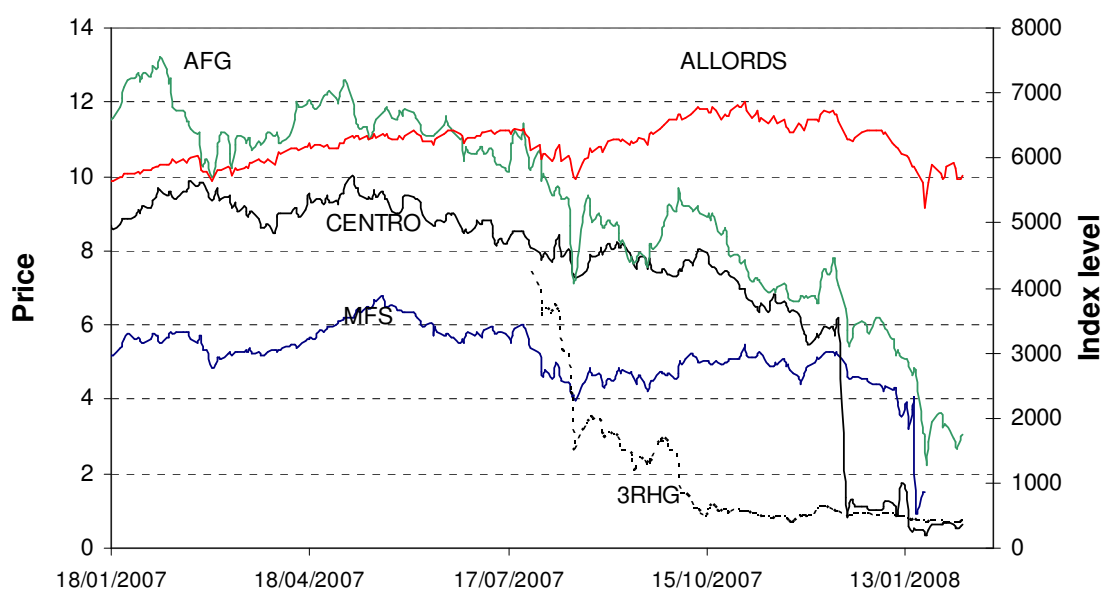
<sup>9</sup> The coefficient on a slope dummy in a full sample regression has a P-value of 1.25%.

**Table 1: Australia and the sub-prime crisis: Headline events**

<b>Date</b>	<b>Headline Event</b>	<b>Further Information</b>
July 16, 2007	Basis Capital announces suspension of withdrawals from two hedge funds due to inability to calculate NAV (previously reported at over \$1 bill).	Planned liquidation of “master fund” in which its retail funds have invested announced on Aug 31. NAV reported to have declined by as much as 80 per cent.
July 25, 2007	Absolute Capital announces suspension of withdrawals from two “Yield Funds (investing in corporate loans and CDOs).	Appointment of a voluntary administrator on Nov 27 under Australian insolvency regime arrangements. Announcement of winding up with likely return of A\$0.10 in the dollar
Aug 14, 2007	RAMS Home Loans announces exposure to rollover risk in US XCP market.	Originally listed July 27 at \$2.50. Sale of origination business to Westpac announced on Oct 2.
Sept 7, 2007	RBA announces expansion of range of eligible securities for Repos.	As well as existing eligible securities of government, some supra-national authorities, and some bank paper, range would include: from Sept 17 – short term paper and AUD bonds with A3 (or better) rating of any ADI with an exchange settlement account; from Oct 8 – high-rated AUD securities and commercial paper backed by prime domestic full-doc residential mortgages.
Sept 20, 2007	RBA Financial Stability report estimates CDOs account for around 10-15 per cent of assets of Local Councils, and that retail investors have bought 15 per cent of new issues since 2002 (through structured products listed on the ASX).	December 17, 2007. Local councils reported as considering action to sue Lehman Bros over losses on the “Federation” CDO, and class actions mooted
Dec 17, 2007	Centro Property announces difficulties in rolling over debt and suspends redemptions from two managed funds. Share price drops from \$6.20 to \$1.36	Jan 15, announces possible default event, forex risks, prior under-reporting of current liabilities, share price drops from \$1.50 - \$0.60. Feb 18, announces extension of refinancing facilities
Jan 18, 2008	MFS announces proposed separation of businesses and “recapitalization” share issue to pay off short term loans. Shares drop 75% to A\$0.99 as it attempts to raise \$550m.	Shares suspended. Short term debt financing problems announced on Jan 23. Redemptions from its managed fund suspended on Jan 30. Sale of 65% of its stake in Stella Group announced on Feb 4.
Jan 23, 2008	Allco Finance Group announcement of sales of stock borrowed from principals of Allco Finance Group due to failure to meet margin call.	Shares had fallen from over \$9 in mid 2007 to around \$4.80 on Jan 18, and fell after the announcement on January 23 to a low of \$1.70, but recovered to \$3 prior to trading halt on Feb 11, reinstated on Feb 25 with announcement of restructuring of debt arrangements with banks and selling off assets to reduce debt levels. Share price falls to below \$1

Aside from the two hedge funds which were early casualties of the sub-prime crisis, the four listed companies most severely affected were the high-profile, large,

non-bank financial/ investment companies: RAMS (RHG), Centro Property Group (CNG), MFS and Allco Finance Group (AFG) which suffered catastrophic price falls of between 50 and 90 percent from mid-August 2007 to early February 2008, as Figure 6 illustrates.



**Figure 6:** Share price behavior of Rams, Centro, AFG and MFS relative to the market index (right hand axis). (The share price of RHG has been scaled up by a factor of 3).

Although the specific reasons behind the share price falls for these cases are somewhat different, common elements are high leverage with large short-term borrowings, predominantly long-term illiquid investments, and complex financial structures including intra-conglomerate equity cross-holdings and debts. RAMS is a non-bank provider of residential home loans in Australia, originating loans through a franchise model. The loans written were funded through a combination of warehouse facilities, residential mortgage-backed securities and extendable commercial paper issued into the US market. MFS is a diversified investment company involved in funds management, tourism and structured finance and advisory businesses. Allco is a global financial services business specialising in leasing and funds management in transport, infrastructure, property and financial assets. Centro is a heavily levered Australian-listed property development company operating a number of listed and unlisted property trusts, and is the largest shopping center owner in Australia and the fifth largest in the US. While these four companies stand out as having been severely affected by events driven by the sub-prime crisis in the US, there are a number of other financial services companies that have fallen by more than 50 percent in the last year.<sup>10</sup>

RAMS faced refinancing difficulties on its extendable commercial paper (XCP) issued in the US market. It funded half of its \$14.6 billion loan book through this means. RAMS advised the market in August 2007 (soon after its float) that it was unable to rollover \$6.2 billion in Commercial Paper and that it had 180 days to refinance. Its mortgage origination business was subsequently taken over by one of the major banks (Westpac) in early October with the promise of funding support as

<sup>10</sup> These include Prime Financial, Mariner Financial, Credit Corp, City Pacific, Flexigroup and absolute return investment manager Everest Babcock & Brown and Babcock & Brown Environmental.

the cornerstone of a syndicated bank facility. At the time of writing the company (now with no operating activities but managing the inherited asset portfolio) had successfully repaid \$5.5 billion of short term debt, albeit with part of its loan book sold off to a major bank.

RAMS shared with MFS, Centro and AFG a highly levered corporate structure that used a 'warehousing' strategy to fund a large portion of its assets. However the structures of MFS, Centro and AFG were substantially more complex and opaque than that of RAMS. Their business model for creating structured finance products was not dissimilar to that of an investment bank. As well as purchasing and funding real assets (real estate, equipment for leasing etc) on the parent balance sheet, a typical structure and sequence of events might be as follows. The listed parent company or a subsidiary borrows short-term (often from a bank) to purchase assets which are then 'warehoused' whilst being repackaged for sale to investors. A trust is created (listed or unlisted, wholesale or retail), units in which are sold to capital market investors.<sup>11</sup> The trust purchases (financed partly by borrowings with or without recourse) the assets from the parent, with the parent company taking a spread on the sale (often by allocation of units in the trust) and locking in a stream of long-term management fees. Opacity, complexity, intra-conglomerate equity and debt linkages, and high leverage are dominant attributes of these structures.

MFS (still suspended from trading at the time of writing) and Centro suffered funding shortfalls when attempting to rollover short term debt. The downfall of Allco Finance Group (AFG), which has arguably the most complex structure of the four companies examined, was precipitated somewhat differently. An entity had been set up (Allco Principals Investments) which allowed executives of the parent to take highly leveraged positions in their own company via lending of their stock to brokers.<sup>12</sup> Subsequent declines in the share price led to sale of some of that stock due to margin requirements, and on January 22, the Australian sharemarket suffered a major disruption when a large broker defaulted on settlement, partly due to its inability to speedily regain title to such stock which it had onlent to banks providing it with funding to support its margin lending book. That, and other events, have led to concerns about inadequate transparency and regulatory arrangements surrounding stock lending, margin lending and short selling in the Australian market. Many commentators have subsequently questioned the merits of the co-regulatory model in which responsibility for stock market supervision is largely ceded to the Australian Stock Exchange (itself a listed company) by the government regulator.

The equity market disruption in Australia has exceeded that of the USA, and has involved substantial wealth reductions for retail investors. Over the seven years from June 2000 to June 2007, margin lending had increased from \$6.5 bill to \$36 bill outstanding (although 2/3 of this was under structured investment product arrangements involving capital guaranteed products). In addition to this impetus to equity market investment, an expiry date of June 30, 2007 for investors to maximize benefits from recent tax changes to pension funding arrangements led to an explosion of contributions into pension schemes and largely into equity market investments.

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<sup>11</sup> Often the structure involves "stapling" together units in such a trust which owns the assets, with shares in a linked operating company which leases and operates the assets, such that investor contributions have both a debt-like and equity component.

<sup>12</sup> Allco Principals Investments Pty Ltd (API), a wholly owned subsidiary of the Allco Principals Trust (APT) held 45,802,729 shares (secured in favour of four margin lenders) in Allco Finance Group (AFG).

Australian retail and other investors have also suffered losses directly through investments in structured products. A number of local governments invested in a CDO (known as Federation) and are subsequently suing Lehmann Brothers. Retail investors had access to hedge fund products such as the Absolute and Basis Capital funds which were early casualties of the crisis. ASX listed CDO style products and hedge-fund vehicles, had also attracted substantial investments from retail investors.

## **5. The Transmission Channels**

In section 1 we identified a number of channels through which the subprime crisis could be transmitted internationally. In the subsequent sections we have outlined how the Australian financial sector has been affected, which enables us now to provide some preliminary conclusions on the importance of the various transmission channels.

First, transmission via the common shock of direct exposure to credit risk on sub prime mortgages and CDOs has occurred primarily via Australian investors having purchased structured capital market products rather than via Australian bank exposures. Institutional (pension fund) investors, retail (and self managed pension fund) investors, and local councils have been amongst those who have experienced wealth losses due to hedge fund failures and declines in market value of both listed and unlisted credit linked products. Whether by good luck or good management (or good supervision?), Australian banks had little exposure via way of SIVs (Black and Fisher, 2008) and the conduits they had established were primarily for the ultimate distribution of high quality Australian mortgages. Indeed, given their major role for a number of years as importers of capital to finance Australia's current account deficit, there was little need to engage in developing off-balance sheet structures to purchase and on-sell US, rather than Australian, sourced securities.

Second, the common shock of increased risk aversion and liquidity preference, has been particularly important, but again not directly through concerns about the strength of the Australian banking sector. While spreads in interbank markets widened, and bank demands for liquidity increased, the Reserve Bank was able to manage the aggregate liquidity position to continuously achieve its cash rate target. Market arrangements were such that individual banks could access required liquidity from the Reserve Bank by repos in a wide range of securities, including other bank (and subsequently asset backed paper) without incurring the risk of being seen as beleaguered borrowers (Debelle, 2007). Nor were there concerns, initially, about the quality of the Australian banks' loan books – particularly in the case of mortgage lending where the incidence of low quality loans is low.

However, third, the common shock of increased risk aversion has operated strongly through capital markets and has identified banking sector exposures to both the corporate sector and, more importantly, non-bank financial/investment companies. Australia's sub-prime equivalent hangover from the excesses of financial engineering has been the exposure of the weaknesses in highly levered, opaque, structures of corporate groups engaged in buying assets to repackage and sell to investors in capital markets. In this case, the assets have been such things as commercial property, infrastructure, and equity in other vehicles. The securities created have been units purchased by investors in trusts created to purchase (with some additional debt funding) those assets from the parent and which are managed (for an ongoing fee stream) by the parent. Problems in refinancing borrowings against illiquid assets currently "warehoused" on the corporate parent's balance sheet, together with market

concerns about the viability of the highly levered business model when borrowing costs rise and asset values become questionable, have seen a number of such large institutions enter financial distress. As Allen and Gale (2007, Chapter 5) argue liquidity provision by arbitrageurs will be inadequate to prevent asset price volatility in response to shocks and the emergence of liquidity-driven pricing and potential firesales of assets.

As major lenders to these non-bank financial and investment companies, Australian banks now face a credit exposure arising from the unravelling of financially engineered structures similar to those behind the sub-prime crisis. However, unlike CDOs built on sub-prime mortgages, where the ultimate recovery value is problematic, the Australian banks generally have (varying) degrees of security against the real assets involved in these structures. Consequently, there are strong incentives for collaboration amongst lenders for work-outs and repayment extensions to avoid the potential losses to lenders associated with firesales of the real, illiquid assets. The major short term channel of transmission here is thus via the decline in equity market values, borne ultimately by investors in these entities.

It is the equity market which has played a major role in transmission of the sub-prime crisis to the Australian financial sector, as seen by the high and increased correlation of daily price movements with the US market, and the substantial decline in the index since late 2007. Whether this should be seen as a direct shock or spillover effect is problematic. The increased correlation of short term equity prices suggests investors in the Australian market appear to be responding to the same information and undergoing the same changes in risk aversion as those in the US market. At the same time, the overall fall in the index can be attributed to declining confidence about the rate of economic growth in the USA and thus globally, brought on by the sub-prime crisis.

But the Australian banking sector also plays a major role in the transmission of spillover effects, by virtue of its role as a major borrower in international wholesale financial markets. Higher credit spreads in wholesale debt funding markets have been passed onto domestic borrowers in both corporate and retail markets, with banks being willing to bear the political opprobrium of increasing variable rate mortgage interest rates by more than the change in the official cash rate. Indeed, there is cause to believe that, provided losses on corporate loans are contained, the major Australian banks may generate benefits from the responses to the subprime crisis. Reintermediation has already begun to occur, the banks have the opportunity to capture a larger share of the mortgage origination market, and more appropriate pricing of credit risk is returning to corporate lending markets.

The economic cycles of the US and Australia have become disconnected largely as a result of the resources boom in Australia. So in contrast to the Federal Reserve in the US lowering interest rates, Australia has seen several interest rate increases as the Central Bank fights to contain inflation. Rising interest rates are putting pressure on homeowners, with mortgage stress at worrying levels.<sup>13</sup> While the banks' substantial stock of retail at-call and small term deposits on which low interest rates are paid will contribute to increased net interest margins, lower equity prices

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<sup>13</sup> Given a strong domestic economy, low unemployment and previously falling interest rates, in the past decade or so there has been a substantial rise in the indebtedness and debt-servicing obligations of Australian households. The September 2007 Australian Mortgage Industry Report from Fujitsu Consulting and JPMorgan shows that 70,000 households are now experiencing severe stress across Australia.

have made it more expensive for banks to raise equity capital to meet the higher capital base associated with reintermediation.

## **6. Some Preliminary Lessons**

The Australian experience to date suggests a number of lessons and potential policy responses. Even though there is little evidence of poor lending practices (such as subprime lending) in Australia causing difficulties, the spillover effects have demonstrated a number of weaknesses in Australian financial markets.

First, it is apparent from the examples cited above that (at least) some companies had paid insufficient attention to liquidity risk management associated with debt funding practices. Although interest rate risk can, in principle, be hedged independently of the debt maturity structure and refinancing requirements, liquidity and basis risk associated with a name or market crisis can be substantial. Too heavy a reliance upon particular debt markets and too great a concentration of maturities can prove disastrous.

In contrast, the Australian banks have not experienced substantial liquidity problems, even though their opacity and concerns about potential exposures led to increased spreads in interbank markets and greater demand for liquidity. The system liquidity management facilities provided by the RBA enable banks to readily access cash through repurchase agreements in a wide range of securities, enhancing the liquidity of those assets in the general market place. Moreover, because the spread charged by the RBA between borrowing and investing overnight with the RBA is relatively large (50 basis points) there is an incentive for market participants to redistribute available liquidity within the banking system. Nevertheless, the heightened uncertainty saw significant increases in overnight Exchange Settlement Account balances.

Second, opaque and complex financial structures put companies at risk in periods of crisis when substantial uncertainty and risk aversion exists. The business models of financial-investment companies engaged in procuring real and financial assets for subsequent sale to investors in levered trusts managed by those companies has particularly been called into question. Intricate structures for executives' shareholdings in parent and subsidiary companies, lack of independent boards and executives for subsidiary companies and questionable investment activities raise serious corporate governance issues.

Third, there have developed a range of unregulated practices in equities markets which warrant examination. Margin lending practices, securities lending and short selling arrangements have been found wanting in the equity market turmoil and have been acknowledged by the ASX as in need of review.

Finally, complex financial products have been marketed to retail (and other) investors whose ability to assess the risk involved is relatively low. As Summers (2000) notes, modern well-functioning global financial systems bring with them enormous potential for benefit to society, but also a need for the right public policy response to financial innovation. The recent events suggest that we are some way from finding the correct response.

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