

An alternative for structuring fixed income investments

Investment in fixed income is often tied to indices which suffer from various shortcomings as a basis for structuring portfolios and evaluating performance.

Here, a practical alternative is suggested, involving tailoring benchmarks around explicit exposure targets and risk premiums. This approach provides a flexible way to align fixed income portfolios with investor objectives, and to ensure



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THE PROPOSED APPROACH to structuring fixed income (FI) portfolios involves setting a customised benchmark based around exposures of interest to the investor. Manager mandates are expressed in the form of targets and risk premiums with respect to each exposure. Excess returns are calculated after applying the risk premiums to deviations from targeted exposures. This approach offers two advantages:

1. Management of FI portfolios can be directly linked to investor objectives. An investor who is seeking a certain amount of some exposure can simply express this through the exposure target. By contrast, the existing approach implicitly adopts the inherent exposures of the chosen index.
2. The approach accounts for risk. Through the charging of risk premiums for deviating from target exposures, active managers are given a hurdle rate that must be exceeded in order to generate excess returns. Currently, FI managers are generally not penalised for

risk, which encourages escalation of the risk profile in an attempt to outperform the index.

The approach is a general one that can be tailored to investor circumstances, subject to the ability to measure satisfactorily the desired exposures. This paper illustrates the approach using a characteristic-based structure built around two exposures of duration and credit. While the approach has its limitations, it is a significant advance on current practice, with potential for refinement and ongoing development.

Existing approach

The current approach to structuring FI investments is typically based around FI indices, with performance evaluated simply by the excess return relative to the index. FI indices are familiar and widely accepted benchmarks, and are motivated by market weighting as the neutral position. Significant infrastructure has been built around managing towards existing indices.

However, FI indices have a number of shortcomings as the basis for structuring portfolios and evaluating performance. Some of these limitations are listed below.

- *Exposures in FI indices do not necessarily align with investor objectives* – using a particular FI index as a benchmark tacitly adopts the exposures within the index. Index exposures need not accord with an investor's preferred position. Furthermore, the benchmark exposures will change as the index evolves.
- *FI indices can be inadequate representations of the investable universe* – benchmarks for evaluating manager performance should ideally be a complete, attainable and transparent representation of the investable universe. FI indices measure poorly on this criterion. The widening net of 'off-benchmark' positions casts increasing doubt over FI indices as a fair point of comparison.
- *Failure to fully account for risk* – under the existing approach, risks associated with positions are either glossed over or treated in an ad hoc fashion. Lack of risk adjustment creates an incentive to push out the risk spectrum to pursue additional returns (e.g. elevated credit exposure). The resulting excess returns can amount to beta masquerading as alpha, obscuring true skill.
- *FI indices reflect the issuance cycle* – the composition of FI indices depends on the nature of borrowers utilising debt markets to access funding. As issuers of FI securities (e.g. corporate treasurers) are concerned with minimising funding costs, FI indices may represent a sub-optimal portfolio skewed towards relatively low-yielding securities. Furthermore, the more significant issuers can be those who are most reliant on debt.

An alternative approach

Many of the problems identified above can be circumvented through an alternative approach involving explicitly setting targets and risk premiums for key exposures within FI portfolios. The approach entails four steps: identifying the relevant exposures; determining how each exposure is to be measured; setting exposure targets (including limits) and risk premiums; and evaluating manager performance.

Identifying the relevant exposures

The starting point is to identify the exposures that are relevant either because they are linked to investor objectives or capture some aspect of risk and return generation. Selection should also reflect practical considerations such as data availability. Five potential exposures are listed below.

- *Interest rates* – as changes in interest rates are a key driver of return fluctuation in FI markets, some measure of sensitivity to interest rates is an obvious first exposure. Interest rate risk also relates to expected return via the term premium.

Using a particular FI index as a benchmark tacitly adopts the exposures within the index. Index exposures need not accord with an investor's preferred position.

- *Credit* – credit exposure influences returns via credit risk premiums, default experience and variation in credit yield spreads. Ideally the focus should be marginal risk and return in excess of that arising from interest rate exposure. This might be represented by credit return spreads relative to treasuries of equivalent duration.
- *Illiquidity* – illiquidity can act as a systematic risk factor with its own associated premium (see Pástor and Stambaugh 2003). Accordingly, illiquidity should ideally be treated as an additional exposure in its own right.
- *Currency* – while standard industry practice is to manage overseas investments towards fully hedged benchmarks, currency positions may be permitted occasionally.
- *Volatility* – FI portfolios might be exposed to changes in volatility because some investments contain option-like elements, including securities with attached prepayment or redemption facilities and certain derivatives.

Measuring exposures

Measurement is a key challenge, and may dictate which structures are feasible. The measurement of interest rate and credit exposure is addressed below.

Interest rate exposure: duration

Portfolio duration may provide an effective estimate of interest rate exposure, subject to two issues: the adequacy of duration as a measure, and determining which duration measure to use.¹ Duration is a linear approximation for a non-linear relation, and reflects sensitivity to parallel changes in the yield curve. It does not capture changes in slope or curvature. Arguably the latter are second order effects, which are better accounted for as a form of security selection.

Credit exposure: credit categories

Credit exposure might be measured by the weighting in various credit categories. A basic method would be to use a traditional credit rating system (e.g. Aaa, Aa, A, Baa, and so on), perhaps extended to high yield and emerging markets debt as discrete categories. However, it is open to use the credit categorisation system that is deemed most effective. Measurement feasibility is a prerequisite for any categorisation; portfolio weightings, required risk premiums, and realised return spreads need to be reliably identified for each nominated credit category.

Setting exposure targets and risk premiums

The appropriate method of setting targets (including limits) and risk premiums for nominated exposures will depend on the circumstances. Exposures can have significantly different implications for risk across portfolio contexts. While volatility for FI portfolios viewed in isolation is dominated by interest rate fluctuations, the volatility of a typical balanced portfolio tends to be dominated by equity-related risk (see Leibowitz and Bova 2007). In liability-aware situations, contributions to risk depend on how an exposure relates to liabilities. Given the above, it is worth considering the role of duration and credit exposure.

- *Duration* – while lengthening duration generally increases risk for a FI portfolio viewed in isolation, this is often not true for a balanced portfolio or liability-aware situation. Indeed, longer duration bonds may

actually help reduce total portfolio risk where equities and bond yields are positively correlated (i.e. equity and bond returns are negatively correlated), as they have been over the past decade or so (see Figure 1).

- *Credit* – moving out along the credit risk spectrum, an increasingly equity-like component is added to returns (see Shane 1994). The implication is that credit exposure tends to augment risk at the total portfolio level. However, for a FI portfolio in isolation, credit can act as a diversifier for interest rate risk, potentially even reducing portfolio volatility. This contrast is illustrated by Figures 2 and 3. These charts simulate the impact since May 1990 of increasing credit exposure on the volatility of a global FI portfolio and an indicative balanced portfolio, respectively. The series are based on progressively substituting the Lehman High Yield Index for the Lehman Global Aggregate within the global FI portfolio.

FIGURE 1: 36-month rolling correlation between world equities and FI

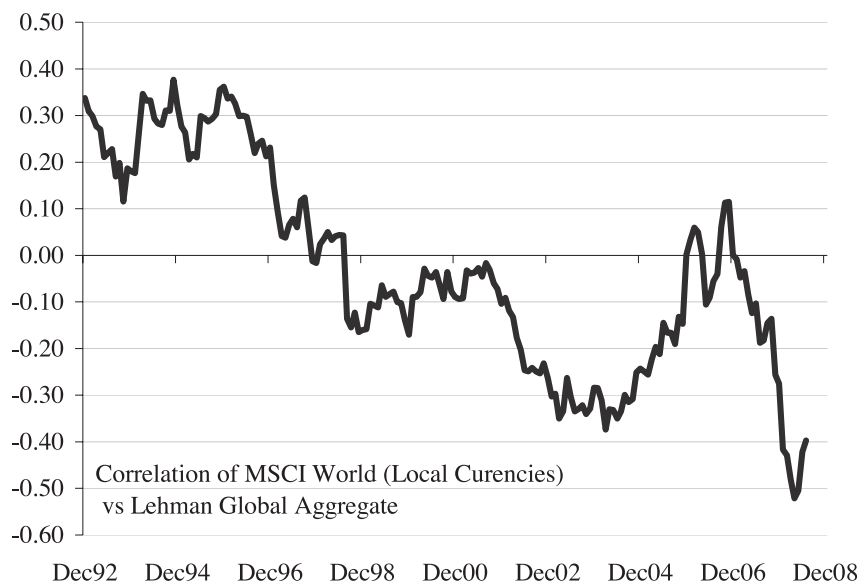


FIGURE 2: Impact on global FI portfolio of adding high yield exposure

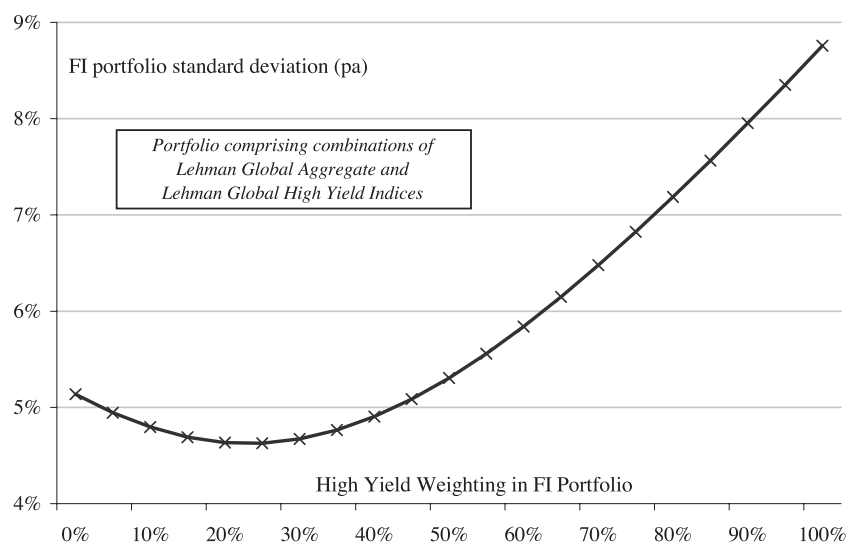
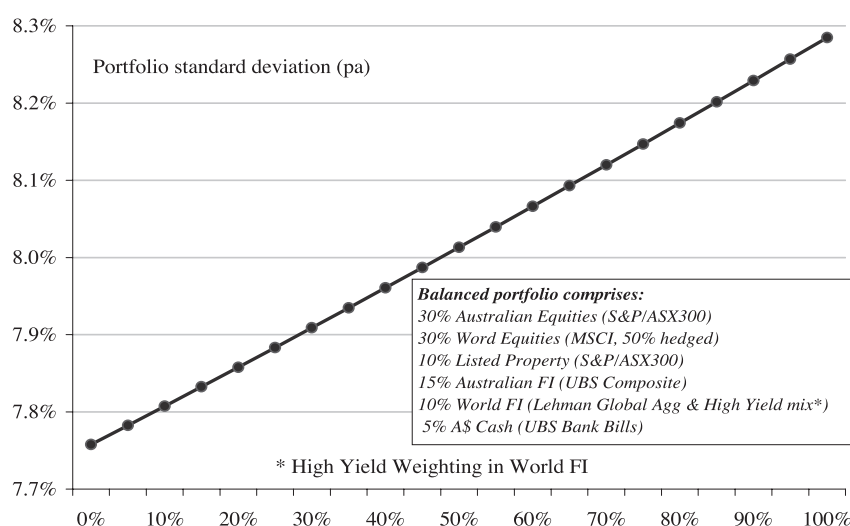


FIGURE 3: Impact on balanced portfolio of adding high yield exposure



While there is no universal solution to setting exposure targets and risk premiums, two general principles might be applied. The first principle is that exposure targets should be linked to investor objectives — i.e. targets should reflect the preferred ‘beta’ exposures. Investor objectives that might influence these targets could include: capturing return premiums; limiting portfolio volatility; liability matching; managing peer risk; or pursuing active returns. For pursuing active returns, generous targets might enhance the potential to capture security selection skill (most notably in credit), while wide exposure limits should increase the scope to add value from market timing.

The second principle is that exposure risk premiums should reflect contributions to portfolio risk. The first step in setting risk premiums is to evaluate the relation between a change in exposure and marginal risk given the portfolio context. The risk premium is then set in accordance with some defined risk/return trade-off. Potential methods include nominating a target information ratio (IR)² when considering a FI portfolio in isolation, or estimating the return consistent with an unchanged Sharpe ratio when operating in a total portfolio context.

Duration exposure targets and risk premiums

A duration target might be set under a two-step process. First, the minimum risk duration position is identified. This could be: zero duration (i.e. cash) for a FI portfolio in isolation; long duration for a broader portfolio (to best capture diversification benefits); duration of liabilities; or a FI index duration where peer risk is important. Second, the preferred duration is selected after taking into account other factors such as desire to capture the term premium. Wide duration exposure limits might be contemplated where FI managers have skill in taking yield curve positions. Tight limits may be appropriate under a strong duration preference (e.g. liability-aware investing) or where there is scepticism over manager timing skill.

The need for any duration risk premium will depend on the circumstances. In instances where duration has a limited or ambiguous impact on portfolio risk (such as in a total portfolio context), setting no duration risk premium may be most effective. A zero risk premium implicitly asks FI managers to maximise returns wherever they can be found on the yield curve. A duration risk premium is more likely to be appropriate for a FI portfolio in isolation, or in liability-aware situations.

Table 1 illustrates the estimation of a duration risk premium for an Australian FI portfolio with a duration target of five years. The yield on bonds with five-years duration is estimated to have a standard deviation of 80 basis points (bps) per annum (p.a.), implying that a one-year change in duration would raise return volatility by around 75 bps p.a. The required risk premium is estimated on the assumption of a notional target IR of 0.25 bps. These assumptions generate a required return premium of 19 bps per year of duration.

TABLE 1: Duration risk premium for FI portfolio in isolation

Duration target	5.0 years
Assumption for government bond with target duration:	
– Yield to maturity (y)	6.0% p.a.
– Standard deviation of yield to maturity (σ_y)	0.80% p.a.
Increase in portfolio standard deviation ($\Delta\sigma_p$) for duration +1	0.75% p.a. $= 0.80\% * (6 - 5)/(1.06)$
$\Delta\sigma_p = \sigma_y * \text{Change in Modified Duration}$	
Target Information Ratio ($IR_{p,T}$)	0.25
Duration risk premium (RP_{DUR}), i.e. required return for $IR_{p,T}$	0.19% p.a. (19 bps) (per year of duration)
$RP_{DUR} = \Delta\sigma_p * IR_{p,T}$	$= 0.75\% * 0.25$

Credit exposure targets and risk premiums

The appropriate exposure targets and risk premiums for various credit categories can also vary significantly. For a FI portfolio viewed in isolation, target credit exposure might be set to limit or even minimise portfolio risk by exploiting its ability to diversify interest rate risk. Risk premiums could be calibrated using a target IR approach. When peer risk is an important consideration, exposure targets might be dictated by the typical credit exposure among competitors.

In a total portfolio context or for liability-aware situations, credit exposure may be addressed as a form of 'equity beta' risk, and risk budgeted accordingly. This requires measuring the equity beta of the chosen credit exposure categories. Risk premiums can be set using a CAPM-like approach, by multiplying beta estimates by the required equity risk premium (ERP). This method is illustrated in Table 2, based on the Lehman excess return indices for Aaa, Aa, A, Baa, high-yield corporate debt and emerging markets, as well as the UBS Australian three-to-five year credit index. Risk premium estimates range from 15 bps p.a. for Aaa corporate to 209 bps p.a. for high yield, and stand at 173 bps p.a. for emerging markets debt. The risk premium for Australian three-to-five year credit is estimated at 16 bps p.a.

TABLE 2: Risk premium estimates for credit exposure

Monthly data Jul'01 to Jul'08	Beta* (vs MSCI World)	Risk Premium (pa) (Beta * 4% ERP)
Global Corporate Bonds (Lehman)		
Aaa	0.04	0.15%
Aa	0.06	0.22%
A	0.11	0.43%
Baa	0.19	0.77%
High Yield	0.52	2.09%
Emerging Markets (Lehman)	0.43	1.73%
Australian Credit (UBS, 3-5 year)	0.04	0.16%

* Estimated from excess returns over equivalent treasuries (hedged).

Evaluating performance

Performance evaluation involves estimating excess active returns and their attribution into contributions from exposure timing and security selection. The approach has a layered structure, where active returns are cut and diced by identifying the marginal impact from various exposures in some specified order. The contribution from security selection is estimated as a residual.

Table 3 provides an overview of a structure that entails duration and credit exposure. The first column identifies the four components of returns. The second column identifies how exposures are to be measured. The

third to sixth columns set down the structure for performance evaluation. The benchmark return arising from a portfolio with target exposures is initially estimated (third column). The next step is attribution of reported portfolio returns into cash, returns to each exposure, and security selection (fourth column). The final phase involves calculating risk premiums to be charged where exposures deviate from target (fifth column), which are applied to estimate active excess return (sixth column). The latter is broken down into 'timing contributions' associated with any deviations from target exposures, and the residual taken as security selection. Active excess returns are essentially a form of alpha estimate.

Realised returns to various exposures might be measured using available indices. A reference treasury exposure needs to be selected, and could include any combination of overseas and local treasuries that best meet objectives. The evaluation period would be as fine as possible, ideally daily.³ Longer evaluation periods may lead to errors in estimating returns to exposure timing, and inappropriate risk premium adjustments.

Limitations

The major limitations of the proposed approach relate to measurement difficulties. The following are worth noting.

- *Use of proxies for true risks* – characteristic-based measurements are only proxies for factors that drive returns.
- *Credit categories are imperfect measures of credit risk* – the assumption that credit risk is homogenous within credit categories is not always accurate. Credit ratings may become stale, with the market often recognising a change in credit risk before ratings are adjusted by the agencies. In addition, credit ratings can have different meaning across segments. For example, the profile implied by Aaa ratings may vary between corporate and securitised assets, or across industries.⁴
- *Failure to account explicitly for illiquidity* – illiquidity is an important attribute that may be difficult to incorporate due to a lack of satisfactory measures. While illiquidity risk might be captured to some extent through accounting for credit exposure (as credit and illiquidity tend to be related), this will be imprecise and probably inadequate.
- *Estimation errors will reside in security selection* – calculating the security selection contribution as a residual means it will contain any measurement error. In particular, it will capture returns to exposures that are not properly accounted for.

While the proposed approach has its limitations, the central issue is its effectiveness relative to alternatives. Arguably, it offers a significant improvement on the existing approach by explicitly linking FI portfolios to investor objectives and addressing risk.

Conclusion

Participants in the investment industry are sometimes apprehensive about structuring FI investments around FI indices without fully accounting for risk. Nevertheless, the

industry has persisted with the existing approach. Reasons include institutional inertia, absence of evident catalysts to motivate change, and a lack of compelling alternatives. This paper proposes a practical alternative that overcomes many of the shortcomings of the existing approach. 

TABLE 3: Overview of a general structure

Return Components	Exposure Measurement	Return Estimation: Target Portfolio	Return Attribution: Manager Portfolio	Risk Premium (i.e. Hurdle)	Excess Active Returns
Cash		Return on local cash	Return on local cash	Nil	nil
Interest rate exposure	Characteristic: Duration Target and limits: Number of years Risk premium: bps per year deviation vs target	Return spread over cash on treasury bond with target duration (NB: overseas treasury bonds on hedged basis)	Return spread over cash on treasury bond with duration of portfolio (NB: overseas treasury bond on hedged basis)	Portfolio – target duration <i>multiplied by</i> Duration risk premium	Duration timing contribution: Return spread for manager portfolio <i>less</i> Return spread for target portfolio <i>less</i> Duration risk premium charged
Credit exposure	Characteristic: Credit category Target and limits: % weight per credit category Risk premium: required return spread vs treasuries per credit category (bps)	Sum of: Target weight in each credit category <i>multiplied by</i> Return spread for benchmark credit index over treasury bond with equivalent duration (NB: overseas hedged)	Sum of: Portfolio weight in each credit category <i>multiplied by</i> Return spread for benchmark credit index over treasury bond with equivalent duration (NB: overseas hedged)	Sum of: Portfolio – target weight in each credit category <i>multiplied by</i> Risk premium for each credit category	Credit timing contribution: Return spread for manager portfolio <i>less</i> Return spread for target portfolio <i>less</i> Credit risk premium charged
Security Selection		nil	Residual (= Portfolio return <i>less</i> Return on local cash <i>less</i> <i>sum of</i> return spreads for duration + credit)	Nil	Security selection contribution (= Residual)
TOTALS		BENCHMARK RETURN	RISK PREMIUM RETURN	RISK PREMIUM CHARGES	ACTIVE EXCESS RETURN

Notes

- 1 See Kopprasch (2006) for a discussion of duration measures.
- 2 The information ratio is the ratio of excess return and standard deviation of returns relative to the benchmark.
- 3 Calculating the effects need not occur each day: it could be done monthly or quarterly, based on reporting of daily exposures.
- 4 Conceptually, it may be possible to use credit yield spreads as a proxy for credit risk (as well as other embedded risks, such as illiquidity). However, modelling risk in this way is far from trivial.

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Fixed income managers: evolution or revolution

Traditional approaches to managing fixed interest funds rely on benchmarks that may not represent optimal risk and return outcomes. New techniques based on separate alpha and beta management should improve portfolio performance.



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IN AN INCREASINGLY COMPETITIVE investment environment, fund managers need to meet client objectives and contribute meaningfully to overall portfolio outcomes. While most investment institutions still rely on the relatively static strategic asset allocation (SAA) framework developed in the 1990s, there is an emerging trend away from the 'traditional' approach to techniques that achieve client objectives more effectively and efficiently.

The traditional approach uses fixed income assets mainly as risk-reducing allocations tied to an ineffective benchmark. Subsequently, the active return target is generally low and even when a fixed income manager strongly outperforms their benchmark, their weighted contribution to the client's total fund level is negligible.

Aside from currency markets, the fixed interest market is the largest and most liquid securities market in the world, providing a wide and ever-increasing range of investment options. This breadth of opportunities facilitates the delivery of scalable and capital-efficient pure alpha strategies that can sit over any beta return.

This paper outlines weaknesses of the traditional approach. It discusses evolving techniques to separate activities aimed at achieving alpha and beta, and argues that these will lead to the eventual dilution of the traditional style of management.

Global fixed income markets

Fixed interest investing continues to evolve from traditional government and corporate bonds to more innovative sub-asset classes and derivative instruments. Investors have typically held bonds in their portfolios for three reasons:

- *most bonds provide a level of fixed income;*
- *diversification:* bonds and equities are generally lowly correlated (that is, with interest rate risk although, over the recent past, this correlation has increased with the expansion of credit markets); and
- *protection against economic slowdown or deflation:* in periods of strong economic growth, inflation typically

risers and a fixed income portfolio's stream of income becomes less valuable; the converse applies in periods of weak economic growth or deflation.

However, through the development, innovation and evolution of fixed interest markets, investors are now able to target specific fixed interest risk premiums and to structure a portfolio to effectively meet a variety of investment objectives at a meaningful level.

Underpinned by deep and broadening fixed income physical or cash markets, there has been strong growth and development in over-the-counter (OTC) derivative securities including interest rate swaps, inflation swaps and, particularly, multi-name and single name credit default swaps. The Bank of International Settlements (May 2008) estimates that notional outstandings in CDS at the end of 2007 was US\$58 trillion.

Traditional approach

The traditional approach to active bond investment typically involves managing a dedicated fixed income portfolio relative to a specified benchmark. For Australian investors, the UBS Composite Index is the most popular benchmark. Active management entails managing portfolio risks within specified constraints to retain the overall market characteristics that the fund is also seeking. The focus of active risk management includes:

- the portfolio's duration and yield curve positions relative to benchmark;
- the credit quality of the portfolio relative to benchmark;
- the maturity structure of the portfolio, based on the expected changes in the relationship between bonds with different maturities;
- the mix of fixed interest asset classes and countries depending on the investor mandate; and
- tracking error.

In general, fixed interest benchmarks present a number of complex issues. Issues arise because these benchmarks are capitalisation weighted and all-inclusive. The two major inefficiencies relate to the duration problem and the 'bums' problem.

The first problem stems from the fact that the duration of the benchmark comes from issuer preferences and does not necessarily reflect the best interests of a given investor. The proportions of bonds in short, intermediate, and long-term categories reflect the maturity or duration preferences of issuers seeking to minimise their cost of capital. Moreover, an investor usually has specific time-horizon preferences that make one duration more advantageous than another. These preferences do not necessarily match those of issuers in the aggregate, whose preferences are reflected in the benchmark.

Second, the 'bums' problem is that the biggest debtors (either companies or countries) have the largest weight in the benchmark – the biggest 'bums' – so the benchmark is not likely to be mean-variance efficient. If a manager is

Another issue related to fixed income benchmarks arises from the recent growth in the size of the credit market. The recent trend includes a reduction in the size of Treasury debt and an increase in corporate issues. As a result, broad-based bond benchmarks are more exposed to tail events than they have been in the past.

tracking such a benchmark, when a security is issued they have to buy it in proportion to its capitalisation weight to minimise tracking error, even if the quality of the security is only just high enough to make it into the index. Such securities would seem to be the most likely to be downgraded or to default.

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Disappointing bond returns

As the downward trend in inflation and interest rates abated over the past few years, fixed interest market (beta) returns have disappointed Australian investors. It is not unusual for one-year Australian Bond Indices (UBS Composite Bond Index) returns to underperform cash. Figure 1 illustrates the long-term decline, followed by stability of cash returns, and falling returns and volatility for the Australian and global fixed interest benchmarks.

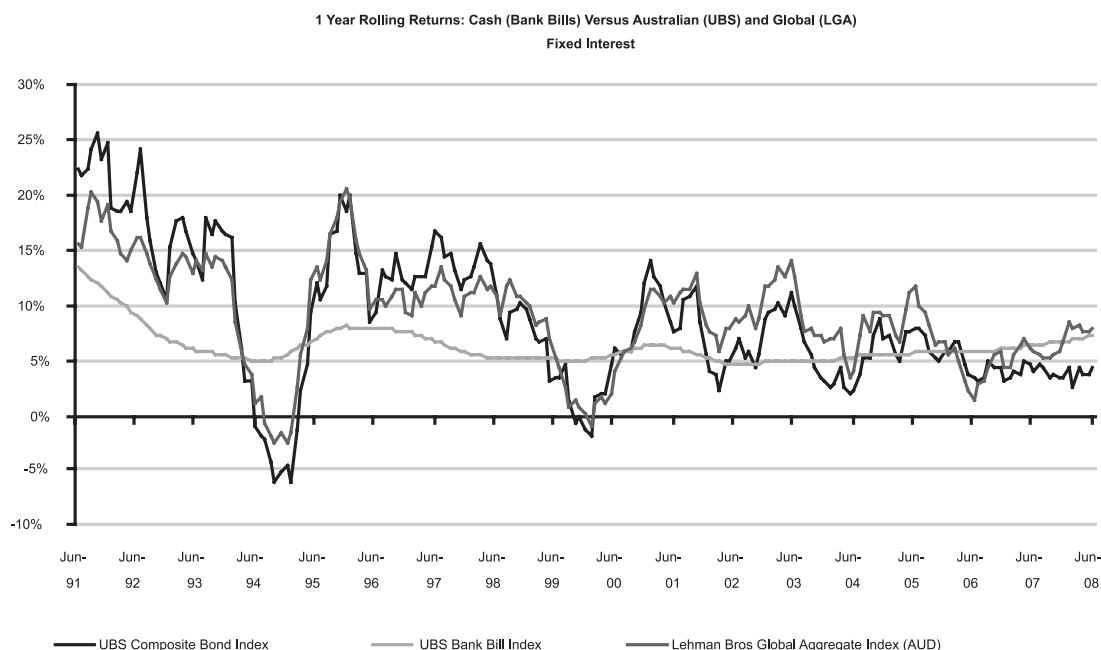
With the prospect of higher global inflation and interest rates, the potential for extended fixed income capital gains within traditional fixed income benchmarks will be limited. For investors focused on traditional benchmark returns this approach may not be an optimal strategy.

Historical analysis of managers' returns highlights that while fixed interest benchmark returns have been declining, many managers have struggled to outperform the benchmark. We believe that this is due to a reliance on strategies that are tied to benchmark characteristics and often do not represent the optimal risk/return structure for investors.

Comparing the 12-month rolling correlations of the UBS Composite Bond Index (Australian benchmark) and the Lehman Global Aggregate Bond Index (global, hedged in Australian dollars) with the median fixed interest manager returns, the following observations can be made:

- there is very strong positive correlation between the benchmark and median manager returns for the Australian fixed interest universe;¹

FIGURE 1: Bond benchmark returns versus cash



Sources: Mercer Investment Consulting, QIC and Bloomberg.

- there is greater variability in correlation between global benchmark and manager returns² compared to Australian fixed interest; and
- overall, active fixed income management has not been evident (until very recently) in traditional portfolios in the last decade.

Weaknesses of the traditional approach for fixed interest investment management include:

- a preoccupation with benchmarks and a reluctance to hold significant allocations of assets that fall outside the benchmark;
- SAAs tend to be static for long periods, even in the face of significant changes in market valuations;
- active mandates are allocated in accordance with SAA weights so some managers are reduced to making insignificant contributions if they manage within an asset class that has a small allocation; and
- active managers tend to be analysed by investors on an unweighted basis. There is seldom any trade-off between a good equity manager and a good fixed interest manager as they vie for a share of the overall portfolio's (alpha) risk budget.

The establishment of an investment framework of independent alpha and beta policy decisions to achieve long-term client investment objectives will address these weaknesses.

Separate alpha and beta

Depending on composition and construction, fixed interest portfolios can provide significantly different risk and return outcomes to investors. By operating

independent alpha and beta policies fund managers can better reflect the investment objectives of their clients.

Beta policy is developed to provide a market return stream (not necessarily a benchmark return). Typical allocations include setting sector exposures (for example, government bonds, corporates, high yield, emerging markets), country allocation, credit limits, inflation exposure and overall duration. The structure should reflect the investment objectives and risk preferences of the client.

Alpha policy is aimed at constructing an absolute return portfolio that provides diversification (multiple alpha sources), a consistent return stream, and an outcome that is not tied to any changes to beta (market) returns. For example, in traditional portfolios the selection of benchmark virtually predetermines the sources of alpha regardless of their quality. Over the medium term, the alpha portfolio should not be subject to the direction of markets. The ability to implement long/short strategies via derivatives allows skilled managers to outperform in all environments.

The most important step in building beta and alpha policy is to understand the investment objective of the portfolio.

Beta risk and return

Broadly speaking, the returns from the fixed interest asset class reflect four fundamental risk premia:

- real interest rate risk
 - inflation uncertainty
 - credit risk – likelihood of default
 - illiquidity risk
- } term premium
 } – shape of the yield curve
 } credit premium
 } – risk of holding

The traditional approach to accessing fixed interest returns has been through benchmarking. These benchmarks often do not represent the optimal risk/return structure to manage physical assets for investors.

There are currently more than 12,300 securities in the Lehman Global Aggregate (LGA) portfolio. Many of these bonds were issued years ago and are consequently illiquid. Thousands of these issues are locked away in long-term bond portfolios and could only be purchased by paying extremely high prices. For this reason, full replication of a broad bond index is highly complex.

Enhanced indexing involves investing in a large sample of bonds such that the portfolio risk factors match the index risk factors (namely, cash flows, sector weights, duration and quality). This portfolio will have higher tracking error than full replication but can be implemented and maintained at much lower cost. Some investment managers estimate that owning bonds from 175 issuers will replicate the LGA with acceptable tracking error.

By using many of the market innovations, investors can effectively replicate most sources of fixed interest return (including credit) via synthetic replication. It is possible for investors to guarantee gross benchmark performance through a total return swap with an investment bank or counterparty. Significant credit risk exists as the investor is tied to the counterparty who offers the swap (generally the owner of the benchmark). The other instruments available to synthetically replicate benchmark performance are bond futures, interest rate futures, interest rate swaps, mortgage futures and credit default swaps/indexes.

Fixed interest alpha is meaningful

Instrument innovations allow skilled active managers to generate high alpha returns for investors. We expect that highly active strategies in fixed interest investments

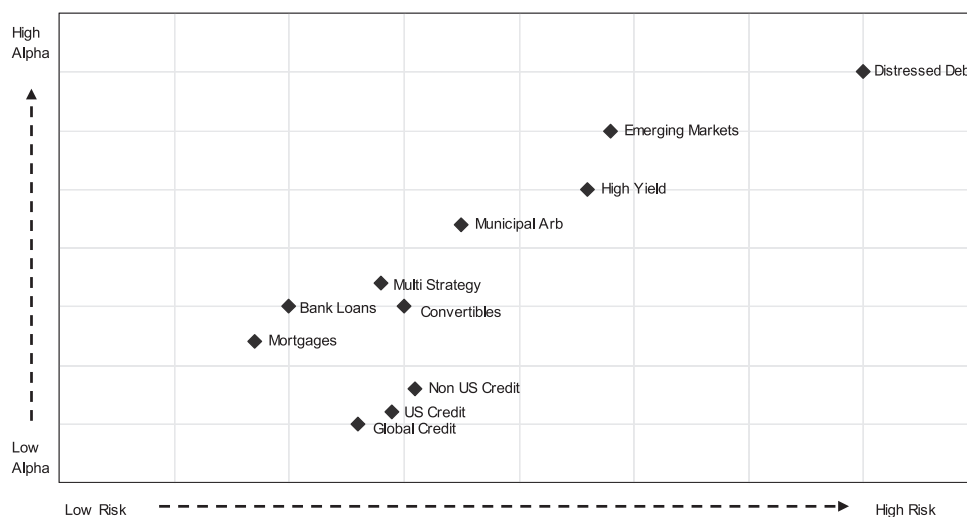
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will become more prevalent as market returns continue to disappoint.

At total fund level, fixed interest alpha is meaningful because it provides the following features:

- the flexibility to adjust underlying betas without disrupting alpha sources;
- improved diversification of alpha sources with the switch to absolute return from fixed interest benchmarks;
- low correlation to beta;
- greater capital efficiency with the use of derivatives and overlays (which are generally liquid and have huge capacity in fixed income markets);
- the ability to manage alpha costs including the use of derivatives to lower transaction costs and use of performance fees to align managers to client objectives; and
- alpha becomes more scalable.

FIGURE 2: Fixed interest alpha opportunity set



Source: QIC.

Total alpha should be approached as a single, integrated stream of return (ideally as an absolute return-above-cash concept). It should form a material part of overall risk taking (at levels well above those currently embedded in typical Australian superannuation fund risk budgets). It should be unconstrained in structure and sourced from as many independent sources as is efficient. The alpha stream should be evaluated on an after-fee, after-tax basis.

In determining opportunities to generate meaningful alpha, fixed interest managers need to also consider a variety of fixed interest sectors via a thorough analysis of the broad global opportunity set. This analysis should explore an unconstrained universe of fixed interest sectors, focusing on those opportunities with the greatest potential for alpha. Although the opportunity set is large, it may be further expanded to incorporate a variety of additional subsector market opportunities.

Figure 2 displays the fixed interest alpha opportunity spectrum; typically the higher the alpha the greater the risk. Figure 3 shows the potential strategies used by a fixed interest manager to drive alpha risk budgets.

Scalability

Scalable fixed interest is relatively easy to achieve due to the depth and liquidity of global interest rate and credit derivative markets. Implementing strategies through synthetic instruments provides access to exposures with minimum cost and low tracking error.

The derivatives market allows a fixed interest manager to implement short and long positioning across country yield curves, indices and individual corporate securities.

The key risk with derivative-based strategies is that the price may differ from that of the underlying physical assets. During the 2007–08 credit crisis, derivative credit spread indices and single-name contracts maintained significant volatility while physical securities spreads did not move with the same volatility. This is highlighted in Figure 4 which shows the credit spread movement of Commonwealth Bank securities with similar maturity.

While the market outlook for fixed interest returns remains relatively subdued, instrument innovations have allowed skilled active managers the facility to generate high alpha returns for investors. We expect that highly active strategies in fixed interest investments will become more prevalent as the market return continues to disappoint.

Using the returns from global benchmarks, it is clear that global fixed interest alpha can be uncorrelated to fixed interest beta, highlighting that it is a pure alpha source of return. A skilful manager translates research and portfolio construction into alpha by taking advantage of inefficiencies and breadth of opportunities within fixed interest markets. Table 1 shows that fixed interest alpha is also uncorrelated to equity beta.

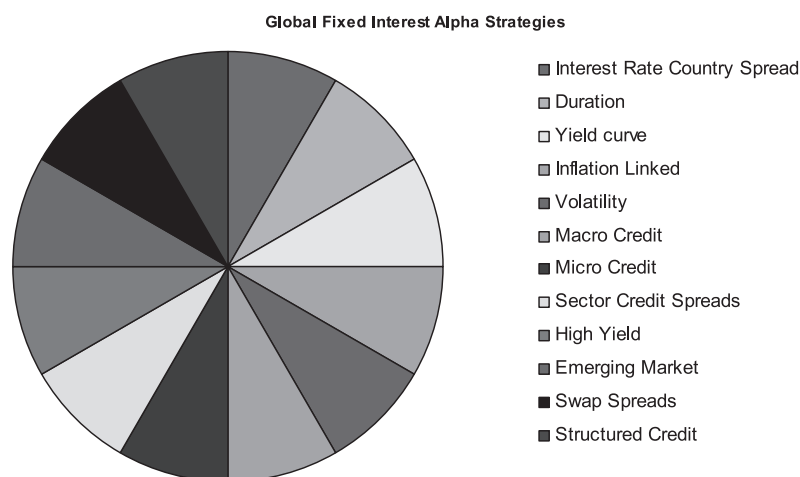
This low or negative correlation to equities makes an allocation to fixed interest alpha attractive for a balanced fund as it reduces risk at the total portfolio level.

TABLE 1: Global fixed interest alpha correlations

Global Fixed Interest Alpha Correlation vs	
Australian Equities (S&P/ASX 200)	-0.09
International Equities (MSCI World ex-Australia)	0.02
Australian Fixed Interest (UBS Composite Bond)	-0.29
International Fixed Interest (LGA)	-0.16

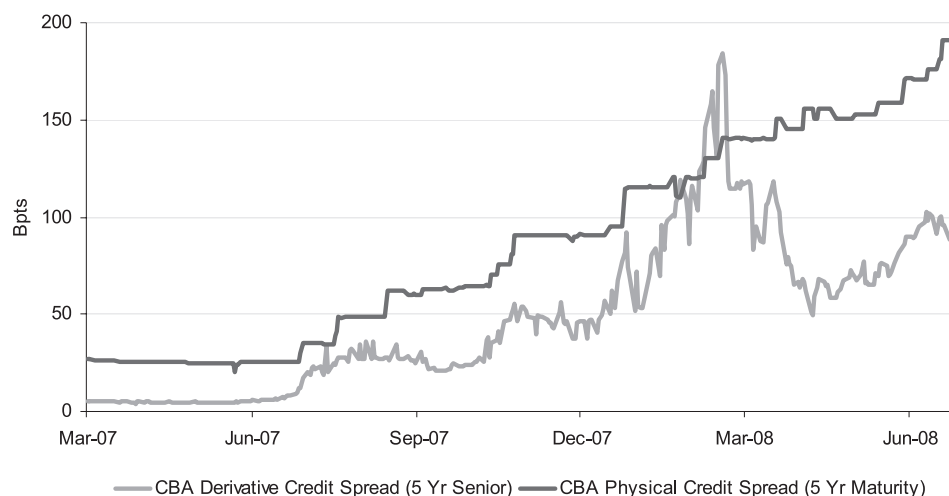
Sources: Mercer, QIC – based on 2004–08 returns. Global Fixed Interest proxy is derived from QIC GFI Alpha Fund and QIC Diversified Fixed Interest Fund Overlay.

FIGURE 3: Diversified alpha pie



Source: QIC.

FIGURE 4: Commonwealth Bank physical and synthetic credit spreads



Sources: QIC, Bloomberg, UBS.

Conclusion

While the market outlook for fixed interest returns remains relatively subdued, instrument innovations have allowed skilled active managers the facility to generate high alpha returns for investors. We expect that highly active strategies in fixed interest investments will become more prevalent as the market return continues to disappoint.

This paper has briefly touched on the intricacies and complexities of managing a fixed interest portfolio. The key themes are:

- the importance of understanding clients' total fund objectives and structuring mandates that will deliver beta (market) and alpha (active) returns most effectively and efficiently;
- fixed interest benchmarks commonly used by investment managers often do not represent the optimal risk/return structure for investors because duration and composition is impacted by the issuers;

- synthetic replication of fixed interest benchmarks has been shown to be effective. By using many of the market innovations it is possible to replicate most sources of fixed interest return;
- fixed interest alpha offers investors great opportunities to improve returns and reduce risk across their portfolio due to the lack of correlation to equity beta; and
- the breadth and scalability of fixed interest markets allows delivery of capital-efficient alpha at fund level.

For the traditional fixed income portfolio manager, evolving separate alpha and beta management capabilities and products may feel revolutionary, but it will provide techniques to improve clients' portfolio performance. The alternative to this evolution away from traditional fixed income management is to fall behind those asset classes and managers who can construct beta portfolios and deliver meaningful alpha returns. ☺

Notes

- 1 Mercer Survey of Australian Fixed Interest to 30 September 2008.
- 2 Mercer Survey of Global Fixed Interest (hedged in AUD) to 30 September 2008.

References

- Bank of International Settlements 2008, *OTC Derivatives Market Activity in the Second Half of 2007*, Monetary and Economic Department, May.
- Mercer Investment Consulting 2008, 'MPA Wholesale Survey Historical Returns', May.

The blow-out in Australian credit spreads: a markets perspective on the repricing of risk

With the global repricing of risk in the wake of the US sub-prime mortgage crisis, the increase in Australia's corporate credit spreads and financial sector risk premiums have almost matched those in the United States. This appears to reflect Australia's heavy reliance on external funding, which has left us vulnerable to disruptions in global securitisation markets.



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ON MOST MEASURES, Australia continues to enjoy healthy economic growth, a stable banking system and pent-up demand in the housing sector. Yet turbulence in markets emanating from the US sub-prime mortgage crisis has had almost as much impact on bank share prices and credit spreads in Australia as in the United States. The securitisation market has become dysfunctional. Generally, this has been attributed to a repricing of risk and loss of confidence in ratings agencies. However, this paper examines whether Australia's reliance on external funding, poorly diversified investor base and lack of flexibility of fund managers and price makers have also played a role. The global financial system faces significant challenges over the next year or so, and it is by no means clear that credit spreads will not widen again. However, there is a chance that an easing of these and other constraints will allow Australian markets to withstand future challenges more easily than has been the case over the past year.

The broad range of economic data suggests Australia's economy will continue to significantly outperform the

US economy. Australia continues to benefit from the global boom in commodity prices which has underpinned strong economic growth despite sharply rising household debt and interest servicing costs. There are nagging concerns about high house prices, capacity constraints, related inflation pressures and the potential for a turn in the commodity price cycle. Despite the economy's strong underpinnings, these developments mean that the loan loss cycle has turned for Australian banks. All the major banks have increased provisioning for bad debts from low levels, mostly due to exposure to companies with large short-term refinancing requirements. Mortgage loan arrears are also likely to rise in the near term at least. However, the Reserve Bank of Australia (RBA) reported in March 2008¹ that Australia's banks remained profitable, well capitalised, with access to funding and good credit ratings and were a low-risk investment.

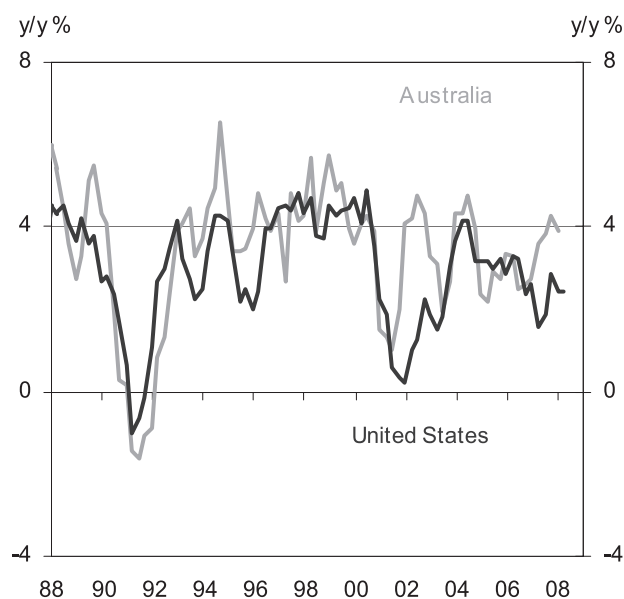
While noting increased funding costs and disruptions to securities markets, the RBA concluded that 'despite the strains in global financial markets, the underlying resilience

of the Australian financial system, together with the relatively favourable outlook for the domestic economy, means that the system is much better positioned than the financial system of many other countries to cope with the current difficulties'. This sentiment was reiterated by Guy Debelle, RBA Assistant Governor (Financial Markets) on 16 May 2008, when he concluded that 'the strength of the Australian banking system relative to those in a number of other countries, particularly the US, and the strength of the domestic economy more generally, has meant that the impact of the global turmoil has been relatively muted [for the Australian financial system]'.² He highlighted that the very low proportions of non-conforming loans in Australian bank portfolios relative to US banks' sub-prime loans demonstrated their much smaller exposure to high-risk mortgages.

Despite these positive comparisons (and many others), the performance of Australia's banks and credit markets has been remarkably similar to those in the US and other countries. The following charts show that spreads on Australian bank corporate bonds and credit default swaps have only marginally outperformed comparable US benchmarks. Spreads on residential mortgage-backed securities (RMBS) have actually widened more than in the troubled United Kingdom market (though the illiquidity of the market and hence unreliability of the data is also apparent), while bank share prices dropped almost as much as their US counterparts (though have more recently outperformed them again).

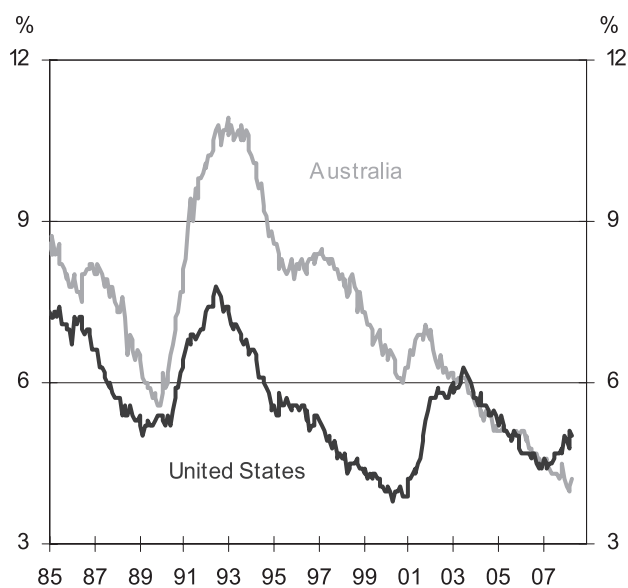
There has been a global repricing of risk in financial markets since the first half of 2007. Credit spreads and

FIGURE 1: US and Australian GDP



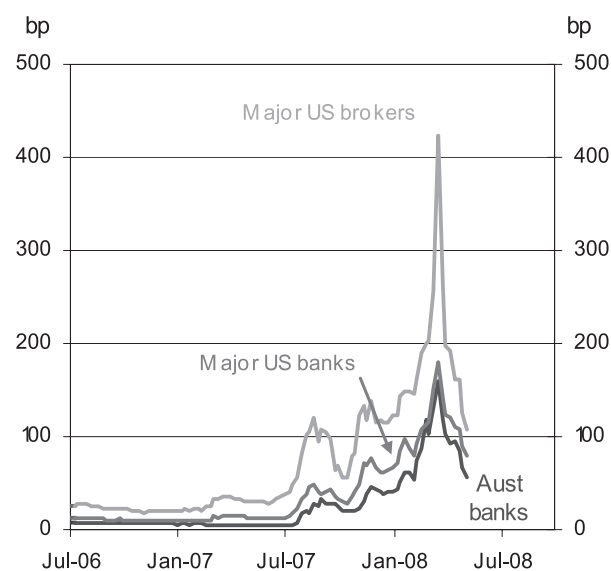
Sources: Bloomberg, ABS, CBA.

FIGURE 2: US and Australian unemployment rate



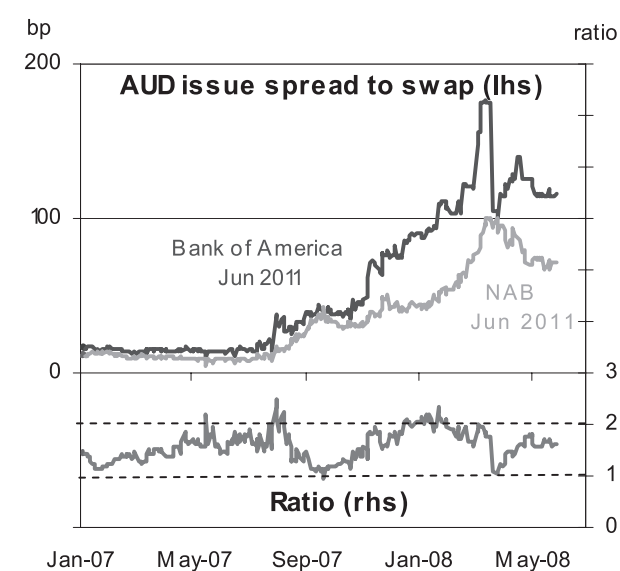
Sources: Bloomberg, CBA.

FIGURE 3: Bank CDS spreads



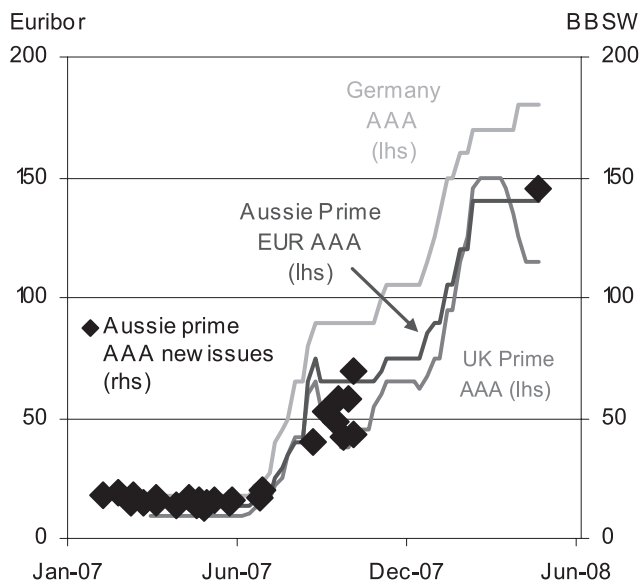
Sources: Bloomberg, CBA.

FIGURE 4: US v Australian credit spreads



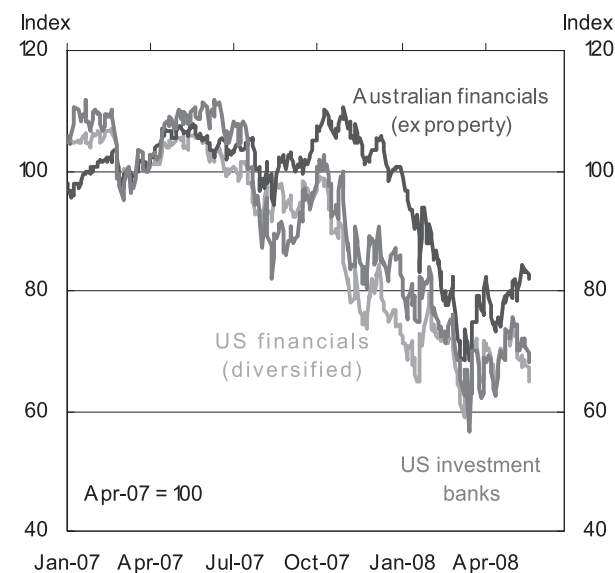
Source: CBA.

FIGURE 5: AAA RMBS spreads



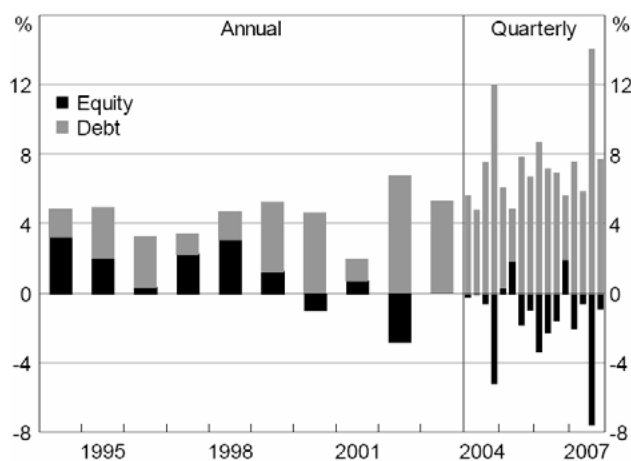
Sources: Merrill Lynch, CBA.

FIGURE 6: Bank share prices



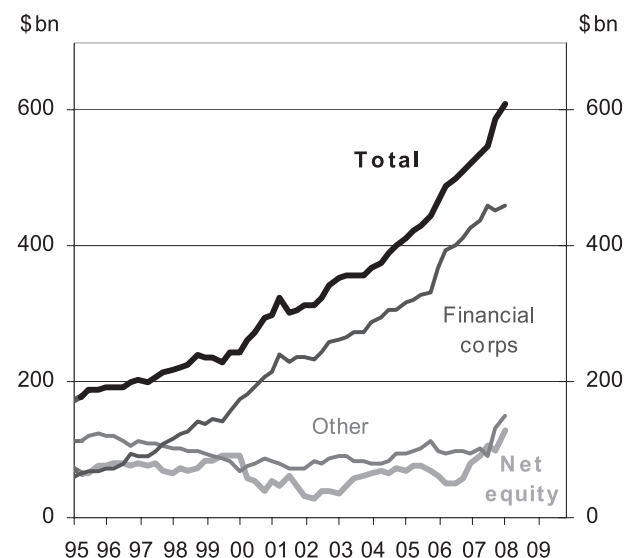
Sources: Bloomberg, CBA.

FIGURE 7: Net capital flows



Source: RBA.

FIGURE 8: Net foreign liabilities



Sources: ABS, CBA.

equity market risk premiums have increased sharply after narrowing steadily for a number of years. Australia has not been immune to this trend. But the extent to which these spreads have increased suggests other factors are also relevant. Experience at the coalface confirms that structural changes in global markets have materially weakened demand for Australian debt.

Australian savings/investment trends

The structure of Australia's finance system, and particularly its large current account deficit, seems to have played a role. Australia has been a major beneficiary of the so-called 'global savings glut' over recent years. The flow of capital from large current account surplus nations in Asia, the Middle East and other emerging markets has facilitated

record levels of external borrowing to fund the country's savings/investment imbalance. The demand has been fuelled by the nation's need and incentive to gear up commodity production to meet the global boom in resources. But the ongoing appreciation of the Australian dollar, rising domestic asset values and falling credit spreads in the face of such a large funding requirement suggests the flow has been externally driven, and a product of the global 'search for yield'.³

Figures 7 and 8 show that the current account deficit has been overwhelmingly financed by debt, and that this has been almost entirely intermediated through the financial sector. Negative net equity flows disguise significant foreign investment in Australia (both portfolio and direct) but foreigners have, mostly, been happy to finance Australian

investment through bank debt and securitised assets. This was mainly used to fund the boom in housing in the early part of the decade, but has been used more for commercial funding during the past four years.

The strength of capital flows to Australia reflects its status as the world's highest-yielding AAA-rated nation. Foreigners owned 70% of Commonwealth bonds on issue at the end of 2007. Australian cash rates and short-term swap rates have been one to seven percentage points above the G7 nations for the past decade, with the carry trade now a long-established part of the financial landscape. The strength of Asia, commodity prices, Australia's terms of trade, and the relationship with the Australian dollar, have provided foreigners with the confidence to take on even more AUD-denominated debt than has been issued offshore. The sheer strength of Australia's income growth and the health of its financial and housing sectors have allowed Australia to service these higher interest rates with ease.

The recent strength of the Australian dollar suggests that these trends remain intact, although there is undoubtedly greater uncertainty over whether households are still comfortably servicing loans following the sharp rise in mortgage interest rates over the past year. However, the reliance on offshore funding also leaves Australia's financial system exposed to changes in global market sentiment and dislocations that have little to do with economic fundamentals (besides the large current account deficit). In 2007, it became apparent that a significant share of the foreign investor base was no longer viable, and investors had turned from actively buying to selling AUD debt.

Foreign demand for AUD securities

More than a quarter of financial corporations' debt issued offshore (which accounts for more than three-quarters of Australia's total foreign liabilities) has been in the form of asset-backed bonds – almost entirely securitised residential mortgages. As highlighted above, the spread to the bank

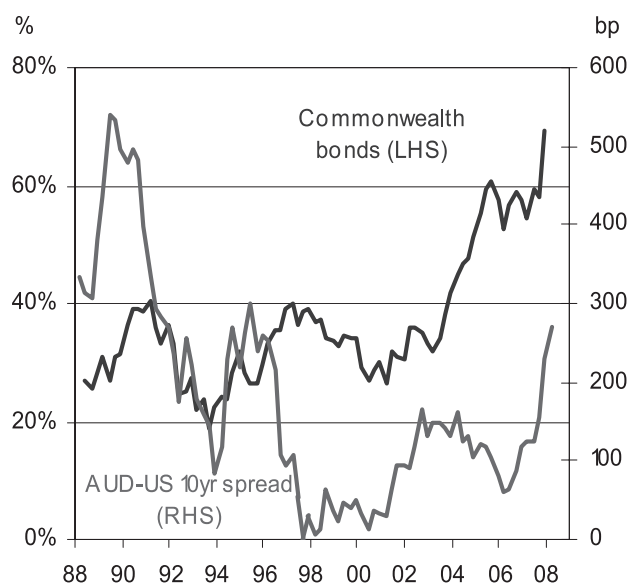
Reliance on offshore funding also leaves Australia's financial system exposed to changes in global market sentiment and dislocations that have little to do with economic fundamentals (besides the large current account deficit).

bill swap rate of AAA tranches of this debt has increased from less than 20 basis points to approximately 150 basis points over the past year. While repricing of risk and loss of confidence in ratings agencies have played a key role in this development, feedback from those involved in the distribution process suggests that the destruction of the investor base for these securities is a dominant factor.

Changed offshore investor appetite for asset-backed securities (ABS) is apparent in issuance and ownership data published by the Australian Bureau of Statistics. Foreign ownership grew by around 150% between 2004 and mid-2007, and well in excess of foreign ABS issuance. That strong demand, which from an issuer's perspective appeared close to insatiable, played a key role in driving spreads to unsustainably tight levels. That same demand, and relative value considerations, acted to lower bank funding costs and corporate credit spreads. Indeed, the relative attraction of bank funding and loan syndication markets have meant that outstandings of 'true' corporate bonds have stagnated in recent years; the scarcity value (and diversification benefits) have compressed these yields as well.

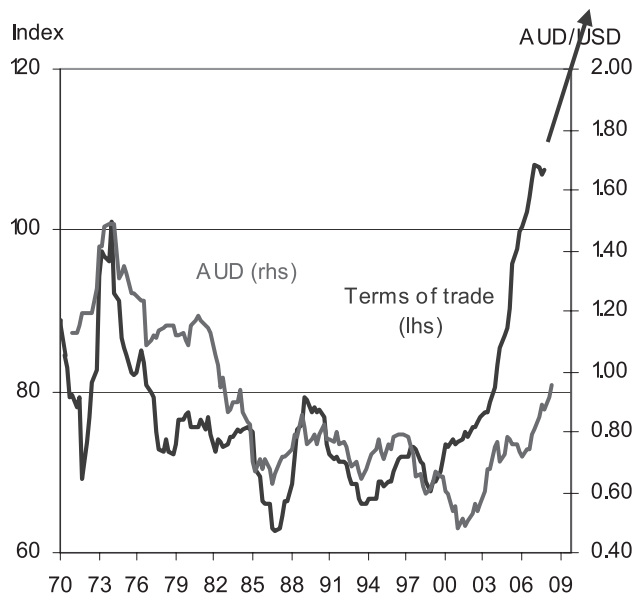
Detailed data on the exact source of foreign demand for Australian securities is not readily available. However, annual data does show that an increasing share of Australian bonds has been held not in Asia or the Middle East, but in Britain, home of the structured investment

FIGURE 9: Foreign bond ownership and spread



Sources: ABS, Bloomberg, CBA.

FIGURE 10: Terms of trade and AUD



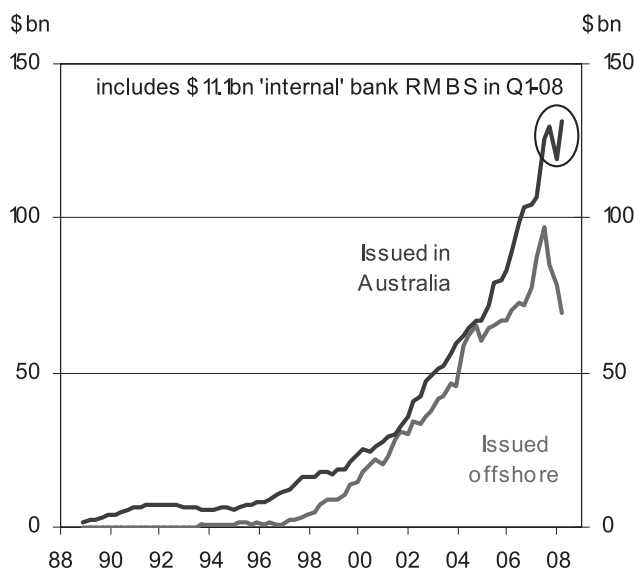
Sources: ABS, CBA.

vehicles (SIVs). The demise of SIVs means that reporting of holdings and activities has now ceased. But Fitch data shows that 96% of SIV assets were comprised of highly rated (90% rated AA or better), structured products and financial institutions' debt,⁴ and feedback indicates that a large proportion of this debt was in Australia. SIV assets under management almost halved over the six months to January 2008.⁵ More generally, asset-backed commercial paper (ABCP) outstandings have been declining since August 2007, indicating that funding to purchase securitised assets is still diminishing.

The switch from insatiable foreign demand for Australian securitised products and bank debt to liquidation of these holdings has had a profound impact on the credit

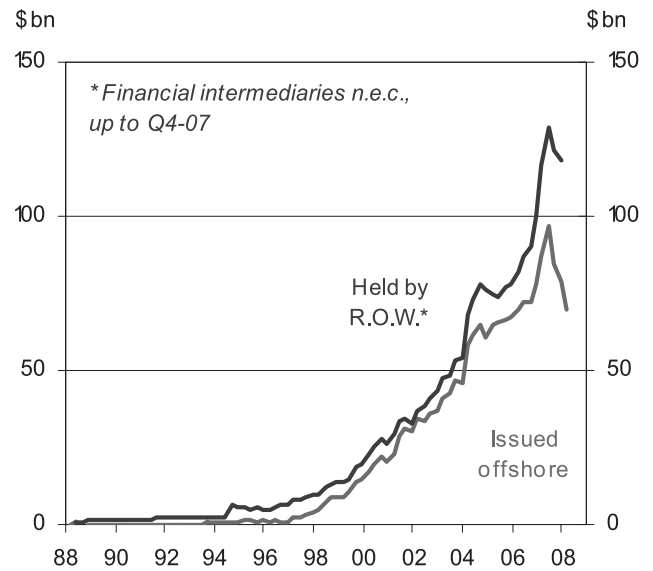
market. In a sense, the collapse of ABCP markets represents a repricing of risk, but the knock-on effect to Australia's financial system is more akin to a structural loss of demand. Relative value considerations and the impact of credit losses on fund managers has spread the impact throughout the credit market. The impact on Australian mortgage providers, who developed a business model fully reliant on securitisation markets (13% of the home loan market⁶) that now appear to have been systematically underpricing risk (or at least liquidity), is devastating. The structure of Australia's financial system and reliance on bank intermediation is likely to radically change, though adjustment to the initial withdrawal of SIVs from the Australian market may be nearly complete.

FIGURE 11: Australian ABS bonds on issue



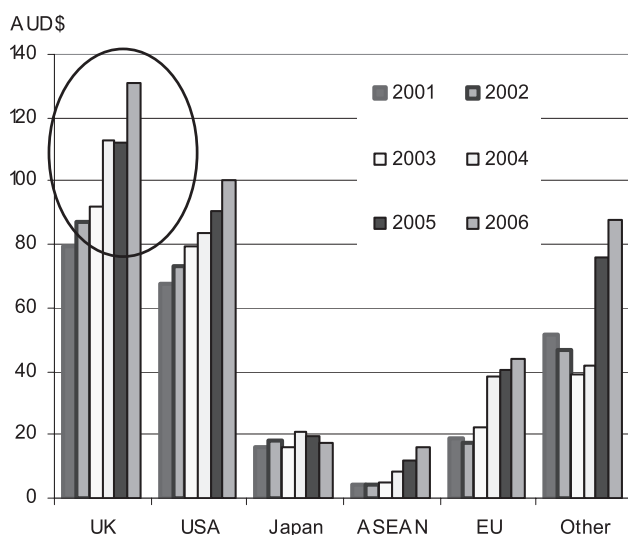
Sources: ABS, CBA.

FIGURE 12: Australian ABS bonds on issue



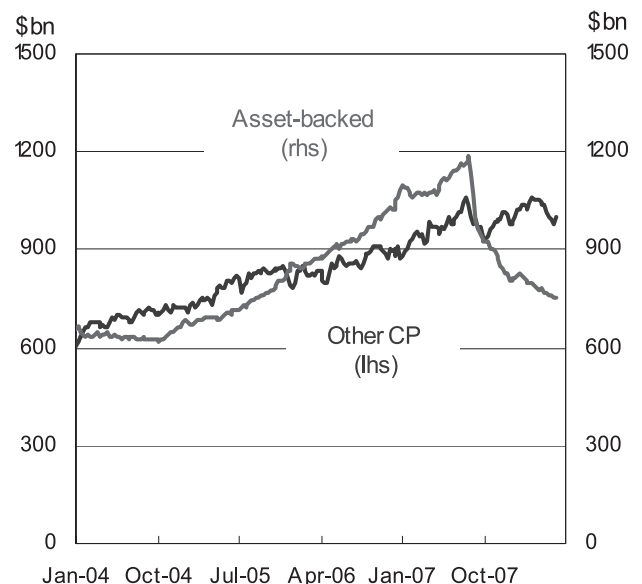
Sources: ABS, CBA.

FIGURE 13: Foreign ownership of debt securities



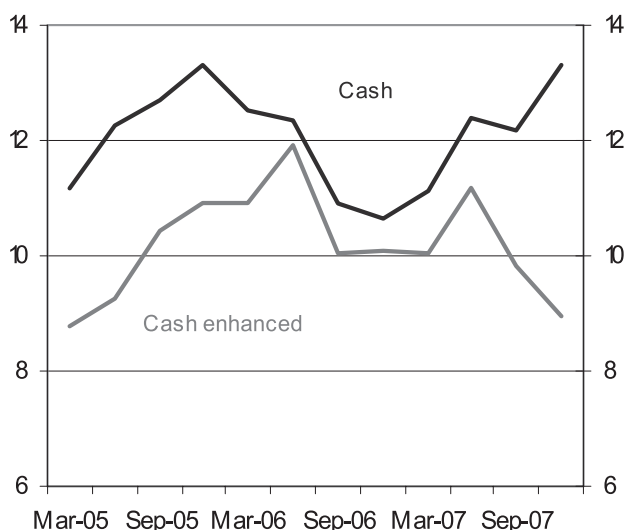
Sources: ABS, CBA.

FIGURE 14: US Commercial Paper outstanding



Sources: Bloomberg, CBA.

FIGURE 15: Wholesale funds under management



Source: MorningStar.

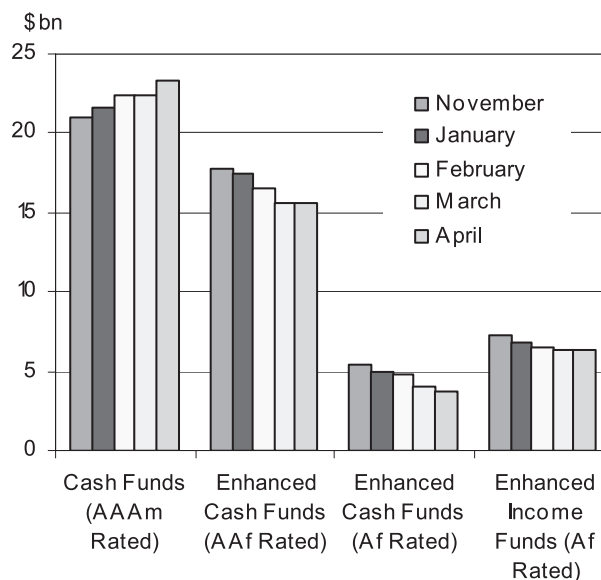
The destruction of a large share of the 'structured' investor base does not, however, imply that asset-backed bond issuance won't recover in time. Changes to capital adequacy rules may limit the appeal for banks to securitise high-grade mortgage assets. A further narrowing in RMBS spreads and/or widening in bank margins is also needed to facilitate a significant re-emergence of non-bank RMBS issuance. But risk-adjusted analysis suggests current spreads are highly favourable for investors, notwithstanding potential changes to ratings categories. Over time, packaging of income streams, investor diversification and freeing of bank balance sheet constraints still make economic sense.

Domestic demand for AUD securities

Australian fund managers and investors have had limited capacity to take advantage of wide credit spreads, particularly for structured products. Investor returns have been significantly damaged by the blow-out in credit spreads, jeopardising fund manager access to funds. Amplified by the lack of liquidity in the market, both the threat and reality of fund redemptions have been major constraints for fund managers, even for those who perceive significant value in spreads.

Figure 15 and Figure 16 show how funds flowed from higher risk 'enhanced cash' products towards more traditional low risk 'cash' funds in the aftermath of the credit crisis. This adjustment forced liquidation of positions in riskier funds, which amplified the lack of liquidity in the credit market.⁷ Banks similarly face regulatory pressure to churn credit inventory, which can increase selling pressure in markets and reluctance to bid for securities offering medium-term value. At the same time, the reliance of many mortgage securitisers on a single source of funding made investors aware of significant pent-up

FIGURE 16: Wholesale credit fund size



Source: Grove Research & Advisory.

mortgage supply likely to emerge from 'full' warehouses as soon as market conditions improved. Along with the typical uncertainty and herd mentality of trending markets, there has been little incentive to be an early buyer of widening credit spreads, which typically widen sharply and narrow slowly. These pressures have been most acute in the ABS and floating rate note markets. But fund managers' need to sell more liquid investments also helps to transfer the widening of credit spreads across the risk spectrum.

This selling pressure is beginning to reverse, with investor appetite and manager in-flows buttressed by ongoing flows into superannuation. Asset consultants are beginning to advise clients to make larger allocations to higher-yielding credit markets. Close examination of fund flow data also reveals some exceptionally large flows into a few cash managers that could be indicative of sovereign wealth fund activity. The entrance of such large (non mark-to-market) investors is necessary to unlock the value in less-liquid markets.

Still, more thorough investigation of the practical pressures confronting banks and fund managers in times of crisis is warranted, including into the role of fund advisers and regulators and whether the need to comply with their requirements causes unintended liquidity problems for markets. From an external perspective, those closest to the credit market and best placed to determine value opportunities have not had the flexibility to invest accordingly. In part, this seems to reflect a lack of investor understanding and perhaps education of the liquidity and risk profile of credit markets, particularly the 'cash enhanced' segment. Many credit products are hold-to-maturity products and investors need to have the ability and intent to hold them until they mature to facilitate smoother functioning in times of stress.

Conclusion

There has been a global repricing of risk in the wake of the US sub-prime mortgage crisis. However, it is surprising that the rise in Australia's corporate credit spreads and financial sector risk premiums have almost matched those of the United States, given Australia's superior economic and financial performance. This appears to reflect the country's heavy reliance on external funding, which has meant that the disruption to global securitisation markets and crippling of ABCP-funded investment vehicles have had a large impact on the demand/supply equation for Australian credit products. Lack of liquidity in the credit market and consequent widening in credit spreads may have also been exacerbated by the inability of domestic banks and fund managers to take full advantage of cheapening spreads, due to mandate and regulatory constraints. ☹

Notes

- 1 Reserve Bank of Australia 2008, *Financial Stability Report*, finalised March 25.
- 2 Guy Debelles 2008, 'A comparison of the US and Australian housing markets', RBA, May. www.rba.gov.au
- 3 Ian Macfarlane 2005, 'What are the global imbalances?', address to the Economic Society of Australia, 28 September.
- 4 Derivative Fitch 2007, 'Rating performance of structured investment vehicles in times of diminishing liquidity for assets & liabilities', September.
- 5 Bloomberg and Moody's reports.
- 6 Australian Bureau of Statistics, 5609.0
- 7 Data sourced from Morningstar and Grove Research & Advisory. There are differences in coverage and clear gaps in time series data that suggest these data need to be treated with caution. Morningstar separately reports that there was \$176 billion under management at cash managers in December quarter 2007. The Australian Bureau of Statistics reports that superannuation funds held \$111 billion in cash and deposits as of the December quarter, \$37 billion of short-term securities and \$23 billion of non-government long-term securities. Cash management trusts had \$46 billion under management. However, the impression conveyed by the charts is consistent with feedback from Commonwealth Bank's client base.

The real risk-free interest rate in thin debt markets

It is standard practice to use the yield on inflation-indexed CGS as a direct observation of the real risk-free rate of return. However, it has been argued that excess demand for such securities artificially depressed their yields, causing this estimate to be understated, and forecasts of inflation given by the difference between nominal CGS and inflation-indexed CGS to be overstated.

This paper suggests an additional hypothesis, namely that there has also been an excess demand for nominal corporate bonds.¹



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FOR A NUMBER OF YEARS Australian regulators have relied on market yields for CPI-indexed Commonwealth Government Securities (CGS) to estimate the real risk-free rate of return, and used this in conjunction with nominal CGS yields to estimate inflation. These estimates have been used as inputs into the weighted average cost of capital (WACC) calculation applied by regulators to determine the price or revenue path for regulated businesses. Hence the establishment of the real risk-free rate is an important component of the regulatory outcome for businesses.

However, the common practice of using indexed CGS yields to estimate the real risk-free rate of return and the difference between nominal and indexed CGS yields

as a measure of forecast inflation has been challenged. For example, the consulting firm National Economic Research Associates (NERA) proposed that due to excess demand for inflation-indexed bonds, there is a 20 basis points (bps) downward bias in the yield on inflation-indexed Commonwealth Government bonds compared to the real risk-free rate.² (This implied an equivalent overstatement of the forecast inflation rate from comparing nominal and indexed CGS yields.)

In this paper, this 'indexed bond shortage' hypothesis is reviewed and an additional hypothesis considered. While it is not possible to discriminate between the two hypotheses, further evidence is presented to support the view that there has been a downward bias in estimated real yields.

Potential bias in indexed CGS bond yields

NERA (2007) observed that since the year 2000, the supplies of real CGS fell considerably when compared against the increasing size of the economy (GDP). In an era of budget surpluses and relatively low inflation, the Government had discontinued issuing indexed CGS. Table 1 shows that inflation-linked (or 'real') bonds have come to represent a small fraction (0.7%) of the total bonds issued in Australia, and that this is less than in many other advanced economies. In the United States and United Kingdom by contrast, inflation-indexed government bonds make up between 25% and 39% of all bonds on issue.

TABLE 1: Inflation-linked government bond markets

Country	Outstanding USD bn	% of Total bonds	Number of issues
Australia	7	0.7	3
US	407	38.5	212
UK	263	24.9	12
France	160	15.1	10
Italy	85	8.0	5
Germany	12	1.1	1
Other Europe	12	1.1	1
Japan	45	4.3	10
Sweden	36	3.4	6
Canada	31	2.9	4

Sources: Barclays, various statistical agencies, RBA calculations (in I. Wilson 2007, 'Developments in inflation indexed securities', presentation to ENA seminar)

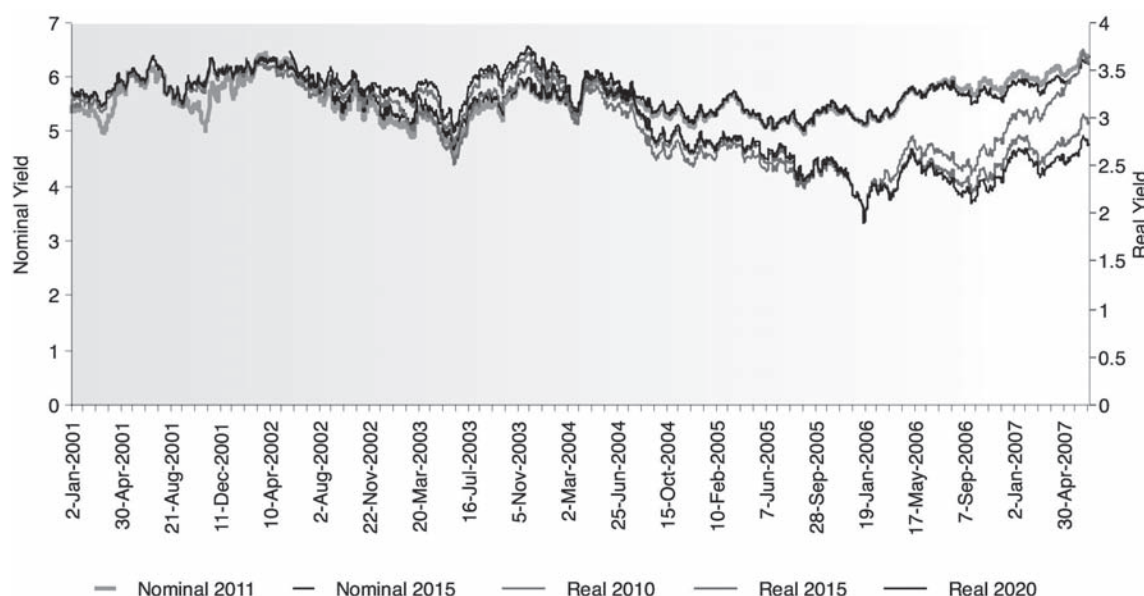
Assuming that demand for real CGS is positively correlated to GDP, and noting that there are no close substitutes for them, NERA reasoned that there would be a growing shortfall of demand for indexed CGS, which would inflate their prices and drive down their yields artificially. A further implication was that since the yield on real CGS would underestimate the real risk-free rate, the difference between nominal and real CGS must upwardly bias the level of forecast inflation.

Figure 1 shows nominal and real CGS yields between January 2001 and April 2007. From late 2004 there was a fall in real CGS yields relative to nominal CGS yields, opening up a gap between them, although the gap between shorter maturity nominal (2011) and real (2010) CGS yields narrowed by January 2007. NERA proposed that either there was an actual reduction in the real CGS yields from late 2004, with a coincident increase in inflationary expectations that kept nominal yields relatively constant, or there had been an artificial reduction in the real CGS yield due to increasing scarcity of supply, and continuing greater demand for real CGS.

In April 2007, the inflation rates implied by the differences between nominal and real CGS yields were, in the main, considerably outside of the Reserve Bank of Australia's (RBA) inflation target range of 2% to 3%. The implied inflation forecast, assuming no bias in real CGS, was 2.77% for the period from June 2007 to April 2010, and substantially higher for later years.

NERA was not alone in considering the yield on real CGS to be downward biased, with the spread between nominal and real CGS overestimating inflationary expectations. In its February 2007 *Statement on Monetary Policy*, the RBA noted that, 'While this spread is usually seen as a measure of expected inflation, its recent increase is at odds with other measures of inflation and is at odds with other measures of inflation expectations and reflected special factors, unrelated to inflationary pressures'.³

FIGURE 1: Yield on nominal and real CGS



Source: RBA data.

Measuring the bias in indexed CGS

To measure the magnitude of the bias in real CGS yields, NERA found matching maturity pairs of real and nominal corporate bonds issued by the same company, which should have the same margin for risk (over the true real or nominal risk-free rate of return respectively). The margins of the real and nominal corporate bonds over equivalent maturity real and nominal CGS were calculated. If the real CGS yield was downward biased, NERA predicted that the gap between real corporate and government bond yields would exceed the gap between the nominal corporate and CGS bond yields. By rearranging the terms in NERA’s equation, the downward bias, measured as the ‘difference in spreads’ (DS) can also be written as:

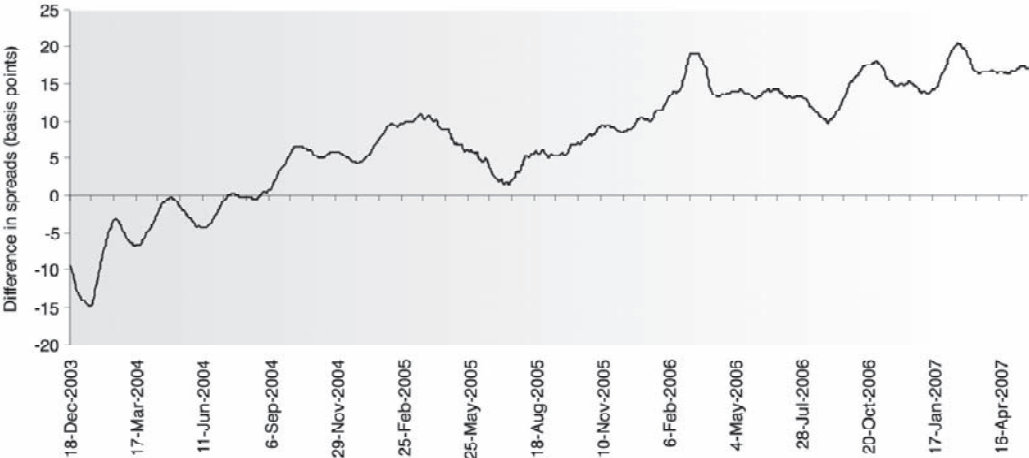
$$DS = (Real\ Corp\ Yield - Real\ CGS\ yield) - (Nominal\ Corp\ Yield - Nominal\ CGS\ yield) \tag{1}$$

NERA obtained daily yield data for nominal and real ElectraNet and Envestra bonds to March 2007. The results can be summarised as follows:

TABLE 2:

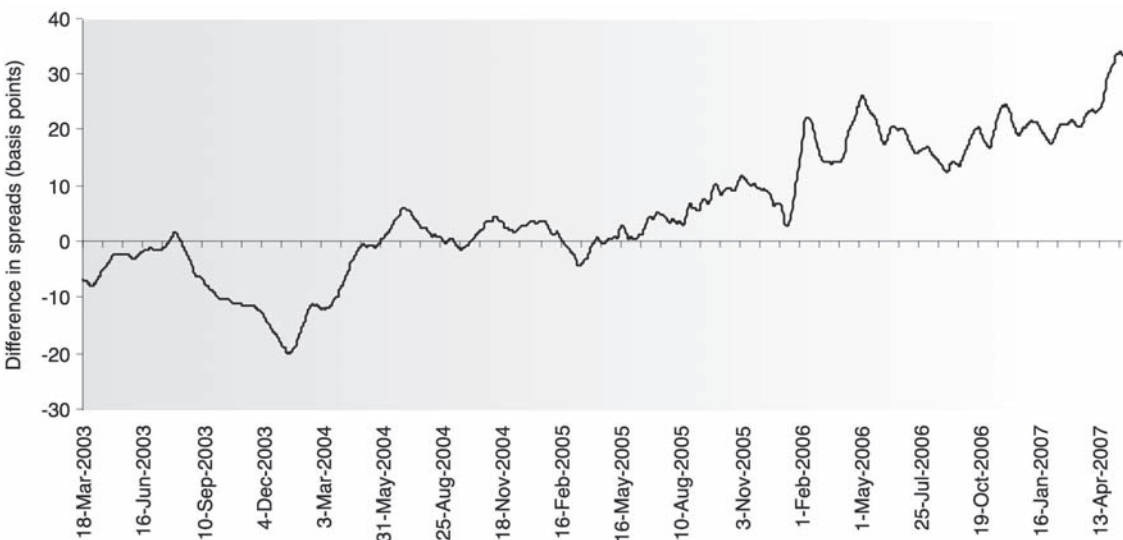
Company	Real Bond Maturity	Nominal Bond Maturity	DS spread (bp)
ElectraNet	20 August 2010	17 November 2009	17-19
ElectraNet	20 August 2015	17 November 2009	19-24
Envestra	20 May 2011	21 February 2008 interpolated with 14 October 2015	21
Envestra	14 October 2025	14 October 2015 (extrapolated) ⁴	21

FIGURE 2: ElectraNet real 2010 vs. nominal 2009 bond DS (nominal-real spreads)



Source: ABN AMRO data.

FIGURE 3: Envestra real 2011 vs. interpolated Envestra nominal 2011 bond DS (nominal-real spreads)



Source: Macquarie Bank data.

Graphical representations of the development of the 20 bps DS for ElectraNet and Envestra bonds are displayed in Figures 2 and 3. For Envestra, DS had increased to 30 bps by the end of April 2007.

Based on these results, NERA concluded that during March 2007, the quantum of the downward bias in the yield of indexed CGS (i.e. the difference in spreads shown in Figure 3) was around 20 bps. To attribute a positive DS to an understatement in the real CGS yield implies that real corporate bond yields are unbiased, nominal corporate bond yields are unbiased, and that there are no other reasons for the margins on the bonds to differ.

Reassessment of the empirical evidence

Discussions with market participants generated agreement in August 2007 that indexed CGS yields were biased downwards, but there was no agreement that this bias had been present during the whole period since 2004. Market participants felt that the increasing differential between nominal and real CGS was likely to incorporate:

- an increase in inflationary expectations;
- an increase in the inflation premium impounded in nominal bonds; and
- a downward bias in the yield on real CGS.

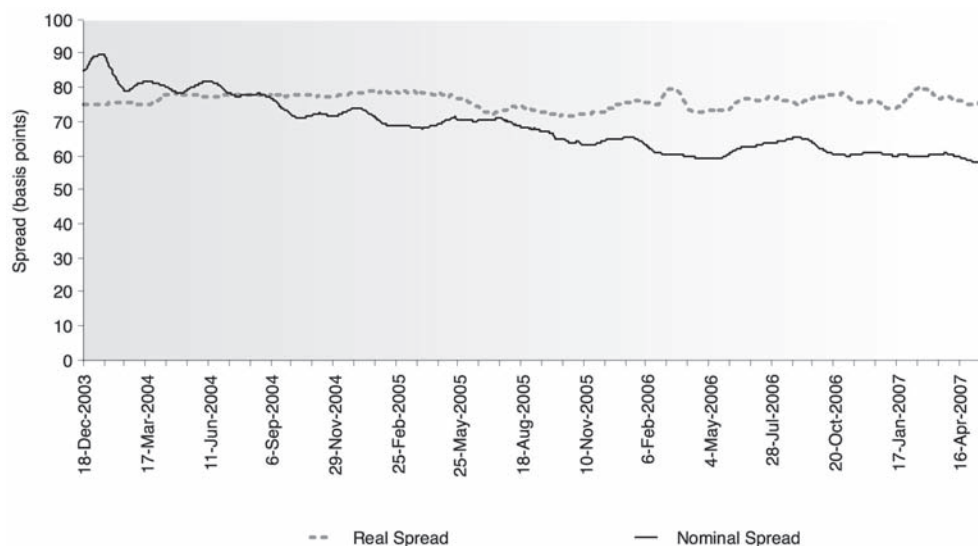
Market practitioners also stressed that real corporate bonds were very infrequently traded. Hence the 'yields' used did not necessarily reflect trades, but rather the valuations that were placed on the bonds by market analysts. For some time, investment banks have valued thinly traded fixed income securities on a weekly or daily basis in the absence of trades on the basis of a margin to the government bond reference yield.⁵ To decompose the drivers of the observed increases in DS, plots of the individual corporate real and nominal bond spreads over the same period are shown in Figures 4 and 5.

An alternative hypothesis was that there had been an excess market demand for corporate nominal bonds over the preceding few years (despite record issuance levels), and this was causing their yields to be depressed.

Referring back to equation (1), if the main driver of DS is the artificially depressed real CGS yield, the nominal corporate bond yield and the nominal CGS yield would be expected to move together. Figure 4 suggests the opposite. As the real CGS yield decreased over the period, the real ElectraNet yield decreased with it, maintaining an almost constant 76 bps margin. By contrast, the nominal CGS yield rose by twice the amount of the rise in the nominal ElectraNet bond. The lack of a widening real corporate-CGS margin does not constitute either a confirmation or refutation of the 'indexed bond shortage' hypothesis. It appears that the trader valuations of the ElectraNet yield had approximately held the same margin to the underlying benchmark, which was the real CGS yield.

An alternative hypothesis for the positive DS value in equation (1), suggested by bond market analysts and traders, was that there had been an excess market demand for corporate nominal bonds over the preceding few years (despite record issuance levels), and this was causing their yields to be depressed. The reduction in the nominal bond yield spread was caused by the ElectraNet nominal bond yield increasing by less than the nominal CGS yield, which is consistent with the 'excess market demand' hypothesis; but existence of a causal relationship is confounded by the possibility of other factors, such as the market's changing assessment of the default/credit risk rating of ElectraNet.

FIGURE 4: ElectraNet real 2010 bond and nominal 2009 bond spreads to CGS



Source: ABN AMRO data.

Analysis of Envestra's real and nominal bond spreads (shown in Figure 5) provides a different picture. Up to 18–19 January 2006 – the turning point in the real bond market – the margins for Envestra's nominal and real bonds had been roughly stable relative to their respective CGS yields. From January 2006 a divergence occurred, with the real margin increasing, and the nominal margin declining to create a 20 bps gap (DS). As proposed in the 'indexed bond shortage' hypothesis, the real margin increased as a result of a relative decline in the real CGS yield compared with the real Envestra yield. However, the other half of the rise in DS was caused by a relative increase in the nominal CGS yield compared with the nominal Envestra bond yield. Accordingly, the behaviour of the Envestra bond yields provided support for both the 'indexed bond shortage' (excess demand for real CGS) hypothesis, as well as the 'excess demand for corporate nominal bonds' hypothesis; however, it is not possible to conclude on the basis of this evidence that these were the causal factors.

Comparison with US and UK inflation-indexed bond markets

The notion that demand and supply imbalances for inflation-indexed government bonds can distort yields and break-even inflation forecasts has also been raised in the United States and the United Kingdom. The US Treasury began issuing Treasury inflation-protected securities (TIPS) in 1997 and, by 2003, US\$176 billion had been issued, constituting 7% of all US Government bonds on issue.

However, the US experience with inflation-linked government bonds was the opposite of Australia's recent experience. Sack and Elsasser observed that the yields on US TIPS were unusually high, providing break-even forecasts of inflation that were well below market surveys of long-run inflation.⁶ They attributed the exceptionally high yields on TIPS to a number of factors, including:

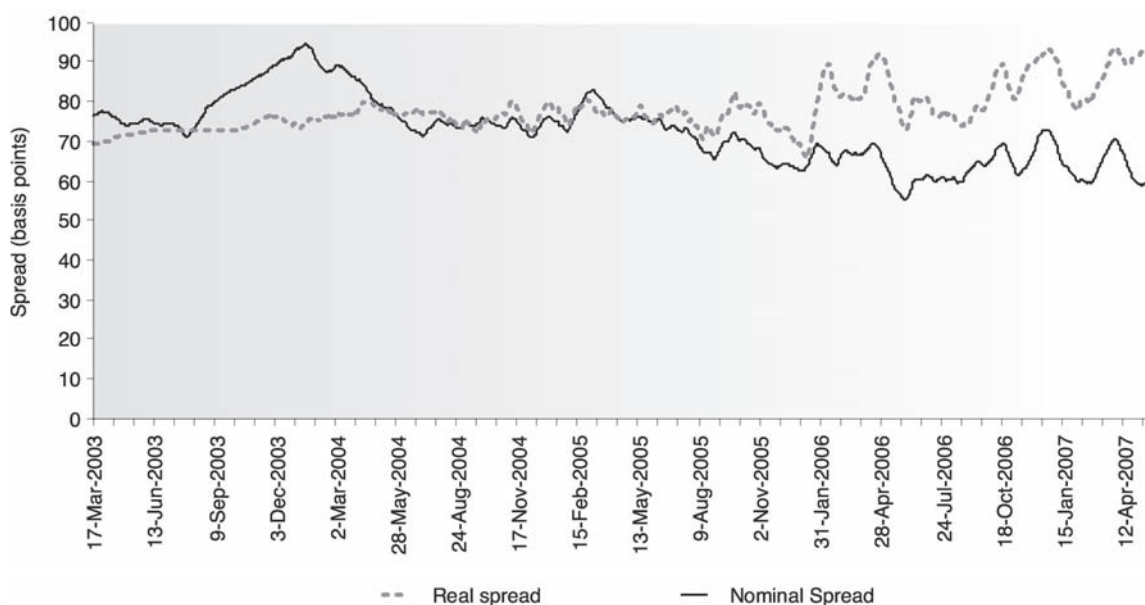
investors' inexperience; supply exceeding demand; their relatively low liquidity (requiring an illiquidity premium); and a generally benign outlook on inflation (i.e. a low or absent inflation premium for holding nominal bonds).

Bank of England researchers have recently produced two studies examining the market for inflation-linked government bonds. Hurd and Rellen compared the market's information on future inflation impounded into inflation swaps with that provided through nominal and inflation-indexed government bonds.⁷ Discussions about UK bond rates have often referred to the distorting influence of the Minimum Funding Requirement (MFR) that requires financial institutions to hold government bonds in their portfolios, and potentially artificially depresses government bond yields. Examining inflation swap data provides a market viewpoint on future inflation that is independent of MFR constraints.

Hurd and Rellen found that as at 21 February 2004, the break-even inflation forecast implied by 10 and 15-year maturity bonds was just over 3%, while the swaps data implied a slightly higher rate of approximately 3.25% at 15 years.⁸ In a more recent UK study, McGrath and Windle found that by the end of 2006, the 10-year horizon inflation forecast curves had converged, with the break-even inflation forecast at 3%, and the inflation swap-derived forecast just slightly higher. Hurd and Rellen noted that the 'relatively unpredictable nature of both demand and non-government supply can have an impact on the price of inflation-linked assets (and hence real interest rates and break-even inflation rates)'.⁹

McGrath and Windle noted the drop in real ultra long (30 to 50 year) inflation-linked yields to all-time lows on 18 and 19 January 2006 (which was also the yield nadir in the Australian market) and put this down to continued institutional demand and uncertainty about future issuance. The subsequent rally in yields was explained by quiet institutional demand and greater inflation-linked supply.

FIGURE 5: Envestra real 2010 bond and nominal 2009 bond spreads to CGS



Source: Macquarie Bank data.

There was evidence from other markets with much larger issues of inflation-linked bonds that demand/supply and institutional factors had influenced estimates of the real risk-free rate.

In summary, there was evidence from other markets with much larger issues of inflation-linked bonds that demand/supply and institutional factors had influenced estimates of the real risk-free rate. This strengthened the case that in Australia an excess demand for inflation-linked bonds was likely to have distorted the yield.

Conclusions

While it is difficult, using the DS approach, to demonstrate that the extent of the bias was approximately 20 bps, as had been suggested, the fact that a bias existed was given credence by the RBA and independently by market bond trading participants. The break-even inflation forecasts derived from nominal and real CGS appeared to be overstating the level of inflation being forecast by participants in the market.¹⁰

Now that we cannot use real bonds, we need to use nominal bond yields and deduct inflation, so the question becomes: 'How do you forecast inflation directly?' One potential solution would be to examine the inflation forecasts that are implied in inflation swap contracts. While this market is growing rapidly, it has not yet achieved the levels of liquidity seen in the United Kingdom in recent years. It is, however, a market that bears watching in the future. The problem with market estimates is that most extend out only two or three years, and longer-term estimates are, in any case, influenced by the RBA's stated inflation target band of 2% to 3%.¹¹ ●

Notes

- 1 This paper relies in part on material provided in an Expert Witness Statement by Jeffrey John Balchin and Michael Lubomir Lawriwsky titled 'Relative bias in the yields of indexed Commonwealth Government Securities when used as a proxy for the CAPM risk free rate', which was provided to the Essential Services Commission in August 2007. I am grateful to Jeff Balchin for helpful comments on an earlier draft.
- 2 NERA 2007, 'Bias in indexed CGS yields as a proxy for the CAPM risk free rate', a report for the Energy Networks Association, March. This was prepared in relation to the *Victorian Essential Services Commission (ESC) Gas Access Arrangements Review 2008–2112*.
- 3 Reserve Bank of Australia 2006, *Statement on Monetary Policy*, February, pp. 48–49.
- 4 Note that extrapolations were also required to generate yields for hypothetical real and nominal CGS.
- 5 Donald Wiss 1993, 'Valuation of thinly traded fixed income securities', Chapter 31 in Raymond H. Rupert (ed.), *The new era in investment banking*, Probus, Chicago and Cambridge, pp. 347–349. Wiss noted that the margin of error in the estimated yield margin for an individual security could be in the order of 25 bps, but would be low or negligible for a portfolio of securities.
- 6 Brian Sack and Robert Elsasser 2004, 'Treasury inflation-indexed debt: a review of the US experience', *FRBNY Economic Policy Review*, May, pp. 47–63.
- 7 Matthew Hurd and Jon Rellen 2004, 'New information from inflation swaps and index-linked bonds', *Bank of England Quarterly Bulletin*, Spring, vol. 46, no. 1, pp. 24–34.
- 8 Grellan McGrath and Robin Windle 2006, *Bank of England Quarterly Bulletin*, Spring, vol. 46, no. 1, pp. 386–396.
- 9 Ibid. p. 393.
- 10 Ultimately, the ESC determined to use nominal bonds and deduct a forecast of inflation derived from RBA and analyst forecasts and an assumption that the RBA hits its target range in the medium term to calculate a real interest rate.
- 11 As noted by the Chief Economist of one of the major banks, setting a long-term inflation rate above the RBA range would imply that the RBA cannot achieve its target range in the long run.

The unlisted unrated debentures market

Following the collapse of several issuers of unlisted unrated debentures in early 2007, ASIC established benchmarks for disclosure and advertising, and an 'if not why not' approach for issuers of these debentures to retail investors. These measures are intended to help retail investors make informed decisions about unlisted unrated debentures while maintaining the essential framework of the market.



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THIS PAPER PROVIDES an economic analysis of recent developments in the unlisted unrated debentures market including changes to the regulatory framework and the recent vicissitudes of several issuers of debentures.²

The paper first briefly describes the characteristics of debentures and their historical role in Australian finance and then examines the regulatory environment and recent events which have prompted regulatory concern. It provides some statistics on developments in the market, an overview of ASIC's response to events and considers possible future trends in the market and regulation.

A debenture is essentially an undertaking given by a company to repay money lent to it by an investor and usually also includes a promise to pay interest on that loan.³ Debentures are mostly issued to investors under a prospectus to fund a range of business activities (e.g. provision of finance and loans, property-related activities, investments, general operations).⁴

If a debenture is unrated it has not received a credit rating from an institution such as Standard & Poor's,

Moody's or Fitch. If a debenture is unlisted it means that the issue is not listed on an exchange and there is no liquid secondary market to observe the value of the debentures or sell them to other investors. There may, however, be withdrawal/redemption facilities offered at the discretion of the issuer.

The typical investors in unlisted unrated debentures are retail investors, including the trustees of self-managed superannuation funds. Some are 'sophisticated investors', others are not. Other investors include businesses, partnerships or other trusts.

History

Debentures emerged as financial instruments in Australia in the 1840s. The earliest index reference to debentures in Australia, in S.J. Butlin's *Foundations of the Australian Monetary System 1788–1851*, is the £50,000 issue of 'immigration debentures authorised by the otherwise debt-abhorring NSW Governor Sir George Gipps in 1842'.⁵

After this introduction, government increasingly borrowed funds by issuing inscribed stock, while corporations used debentures. According to the 1965 Vernon Report, debentures (along with registered notes and deposits) had become a major form of financing for Australia's listed companies by the mid-1950s.⁶

The Campbell Committee in 1980 observed that 'the larger finance companies obtain their funds predominantly from the household sector by issuing debentures and unsecured notes'. Most common maturities seem to be out to five years with a large part of funds with maturities less than two years.⁷

Major reforms to the financial system in the 1980s had a significant impact on the industry. Gizycki and Lowe⁸ recorded a decline in the number of finance companies from 191 in 1990 to 114 in 1999, and a decline in their share of total assets in the financial system from 7.6% to 4.3%, largely as a result of their loss of competitive advantage in the newly deregulated era. The recession in the early 1990s had also taken a toll.

Regulatory framework

a. Finance companies

Finance companies have never been subject to prudential regulation in Australia, although the *Financial Corporations Act 1974* contained provisions that could have enabled federal control.

In 1996, the Reserve Bank of Australia (RBA) urged the Wallis Committee to accept that finance companies were a different case from building societies, credit unions and merchant banks: 'They do not take deposits, but finance themselves through the issue of debentures under the prospectus disclosure provisions of the Corporations Law subject to the ASC [Australian Securities Commission]. Their liabilities are relatively long term, and they are not subject to runs or contagion. Several have failed over the past two decades without threatening system stability. The RBA sees no case to change their present regulatory regime'.⁹

The Government accepted the Wallis Committee recommendation to establish a separate prudential regulator for banks, insurance and *superannuation* – the Australian Prudential Regulation Authority (APRA) – but to leave the regulation of finance companies¹⁰ and their products with what has become the Australian Securities and Investments Commission (ASIC).

Subsequently, the *Financial Statistics (Collection of Data) Act 2001* repealed the *Financial Corporations Act 1974*. Corporations that were previously registered under the *Financial Corporations Act* – including finance companies – have since been known as registered financial corporations (RFCs). From 1 July 2002, the responsibility for the registration and categorisation of financial corporations was transferred from the RBA to APRA, but at no stage has APRA supervised, regulated or reported statistically on RFCs. APRA passes on the data collected for publication by the RBA and the ABS.

b. Debentures, including unlisted unrated debentures

The *Financial Services Reform Act 2001* (FSRA) came into force on 1 March 2002.¹¹ The FSRA replaced old Chapters 7 (Securities) and 8 (The Futures Industry) of the *Corporations Act 2001* with a new Chapter 7 (Financial Services and Markets). The key elements of the post-2002 regulatory structure are a uniform licencing scheme for financial services providers, licencing of financial product markets, and clearing and settlement facilities, and financial product disclosure.

An issuer does not need to have an Australian financial services licence (AFSL) to issue a debenture. However, a debenture can only be sold to the public by the holder of an AFSL. Thus an issuer without an AFSL needs to use an AFSL holder as an intermediary.

Property finance companies

A number of issuers of unlisted unrated debentures collapsed in 2007 in Australia – Fincorp Investments Limited (March/April 2007), Australian Capital Reserve Limited (May 2007) and Bridgecorp Finance Limited (July 2007). There were a number of common features of these failures: property development companies involved mainly in residential property development raised funds from retail investors through the issue of debentures – that is, the investor provided loan funds to the issuer who issued a debenture with a promise to pay a rate of interest (usually fixed) for a defined term and then repay the loan.¹² In total, around 20,000 investors in these companies were owed approximately \$900 million.¹³

The main difficulties facing issuers is providing investors with the security of regular income and capital certainty. This is especially problematic when property (and particularly property development) is the underlying asset as the security is both illiquid and cyclical, valuation problems can arise and cash flows depend on sales at project completion.¹⁴ Problems may also arise if the debenture issuer has allowed debenture holders an early withdrawal mechanism.

The main difficulties facing retail investors when considering investing in unlisted unrated debentures include inadequate information on, and understanding of, risk and return and underestimation of the benefits of diversification. The investors who invested in the unlisted unrated debentures that ran into problems tended to be older, sought income for retirement, wanted capital protection, were more easily influenced by advertising and tended not to enjoy investing. (See Appendix 1 for more details on the retail investors who invest in debentures.)

Size of the market

Virtually all debenture holders are retail investors (including self managed superannuation funds). ASIC analysis¹⁵ in 2007 showed that:

- debentures issued to retail investors account for around 7% of the total retail market for deposits and debt securities of \$523 billion, or some \$34 billion; and

- of that \$34 billion, some \$8 billion (or 24%) is invested in unlisted, unrated debentures. Most recent failures have been in this unlisted, unrated category.

Investments in unlisted unrated debentures amount to an estimated 1.5% of total household holdings of deposits and debt securities. While only a small minority of retail investors hold debentures, some held a disproportionate share of their total investments in the unlisted unrated debentures of issuers that have run into trouble (see Appendix 1).

Table 1 provides ASIC estimates of the size of the debenture market in recent years.

TABLE 1: Size of the debenture market in Australia 2006–08

	June 2006	June 2007	December 2007	April 2008
Unlisted unrated debentures				
Amount on issue (\$billion)	6.6	7.6	7.6	6.7
Number of issuers	84	89	86	
All debentures				
Amount on issue (\$billion)	28.7	31.3	29.7	
Number of issuers	154	159	153	

Sources: ASIC Report 127; Consultation Paper 89.

Although amounts on issue increased between 30 June 2006 and 30 June 2007, more issuers reduced the amount on issue than increased it. This pulling back became more pronounced in the six months to 31 December 2007.

ASIC's approach

ASIC is not a prudential regulator. In business, companies are allowed to take risks and to fail. The problems arise from the debenture issuer's obligation to adequately inform and not mislead the intended retail investor base, so that investors have the material required to make an informed investment decision.

As the RBA's March 2008 *Financial Stability Review*¹⁶ recounted, regarding the issuance of debentures to retail investors:

ASIC's proposed changes were released for industry consultation in August 2007. This was followed in October 2007 by the release of the new requirements in 'Regulatory Guide 69 – Debentures – Improving Disclosure for Retail Investors'. Under the new arrangements, disclosure benchmarks have been set for, among other things, equity capital, liquidity, rollovers, credit ratings, loan portfolios, related-party transactions, valuations and lending principles. If issuers do not meet these benchmarks, they are required to explain why this is so. ASIC is now reviewing fundraising documents against this 'if not, why not' approach, with a view to issuing a public report in June 2008.

Another element of ASIC's response relates to the advertising of debentures. In December 2007, ASIC released 'Regulatory Guide 156 – Debentures Advertising' which details several principles-based standards in relation to the advertising of debentures to apply if the debentures are offered to retail investors.

In addition, any statements made in response to inquiries are subject to the same regulation regarding misleading and deceptive conduct as the advertisements.

The guide also makes clear that ASIC expects publishers to have systems and controls to detect and refuse advertisements for debentures that do not comply with these advertising standards. While the primary responsibility for advertising material rests with the organisation placing the advertisement, the publisher or other media conduit may also have some responsibility for its content. Accordingly, ASIC has included guidance on the role of publishers and the media in promoting debenture products.

Compliance with the new standards for advertising has been in effect since February 2008.

On 23 April 2008, ASIC announced its actions on disclosure and released several documents:¹⁷

- Media release: '08–82 ASIC acts to provide retail investors with better disclosure in unlisted unrated debentures'. This summarises what ASIC has done against its 'three-point plan' (including the Westpoint compensation claims);
- 'Report 126: Understanding investors in the unlisted unrated debenture market.' This outlines the findings of the investor research ASIC commissioned to better understand the profile and motivations of unlisted, unrated debenture investors;
- 'Report 127: Debentures – improving disclosure for retail investors.' This presents the findings of ASIC's review into disclosure made by each unlisted, unrated debenture issuer against the new disclosure regime; and
- 'Investing in debentures? Independent guide for investors reading a prospectus for unlisted debentures.' This is designed to help retail investors make investment decisions about unlisted, unrated debentures by providing further explanation of the new benchmarks.

Further difficulties for some issuers of unlisted unrated debentures have recently been reported in the media.

Concerns

ASIC has engaged the industry, investor groups and other experts in extensive consultations. Some interesting suggestions came from the self-appointed members of the Australia–New Zealand Shadow Financial Regulatory

Committee (ANZSFRC) in September 2007.¹⁸ The ANZSFRC:

- emphasised that the prudential safety net should be limited and the boundary line should not be blurred;
- called on the Australian and New Zealand authorities to speedily finalise and implement their proposals regarding failure management arrangements, which would help to clearly delineate the safety net boundary;
- ... recommended that proposals for new disclosure requirements should be 'road tested' with consumers as part of the required regulatory impact assessment;
- suggested that regulators review whether increasing (or retaining) the role of mandatory trustees for debenture or deposit-like securities was appropriate;
- argued that the authorities should promote the development of secondary markets for such securities as a complement to other measures which have been proposed for improving information (and exit mechanisms) for retail investors; and
- questioned whether the application of an 'if not why not' approach to disclosing whether benchmark financial indicators had been met, as proposed by ASIC, was effectively equivalent to compulsion, and called for more detailed consideration of the proposed benchmarks.

ASIC's approach has responded to many of the ANZSFRC concerns:

- the limited extent of the prudential safety net has been maintained: debenture issuers can still fail and investors lose money;
- disclosure requirements are being road-tested with consumers for effectiveness;
- while the role of mandatory trustees for debentures remains, issuers have the option of moving to alternative structures, including managed investment schemes where different arrangements apply;
- the development of secondary markets in unlisted debentures is a longer-term objective. ASIC's preference for exchange-traded rather than over-the-counter traded instruments for retail investors is well known; and
- the 'if not why not' approach has not made meeting the benchmarks compulsory – for instance, only half of the 82 issuers listed in ASIC's April 2008 report met the benchmark for equity capital and half opted to explain 'why not'.

Undoubtedly, not all in the industry are happy with the approach involving the eight benchmarks and the 'if not why not' and advertising guidelines, while some consumer advocates may also be frustrated by the outcome.

The actions also need to be tested against some broader regulatory objectives. For instance, one important test is whether the measures counterbalance the financial and economic cycle or accentuate it. There are two main considerations:

- by not extending the prudential safety net and still permitting failure, the measures should avoid the moral hazard and other incentive problems that exacerbate the pro-cyclical tendencies of finance; and
- by relying on enhanced disclosure and slightly tougher benchmarks, the measures encourage and help consumers to be interested and better informed about the risks in their investments.

If disclosures are sound and consumers pay heed, the outcome should be countercyclical (at least, compared to a situation with no additional disclosure) unless – perversely – retail investors consider that a problem disclosed is therefore not a problem.¹⁹

Looking forward

Despite some industry and consumer criticism, there are signs that the market is continuing. For instance, a recent item in the national media²⁰ suggests that 'despite a few prominent failures of unlisted products, debentures are back debentures remain a useful income-generating tool. They are also a way of diversifying an investment portfolio'.

The need for ASIC's enhanced disclosure requirements is likely to persist. Would-be investors in unlisted unrated debentures will always need adequate information to make informed investment choices.

There are also likely to be implications for other product classes. ASIC Superseded Regulatory Guide 69 indicated in October 2007 that 'over coming months, we will also be considering whether a similar approach is appropriate for any other sectors, including some managed investment schemes'.²¹

The potential problems with unlisted unrated debentures, in terms of unlisted illiquid products invested in illiquid assets, can also occur in other property-related products, including mortgage trusts and property funds. So applying similar requirements and guidelines to these areas is a logical next step.²²

In addition, retail investors are increasingly able to invest in more complex products such as alternative investments, which are less familiar, less readily understandable and more volatile and where the risks are relatively hard for the investor to see and for the issuer to manage. As a result, it seems reasonable to suppose that the approach taken with unlisted unrated debentures may be extended to retail offerings of alternative investments more generally.

Finally, it is important to be clear that the changes introduced by ASIC are not a move to prudential regulation and all that would properly entail. The approach taken by ASIC is in line with the longstanding principles of disclosure-based regulation of companies and securities markets and the changes are a sensible evolution informed by the legitimate needs of retail investors. Substantial challenges still lie ahead for investor education and investor financial literacy to take advantage of the improved disclosure. ☺

Appendix 1

What ASIC has learned about the retail investors who invest in debentures

According to research conducted by Roy Morgan Research for ASIC in 2006–07 few Australian investors own debentures.²³ Only 11% of investors reported owning an ‘other direct investment’ (i.e. other than shares, savings and term deposits, super, investment property or managed investments), of which less than 40% owned a debenture.

In 2007–08 brandmanagement conducted research for ASIC about people who had invested in unlisted, unrated debentures (UUDs).²⁴ This research compared three groups of investors in order to understand who invested and why:

- people who had invested in ACR and/or Fincorp (ACR/Fincorp investors);
- people who had investments in UUDs at the time of the research (active UUD investors); and
- a ‘control’ sample of general investors (general investors).

Two key ‘types’ of investors emerged in this research, referred to as Type 1 investors and Type 2 investors. Type 1 investors were *inter alia*: more likely to be attracted by capital protection than growth; seeking income for retirement; more influenced by product advertising; less likely to seek advice; older; retired; more likely to be divorced or widowed; and less well-educated.

ACR/Fincorp investors (86.7%) were much more likely to be Type 1 investors than the other investor groups (active UUD: 43.7%, general: 34.8%). General (65.2%) and active UUD (56.3%) investors were more likely to be Type 2 investors.

Among the investment features valued by ACR/Fincorp, relative to active UUD and general investors, marketing and advertising, the property-related nature of the investment, customer service, and regular income stand out as key differences.

The main differences in their reasons for investing was a much greater emphasis on ‘income for retirement’ by ACR/Fincorp investors, and greater emphasis on long-term savings and portfolio diversification by the other groups.

While product advertising was a key decision driver for ACR/Fincorp investors, active UUD investors were more influenced by advisers and other associates.

Finally, active UUD investors appeared to be more likely to practice diversification than ACR/Fincorp investors. ACR/Fincorp investors were the most likely investor group to have invested more than 75% of their total investments in their UUD investment. Active UUD investors were the most likely group to have invested 25% or less of their total investments in their UUD investment.

Notes

- 1 The author wishes to thank his colleagues, and especially Richard Harrison and Clare Marlin, for helpful comments and assistance. The views in this paper are those of the author and are not necessarily shared by the Australian Securities and Investments Commission.
- 2 Several provisions of the Corporations Act in Chapter 2L define what is or is not a debenture, including a section (283BH(3)) headed ‘When debentures can be called debentures’.
- 3 Debentures cannot be issued by a proprietary company.
- 4 By contrast, investments offered by Managed Investment Schemes (MIS) are issued under a Product Disclosure Statement (PDS).
- 5 S.J. Butlin 1953, *Foundations of the Australian Monetary System 1788–1851*, chapter 10, p. 315 and p. 325.
- 6 See Commonwealth of Australia 1965, ‘New Capital Raisings by Australian Companies 1948–49 to 1963–64’ in vol. 2 of the *Report of the Committee of Economic Enquiry*, May.
- 7 The Interim Report of the Committee of Inquiry into the Australian Financial System 1980, para 5.65.
- 8 Marianne Gizycki and Phillip Lowe 2000, ‘The Australian Financial System in the 1990s’, Reserve Bank of Australia, *Proceedings of a Conference*, table 2, p. 192.
- 9 Reserve Bank of Australia 1996, ‘Submission to the Financial System Inquiry’, 6 September, published as Occasional Paper no. 14. The body of the RBA submission argues (in chapter 14, para. 156) that few (only 20 out of 100) borrow from retail markets under the disclosure provisions of the Corporations Law and subject to the surveillance of the ASC, and the community accepts that finance companies ‘are further out on the risk/return frontier than the banks’.
- 10 The Wallis Committee set out its recommendation regarding the prudential supervision of finance companies in chapter 8 on ‘Financial Safety’.
- 11 Alias Corporate Law Economic Reform Program (CLERP) 6.
- 12 Westpoint Group raised funds by way of promissory notes (rather than debentures) but operated in the way outlined above.
- 13 See ‘Developments in the Financial System Infrastructure’ 2007, *RBA Financial Stability Review*, Sept.
- 14 These are not new problems and they are often not resolved quickly or favourably for investors. See, for instance, Leonie Wood 2007, ‘Land sales bring Cambridge Credit saga to a close’, *The Sydney Morning Herald*, 22 September – Cambridge Credit Corporation Limited collapsed in September 1974, with 19,500 debenture holders having invested \$90 million.
- 15 See Appendix 1 of CP89 released 30 May 2007.
- 16 See ‘Developments in the Financial System Infrastructure’ 2008, *RBA Financial Stability Review*, March.
- 17 Published at www.asic.gov.au/uud
- 18 ANZSFRC Statement no. 3 2007, ‘Responding to Failures in Retail Investment Markets’, 25 September.
- 19 More basic concerns arise if the disclosures are not understood or even read.
- 20 Alexandra Cain 2008, ‘Steady investment tortoise starts to outshine flashier hares rocky economic times have resurrected the debenture’, *Australian Financial Review Special Report on Alternative Investments*, 15 May.
- 21 See [RG 69.23]. Regulatory Guide 69 was reissued in August 2008.
- 22 ASIC has since issued guidance for these areas in Regulatory Guide 45 *Mortgage schemes—improving disclosure for retail investors* and Regulatory Guide 46 *Unlisted property schemes—improving disclosure for retail investors* (both September 2008).
- 23 *Australian investors: at a glance* is available from the ASIC website, [http://www.fido.gov.au/asic/pdf/lib.nsf/LookupByFileName/rep_121_Australian_investors_at_a_glance.pdf/\\$file/rep_121_Australian_investors_at_a_glance.pdf](http://www.fido.gov.au/asic/pdf/lib.nsf/LookupByFileName/rep_121_Australian_investors_at_a_glance.pdf/$file/rep_121_Australian_investors_at_a_glance.pdf)
- 24 ‘Understanding investors in the unlisted, unrated debenture (UUD) market’ is available from the ASIC website.

Recent developments in Australian household debt

Household debt in Australia has risen to record levels in recent years with highly geared households also coming under increased stress due to deteriorating conditions in asset prices, incomes and interest rates. This paper assesses recent developments in household debt from macroeconomic and microeconomic perspectives, and provides a research agenda to cast further light on the causes of burgeoning household debt.



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IN NEARLY ALL OECD ECONOMIES, including Australia, household debt has risen to record levels during the past two decades. The key contributing factors were generally buoyant housing markets, favourable financial markets providing lower borrowing costs, and relatively easy access to capital. Financial deregulation, liberalisation, and innovation have also had a role to play. Competition has meant that reductions in lending margins have been passed on to consumers, and loans for investor housing have risen dramatically as financial institutions have sought to expand their portfolios with loans on high-return, low-risk residential properties, and by offering investors products such as split-purpose and interest-only loans.

The development of new products, particularly home equity loans and redraw facilities, has also enabled households to manage more flexibly their equity for housing and other investment and consumption purposes. Technology has likewise improved, lowering transaction and search costs for consumers. Also, government policy has combined with market forces to lower some pre-

existing credit constraints facing borrowers – particularly for first-home buyers – and provide an encouraging taxation environment for both owner-occupied and investor housing. Together, these effects have been particularly noticeable in economies with hitherto lower levels of debt that have now grown towards some higher OECD benchmarks (Girouard et al. 2007).

The rapid growth in household debt to record levels has raised valid concerns about the sensitivity of the household sector to changes in interest rates, asset prices, and incomes. This is evidenced by the increasing interest of central banks.¹ Again, while such concerns are relatively common across the OECD, they have been heightened by the US sub-prime mortgage crisis, where rising interest rates, a bursting housing bubble, a slowing economy, questionable securitisation practices and credit policies, and a surfeit of market optimism have combined to initiate a series of far-reaching impacts. Together, these developments illustrate the need to balance the evidence and causes of burgeoning household debt across the

The rapid growth in household debt to record levels has raised valid concerns about the sensitivity of the household sector to changes in interest rates, asset prices and incomes.

developed world, fine-tuned by national market, institutional and regulatory conditions.

This paper provides a brief snapshot and discussion of recent developments in Australian household debt from macroeconomic and microeconomic perspectives and, where possible, provides some comparisons with similar economies. This provides the basis for a possible research agenda to throw further light on some outstanding areas of interest relating to the growth of household debt.

A macroeconomic perspective

One perspective on aggregate household debt is obtained by considering household debt as a percentage of assets or household gearing. This throws useful light on the relative changes in household net worth and the composition of household assets. As shown in Table 1, the composition of the household asset portfolio has only changed marginally in the past two decades with non-financial assets (consumer durables and dwellings) accounting for about 60% of total household assets – most being dwellings. This is reflected in the composition of household debt: borrowing for housing currently accounts for about 86% of total household debt (RBA 2008).

TABLE 1: Household assets, percentage of total by end of calendar year

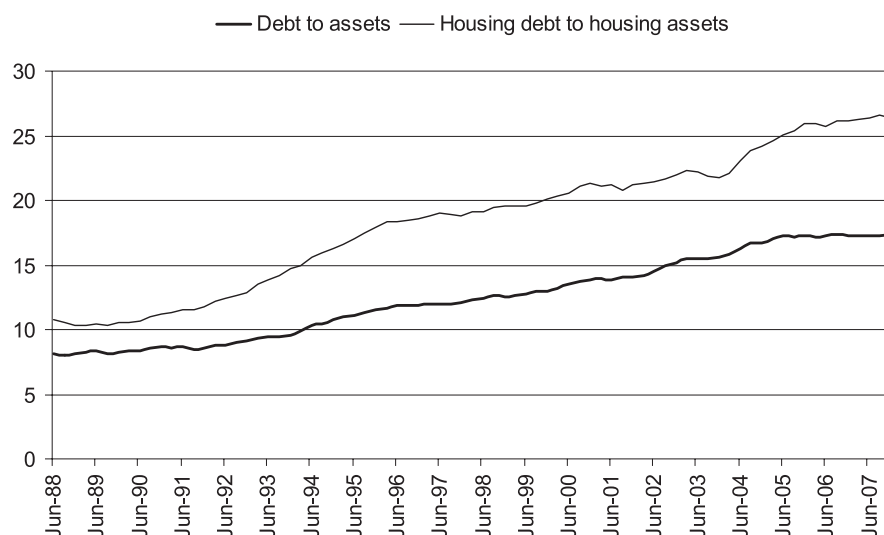
	1988	1998	2008
Non-financial assets	64.2	59.3	60.6
Consumer durables	9.2	6.6	4.1
Dwellings	55.1	52.7	56.6
Financial assets	35.8	40.7	39.4
Superannuation and life offices	15.9	20.2	22.5
Equity and unit trusts	5.8	7.7	7.1
Currency and deposits	10.3	9.3	7.6
Other	3.7	3.4	2.2
Total	100.0	100.0	100.0

Note: Financial assets include assets of unincorporated enterprises. Superannuation includes unfunded superannuation. 2008 data is as at March. Source: Australian Bureau of Statistics (ABS).

As shown in Figure 1, the ratios of household debt to assets and household housing debt to housing assets have both increased substantially in the past two decades. Using the most recently available figures, household debt to assets is now 17.4% (compared to 8.1% in 1988) and housing debt to housing assets is 26.4% (10.8% in 1988).

The second aggregate measure considers household debt as a percentage of household disposable income. As shown in Figure 2, total household debt to assets has grown from 45.6% in June 1988 to 81.7% in June 1998 and to 160.4% most recently. In the past 10 years, housing debt to disposable income has also risen from 67.5% to 137.3%, while owner-occupied housing debt to disposable income has risen from 51% to 93.9%.

FIGURE 1: Household debt to assets



Source: Reserve Bank of Australia (RBA).

In relative terms, the ratio of household debt to income in Australia has risen from a relatively low level to the upper range for comparable economies. Table 2 provides household debt and net wealth as a percentage of annual disposable income from a recent OECD paper (Girouard et al. 2007). Australia had the second-highest rate of increase in the debt-to-income ratio between 1995 and 2005 for the 15 OECD economies shown and, in 2005, had the fourth-highest level of debt relative to annual disposable income.

TABLE 2: Household debt as a percentage of annual disposable income

	1995	2000	2005
Australia	83	120	173
Canada	103	114	126
Denmark	188	236	260
Finland	64	66	89
France	66	78	89
Germany	97	111	107
Ireland	n/a	81	141
Italy	32	46	59
Japan	130	136	132
Netherlands	113	175	246
New Zealand	96	125	181
Spain	59	83	107
Sweden	90	107	134
United Kingdom	106	118	159
United States	93	107	135

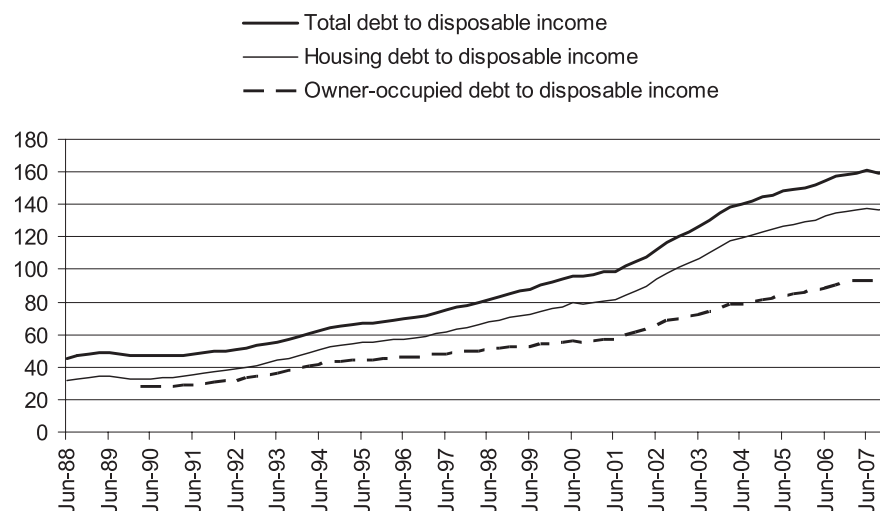
Source: Girouard et al. 2007.

Total household debt to assets has grown from 45.6% in June 1988 to 81.7% in June 1998 and to 160.4% most recently.

An alternative perspective on household debt is obtained by considering debt-service ratios – the fraction of disposable income devoted to debt repayment. While two measures of debt-servicing capacity are informative – one employing interest payments only and another with interest payments and principal repayments – the later, rather more informative measure, is difficult to obtain in Australia using aggregate data.

As shown in Figure 3, interest payments as a percentage of disposable income have reached a two-decade high of 12%. Arguably, however, this overstates the average interest-payment ratio as it is accompanied by an increase in the proportion of the life cycle that owner-occupier households retain debt and by the increasing proportion of households with investor housing debt (RBA 2008). At the international level, most comparable economies experienced relatively stable interest-service burdens in the 1990s with the general increase in indebtedness illustrated in Table 2 mostly offset by declines in borrowing costs (though now also rising with higher interest rates).

FIGURE 2: Household debt to income



Source: Reserve Bank of Australia (RBA).

A microeconomic perspective

Aggregate indicators (such as considered in the previous section) mask important disparities in financial conditions across different households in the population (Girouard et al. 2007). These disparities can be studied using, among other things, household-level surveys, information from the Australian Prudential Regulation Authority on non-performing loans and, most recently, court data from NSW and Victoria on applications for property possession. The richness of these datasets contrasts sharply with the macroeconomic aggregate data provided on a quarterly basis by the Australian Bureau of Statistics (ABS).

In recent years, attention has increasingly focused on indicators of household financial duress, including housing loan arrears and applications for property possession. As at December 2007, 0.322% of banks' housing loans were non-performing and the 90-day arrears rate for securitised housing loans was 0.40%.² Overall, these figures appear broadly consistent with the limited international comparisons available; mortgage delinquency rates (as a percentage of loans outstanding) are below 1% in most OECD economies with the exception of the US.

However, these figures can obscure sizeable differences in households, especially at a geographic level. For example, the most recent *Financial Stability Report* (RBA 2008) identifies that NSW has a substantially higher 90-day arrears rate than other states. Moreover, it is unevenly distributed, with rates in excess of 1.0% in Greater Western Sydney and less than half that in the remainder of Sydney and the rest of NSW. In terms of other forms of household debt, as at December 2007, the non-performing rate for personal loans was 0.8% and 1.0% for credit cards.

Several other developments in household debt are worth noting. First, Australian households have increasingly turned to fixed-rate housing loans (currently some 25% of all owner-occupier approvals). Second, the high growth rates in borrowing for investor housing and credit cards have fallen

for much of the past decade, with credit card debt now growing at its slowest rate over that period (9%) (RBA 2008). This contrasts sharply with the 10-year and five-year average growth rates of 17.4% and 20.9% just a few years earlier.

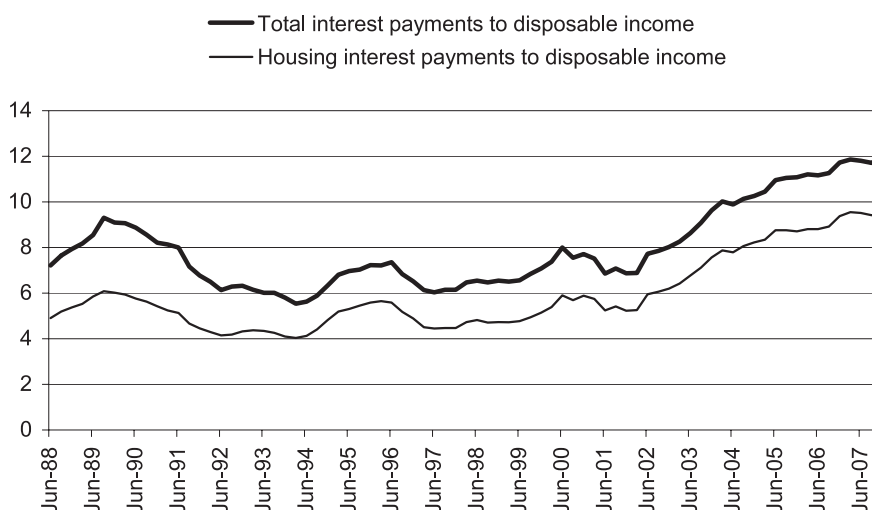
A research agenda

The Household Expenditure Surveys (HES) conducted by the ABS and the Household Income and Labour Dynamics in Australia (HILDA) Survey administered by the Melbourne Institute are the most readily available and cost-effective means of obtaining detailed information on household debt in Australia at the micro level.

The HES collects detailed information about expenditure, income and household characteristics and is administered on a five-yearly basis with the most recent surveys in 1993–94, 1998–99 and 2003–04. Data on average weekly expenditure on more than 600 goods and services (including mortgage payments and details of the separate mortgages and loans held by the household) are provided in the survey. These can be cross-classified with household income, household net worth (2003–04 only), household characteristics (including composition and structure), individual characteristics (including education and occupation) and geographical location (state, capital city/rest of state). From 1998–99, information on financial stress is also available and, from 2003–04, income in the previous financial year.

While comprehensive, the main limitations of the HES are that it is infrequent and that each survey is essentially a unique cross-section (i.e. there is no attempt to link households across time). However, it is possible to measure the distribution of household debt and debt repayments by categories of income and the age of the household head to obtain measures of the distribution of debt gearing and burden. Geographic household identifiers across households would also be useful; however, these are currently restricted to very broad categories such as state, capital city, urban and rural.

FIGURE 3: Household interest payments to income



Source: Reserve Bank of Australia (2008).

HILDA's objectives include the provision of a wide range of social statistics and the investigation of new methods of measuring change and social trends. The report contains information and statistical tables covering households and family life; incomes and wealth; employment and unemployment/joblessness; and life satisfaction and well-being. Unlike the HES, HILDA is a longitudinal study so it is technically possible to follow debt-holding households over time and at more frequent intervals. Currently, Wave 6 has been released with questions on topics such as repayments, original and outstanding debt, and refinancing. Unfortunately, the HILDA survey does not separately identify interest and principal repayments. Like the HES, HILDA also includes some questions relating to household stress.

Within the constraints of the household-level data available in the HES and HILDA, the extant literature concerning the causes and consequences of household debt may be categorised into three areas:

- attempts to explain differing household financial strategies, or the different patterns of financial assets and debts found in households, and to link these with consumption, saving and borrowing behaviour;
- efforts to investigate the factors which are associated with the source, level and conditions of debt that a household demands; and
- studies that explore the issues related to insolvency in household finances, usually in terms of predictive models of debt repayments, delinquency and bankruptcy.

All of these offer fruitful areas for further Australian research using the available data.

A small amount of empirical attention has been directed at analysing the linkage between household portfolio choices and other household behaviour. This is important because the impact of policies on households' saving and debt behaviour (and consumption) can vary across different groups in an economy in ways not reflected at the aggregate level. Gunnarsson and Wahlund (1997), for example, categorised the financial choices of Swedish households into residual saving, contractual saving, security saving, risk hedging, prudent investing and 'divergent' strategies and examined the impact of financial planning and control, financial wealth and home ownership, and attitudes to risk-taking across these categories. They concluded that contractual savers had a very heavy debt burden and relied upon credit cards, whereas residual savers had fewer loans and few even possessed credit cards. As an alternative, Viaud and Roland-Levey (2000) organised a typology of four classes defined by how households strived to build up their capital, namely 'accumulating savers', 'prodigal households', 'prudent agents' and 'fragile borrowers'. Using the concept of social identity, Viaud and Roland-Levey (2000) examined why households in different economic positions may have the same sort of structural relationships regarding savings and credit.

Other work in this area has concentrated on the link between household portfolios and decisions regarding

Larger debt values were often associated with greater value residences and with the level of household income, along with household mobility and other demographic variables.

consumption or savings/borrowing. For example, de Ruiter and Smant (1999) examined the relationship between the household balance sheet and consumer durables expenditure. In particular, they addressed the potential impact of the excessive debt burdens built up by households during financial deregulation. While finding that household wealth was an important determinant of consumer expenditure, they also found no evidence that 'excessive' household debt ratios were directly responsible for slowing consumer durables expenditure. They concluded that an emphasis on debt-income ratios at the aggregate level was misleading and that it was '... probably merely an illustration of common failures to consolidate balance sheets on an appropriate level when discussing macroeconomic issues'. Engelhardt (1996) examined the empirical link between house price appreciation and the saving/borrowing behaviour of homeowners. Interestingly, he concluded that a savings asymmetry existed whereby households that experienced real gains in wealth did not change their saving/borrowing behaviour.

A generally more extensive area of research has focused on the demand for household debt. At least some part of this work is aimed at differentiating mortgage demand and housing demand, while others are concerned with the interactions between the choice of mortgage instrument and the role of mortgage rationing and liquidity constraints. Leece (2000a), for instance, used the UK Family Expenditure Survey to estimate reduced form mortgage demand equations to analyse the impact of market rationing and financial liberalisation on households. He found significant cross-sectional variation regarding the demand for mortgages, and that the choice of mortgage instrument involving saving in an alternative investment vehicle reflects important portfolio and liquidity consideration. Leece (2000b) also examined the determinants of UK household mortgage debt, through using the British Household Panel Survey (BHPS) and in the context of the choice between floating or fixed interest rates. He concluded that no socioeconomic variables, including age and first-time buyers and marital status, were significant factors in influencing the choice of mortgage instrument.

Demand functions for household debt have also been modelled in the United States. For example, Crook (2001) used the Survey of Consumer Finance to examine the factors that determined whether a credit applicant was likely to be rejected and/or discouraged from future application and what variables significantly affected the demand for household debt. While the research

concluded that household debt was a function of household age, income, size and employment status, it was largely unaffected by the level of expected future interest rates. Alternatively, Ling and McGill (1998) used the American Housing Survey to simultaneously estimate mortgage debt level with house value. They found that larger debt values were often associated with greater value residences and with the level of household income, along with household mobility and other demographic variables. Crook and Hochguertel (2006) and Worthington (2006b) have recently also examined the demand for household debt as a function of financial, demographic and socioeconomic factors.

The final area of empirical research is concerned with consumer debt repayment in the context of household insolvency, delinquency and bankruptcy. Böheim and Taylor (2000), for example, examined evictions and reposessions using the BHPS. The results showed that previous financial problems had a significant and positive association with the current financial situation and the probability of eviction, and that negative financial surprises were an important route to financial difficulties (after controlling for life events such as divorce and loss of employment). Walker (1996) also examined a significant

life event, childbirth, as a source of financial strain and presented evidence that psychological and behavioural variables had a considerable impact on being in or keeping out of debt. Worthington (2006a) analysed debt in the context of household repayment difficulties, financial stress insolvency and bankruptcy.³

Summary

Household debt has grown strongly in recent years, with aggregate gearing and debt-service ratios increasingly exposing households to deteriorating conditions in asset prices, incomes and interest rates. At the microeconomic level, some categories of households are coming under increasing stress with tighter credit conditions acting negatively on highly geared households. Further opportunities exist for research to cast light on the behaviour of these households, by examining household financial strategies and linking these with consumption, saving and borrowing behaviour. This research could also investigate factors associated with the source, level and conditions of debt that households demand, and explore insolvency and financial stress, usually in terms of predictive models of debt repayments, delinquency and bankruptcy. ●

Notes

- 1 See, for example, Schwartz et al. (2006), Bucks et al. (2006).
- 2 For low-doc loans the 90-days arrears rate was 0.70% in November 2007, and 7.25% for non-conforming loans.
- 3 Worthington (2006a) provides further references for international studies addressing the same issue.

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Fair or not?

Fair value measurement in the sub-prime crisis

Fair value accounting has come under significant scrutiny in the wake of the sub-prime mortgage market crisis and subsequent global liquidity crisis. Commentators have questioned whether current market prices are consistent with the definition of fair value in Australian accounting standards, or whether current market prices are more indicative of distressed sales. We argue that these prices do indeed represent fair values and convey useful information for market participants.



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AS THE FINANCIAL TURMOIL has unfolded in world economies, commentators have questioned the accounting, disclosure and risk management practices of banking and industrial corporations. The extreme view is that fair value accounting is exaggerating or even causing financial market volatility by requiring write-downs, and it goes as far as proposing its suspension.² We examine whether current market prices for affected financial instruments are fair values as defined by accounting standards, or are indicative of distressed sales and therefore by definition are not 'fair values'.

Sub-prime mortgage crisis

A major feature of the global credit boom between 2001 and 2007 was the extraordinary expansion of credit risk transfer instruments, which permitted the transfer, hedging and active trading of credit risk as a separate asset class. Examples included credit default swaps (CDSs)³ and structured credit products such as collateralised debt obligations (CDOs).⁴ These products were further resecuritised into secondary markets.

For many credit-linked instruments, the securitiser places mortgages in a bankruptcy-remote entity that issues various tranches of mortgage-backed securities (MBS).

The most senior tranche is sized as large as possible for it to obtain an AAA rating. The most junior ('equity') tranche is unrated and sized as small as possible such that the second most junior tranche obtains the lowest investment grade rating. Typically, the securitiser retains the equity tranche. Ignoring any other forms of credit enhancement (e.g. third-party guarantees), the equity tranche bears credit losses on the securitised mortgages first. If that tranche is lost due to credit losses, then the second most junior tranche bears the incremental credit losses on the securitised mortgages until it is wiped out, and so on until all credit losses are absorbed.

Sub-prime MBS rated AA or lower were often resecured in CDO securitisations, which created sequenced senior to junior tranches of CDOs, with the most senior tranche typically sized to yield an AAA rating. While it may seem odd that higher-rated CDOs can be created out of lower-rated MBS, this is possible for two reasons. First, individual MBS experiencing losses in a CDO resecutisation pool need not experience complete losses, and so the portion that is not lost is effectively allocated to the most senior CDO tranche. Second, and more importantly, these pools are constructed to include diverse sets of MBS from many different prior securitisations, and the losses on the individual MBS in the pool are expected to have low correlation.

As noted by Ryan (2008),⁵ all MBS tranches are likely to experience good investment performance if asset prices appreciate and debt markets remain liquid. In contrast, if house prices depreciate or debt markets become illiquid, most or all of the junior MBS tranches are wiped out. Moreover, if asset price depreciation is sufficiently large, even the most senior tranche will experience poor investment performance.

By mid-2007 it had become clear that asset and loan serviceability had significantly deteriorated in the US housing market. This uncertainty spread to the secondary market for CDOs, where the demand for credit-linked products declined significantly. This resulted in significant uncertainty regarding the pricing of these instruments, and contributed to the development of illiquid markets in which required rollovers of asset-backed paper could not be achieved at realistic prices (if at all).

In such an environment, the accounting standards for valuing and reporting asset values become particularly significant. As noted by the Bank of International Settlements (2008),⁶ the sharp repricing of credit risk was amplified by the great opacity of new instruments, such as structured credits, and the distribution of exposures across the system. This led to a crisis of confidence in valuations, triggered by unexpected rating agency downgrades, and to a generalised distrust of counterparties, as market participants wondered about the size and character of their own exposures and those of others. The crisis of confidence triggered an evaporation of market liquidity for those new instruments as well as a loss of funding liquidity for institutions considered vulnerable to the market disruption.

When markets are illiquid and credit spreads are at historically high levels, as is now the case, then the fair values of financial instruments should reflect those conditions at reporting date.

Fair value

Financial reporting standards are a crucial element of the financial infrastructure: they are a key measuring rod for valuations, incomes and cash flows and the main vehicle through which this information is conveyed to the public. As a result, they provide the basis for exercising market discipline.

Revisions in international financial reporting standards in recent years have increased the emphasis on fair value accounting (FVA). They have generated a heated debate about the system-wide properties of this measurement system (including its potential pro-cyclicality properties) and its firm or instrument-specific properties.

As noted by Young (2008),⁷ the determination of fair value raises one of the oldest debates in accounting: historical cost versus market value. The supporters of historical cost argue that the price observed at the time of purchase or creation is an objective, verifiable measurement not subject to financial market trading activity or manipulation. Of course, at the time of purchase the historical cost is the market value; the two values diverge over time. In contrast, supporters of the market value approach believe that fair value is best represented by the current market price for the asset or liability as this represents the value of the asset or liability at the time of recording the financial accounts. In practice, the financial reporting framework is a mixed measurement system, with some assets or liabilities better suited to market valuation than others. Financial instruments are particularly suited to market valuation, as an observable market price is available from a liquid market.

Those parties affected by the market turmoil are likely to encounter major complexities in accounting and finance issues, requiring significant judgments or estimates. Such issues may include loan loss reserves, consideration of other-than-temporary impairment, complex or judgmental determination of fair value, off-balance sheet structuring involving special purpose entities, loan and investment portfolio modifications, and short-term liquidity conduit and trust arrangements. We focus on issues related to the fair value of financial instruments.⁸

Australian corporations are required to adhere to the Australian Accounting Standard for the reporting of financial instruments, AASB 139 Financial Instruments: Recognition and Measurement, which is very similar to the International Accounting Standard 39.⁹ AASB 139

defines fair value as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. Importantly, it is not the amount that an entity would receive or pay in a forced transaction or distressed sale price offered by a seller in financial or operational difficulty.¹⁰ To claim a distressed sale valuation therefore removes the necessity of compliance with the standard, and hence the necessity of a write-down to market value in a market downturn.

The definition reflects an optimal 'exit' or 'value-in-exchange' notion of fair value: the highest values of assets and the lowest values of liabilities currently held by the firm. This notion corresponds to firms' solvency more than the possible alternative fair value notions of 'entry value' (the price that would be paid to buy an asset or received from issuing a liability) or 'value-in-use' (the entity-specific value to the current holder of an item). In particular, if all assets and liabilities on a firm's balance sheet were perfectly measured at exit value, then owners' equity would equal the cash expected to remain if the firm liquidated all of those items in orderly transactions between market participants at the measurement date, that is, not in distressed sales.

Given the paramount importance of maintaining solvency during the sub-prime crisis, this element of the definition of fair value is well suited to the current informational needs of users of financial reports.

When markets are illiquid and credit spreads are at historically high levels, as is now the case, then the fair values of financial instruments should reflect those conditions at reporting date. In particular, firms should not incorporate their expectations of market liquidity and credit spreads returning to normal over some horizon, regardless of indications from historical experience, statistical models, or expert opinion. Fair values can be subject to volatility, but reflect a real economic phenomenon, and are certainly more relevant than any historical cost.¹¹

Fair value measurement of a financial instrument is generally the 'mark-to-market' value. AASB 139 states that at initial recognition, the best evidence of fair value is the transaction price. A profit or loss on initial recognition can only be recognised if an alternative value, based entirely on observable data, can be determined.

AASB 139.AG72 states that the appropriate quoted market price is usually the current bid price for an asset held or liability to be issued and the asking price for an asset to be acquired or liability held. When an entity has assets and liabilities with offsetting market risks, it may use mid-market prices as a basis for establishing fair values for the offsetting risk positions and apply the bid or asking price to the net open position, as appropriate.

When current bid and asking prices are unavailable, the price of the most recent transaction provides evidence of the current fair value as long as there has not been a significant change in economic circumstances since the time of the transaction. If there has been a significant change, valuation should be made by reference to current prices or rates for similar financial instruments, as appropriate.

Similarly, if the entity can demonstrate that the last transaction price is not fair value (e.g. because it reflected the amount that an entity would receive or pay in a forced transaction, involuntary liquidation or distress sale), that price is adjusted.

AASB 139 distinguishes between instruments quoted on active markets and those where there is no active market. Measurement can be undertaken with reference to quoted prices in active markets or, if no active market exists, a valuation technique can establish what the transaction price would have been on the measurement date (AASB 139.AG75).

Active market

In active markets, where quoted prices are readily available and represent prices of actual and regularly occurring transactions, AASB 139 states that the best evidence of fair value is the published price quotation. If there is more than one quoted market price for an instrument, the price to use is the one quoted in the most advantageous market to which the entity has immediate access. Consequently not all entities will use the same price as the fair value.

AASB 139 requires the use of bid prices for long positions and offer prices for short positions. Where an entity has a portfolio of offsetting transactions, the bid or offer price may be applied to the net open position rather than transaction-by-transaction. This is important for dealers who run portfolios of transactions and manage their exposure on a net basis, and is consistent with generally accepted market practice.

AASB 139 acknowledges that there may be circumstances when current prices are unavailable and the most recent traded price may be stale. In such circumstances the price should be adjusted, but no adjustment is allowed simply because an entity has such a large holding of a particular instrument that the market price would almost certainly change if the position was sold. Some liquidity adjustments currently applied in practice may no longer be permitted.

If the convention in the market for a particular instrument is to quote rates that are model inputs rather than prices, this is the approach that should be followed to determine fair value. This means that many of the more liquid over-the-counter (OTC) derivatives markets, such as the interest rate swaps market, probably need to be considered active markets, even though valuation models need to be used and adjustments for credit or other costs will be needed to determine fair value.

No active market

For instruments with no active market, fair value has to be established using a valuation technique such as recent transactions in similar instruments, discounted cash flow analysis and option pricing models. Any technique that is commonly used in the market and has been demonstrated to provide reliable price estimates should be followed.

The approach to be used in the absence of an active market is similar to a mark-to-model rather than mark-to-

market approach. A valuation technique would be expected to arrive at a realistic estimate of the fair value if:

- it reasonably reflects how the market could be expected to price the instrument; and
- the inputs to the valuation technique reasonably represent market expectations and measures of the risk-return factors inherent in the financial instrument.

AASB 139.AG76 requires that an entity calibrates the valuation technique and tests it for validity using prices from any observable current market transactions in the same instrument (i.e. without modification or repackaging) or based on any available observable market data. An entity obtains market data consistently in the same market where the instrument was originated or purchased. The best evidence of the fair value of a financial instrument at initial recognition is the transaction price (i.e. the fair value of the consideration given or received) unless the fair value of that instrument is evidenced by comparison with other observable current market transactions in the same instrument (i.e. without modification or repackaging) or based on a valuation technique with variables that only include data from observable markets.

AASB 139.AG82 provides that an appropriate technique for estimating the fair value of a particular financial instrument would incorporate observable market data about the market conditions and other factors that are likely to affect the instrument's fair value. For example, when using a valuation model to measure the fair value of securities backed by sub-prime mortgages (when quoted prices are not available), assumptions such as prepayment speeds, default rates and discount rates are often key inputs. To the extent that default rate assumptions can be derived from transaction prices observable for similar securities and/or credit default swaps, such data should be used. An additional adjustment, such as a liquidity adjustment, or higher discount rate, might be necessary to ensure the model reflects current market conditions.

To test whether the model reflects current market conditions, it can be applied to similar securities with available price information. If the model appropriately reflects current market conditions, it should produce approximately the market price. The parameters and assumptions used in those valuations should also be used, with adjustments where appropriate, to value similar securities where a market price is not currently available.

Importantly, valuation models that rely on historical default data, or an entity's own default assumptions, are not appropriately utilising market participant assumptions, even if the default assumptions are 'stressed'.

It is important to distinguish between an imbalance between supply and demand (e.g. fewer buyers than sellers), which forces prices down and a 'forced' or 'distressed' transaction. The U.S. Securities and Exchange Commission (SEC) addressed illiquid market conditions in a 2004 Accounting and Auditing Enforcement Release. In that release, the SEC concluded that the registrant had

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violated generally accepted accounting principles (GAAP) by using a definition of fair value that assumed that supply and demand were in reasonable balance when, in fact, GAAP defines fair value as the amount at which an asset could be bought or sold in a current transaction. The SEC concluded that the registrant should have considered current market conditions, such as imbalances in supply and demand, when determining the (then) current market value. Specifically, the commission objected to the practice of ignoring prices quoted by external pricing sources and taking a longer view of the market (a view that assumes equilibrium will occur and facilitate transacting at more rational prices).

To further enhance disclosure, AASB 7, which now applies to Australian corporations, requires entities to disclose the methods used and assumptions applied (when a valuation technique is used) to determine the fair values of financial instruments. In addition, entities are required to disclose whether fair values recognised or disclosed in financial statements are determined, in whole or in part, by reference to published price quotations in an active market, or are estimated using a valuation technique. They are also required to disclose whether fair values are determined, in whole or in part, on a valuation based on assumptions that are not supported by prices from observable current market transactions in the same instrument (i.e. without modification or repackaging) and not based on available observable market data.

Conclusion

Commentators have questioned whether current market prices are consistent with the definition of fair value in AASB 139 or are more indicative of distressed sales.

As discussed, if orderly transactions occur between market participants in a manner that is usual and customary for transactions involving such assets, then those transactions are not forced sales. The fact that transaction volume in a market is significantly lower than in previous periods does not necessarily mean that sales are forced or distressed. Moreover, decreased volumes in a market do not necessarily mean the market has become inactive. Persuasive evidence is required to establish that an observable transaction is a forced or distressed transaction. Because the objective of a fair value measurement is to determine the price that would be received for the sale of

the asset at the measurement date (an exit price), such a measurement, by definition, requires consideration of current market conditions including the relative liquidity of the market. It is not appropriate to disregard observable prices, even if that market is relatively thin compared to previous market volume.

We conclude, therefore, that current market values for financial instruments affected by the sub-prime mortgage crisis do indeed represent fair values as defined and required by financial accounting standards. They do not represent distressed sale values. Rather than contributing to financial volatility, fair values are highly relevant to the information needs of participants in current markets. ☹

Notes

- 1 The views expressed in this paper are those of the author and not of Ernst & Young. The authors wish to thank Kevin Davis and Iain MacLachlan and conference participants at the 13th Melbourne Money and Finance Conference held in June 2008.
- 2 See, for example, M. Young 2008, 'Fair Value Accounting and Subprime' http://www.willkie.com/files/tbl_s29Publications%5CFil eUpload5686%5C2566%5CFair%20Value%20Accounting%20and %20Subprime.pdf and Gross, 'The Mark-to-Market Melee', (www.newsweek.com/id/130029). Note that we see no arguments for the suspension of fair value accounting when market prices are increasing.
- 3 Remolona and Shim 2008, 'Credit derivatives and structured credit: the nascent markets of Asia and the Pacific', *BIS Quarterly Bulletin* noted that a single-name CDS contract is an over-the-counter derivative in which the buyer pays a fixed premium in return for protection against losses in the event of default by a specified borrower. CDS contracts are most actively traded in the form of CDS indices, which consist of standardised portfolios of single-name CDS contracts.
- 4 As noted by Remolana and Shim 2008, a CDO is a securitisation where the risk of a credit portfolio is transformed into tranches of varying risks by means of a subordination structure. CDOs can be further classified into cash and synthetic CDOs. In a cash CDO, the manager assembles a collateral pool of debt, transfers it to a special purpose vehicle (SPV) and uses the cash flow from the collateral to pay principal and interest to investors in the CDO. In a synthetic CDO, the manager assembles CDS contracts rather than actual debt. Compared to a cash CDO, a synthetic CDO has the advantage that the manager can quickly assemble a sufficient number of names by going to one or two CDS dealers.
- 5 S.G Ryan 2008, 'Accounting for and in the sub prime crisis', Stern School of Business Working Papers series.
- 6 C. Bono 2008, 'The financial turmoil of 2007-?: a preliminary assessment and some policy considerations', BIS Working Papers, no. 251.
- 7 M.R. Young 2008, 'Fair value accounting and subprime'.
- 8 AASB 139 recognises that all financial assets and liabilities, including derivatives and embedded derivatives, are to be recognised on balance sheet, either at fair value or at amortised cost depending on the specific rules. Movements in fair value are recognised through profit and loss for trading items, or equity for available for sale items. All derivatives and embedded derivatives are deemed held for trading and therefore at fair value through profit and loss, subject to detailed hedge accounting rules.
- 9 IAS 39 Financial instruments: recognition and measurement.
- 10 D. O'Regan 2004, *Auditor's dictionary*, Hoboken, John Wiley & Sons, NJ.
- 11 Ernst & Young 2008, 'Reducing complexity in reporting financial instruments'.



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