

DEBT MANAGEMENT IN A LOW DEBT ENVIRONMENT: THE AUSTRALIAN GOVERNMENT'S DEBT MANAGEMENT FRAMEWORK

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ABSTRACT

The Australian Government's very low level of government debt sets the context for Australia's debt management policy. Australia's debt management policy seeks to achieve two objectives: supporting financial market efficiency; and achieving an appropriate balance of cost and risk for the Government. To achieve these two objectives the Government uses two instruments: physical bond issuance and financial derivatives (primarily interest rate swaps). Use of these two instruments allows the two targets to be independently managed. Financial market efficiency requires the issuance of sufficient Treasury bonds to support the Treasury bond futures market. Given this profile of physical issuance, the Government enters into interest rate swaps to achieve an appropriate balance between costs and risks. Given the low level of debt in Australia, particular attention is given to catering for short-term cash management trends and the specific issues raised by indexed debt.

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1. INTRODUCTION

In recent years, debt management in Australia has been conducted within a Government policy of reducing Australian government net debt. Australian Government general government net debt fell from almost 20 per cent of GDP to less than three per cent of GDP between 1996 and 2004. Over the same period, Treasury bonds on issue have fallen from 15 per cent of GDP to six per cent of GDP.

This significant reduction in debt outstanding has led to examination of the Australian Government debt portfolio from two perspectives: its place in the broader financial markets, and the most appropriate approach to managing the debt from the Government's own financing perspective.

As a result of the reduction in net debt, and concerns raised by key financial market stakeholders, the Australian Government undertook a Review of the Commonwealth Government Securities (CGS) market in 2002. This Review set out to determine whether there was a case, on financial market efficiency grounds or other policy objectives, for the Government to continue to issue debt despite the strong fiscal position.

The Review concluded that closing the CGS market would lead to slightly higher interest rates, given the current state of development of Australian financial markets. This would result primarily from the higher costs associated with managing interest rate risk without a Treasury bond futures market. Further, the Australian financial markets may become less diversified and more vulnerable during periods of instability

if the CGS market were eliminated. Accordingly, the Government announced in the 2003 Budget that it would maintain sufficient CGS on issue to support the Treasury bond futures market.

The outcome of the Review means that the debt issuance program is now tightly targeted at maintaining liquid and efficient CGS and Treasury bond futures markets. Issuance of a long dated bond every second year will continue to support the 10-year futures contract. A new mid curve bond will be required in the years that a new long bond is not being issued, in order to provide better coverage of the short end of the yield curve. In total around \$5 billion of Treasury bond issuance will occur each year.

The outcome of the CGS Review has provided a clear, well-defined and transparent framework for issuance of physical debt. This physical issuance is primarily directed to achieving the financial market efficiency objective of debt management. Accordingly, there is limited scope to alter physical bond issuance to achieve desirable cost and risk characteristics for the Government.

In addition to raising issues about the ongoing operation of the CGS market, the reduction in net debt also raised issues relating to the operation of the portfolio benchmark. As the gross debt portfolio has reduced in size, the within year financing flows have become a greater proportion of the total portfolio, causing greater volatility in the duration of the portfolio. In addition, indexed debt has become a proportionally larger part of the portfolio as gross nominal debt has fallen, increasing the importance of examining the way indexed debt is treated in the portfolio. These issues meant that it was becoming increasingly difficult to manage to the portfolio benchmark in a clear and transparent manner without unduly impacting on the financial markets.

As a result of these issues, a review of the portfolio benchmark for the management of the Australian Government debt portfolio was undertaken by the Australian Office of Financial Management (AOFM)² and a new benchmark was adopted. In keeping with

2 See Appendix I for a description of the institutional arrangements for Australian Government debt management.

the approach undertaken in recent years, the new benchmark uses interest rate swaps, rather than the debt issuance program to modify the duration of the portfolio.

The portfolio benchmark represents a trade-off between risk and cost minimisation. The benchmark entails lowering the duration of the portfolio below what it would be in the absence of interest rate swaps in order to reduce expected debt servicing costs. This reduced cost is achieved at the risk of slightly higher potential volatility in interest costs. However, reducing portfolio duration also serves to reduce the volatility of the market value of outstanding debt, an important point given that a budget aggregate regularly referred to is net debt.

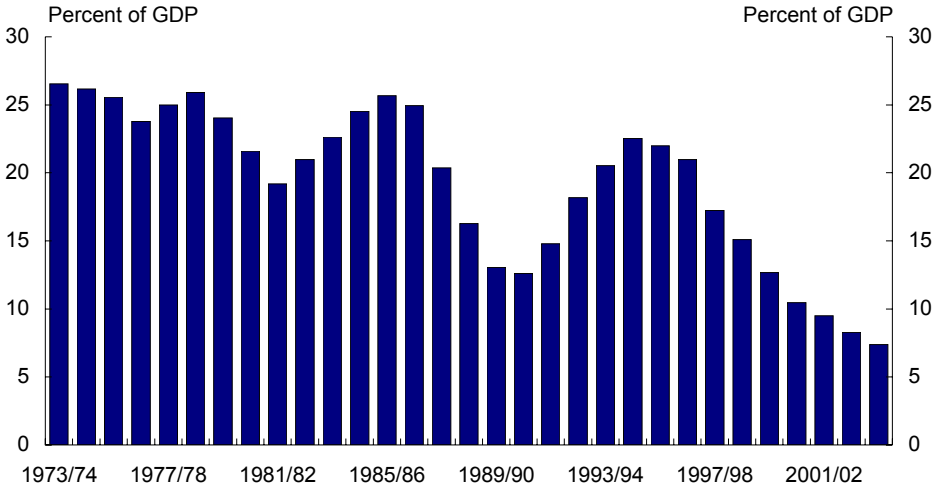
The new benchmark has two major aspects. First, four changes have been made to ensure that more appropriate measures of cost and risk are used to define the benchmark and that the link between these measures and the actual level of management discretion for the AOFM is more clearly stated. Second, having clarified these measurement and governance issues, the benchmark parameters have been reviewed to ensure that they represent an appropriate balance between cost and risk.

This paper provides the necessary background to understand the current approach to debt issuance and portfolio management. The paper is organized as follows. Section 2 provides background on the evolution of debt levels in Australia and the process of the CGS Review. Section 3 examines in more detail the reasons for the decision to maintain the CGS market. Section 4 discusses the size of the CGS market. Section 5 outlines how the CGS Review outcome affected the Australian Government's approach to debt issuance, given the prospect of continued fiscal surpluses. Section 6 explains the new benchmark for portfolio management given the low debt environment and the constraints imposed by directing debt issuance to meet financial market efficiency objectives. Section 7 provides some concluding remarks.

2. BACKGROUND

The Australian Government has, in recent history, had relatively low levels of debt by international standards. CGS on issue amounted to about 30 per cent of GDP in the late 1960s and has been below that proportion since. Since then, the peak debt on issue has been just over 25 per cent of GDP (Chart 1).

Chart 1: CGS on issue as a proportion of GDP



Source: Reserve Bank of Australia Bulletin Database, Australian Bureau of Statistics Cat. No 5206, and Australian Office of Financial Management.

Australian Government debt management operations have traditionally been focused on lowering debt servicing costs through establishing the appropriate market infrastructure and maintaining relationships with the market for CGS. In the late 1980's, debt management moved towards a benchmark approach aimed at reducing the cost of the debt portfolio subject to an acceptable degree of risk. This approach involved specifying a duration target for the debt portfolio and included a proportion of foreign currency exposure. When this approach was first adopted the Australian Government used the profile of its physical debt issuance program to meet the duration target. While direct borrowing in foreign currencies was used in the 1980's to

achieve a proportion of foreign currency exposure, the use of cross currency swaps became the preferred means to achieve this from 1988.³

It was not until 1997 that the AOFM introduced the use of domestic interest rate swaps to alter the duration of the portfolio. New debt issuance was targeted at the long end of the yield curve in order to maintain an even, liquid CGS yield curve.

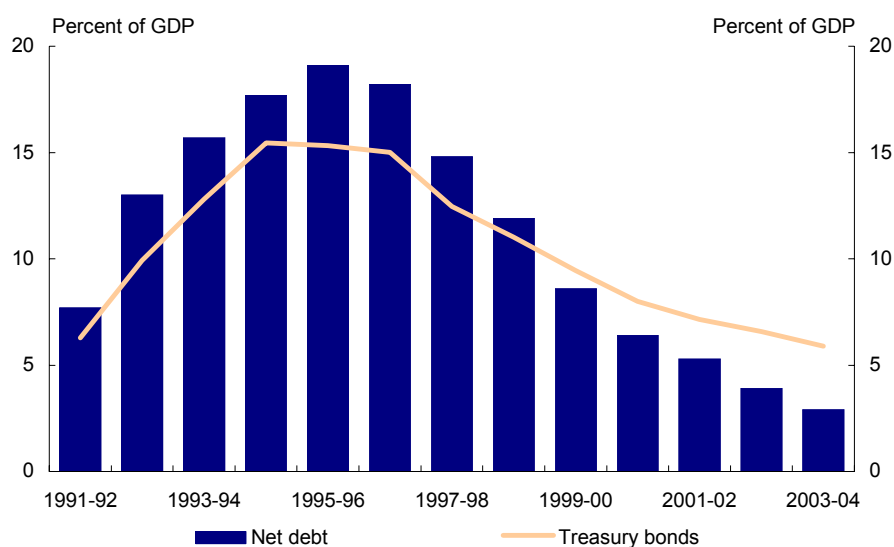
Since 1996, net debt has fallen from a peak of 19.1 percent of GDP, or around \$96 billion in 1995-96, to 2.9 percent of GDP or around \$23 billion in 2003-04.

This reduction in net debt has been achieved by a combination of budget surpluses within the Government's fiscal strategy of maintaining budget balance, on average, over the course of the economic cycle and by applying the proceeds of asset sales to debt reduction.

Reductions in gross debt outstanding have accompanied the decline in net debt. This is reflected principally in declining CGS on issue. In particular, Treasury bonds on issue have fallen from around 15 per cent of GDP in 1995-96 to less than six per cent of GDP in 2003-04 (Chart 2).

3 The policy of maintaining a proportion of the debt portfolio in foreign currency was terminated in September 2001 and the foreign currency exposure was eliminated between that time and March 2004.

Chart 2: Australian Government general government net debt and Treasury bonds on issue ^(a)



(a) Treasury bonds on issue are net of the Commonwealth's own holdings and debt on issue for the States and Territories.

Source: ABS Cat No. 5206, Australian Government Final Budget Outcome 2003-04, Australian Office of Financial Management and Australian Treasury.

Up until the 2003-04 Budget, the reduction in net debt was managed in accordance with the general objective of maintaining a viable CGS market. That is, debt issuance had been targeted at the long end of the yield curve and transactions were undertaken to reduce outstandings in non-benchmark lines.

Notwithstanding this general approach, the reduction in CGS on issue raised questions among some market participants about the future viability of the CGS market. The Government acknowledged these concerns in the 2002-03 Budget and undertook to examine the issue in consultation with key stakeholders (Commonwealth of Australia, 2002a).

The Government initiated a public review on the future of the CGS market, releasing a discussion paper in October 2002 (Commonwealth of Australia, 2002b) and inviting written submissions from interested stakeholders. The Review was conducted by the Debt Management Review Team within the Australian Treasury and involved an extensive and broad-based consultation process. During the Review, a wide range of stakeholders lodged over 40 written submissions and over 120 consultation meetings were held involving more than 90 domestic and international market participants and

organisations. In addition, a reference committee, comprising representatives of key industry associations and an academic, met on a number of occasions to discuss a range of technical issues.⁴

4 The Reference Committee comprised representatives of the Australian Financial Markets Association, the Australian Shareholders Association, the Investment and Financial Services Association, the Investment Banks and Securities Association, the Australian Bankers Association, and Professor Ian Harper of the Melbourne Business School. The Committee was chaired by the General Manager of the Debt Management Review Team.

3. RATIONALE FOR RETAINING THE CGS MARKET

The discussion paper published as part of the Review (Commonwealth of Australia, 2002b) outlined possible roles that the CGS market plays and sought feedback from stakeholders to determine the importance of each role and the capacity for other markets or instruments to perform similar roles in the absence of a CGS market. The objective was to determine whether any roles alone or collectively were significant enough to warrant a decision to maintain the CGS market.

This task was made more difficult given the lack of empirical evidence of well developed financial markets operating in the absence of a government debt market. Accordingly, the Review, and the discussion paper, attempted to analyse the role that CGS plays in Australian financial markets with a view to understanding whether other products could substitute for CGS and deliver similarly beneficial effects.

The following sections describe some of these roles and the assessments of them that emerged from the Review process. Before proceeding, it is useful to point out a few key features of government debt markets that underpin these roles before discussing them in more detail.

3.1 Key features of government debt markets

Markets in which government debt securities are traded have distinctive elements that commentators have argued are important for developing sophisticated and well-functioning financial markets.

Government debt securities usually offer minimal credit risk, high levels of liquidity, a broad range of maturities and well-developed market infrastructure, including active derivative markets (International Monetary Fund, 2001).

3.1.1 Minimal credit risk

Credit risk refers to the possibility that the issuer of a debt security, the Australian Government in the case of CGS, will default on its obligations to repay borrowed funds.

The credit standing of an issuer and the degree of credit risk associated with its debt securities is reflected in the price and yield of the security. Investors require an additional margin in the yield of the security to compensate them for bearing the risk of default. This margin increases as the perceived riskiness of a borrower rises.

The credit risk of a government of a well-developed economy, such as Australia, is generally considered to be small as such countries have the economic and political stability that enables their governments to increase taxation if necessary to meet debt-servicing obligations. Therefore, the margin for credit risk is likely to be small. Indeed, government debt is often referred to as a proxy for a 'risk-free' asset.

3.1.2 High levels of liquidity

Government debt securities are usually issued into a limited number of maturities (or benchmark lines). For example, as at 30 June 2004 the Australian Government had nine benchmark Treasury bonds with an average of around \$5 billion on issue in each line.⁵ The concentration of issuance into a limited number of benchmark lines promotes market liquidity.

3.1.3 Broad range of maturities

Benchmark lines of government debt securities are usually spread over a wide range of maturities. The Australian Government's nine benchmark lines are distributed reasonably evenly from less than one year to 13 years to maturity.

From the issuer's perspective, this approach reduces refinancing risk and avoids potentially exhausting demand for a particular point on the yield curve.

5 The February 2017 line had only \$800 million on issue as at 30 June 2004, but is considered a benchmark because of the Government's commitment to build the line to \$5 billion.

From the market's perspective, the existence of benchmark lines of government debt securities across a range of maturities provides a source of information on yields at these different maturities (that is, it provides a yield curve).

3.1.4 Well developed market infrastructure

Government debt markets have contributed to developing key elements of financial markets, including mechanisms and processes that also are important for the operation of other sectors of the financial markets.

The types of supporting market infrastructures that the presence of a government debt market may contribute to include:

- skilled workforce in the debt market providing price discovery in securities necessary to promote a liquid market;
- legal and accounting arrangements to govern the issuance, trading and settlement of debt securities that provide certainty in issues such as ownership and payment of debt obligations;
- administrative structures for the clearing, registration of ownership and settlement of debt securities; and
- establishment and development of derivative markets (such as government debt futures markets and repurchase markets) associated with debt securities.

Sections 3.2 to 3.7 identify several propositions raised in support of the maintenance of a CGS market and the importance of those propositions in the decision to maintain the CGS market.⁶

⁶ The Government's decision was announced in the 2003-04 Budget, Statement 7: Budget Funding (Commonwealth of Australia, 2003).

3.2 Interest rate risk management

The CGS market plays an important role in managing interest rate risk (that is, the risks associated with adverse movements in interest rates). This capacity to manage interest rate risk contributes to a lower cost of capital in Australia.

Two examples related to both non-intermediated and intermediated debt illustrate this point in the Australian market. First, for non-intermediated debt, investors may accept a lower yield from a corporate bond if they can hedge the interest rate risk associated with holding this bond. Second, for intermediated debt, the ability of financial institutions to manage interest rate risks associated with their balance sheets also may contribute to lower costs for consumers on a range of products (including retail loans).

In particular, financial institutions may have a mismatch between the term of their borrowing and lending portfolios. For example, banks fund themselves with a mixture of retail deposits (essentially floating rate liabilities) and bond issuance (often fixed rate liabilities). On the other side of the balance sheet some assets are essentially floating rate (for example, the vast majority of home loans in Australia) while some are fixed rate (for example, fixed rate mortgages or corporate loans). Although the magnitude of the mismatch may change over time, in the absence of hedging facilities, any mismatch would lead to the financial institution charging a premium for accepting the interest rate risk.

The intermediated debt channel is perhaps the most important element in the current Australian financial market given the relatively small, but expanding, corporate debt market. Should the corporate bond market continue to grow, then the non-intermediated channel will grow in relative significance.

Changes that increase the difficulty of managing interest rate risk could, therefore, lead to an increase in the cost of capital. The magnitude of any increase would depend on the extent of the increased cost of new hedging arrangements. Therefore, a key question is the likely difference in hedging costs between current arrangements and a market without government securities.

In considering the likely impact of the removal of CGS, it is useful to compare three possible market structures. The first market structure is the current situation. The second structure could be considered the 'benign non-CGS' structure. The third could be considered the 'non-benign non-CGS' structure.

3.2.1 Current situation

Financial market participants in Australia currently use two main markets to manage their interest rate risk: the Treasury bond futures market (an exchange-traded market operated by the Sydney Futures Exchange (SFE)) and the interest rate swap market (an over the counter (OTC) market). The Treasury bond futures market is the primary vehicle for managing outright interest rate risk, reflecting its high liquidity, low transaction costs and accessibility to a wide range of participants. Two main contracts, the 3-year Treasury bond futures contract and the 10-year Treasury bond futures contract, are used by market participants to manage risks of different durations.

The interest rate swap market generally is limited to large financial institutions (particularly banks) and is used to establish customised arrangements for interest rate risk management. Interest rate swaps can be specifically tailored to meet the requirements of the participant, whereas Treasury bond futures contracts have standardised parameters. Interest rate swaps also may be more effective in managing the interest rate risk associated with instruments that incorporate credit risk, as the yield on swaps also includes an element of credit risk.

Interest rate swaps generally are a more expensive hedging instrument than Treasury bond futures. A number of factors currently contribute to the higher cost of interest rate swaps including a lower level of market liquidity, less transparent pricing of the OTC market relative to Treasury bond futures (which are exchange traded), and the concentrated nature of the swap market. The cost of using interest rate swaps often is higher due to administration costs and the need to actively monitor and manage the risks associated with these instruments, including operational risk and counterparty credit risk.

The current situation is best thought of as the simultaneous interaction of at least three markets: the physical Treasury bond market; the Treasury bond futures market; and the interest rate swap market. All three markets are very liquid with the liquidity in each market contributing to liquidity in the other markets. For example, participants in the physical bond market are more prepared to take positions as they are able to hedge their exposure in the futures market. Participants that would have used an outright position in CGS to hedge a position can do so by using the Treasury bond futures market. This potentially makes the CGS market more liquid than is indicated just by the outstandings in the market.

In addition, the ability of participants to arbitrage the physical and futures markets reduces the likelihood of pricing irregularities in the physical market. In practice the existence of the highly liquid futures market (based on a basket of bonds) allows liquidity to be achieved in the physical market with a lower volume of bonds in each line than would otherwise be the case. This is because an individual seeking to manipulate the futures price would need to effectively manipulate prices based on a pool of bonds three times larger than that of any single line.

Further, the highly liquid futures market allows the swap market to be more liquid than it otherwise would be as swap traders can more readily execute transactions knowing that they can quickly, and at low cost, hedge any outright risk associated with entering into a swap transaction. In practice, in the Australian swap market, individual traders generally hedge individual trades in the futures market, with the financial institution rebalancing its swap portfolio on a regular, though less frequent, basis.

Finally, a liquid swap market can provide an additional arbitrage discipline on the exchange-traded futures market (although in practice this channel is less important).

The liquidity in each market constrains the bid/ask spread in each of the other markets. In particular, the highly liquid futures market constrains the bid/ask spread in the physical market. Thus, although the futures market cannot exist without the physical market which sets the underlying price, it is the futures market that

contributes significantly to the efficiency of the market determining the underlying price.

A key factor that contributes to the role of the futures market is the very broad participation in the Australian futures market – in particular, by foreign organisations. This broad participation by diverse players with differing underlying positions contributes to the liquidity of the market.⁷ In contrast, the interest rate swap market can often be influenced by large one-off deals or events that mean the market can be some-what ‘one-sided’. This is evidenced by relatively large movements in the spread between the CGS market and the swap market. The capacity of interest rate swap dealers to hedge one-way flows in the futures market reduces the price of using the swap market for those with an underlying demand to transfer their risk position.

3.2.2 Benign non-CGS outcome

There are a number of possible benign outcomes (in terms of providing appropriate risk management architecture) that could occur in the absence of CGS. It should be noted that almost no market participants consulted in Australia believed that these outcomes were likely to occur.

There is general agreement that, in the Australian situation, a benign outcome can only be achieved if a viable exchange-traded futures market is established. This reflects the fact that few people believe that an over-the-counter swap market alone would be able to transfer risk at an appropriately low cost (for more on this see below).

The most likely benign outcome would require the establishment of an exchange traded interest rate swap futures market. Under this scenario the liquidity of the interest rate swap market would be enhanced by the capacity of swap participants to

7 The SFE (2002, p 27) provides evidence of the broad participation in the futures market: ‘SFE currently estimates, based on a breakdown of participant type and other data sources, that approximately 20 per cent of contract volumes in the 3-year bond futures contract and 10 per cent in the 10 year bond futures contract are dedicated to swap hedging. Other underlying demand drivers include longer term asset hedging, overlay exposure management, portfolio curve smoothing, non expiry speculation (including day trading) and the use of contracts as a capital efficient proxy for physical bonds, among other reasons’.

hedge their OTC positions. If such a market were established, and were to become highly liquid, then the interest rate swap and swap futures market could reinforce each other in the same way as the three current markets do.

For the interest rate swap futures market to become highly liquid, it is likely that international market participants would need to be willing and active participants in the market. Increased international participation is likely to increase the diversity of motivations for participation within the market, in turn enhancing the likelihood of a 'two-way' market.

The SFE launched an interest rate swap futures contract in December 2002. To date the contract is not highly traded. In the first full year of trading (2003), the total volume of 3-year interest rate swap futures contracts traded was 401, compared to 19 million 3-year bond futures contracts. Over the same period, the total volume of 10-year interest rate swap futures contracts traded was 200, compared to 6.7 million 10-year bond futures contracts (Sydney Futures Exchange, 2004). It should be noted that it is difficult to assess the viability of the swap futures contracts in isolation while the established Treasury bond futures contracts are still operating.

It is useful to make one final point about an outcome based on an interest rate swap futures market. The swap market is essentially a bank market (the floating rate for interest rate swaps is the Bank Bill Swap Reference Rate) with rates providing a proxy for bank risk. Without CGS, the concentration of financial market activity in the banking sector is likely to increase. Given the soundness of the Australian banking system, this may be of little consequence. However, in times of major economic and financial instability, it could add to the risk in the financial system. Although major shocks are rare, experience suggests the consequences can be more severe in less diversified financial systems.

A second possible benign scenario would see the establishment of a futures contract based on a basket of Australian semi-government bonds. Establishing such a contract faces some technical difficulties given the heterogeneous nature of semi-government issuance. That said, there have been some discussions between the semi-government

issuers about bringing greater uniformity to their issuance programme. Again, if the futures market was established it would enhance the liquidity of the underlying physical markets. The SFE unsuccessfully attempted to launch such a contract in the early 1990s.

A final possibility is that a futures market could be established based on a corporate bond index. This possibility would rely on a sufficiently large and liquid corporate bond market. Such an index would mirror equity indexes that are currently in widespread use, including in Australia.

3.2.3 Non-benign outcome

The non-benign outcome is that no exchange traded market comes into existence. Some market participants claimed that the swap market would cease to function. A more likely outcome is that the swap market would continue to function, but with wider bid/ask spreads as traders would be unable to hedge their risk in an efficient manner. Participants in the swap market would be required to assume both outright and basis risk when entering into a swap contract.⁸ Unless international participants were prepared to extensively trade in the swap market there may be considerable difficulty in establishing prices.

The implications of this outcome are that the cost of managing interest rate risk would be higher. For investors, this means potentially requiring higher yields to compensate for the increased risk retention. For issuers, this means potentially having to pay higher yields to meet their financing requirements (or potentially moving to offshore markets where risk can be hedged more cheaply). For banks, the increased cost of managing their balance sheets would likely be passed on to consumers in terms on retail and commercial lending. Thus, interest rate spreads throughout the economy would rise.

⁸ Outright risk is the general risk of changes in interest rates. Basis risk is the risk that offsetting investments in a hedging strategy will not be correctly matched.

3.2.4 Transition between market structures

The current market situation appears to represent a stable equilibrium. It is also possible that the other two potential structures may be stable if they are actually reached. In particular the benign outcome could be stable if sufficient liquidity were established in the relevant exchange traded futures market. However, it is not clear that the benign equilibrium would be reached. The key issue is the likely transition path given that liquidity requires market participants to have confidence in the market (National Australia Bank, 2002). This can be thought of as a self-reinforcing cycle – liquidity breeds confidence, confidence breeds liquidity.

In the Australian case the most likely market to form would be the interest rate swap futures market. For the market to form at least two conditions must be met. First, market participants must have confidence that the underlying price (some basket of OTC swap contracts) cannot be manipulated in a way that places them at risk of significant loss. Second, sufficient liquidity needs to be established so that participants own actions do not unduly affect the futures price.

Two factors related to the role of the major Australian banks may inhibit the establishment of an interest rate futures contract. First, the interest rate swap futures contract is only likely to become liquid if the major Australian banks were to participate actively in the market given their overall size and their underlying demand for risk management arising from the composition of their large balance sheets. Many market participants pointed out that the major banks had a weak incentive to participate as the exchange traded futures would act as direct competition for OTC interest rate swaps, a market in which the major banks have a very large share. For example, the SFE (2002, p 27) stated that ‘...it is not in the narrow interests of bank shareholders to see swap price discovery migrate from the OTC derivatives market to the exchange traded derivatives market’. Second, for the market to become liquid, other players must have confidence in the robustness of the underlying price. The major banks have a substantial share of the interest rate swap market and as such other participants may be concerned that they could manipulate the price, particularly in the early stages of the market when turnover is likely to be lower. Concern about

manipulation may keep volumes low, in turn increasing concern about the ease of manipulation.

3.2.5 Conclusion

The Review concluded that the costs associated with interest rate swaps could increase if the CGS market were closed. The interest rate swap market heavily depends on the Treasury bond futures market, as participants in the swap market extensively use Treasury bond futures to hedge interest rate exposures associated with providing swaps. Without Treasury bond futures, swap market participants would likely require a higher premium as compensation for taking significant additional risk on their balance sheet.

3.3 Providing a safe haven in times of financial instability

During periods of financial instability, investors often sell out of risky assets and seek safe assets to avoid the potential of a capital loss on their investment. Traditionally, investors have sought out government bonds in times of financial instability, but they do also seek other safe financial assets. An example of flight to quality was the change in relative yields on low risk corporate, high risk corporate and government bonds following 11 September 2001. The spreads between corporate bond yields and equivalent maturity Treasury bonds rose immediately after the terrorist attacks. However, the spread widened most for lower credit rated corporate bonds and least for the highest rated bonds as investors sold relatively risky assets and purchased relatively safe assets.

In Australia, events such as the 1997-98 Asian financial crisis have had a greater impact on the Australian corporate bond spread.

While a government debt market exists, it is likely to be used as a domestic safe haven. If no alternative safe haven assets exist, then financial instability may lead to capital flight. This may push down the exchange rate and further disturb unsettled financial markets. The International Monetary Fund has identified this safe haven role as a key

uncertainty in assessing the need for a government debt market (International Monetary Fund, 2001).

The importance of government bonds as a safe investment during periods of financial instability may vary depending on the circumstances of the shock.

At one extreme, a small shock resulting from the collapse of a single large corporation, might lead some investors to seek safe havens in government bonds or other highly rated issuers. In this case, any highly rated bonds could provide the safe haven, and some large, low risk equities also may suffice. At the other extreme, a severe financial crisis, such as a systemic banking crisis, the presence of a government bond market may not make a substantive difference.

A range of cases occur between these extremes. In the intermediate case of a relatively large, financial system-wide disturbance, the presence of very low risk government securities may be beneficial.

There may be alternatives to government bonds as a safe haven during periods of financial instability. Investors can hold alternative investments such as AAA/Aaa rated corporate bonds, mortgage-backed securities, or cash at commercial banks during financial distress. However, the key problem with relying on private credit instruments is the potential for rapid changes in credit worthiness affecting the security of the asset. For example, investors may hold highly rated corporate bonds as a safe investment, only to learn that their investments are downgraded due to the effects of financial instability on the company's operations.

Cash could involve lower returns than alternative investments, but depending on the rate of inflation, could provide a suitable low risk substitute for CGS. Australia's sound prudential regulation of the banking sector ensures investors are likely to view bank assets as relatively low risk.

Of course, sound financial system regulation and supervision can also assist with identifying and preventing instability. A key issue in an episode of financial instability is liquidity – that is, the ability to convert assets to cash or another safe asset when

required. The Reserve Bank of Australia (RBA) can provide emergency liquidity to the financial system by making funds available to the market as a whole through its open market operations. The RBA also can lend directly to an institution (governed under the *Corporations Act 2001*) in cases of liquidity difficulties, if the failure of the institution to make its payments could seriously affect the financial system. This would help calm unsettled markets, and therefore reduce the need for investors to seek safer assets.

In an example of this, central banks around the world acted after the September 11 terrorist attacks to boost liquidity in their financial systems to ensure markets did not experience systemic failures resulting from disruptions in payment and settlement systems or the increased risk aversion (Reserve Bank of Australia, 2001).

Overall, the CGS market is likely to be used as a safe haven during periods of instability whenever it exists, despite the proposition that the benefits of this role may vary according to the scale of the event.

3.4 Investment vehicles

An argument presented in the Review of the CGS market was that the Government should continue to supply CGS in order to provide investors who require a low risk, low return fixed interest investment option. Investors such as superannuation funds find CGS provide a long-dated financial asset that can assist portfolio management by closely matching long-dated liabilities. Low-risk long-dated securities also provide investors with greater diversification options.

Historically, the CGS market has been the principal source of long-dated financial assets in Australia. The absence of CGS may limit long-dated investment options and complicate portfolio management. Several submissions to the Review supported this argument by drawing on analysis (Bomfin, 2001) using portfolio theory to determine the potential welfare impact on investors from the reduction in investment options if government bonds were to be eliminated from the market.

The extent of this potential problem depends on the importance of CGS as a long-term investment for investors, such as superannuation funds. The estimates suggest that

pension funds (superannuation funds) holdings of CGS have averaged around 18 per cent of total CGS outstanding and life insurance corporations holdings have averaged around 12 per cent of total CGS outstanding (Australian Bureau of Statistics, 2004).

The superannuation sector's holdings of CGS need to be considered in the context of the total assets the sector manages. At the end of the June quarter 2004, superannuation funds reported total assets of around \$625 billion (Australian Prudential Regulation Authority, 2004), with CGS accounting for around four per cent of these assets. The very small contribution of CGS to total assets suggests CGS may not be a crucial instrument in the investment strategy of the superannuation sector at present.

The Australian Government's decision to maintain the CGS market was not specifically targeted at meeting investor demand for risk-free financial assets. The argument that there is a market failure in investment opportunities to justify a role for government was not considered particularly convincing. However, maintaining the CGS market obviously maintains opportunities for superannuation funds and other investors to hold government bonds.

Alternative low risk investment options are available in domestic debt markets, including State government debt and highly rated supranationals. The continued development of markets for securities backed by assets such as residential and commercial mortgages (asset-backed markets) also may provide alternative investment options.

3.5 Pricing other financial products

One of the key developments in finance theory in past decades has been increased focus on pricing of risk. Common practice among financial practitioners, as well as in commonly used asset pricing models, is to break risk into component parts. Usually, this process begins with specifying a proxy for a risk free rate (that is, in state preference terminology a security that pays a given return regardless of the state of nature that eventuates). Models such as the Capital Asset Pricing Model (CAPM) and

Arbitrage Pricing Theory (APT) take the risk free rate as a base and then add components reflecting the individual characteristics of the asset. In the CAPM, the additional characteristic considered is the covariance of the asset return with the return on a portfolio of securities comprising each security weighted by its proportion of the market.

It should be noted that the risk free asset considered in these models is an asset for which there is zero variance in returns. Clearly, this is not the case with CGS or most other government bonds. When stakeholders refer to CGS as being a proxy for 'risk free' assets, they are generally referring the general lack of default risk. CGS and other government bonds are still affected by both interest rate and inflation risk, which are both risks that are absent from the 'risk-free' asset used in CAPM and APT. On this basis, it should theoretically be possible to find another asset with low return variance that could be used as a proxy for a risk free asset. There have been studies that demonstrate that fundamental asset pricing models such as the CAPM can still function without a risk free asset under certain circumstances. A well known case (Black, 1972) involves replacing the risk free asset with a portfolio constructed to be uncorrelated with the market portfolio. While the CAPM holds using this approach, it relies heavily on the assumption that there are no short sales constraints (Ross, 1977).

In more practical terms, approaches to pricing risk that break it into its component parts contribute to a better allocation of resources throughout the economy. If risk can be accurately priced, investors are better able to allocate their savings to the types of assets that most closely match their risk preferences and funds managers can allocate capital to its most efficient uses.

Financial market participants pricing private debt securities in the primary market may use the CGS yield as a starting point, and add margins for credit, liquidity and other risks. The CGS curve, in addition to being the closest domestic proxy for a 'risk-free' security, is a homogenous curve facilitating price discovery across the maturity spectrum. Several problems could arise if the pricing of debt securities is less efficient.

- If the yield on new issues of debt securities is inappropriate there may be income transfers between investors and issuers as the yield adjusts in subsequent market trading.
- Some market participants may withdraw from the segments of the market where problems with pricing debt securities are ongoing. For example, a corporate may restrict issuance to short-dated bonds if longer-dated bonds have ongoing pricing difficulties. This may mean the corporate foregoes lower cost alternatives, potentially increasing the domestic cost of capital.
- A systematic reduction in pricing efficiency may lead to misallocation of capital in the economy as some sectors face either too high or too low a cost of capital. For example, if corporate bond yields of a particular industry were systematically too low because of pricing inefficiencies, then they would borrow and invest more than would be appropriate, potentially reducing funds available for more productive investment elsewhere in the economy.

Possible alternatives for pricing debt securities in the Australian market could be based on the price of existing debt securities of organisations with similar risk characteristics or the interest rate swap curve.

Pricing could rely on a yield curve constructed from corporate bonds and debt issued by 'supranationals' (multinational public institutions such as the World Bank and the Asian Development Bank) with the same credit ratings. However, at this point, these markets do not appear to be liquid enough across the yield curve to play this role permanently.

Another alternative is to price debt securities against the price of interest rate swaps. The interest rate swap market is liquid and the interest rate swap curve currently extends to a similar maturity as the CGS yield curve. This should allow pricing at the same range of maturities.

The price investors paid for some recent issues of corporate debt securities was based on the rate for an interest rate swap at that maturity, plus an additional margin for risks such as credit risk. While some of these issuances also note the price as a margin over the CGS yield, increasingly the interest rate swap curve is used as the primary pricing benchmark.

The International Monetary Fund (International Monetary Fund, 2001), the Bank for International Settlements (Bank for International Settlements, 2001), and the Organisation for Economic Cooperation and Development (Organisation for Economic Cooperation and Development, 2002a) report that these benchmarks are commonly used overseas for pricing new issues of debt securities implying that, internationally, government securities are also becoming less important for pricing.

Overall, it seems unlikely that prices would continue for long periods of time at the 'wrong' level. For example, if an investor has paid 'too much' for a corporate bond, then this will become apparent over time. In essence the pricing argument reduces to the fact that in the absence of a clear pricing benchmark the market may find the 'wrong' price for a, possibly short, period of time. Concern by market participants that they may pay the 'wrong' price may lead to them requiring a risk premium. It seems unlikely that this risk premium would be significant.

3.6 Implementing monetary policy

As in many countries, Australian government debt has played an important role in implementing monetary policy. In Australia, the RBA announces the desired stance of monetary policy in terms of a target for the interest rate on overnight cash funds borrowed and lent between banks. This interest rate forms the base of the structure of interest rates in the economy.

The RBA's open market operations involve purchases and sales of securities to inject funds or withdraw funds from the banking system. These transactions once were carried out exclusively through outright purchases and sales of government securities, but now are conducted almost entirely through repurchase agreements. Repurchase

agreements involve the sale of a security with an agreement to repurchase it on an agreed future date at an agreed price. They expose the RBA to little market risk and are efficient because the RBA can set the maturity dates to meet expected future flows of funds.

The RBA has responded to the decline in the amount of CGS on issue by broadening the range of securities that it will accept as collateral on repurchase agreements in open market operations. The RBA will now accept:

- CGS;
- Australian dollar securities issued in Australia by central borrowing authorities of State and Territory governments (since June 1997);
- Australian dollar securities issued offshore by central borrowing authorities of State and Territory governments but traded in the Australian Austraclear System as euroentitlements (since June 2001);
- Australian dollar securities issued by a range of AAA/Aaa rated, supranational organisations (since October 2000/June 2001), foreign sovereigns and government agencies (since March 2004); and
- bills of exchange and negotiable certificates of deposit (CDs) accepted or issued by eligible banks (since March 2004). Bank bills and CDs will be eligible where the issuer has a short-term rating of P-1 or equivalent, and a long-term rating equivalent to A3 or above, by all major credit rating agencies that rate it, and in any event by at least two major credit rating agencies.⁹ Banks will not be able to offer their own bank bills or CDs to the Reserve Bank.

9 Short term rating of P1 and long term rating of A3 are Moody's ratings. The equivalent Standard and Poor's short term rating is A1 and long term rating is A. The equivalent Fitch ratings are F1 for short term and A for long term issuers.

In addition, the RBA has increased its use of foreign exchange swaps to supplement its operations in domestic securities. Foreign exchange swaps work like repurchase agreements. Australian dollars are exchanged for foreign currency rather than domestic securities. Moreover, the foreign currency can be invested in foreign debt securities. As the swap involves agreement to unwind the transaction at a future date at an agreed exchange rate, neither party to the swap is exposed to exchange rate risk. In 2003-04, foreign exchange swaps undertaken for liquidity purposes amounted to \$139 billion (Reserve Bank of Australia, 2004).

Given these developments, the effective operation of monetary policy would likely continue without CGS on issue.

3.7 Attracting foreign capital inflow

Some commentators argue that the CGS market is necessary to attract foreign capital inflow. However, the level of capital inflow is not a policy goal in itself. A more desirable policy goal is to keep the cost of capital in Australia as low as possible.

The Government's fiscal strategy is to maintain budget balance, on average, over the course of the economic cycle. Since the Government is not investing more than it is saving (and therefore not borrowing by issuing CGS), it does not directly require additional foreign capital inflow for its own purposes. Instead, private sector savings and investment decisions will determine whether additional foreign capital inflow is required.

Accordingly, the key question is whether the existence of CGS lowers the cost of other borrowing in Australia. As discussed previously, the decision to maintain the CGS market was aimed at ensuring the cost of capital remained as low as possible by facilitating efficient interest rate risk management.

However, it could be argued that foreign investors may only be prepared to invest in a country if it has a liquid sovereign debt market. That is, investors may not be prepared to invest in private financial markets if they are not underpinned by an efficient government debt market. The existence of a liquid sovereign debt market ensures the

'visibility' of the country, for example, through inclusion in international bond indices (Australian Stock Exchange, 2002). Consultations with international investors indicated that very few investors fit into this category. Many investors only invest in sovereign debt. Other investors indicated that they would reconsider their investment in other Australian markets only if the removal of the CGS market had significant undesirable consequences for the financial markets generally.

This line of thinking also contributed to calls from some market commentators to maintain the CGS market to assist with the Government's policy objective of promoting Australia as a global financial centre. Clearly, the more developed Australia's financial markets are, the more attractive it will be as a centre for financial service provision. However, Australia also boasts many other attributes that contribute to this objective – a strong, dynamic economy; world class information and communications technology; highly skilled and flexible workforce; and time zone advantages.

4. SIZE OF THE CGS MARKET

The Review Discussion paper sought stakeholders' views on the optimum size of the CGS market. Relatively few submissions were specific about an optimum size in terms of volumes outstanding, but estimates ranged from around \$30 billion (Catholic Superannuation Fund, 2002) to \$80 billion (ICAP, 2002) or more. In determining the optimal size most stakeholders that commented linked the required size of the market to either the efficient operation of the Treasury bond futures market or the needs of investors for long term investment vehicles.

As previously mentioned, the Government did not decide to maintain the CGS market primarily to maintain a long term investment vehicle. As the decision to maintain the market was based on interest rate risk management, the Review concluded that the CGS market should be maintained at a sufficient size to facilitate continued efficient trading in the Treasury bond futures market.

The Treasury bond futures contract specifications require at least three bonds in each contract basket to ensure that the price of the futures contract is not unduly affected by unusual factors affecting a single bond. In order to support both the 3-year and 10-year Treasury bond futures contracts, this requires a minimum of six bonds on issue.

Bonds with less than eighteen months to maturity were deemed to not be useful for the purposes of the 3-year futures contract as they are largely subsumed by money market dealing.

As will be discussed more fully in the next section, the Review concluded that at the long end of the yield curve, spacing of up to two years between each bond would be consistent with efficient futures contract operation. Market participants indicated that the average maturity of the bonds underlying the 10-year bond futures contract could range from 9 to 11 years. However, it was more important that the average of the bonds underlying the 3-year bond futures contract varied in a more narrow range: preferably around 2.5 to 3.5 years.

In order to minimize CGS issuance given the strong fiscal position, the Review concluded that an issuance pattern involving a new 13-year bond every second year would be consistent with efficient operation of the 10-year futures contract. This should be supplemented by issuance of an additional bond with a term to maturity of around five years in the year that a 13-year bond was not being issued. This issuance pattern would result in a market of around eight to nine lines, with two year spacing at the long end and one year spacing at the short end.

Most stakeholders were of the view that each bond line should contain around \$5 billion on issue. Combined with the requirement for three bonds per futures contract basket, this would ensure that there was limited scope for manipulation of the futures contract price. Given the issuance arrangement outlined above, this would result in an overall Treasury bond market of around \$40 to \$45 billion.

At the beginning of the Review process, many stakeholders argued that the market would need to grow over time to maintain efficiency. Estimates of the required growth rate varied from the expected growth rate of nominal GDP (to maintain the market constant as a proportion of economic activity) to the growth rate in financial assets (to maintain the market as a constant proportion of financial assets). However, over the course of the review, a general consensus emerged that mechanical growth rules were not appropriate given the uncertainty surrounding the minimum required size and the ongoing process of financial market evolution. Accordingly, the approach adopted has not been to set a mechanical growth rule, but rather to monitor the market to see whether inefficiencies are arising that may warrant additional issuance.

5. IMPLICATIONS FOR AUSTRALIAN GOVERNMENT DEBT ISSUANCE AND PORTFOLIO MANAGEMENT

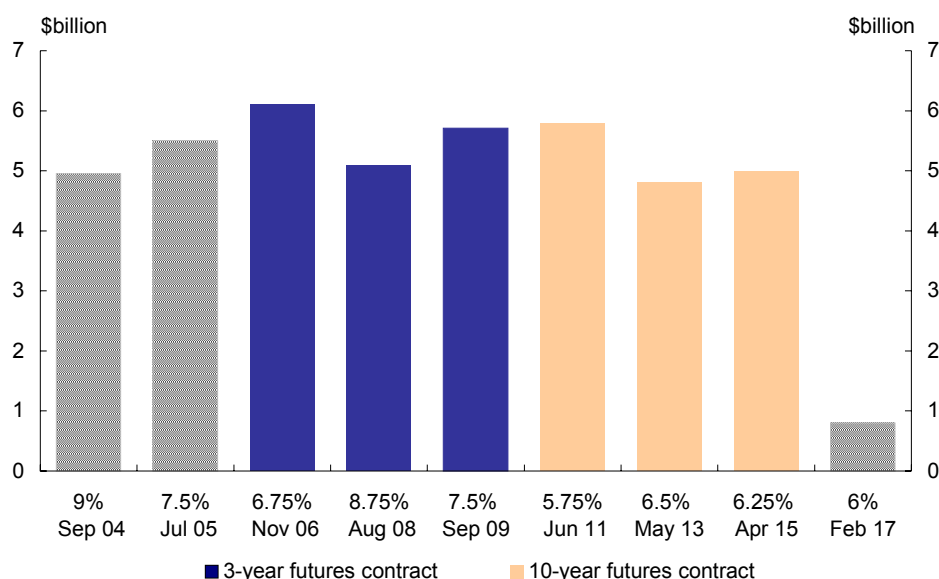
5.1 Implications for debt issuance

In the years immediately preceding the Review of the CGS market, the Government issued new debt in excess of funding requirements with the general objective of maintaining a liquid and efficient CGS market. As a result of the Review, debt issuance is now more specifically targeted to meet the objective of maintaining an efficient CGS market. Both approaches targeted a financial market efficiency objective. The new approach is clearer, better-defined and more transparent given the explicit link to the key role of the Treasury bond futures market.

CGS issuance is structured to underpin the 3-year and 10-year Treasury bond futures contracts. The Treasury bond futures contracts are supported by an underlying basket of Treasury bonds. This basket provides a price against which the futures contracts can be settled. Each basket usually is comprised of three Treasury bonds determined on the basis of their liquidity, amount outstanding and term to maturity. The 3-year futures contract requires the basket of bonds underpinning the contract to have an average remaining period to maturity of around three years. Similarly, for the 10-year futures contract, the underlying basket of bonds should provide an average remaining period to maturity of around 10 years.

Chart 3 illustrates the profile of benchmark Treasury bonds outstanding as at 30 June 2004 and highlights those bonds included in each of the futures contracts at that time.

Chart 3: Profile of benchmark Treasury bonds outstanding (30 June 2004)^(a)



(a) Treasury bonds on issue are net of Australian Government holdings. Several smaller Treasury bond lines currently on issue, including the February 2006 and October 2007 Treasury bonds, are excluded from the chart as they are not considered benchmark bond lines.

Source: Australian Office of Financial Management.

At 30 June 2004, the basket of Treasury bonds underpinning the 10-year futures contract comprised bonds maturing in June 2011, May 2013 and April 2015, providing an average term to maturity of around 10 years. This profile of around two years between maturity dates of bonds in the basket effectively supports the 10-year futures contract. The two year spacing of bonds may result in some fluctuations in the average term to maturity of the basket around the notional target of 10 years. However, given the long-dated nature of the contract, these divergences are relatively minor and should not impact on the contract's efficient operation.

Maintaining this profile of outstandings will require issuance of a new long-dated Treasury bond every two years with a term to maturity of around 13 years. The Australian Government announced that around \$5 billion will be issued into each new line of Treasury bonds over the two year period (Commonwealth of Australia, 2003).

At 30 June 2004, the basket of Treasury bonds underpinning the 3-year futures contract comprised bonds maturing in November 2006, August 2008 and September 2009, providing an average term to maturity of around three years. This profile of around

one to two years between maturity dates of bonds in the basket effectively supports the 3-year futures contract.

The efficiency of the 3-year futures contract may be undermined if the bonds in the underlying basket had intervals of two years or more. This profile would at times result in the average term to maturity of the basket being significantly higher or lower than the target of three years. Departures from the notional maturity target are more likely to significantly impact on the efficiency of the 3-year futures contract (compared to the 10-year futures contract). Therefore, given the expected issuance pattern of long-dated benchmark lines, additional issuance of Treasury bonds needs to be undertaken in the mid-section of the yield curve. This issuance will reduce the interval between the benchmark lines to around 12 months and will mean that the yield curve is more closely spaced at the short end than the long end. To achieve this, a new Treasury bond line with a term to maturity of around five years will need to be issued every two years. Issuance of around \$5 billion will be undertaken over the course of the two year period.

Charts 4 and 5 provide a stylistic illustration of the broad pattern of issuance and debt profile outstanding that will likely be required over time to support the Treasury bond futures market. The issuance pattern of commencing new benchmark lines of Treasury bonds every two years will be phased in as current benchmark lines of Treasury bonds progress down the yield curve.

Chart 4: Treasury bonds outstanding and issuance in alternate year 1

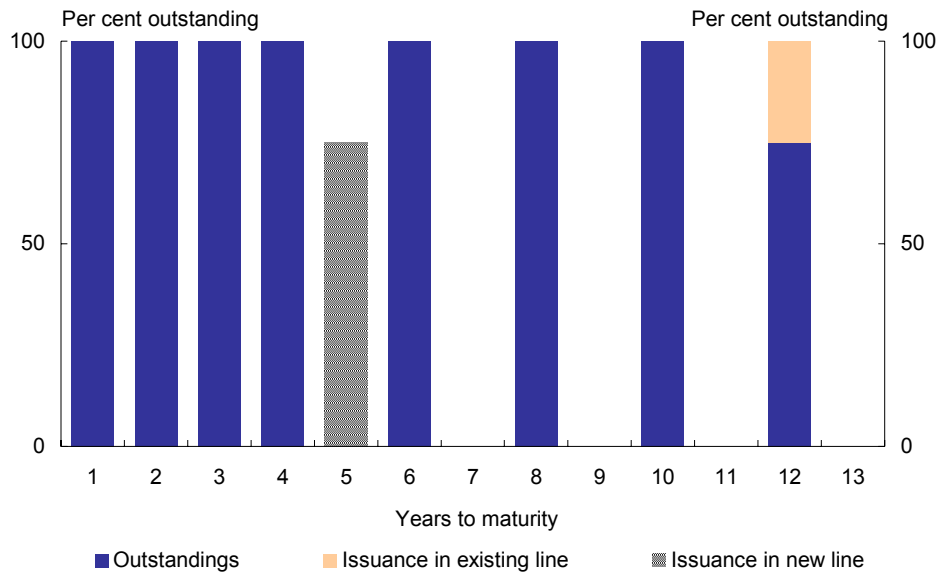
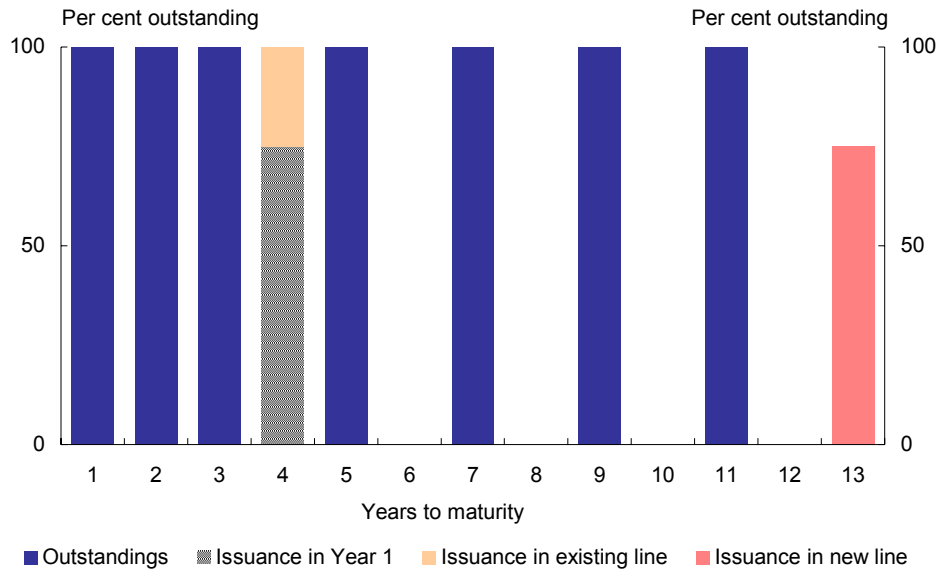


Chart 5: Treasury bonds outstanding and issuance in alternate year 2



Maintaining the CGS market to support the Treasury bond futures market will require issuance to be concentrated in Treasury bonds. On this basis, the issuance of Treasury Indexed Bonds, the only other type of long dated debt used by the Australian government in recent years, has been suspended.

5.2 Management of financial assets

Given the Government's fiscal strategy of maintaining budget balance, on average, over the course of the economic cycle, the Government's decision to maintain the CGS market will result in surplus funds that will need to be managed.

The Review considered concerns about the potential impact of government ownership of private financial assets. Key concerns were: the potential for government activities to distort financial asset prices, the impact of government ownership on the operations of the firm the government was investing in, the potential for assets to be liquidated for use in general government expenditures and the commitment of government resources to monitoring and oversight of governance structures for investment. These considerations were taken into account in determining how assets resulting from debt issuance should be managed.

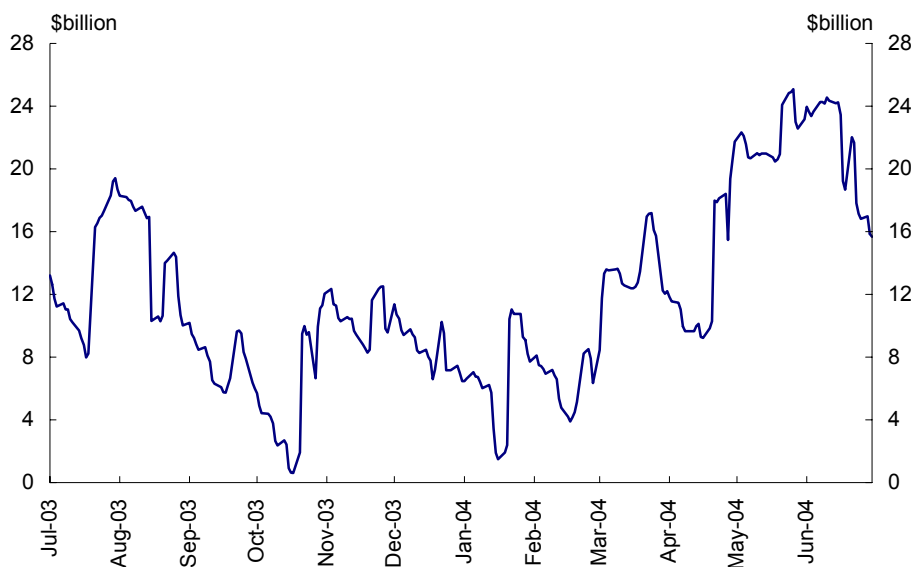
The Australian Government has held some financial assets in the form of term deposits with the RBA since December 1998. These assets resulted from the policy of maintaining liquidity in the CGS market and have been used to assist with the Australian Government's short-term funding requirement.

Short-term funding is required when the timing of the Australian Government's cash receipts do not match the pattern of its expenditures and debt repayments. Short-term funding requirements are met by a combination of running down RBA term deposits and issuing Treasury Notes (a discount instrument with less than twelve months to maturity). The latter usually have been issued where RBA term deposits were not available to meet short-term funding requirements.

The size and volatility of the short-term funding requirement is illustrated by changes in Australian Government financial asset holdings at the RBA (overnight cash and term deposits). Chart 6 shows the Australian Government's short-term funding requirement for 2003-04. In this period the net short-term asset position was initially \$13.2 billion (1 July 2003). It improved to around \$19 billion (late July 2003), fell to around \$0.5 billion (mid October 2003) before rising to a peak of \$25 billion (late May 2004),

producing a fluctuation of around \$25 billion over the year (Australian Office of Financial Management, 2004).

Chart 6: Australian Government general government financial asset holdings at the Reserve Bank of Australia less Treasury notes on issue



Source: Australian Office of Financial Management.

Following the CGS review, the Government decided to continue to hold surplus funds in the form of term deposits to meet short term funding requirements. However, the Government also announced that it would consider allocating some funds to other liabilities, including unfunded public service superannuation liabilities, should the term deposit balance reach a significant level.

In the 2004 federal election campaign the Government announced its intention to establish an asset fund, called the Future Fund, to meet the unfunded superannuation liabilities.

The unfunded superannuation liability is the largest liability of the Commonwealth Government and was valued at \$88 billion as at 30 June 2004. The Government has already taken decisions to address the growth in its unfunded superannuation liabilities. These include closing the existing Public Service Superannuation Scheme to new entrants and paying out \$4.6 billion to fully extinguish the liabilities relating to its share of the Telstra and Australia Post superannuation schemes.

The aim of the Future Fund is to meet the costs of superannuation benefits currently being incurred but not payable for some time. It will reduce the call on the Budget in future years and free up resources to meet other fiscal priorities. In addition, the Fund will aim to contribute to maximising the Government's net worth and increasing national savings.

The Government announced its intention to build assets in the Fund with the aim of fully funding the superannuation liability by 2020. Arrangements for the drawdown of assets from the fund will be set out in legislation. As it will take some time for funds to accumulate, the Government stated a disposition to impose a requirement that assets cannot be drawn from the Fund until 2020. Draw down arrangements will be decided after an analysis of both the expected long-term fiscal pressures associated with demographic change and the cash flow profiles related to the superannuation liabilities.

The Fund will be administered by a statutory authority with a well qualified board and would likely outsource funds management. The mandates given to managers would define roles and responsibilities and establish clear financial risk guidelines (particularly in relation to diversification, concentration of risk, foreign exchange exposure, liquidity, operational controls and credit limits). These arrangements should minimize any financial market or governance issues with Government financial asset management.

In advance of the establishment of the Future Fund, financial assets will continue to be held as term deposits at the RBA.

5.3 Implications for portfolio management

The nature of the new issuance program and the associated financial asset holdings raises new issues for portfolio management. Debt issuance was previously targeted at the long end of the yield curve to assist with maintaining the length and efficiency of the CGS market. Now, issuance will be targeted at both the long end and the middle of the yield curve. This change on its own would lead to a shortening of the average

duration of the portfolio. Holding an increased amount of short term deposits at the RBA would contribute to lengthening portfolio duration, by defeasing short dated liabilities.

While these issues are clearly important for portfolio management, there have been a number of other pressures in recent years driving adjustments in the approach to portfolio management. These issues and the outcomes of the review of the portfolio benchmark are discussed below.

6. PORTFOLIO MANAGEMENT

Australian Government debt management can be thought of as having two policy objectives: to contribute to promoting financial market efficiency; and to manage the portfolio at least cost to the government subject to an acceptable degree of risk.¹⁰ To achieve these two objectives the AOFM primarily has two instruments: physical issuance and the use of derivative instruments.

The outcome of the CGS Review means that the general size and tenor of bond issuance will be determined by the requirement to maintain a liquid bond futures market. As in the past, this means that the physical bond issuance program cannot be substantially modified in order to meet a particular portfolio duration benchmark. In other words, the physical bond instrument is primarily aligned to meet the objective of contributing to financial market efficiency.

Given the assignment of physical issuance to the financial market efficiency objective, the AOFM uses another instrument to manage the cost of the debt portfolio – interest rate swaps. Use of interest rate swaps allows the AOFM to manage the cost independently of the physical debt issuance program.¹¹ However, managing the cost of the portfolio involves making judgments about an acceptable degree of risk in debt servicing costs.

There are a number of potential approaches to the concept of risk for a sovereign debt manager. In the Australian context, primary consideration was given to the risk

10 These two objectives are explicitly stated in the mission statement of the AOFM: ‘The AOFM aims both to manage Commonwealth net debt at least cost over the medium-term and contribute to supporting financial market efficiency, subject to the government’s general policies and risk preferences’.

11 Conceptually the two instruments – physical issuance and interest rate swaps – are completely independent. However, in practice there is some interdependency. For example, the Government needs to take account of the depth and liquidity of the interest rate swap market. In Australia the interest rate swap market is not highly liquid beyond 12 years. Accordingly, the Government may not be able to issue, for example, 30-year bonds, and expect to be able to independently manage the duration of the portfolio. More generally, where possible the Government undertakes a physical

associated with variations in the annual debt servicing costs involved in managing the portfolio.

The shorter the average term to maturity of the portfolio, the greater the risk borne by the Government in instances where there is a parallel shift in the yield curve because there is no fixed interest rate locked in beyond the maturity date.¹² The Government is exposed to the risk that it will have to pay higher interest rates at the point of refinancing. At the same time, because the yield curve is generally upward sloping, a short average term to maturity will generally reduce the expected cost of the debt portfolio. The yield curve is generally upward sloping because investors demand a 'term premium' over and above the expected path of future short term rates for locking up their funds for an extended period. However, the term premium is not directly observable as the observed slope of the yield curve is a composite of the term premium and expectations regarding changes in interest rates.

Overall, choosing the right average term to maturity involves a balance between the lower expected costs associated with a lower average term to maturity and the higher risk associated with not having a particular interest rate locked in for a long period of time.

An added consideration is that the volatility of net debt, valued at market prices, will be reduced when modified duration is reduced.

6.1 The previous benchmark

From 1996 to 2003, the interest rate risk of the Australian dollar share of the net debt portfolio was controlled through managing the portfolio to a benchmark modified duration target range of three to three and a half per cent. As described above, this

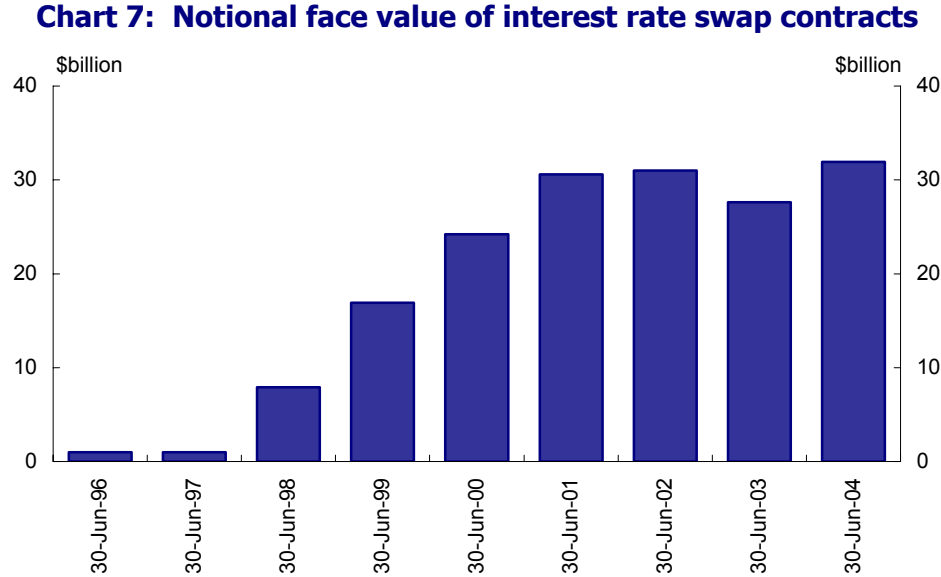
issuance program that, subject to the constraint of supporting the futures baskets, minimises the required interest rate swap program.

12 Average term to maturity, often proxied by modified duration, is a good measure of interest rate risk when considering parallel shocks to the yield curve. However, the precise detail of the maturity profile will affect debt servicing cost outcomes in the presence of non-parallel yield curve shocks.

benchmark was aimed at balancing the competing considerations of reducing the expected debt servicing cost and reducing the risk to the expected debt servicing cost in a dynamic interest rate environment.

The Treasury bond portfolio, without interest rate swaps, typically has a relatively high modified duration of between four and five per cent. The net debt portfolio modified duration is lower due to the transaction of interest rate swap contracts that effectively exchange some of the Treasury bond portfolio's fixed interest rate obligations for floating interest rate obligations with a modified duration of less than 0.5 per cent.

As at 30 June 2004, the notional face value of interest rate swap contracts outstanding stood at \$31.9 billion (Chart 7).



Source: Australian Office of Financial Management.

The AOFM first entered into interest rate swap transactions for duration management in 1997, and as at 30 June 2004, had realised a gain of \$1787 million (\$2074 million in current dollar terms).

An example of a non-parallel shock may be a short term monetary policy tightening with well anchored long-run inflationary expectations.

6.2 Reasons for reviewing the benchmark

While periodic review of significant debt management policies is normal practice, there were several considerations that led to increased pressure to review the portfolio structure and benchmark. Two major considerations resulted from the impact of a lower net debt environment.

First, at the same time as net debt was falling, the within year financing task was increasing in scale. That is, the range between peak and trough within year financing requirement has grown in recent years. The level of short term borrowing had a greater impact on the overall portfolio duration. This meant that the portfolio duration target was increasingly difficult to meet for periods within the financial year. As these fluctuations were known to be temporary, it made little sense to undertake further interest rate swaps to bring the portfolio within the benchmark range only to have to reverse them within a matter of months.

Second, as the volume of nominal debt on issue fell, the proportion of the portfolio in indexed debt rose. As will be discussed below, the portfolio benchmark did not specifically address the differences between nominal and indexed debt in terms of their response to interest rate changes. As indexed debt became a greater proportion of the portfolio these differences were becoming more important.

6.3 New interest rate benchmark

In 2002-03, the AOFM completed a review of the portfolio benchmark. This review was undertaken partly because of changes in the net debt portfolio's composition that have been driven by the reduction in net debt achieved since 1996. The findings of the review were subsequently verified by an independent consulting firm (Deloitte Touche Tohmatsu).

The new benchmark is based on the same philosophy as the old benchmark – to use interest rate swaps to shorten the duration of the net debt portfolio in order to achieve a lower average cost outcome. However, the new benchmark enhances the former approach by, among other things, taking better account of the low debt environment.

The new benchmark has two major aspects. First, four changes have been made to ensure that more appropriate measures of cost and risk are used to define the benchmark and to clearly state the link between these measures and the actual level of management discretion for the AOFM. Second, having clarified these measurement and governance issues, the new benchmark parameters were reviewed to ensure that they represent an appropriate balance between cost and risk.

6.4 Enhanced measurement and governance

The four key changes to improve measurement and governance are set out below.

First, for management purposes, the net debt portfolio was decomposed into a Long-Term Debt Portfolio and a Cash Management Portfolio. The Long-Term Debt Portfolio holds the debt required for the Australian Government's ongoing borrowing program and is quarantined from the effects of large swings driven by within-year financing needs. The impact on the overall duration of the net debt portfolio of these swings has become more pronounced as net debt has fallen.

- The Australian dollar Long-Term Debt Portfolio holds all domestic currency financial assets, liabilities and derivatives under the AOFM's management and control, except those required for cash management purposes. The new benchmark applies to this portfolio.
- The Long-Term Debt Portfolio should reflect the trend level of net debt. Transfers to ensure this outcome are made between the Long-Term Debt Portfolio and the Cash Management Portfolio, based on Budget and Mid-Year budget review information. All transfers are fully transparent, ensuring that the AOFM is not able to inappropriately use transfers to artificially meet risk targets.

- On average, the Cash Management Portfolio should therefore have neither a net asset balance, nor a net liability balance.¹³

Second, the benchmark has been defined in terms of modified duration and also short-dated exposure (a measure of the proportion of the portfolio subject to immediate repricing). A portfolio with higher short-dated exposure will generate changes in debt servicing costs sooner when interest rates change than a portfolio with lower short-dated exposure and the same modified duration. The inclusion of a target for short-dated exposure provides more information on the extent to which interest rate changes may flow through to debt servicing costs. It also ensures that the duration target is not met by generating an unacceptably large exposure to floating interest rates.

Third, the new benchmark distinguishes between nominal interest rate debt and inflation-indexed debt. This is important, as the interest rate risk for inflation-indexed debt is not the same for real rate and inflation shocks.

- Inflation-indexed debt behaves similarly to nominal fixed interest rate debt with regard to real interest rate movements.
- Inflation-indexed debt behaves similarly to floating interest rate debt with regard to inflation rate movements.

Distinguishing between the two types of debt became more important as the stock of nominal debt fell while the volume of indexed debt remained stable (thus increasing the proportion of the portfolio in indexed debt).

The new benchmark applies to the nominal component of the Long-Term Debt Portfolio but was selected by taking into account the level of indexed debt. This is because the nominal component will be the key driver of debt servicing costs going forward, partly because issuance of Treasury Indexed Bonds has been suspended. There is no intention to repurchase current Treasury Indexed Bonds, the longest of

¹³ Appendix II outlines the rules for transfers between the Long-term Debt Portfolio and the Cash Management Portfolio (Australian Office of Financial Management, 2003).

which matures in 2020. While the compliance regime is based on the nominal component of the portfolio, the modified duration and short-dated exposure of the overall Long-Term Debt Portfolio are also reported under both treatments of inflation-indexed debt.

Fourth, the governance framework applying to the benchmark has been enhanced by clarifying the nature of the benchmark limits. Two types of limits around the benchmark parameters set out the level of discretion that can be exercised by the AOFM and by the Secretary to the Treasury. The Treasurer has approved Policy Interest Rate Limits around the benchmark parameters. The AOFM needs to seek approval from the Treasurer to breach these limits. The AOFM operates within narrower Operational Interest Rate Limits. The AOFM needs to seek approval from the Secretary to the Treasury if it wishes to breach or vary these Operational Interest Rate Limits.

6.5 New benchmark parameters

The modified duration and short-dated exposure levels for the nominal component of the Australian dollar Long-Term Debt Portfolio are the key risk parameters. The new benchmark parameters and associated limits approved by the Treasurer are outlined in Table 1. These will be reviewed periodically.

Table 1: Australian dollar Long-Term Debt Portfolio benchmark parameters and limits

	Nominal portfolio
Modified duration	2.00%
<i>Operational interest rate limit</i>	1.75% - 2.25%
<i>Policy interest rate limit</i>	1.5% - 2.5%
Short-dated exposure	35%
<i>Operational interest rate limit</i>	30% - 40%
<i>Policy interest rate limit</i>	27% - 43%

The previous benchmark’s modified duration target range of three to three and a half per cent was inclusive of the impact of Treasury Indexed Bonds, where these were treated as being equivalent to Treasury bonds. Based upon the current mix of

inflation-linked and nominal debt within the net debt portfolio, the new benchmark's modified duration target of two per cent for the nominal component equates to a modified duration target of 2.9 per cent when Treasury Indexed Bonds are included in the traditional manner. Therefore, the reduction in the modified duration target has been relatively minor.

At the time the new benchmark was introduced, the Australian dollar Long-Term Debt Portfolio had a higher modified duration and also a higher short-dated exposure than the new benchmark levels. A lower modified duration would reduce the expected debt servicing cost. A lower short-dated exposure would reduce short-term risk to debt servicing cost in the event of higher interest rates, but at the expense of an increase in expected debt servicing cost. Overall, compared with the current net debt portfolio, the new benchmark should result in broadly the same expected debt servicing cost but reduced exposure to short-term interest rate increases (Section 6.8 outlines the types of transactions that will be required to move towards the new benchmark).

The benchmark parameters were determined by modelling a range of potential portfolios and comparing them to a 'standard' portfolio (which approximated the portfolio that will arise under the new Treasury bond issuance arrangements). A series of shocks (including non-parallel yield curve shocks) were applied to these and the expected cost outcomes compared to the standard portfolio under the same shocks. This analysis considered both the impact of these shocks on short term as well as the long term cost of the portfolio. The parameters set out above were chosen on the basis that they provided an acceptable trade-off between short term volatility in debt servicing costs and potential long term cost savings.

An additional consideration in the determination of the benchmark parameters was to minimise the expected size of the swap portfolio required to meet the benchmark. This consideration was driven by concerns over an adverse market movement that compressed bond/swap spreads in the long end of the yield curve. In addition, a lower stock of swaps would reduce governance concerns over counterparty credit risk and operational risk management.

6.6 Term premium assumption

The key assumption underlying the benchmark is that there is a positive term premium in market interest rates. Analysis was undertaken on the implications of a range of different term premia. A positive term premium implies it will generally be more cost effective for the Government to have a debt portfolio that has a shorter average term to maturity. A benchmark based on this assumption will reduce the cost of debt when averaged over a period of years. The higher the assumed term premium, the stronger is this conclusion.

However, in the event of a general increase in interest rates, the debt servicing cost of a portfolio with a shorter average maturity will increase more quickly than those of a portfolio with longer average maturity. This should be set against the savings expected to be achieved over the longer term from the term premium effect.

Clearly, from time to time, there may be circumstances where short term rates equal or exceed long term rates (that is, the yield curve becomes flat or inverted). The key issue is whether this circumstance is expected to continue for an extended period. Experience suggests that a flat or inverted yield curve usually indicates that increased short term rates are not expected to be sustained. In these circumstances, adhering to the benchmark portfolio may be expected to continue to provide net benefits over the longer term. However, it would be appropriate to reconsider the term premium assumption and the benchmark portfolio if there is evidence that the term premium has changed significantly over time. For this reason, the benchmark is subject to ongoing review and monitoring including a formal annual review.

The AOFM currently estimates that the average term premium margin for 10-year bonds over cash deposits is 0.75 percentage points (AOFM, 2004).

6.7 Benchmark reporting

Reporting primarily focuses on the modified duration and short-dated exposure of the Australian dollar Long-Term Debt Portfolio and compliance with the associated limits. Portfolio cost outcomes are also compared against outcomes associated with the

benchmark and default portfolios that do not include interest rate swaps. Additionally, the AOFM reports on the interest rate risk associated with the Cash Management Portfolio.

6.8 Portfolio transition

In order to achieve the new benchmark targets, the AOFM is undertaking two different types of interest rate swaps. First, as in the past, the AOFM is entering contracts agreeing to receive a fixed rate at terms around 9 to 13 years and pay floating rate interest flows. This shortens the portfolio duration towards the target. Second, the AOFM is entering into contracts to receive floating rate interest flows and pay fixed rate interest flows with terms of up to four years. This reduces the floating rate exposure of the portfolio and assists with meeting the short dated exposure targets.

It is expected that the transition to the new benchmark parameters will take up to three years, so should be complete by around June 2006. Transitional interest rate limits will guide the management of the portfolio during this period. However, these limits will not be made public as publication may prejudice the Australian Government's financial interests.

6.9 Total cost of the debt portfolio

As mentioned above, the physical debt portfolio normally has a modified duration of around four to five per cent, reflecting the dominance of long dated bonds. The assets held at the RBA generally have a very short term to maturity and as such earn a lower return than the market yield on outstanding physical debt.

However, this comparison ignores the impact of the interest rate swaps on debt servicing costs. Any increase in the trend level of term deposits would increase the Long Term Debt Portfolio's duration by defeasing short dated liabilities. This would have the effect of moving the portfolio away from the benchmark target. As such, additional interest rate swaps would be transacted to reduce the duration.

Very broadly, the short-term interest rate received on the term deposit matches the payment of a short-term interest rate on the interest rate swap. The Australian Government receives a long-term interest rate on the swap, which is broadly consistent with the market yield it is paying on the longer-term physical debt securities in the portfolio.

With this defeasance arrangement in place, the net cost of the debt portfolio is then determined by the application of the portfolio benchmark to the Long Term Debt Portfolio.

7. SUMMARY AND CONCLUSION

Over recent years, the Australian Government debt management framework has been driven by the need to adjust to declining levels of net debt.

The reduction in net debt led to concerns within the financial community that further declines in CGS would result in diminished financial market efficiency. These concerns lead to a thorough consideration of the issues through a public review of the CGS market.

The Review concluded that, given the current state of financial market development in Australia, the cost of managing interest rate risk was likely to rise in the absence of CGS due to the decline of the Treasury bond futures market, which is currently the key market for interest rate risk management. An increase in the cost of managing interest rate risk would lead to increases in interest rate spreads throughout the economy. The next most efficient alternative risk management market, the interest rate swap market, is less cost effective due to lower liquidity and higher transaction costs. In addition, the absence of a CGS and bond futures market would increase the costs of executing interest rate swaps. There is also a risk that the Australian financial system may be more affected by a significant shock if it were to rely on the interest rate swap market, as this market is dependent on the banking system.

The outcome of the Review of the CGS market has implications for debt issuance and portfolio management. CGS issuance is now directed to supporting the 3-year and 10-year Treasury bond futures contracts. Put another way, physical debt issuance will primarily be assigned to promoting financial market efficiency. This will involve issuing a new Treasury bond of around 13 years to maturity and a new Treasury bond of around five years in alternate years. Each new bond line will be built up to around \$5 billion outstanding over a two year period.

Debt issuance proceeds and budget surpluses have been placed on term deposit with the RBA. However, the Government recently announced that in the future, budget surpluses will be invested in a diversified financial asset portfolio called the 'Future Fund'. This Fund will be used to strengthen the Australian Government's balance sheet by financing accumulating public service superannuation liabilities.

The reduction in net debt also raises implications for the management of the remaining debt. A new portfolio benchmark represents an evolution of the previous approach which takes account of the low debt environment. The net debt portfolio has been split in to a long term debt portfolio and a cash management portfolio in order to handle the growing significance of short term financing fluctuations. The new benchmark target applies to the long term debt portfolio and is expressed in terms of both modified duration and the proportion of the portfolio subject to immediate repricing. The new benchmark distinguishes between inflation linked bonds and fixed coupon bonds to take account of the differences in the impact of changes in interest rates on the two types of bonds. The opportunity has also been taken to clarify the governance arrangements around the transactions used to move the portfolio towards the benchmark. Finally, the portfolio targets have been reviewed and adjusted to ensure an appropriate balance between cost and risk. These portfolio targets are achieved through the use of interest rate swaps.

As a result of the decline in the level of Government net debt in Australia, a fundamental review of debt management operations took place and led to a clearer, better defined and more transparent debt management framework. Debt management in Australia now has two explicit objectives – contributing to financial market

efficiency and achieving an appropriate balance between cost and risk for the Government. Two instruments are used to achieve these two objectives. Physical bond issuance is primarily assigned to promoting financial market efficiency and interest rate swaps are primarily assigned to achieving an appropriate balance between cost and risk.

APPENDIX

Rules for governing transfers between the long term debt portfolio and cash management portfolio¹⁴

Portfolio Framework

The AOFM's portfolio framework allocates the Australian Government net CGS debt portfolio between a Long Term Debt Portfolio and a Cash Management Portfolio. The objectives underpinning the allocation methodology are that:

- The Long Term Debt Portfolio represents the trend volume of the net CGS debt portfolio on a year to year basis; and
- The Cash Management Portfolio is to accommodate within-year variability in the volume of net debt around this trend level.

Initially, longer-term instruments such as bonds reside in the Long Term Debt Portfolio, while shorter-term instruments such as Treasury Notes and term deposits reside in the Cash Management Portfolio. Debt volumes are subsequently allocated between the two portfolios using transfers of assets and liabilities from one portfolio to the other, as governed by a set of objective rules.

Transfer rules

The principles behind the transfer rules are that the trend level of net CGS debt should reside in the Long Term Debt Portfolio and that the Cash Management Portfolio should accommodate any within-year variation from this path. On average, the Cash Management Portfolio should therefore have neither a net asset balance, nor a net liability balance.

14 This section reproduces Australian Office of Financial Management (2003).

There are two types of transfer rules. The first are defined in terms of the steps necessary to offset the impact of one-off events such as bond issuance and maturities. This process is mechanical and triggered by externally observable events.

- For example, consider the impact of the maturity of \$5 billion worth of bonds. Initially, these bonds would have resided as liabilities within the Long-Term Debt Portfolio. If no transfer were made on the day of maturity, the Long-Term Debt Portfolio would fall by \$5 billion. Consequently, a transfer is undertaken to reverse the impact of the maturity. This transfer of assets from the Long Term Debt Portfolio to the Cash Management Portfolio removes the discontinuity in the volume of net debt within the Long Term Debt Portfolio. From the perspective of the Cash Management Portfolio, the transfer of assets serves to offset the impact of the cash repayment of the maturing bonds.

The second set of transfer rules forces the value of the Long Term Debt Portfolio to trace out the estimated path of net CGS debt.

- For example, in the event of a forecast budget surplus giving rise to an estimated reduction in the level of net CGS debt through the course of a financial year, a steady reduction in the level of the Long Term Debt Portfolio is to occur. This is achieved through the transfer of assets from the Cash Management Portfolio evenly through the course of the year. These assets serve to partially defease the liabilities within the Long Term Debt Portfolio, thereby reducing its net volume.

Estimating the path of net debt

The AOFM bases its estimate of the path on financing information embedded within Budget projections, released in May each year. This data is used to generate the estimated path of net debt for the following financial year, under the assumption that any change in net debt will occur evenly over the course of the financial year.

Approximately halfway through the financial year, Mid-Year Economic and Fiscal Outlook (MYEFO) forecasts are released. Any change in the estimated financing requirement from the previous Budget projection is reflected in a revision of the path of net debt for the remainder of the financial year, effective 1 January. It is worth noting that there is no one-off adjustment to the stock of net debt, but rather the path is adjusted to reflect any changes in that year's expected financing requirement.

At the end of the financial year, the AOFM is in a position to determine the *actual* trend level of net debt through the course of that year. By determining the average daily balance of the Cash Management Portfolio throughout the year, a one-off adjustment is made to reduce this balance to zero, effective 1 July.

- For example, in the event that the Cash Management Portfolio had an average asset balance of \$1 billion throughout the course of the year, a one-off transfer of \$1 billion worth of short-term assets would be made from the Cash Management Portfolio to the Long Term Debt Portfolio, effective 1 July.

This revision process ensures that the Long-Term Debt Portfolio converges upon the trend level of net debt. It is important to note that the path-estimation process is rule-based and therefore not subject to any discretion on the part of the AOFM.

Information principles

It is important that the AOFM provide confidence that the Long Term Debt Portfolio truly reflects the best estimate of the trend level of net CGS debt. If it were not to do so, it is likely that the Portfolio Framework would be criticised as a vehicle through which the AOFM could artificially achieve compliance with its benchmark risk limits.

For this reason, estimates of the path of net CGS debt are based upon information contained within Budget and MYEFO projections of annual financing requirements. The one-off adjustment to the stock of net debt within the Long Term Debt Portfolio made on 1 July is based upon information that, while not publicly available at that time, will subsequently be made available at the time that the AOFM Annual Report is

released. Therefore, the net debt adjustment path and one-off adjustments can be independently verified.

The table on the following page summarises the various triggers that can give rise to a transfer of assets between the Long Term Debt Portfolio and the Cash Management Portfolio.

Transfer trigger-event	Why a transfer is required	How will the transfer be achieved?	What are the consequences of not doing the transfer?
Level of Long Term Debt Portfolio (LTDP) changes each day under target LTDP Path to reflect estimated path of net CGS debt	To ensure volume of debt in LTDP moves in line with estimated trend for net CGS debt. (Note the trend is revised on 1 July and 1 January).	Internal transfer of cash-like assets between Cash Management Portfolio (CMP) and LTDP.	Volume of net debt within LTDP will differ from trend level of net CGS debt.
Revision to LTDP Path	On 1st July the previous year's actual level of net debt is known. (Conversely, any persistent asset/liability balance within CMP can be quantified.)	A one-off internal transfer of cash-like assets between CMP and LTDP is required to unwind the persistent asset/liability balance within the CMP and to get the LTDP back to a level consistent with net CGS debt.	LTDP will not be representing the current forecast of trend path for net CGS debt portfolio. A persistent net asset/liability balance will be residing in the CMP.
Bond maturity / repurchase	This event causes LTDP to fall below the target path. An internal transfer is required to offset the effect.	Internal transfer of cash-like assets from LTDP to CMP.	LTDP will fall despite no corresponding change in the level of net CGS debt.
Bond issuance	This event causes LTDP to rise above the target path. An internal transfer is required to offset the effect.	Internal transfer of cash-like assets from CMP to LTDP.	LTDP will rise despite no corresponding change in the level of net CGS debt.

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