

BALANCE SHEET RESTRUCTURING AND INVESTMENT

Karen Mills, Steve Morling and Warren Tease

Research Discussion Paper
9308

June 1993

Economic Analysis Department

Reserve Bank of Australia

The authors would like to thank Adrian Blundell-Wignall, Philip Lowe, Peter Stebbing and Glenn Stevens for their thoughtful contributions to the paper. Remaining errors are ours. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Reserve Bank of Australia.

ABSTRACT

This paper looks at the evolution of corporate balance sheets and investment over the past few years.¹

We find that many companies have significantly improved their balance sheets in this time. Leverage has been reduced, and this, coupled with lower nominal interest rates, has improved the interest cover and cash flows of the corporate sector. For many firms, the process of balance sheet repair has proceeded a long way so that the extent to which the financial position of firms will impinge on investment is much lower than it was a few years ago. However, in the short term, some focus on financial restructuring may remain given the extent of excess capacity in the economy and a shift in incentives away from debt financing.

Looking further ahead, it appears that the rate of return to investing in capital is relatively high, at least when judged against the standards of earlier downturns. As the recovery picks up pace we should, therefore, see firms more inclined to expand their capital expenditure and less focused on financial restructuring.

¹ Lowe and Shuetrim (1992) also provide information on the evolution of corporate gearing in the 1980s. This paper focuses on the more recent experience of balance sheet restructuring and investment.

TABLE OF CONTENTS

1.	Introduction	1
2.	Investment and Finance	2
3.	Trends in Funding and Investment	5
3.1	Balance Sheet and Investment Expansion 1984/85 - 1989/90	5
3.2	Balance Sheet Restructuring Post 1989/90	13
3.2.1	Process and Extent of Repair	13
3.2.2	Factors Behind the Financial Restructuring	18
4.	Implications for Investment	22
5.	Conclusion	27
	Appendix: Data Sources and Construction	28
	References	32

BALANCE SHEET RESTRUCTURING AND INVESTMENT

Karen Mills, Steven Morling and Warren Tease

1. INTRODUCTION

A key feature of the most recent business cycle has been the importance of financial factors. During the upswing in the late 1980s, corporate profits, recourse to external sources of finance, asset prices and business fixed investment all grew rapidly. The corporate sector began to rely more heavily on debt as a source of external finance and consequently leverage increased sharply.

In the past few years, we have witnessed a partial reversal of this process: asset prices have fallen and corporate balance sheets have been strengthened by a decline in leverage. The process of deleveraging occurred during a period of weak cash flows, limiting the extent to which businesses could restructure their balance sheets using internal funds. This, coupled with the sluggishness of the economy and an uncertain investment climate, has meant that business fixed investment has been extremely weak. This paper documents the evolution of corporate balance sheets in the 1980s.² It also examines the process and extent of balance sheet repair and draws some implications for investment.³

The paper is organised as follows. Section 2 provides an analytical framework for considering the various influences on investment and the interaction between finance and investment. Section 3 provides an overview of the broad trends in corporate balance sheets and the state of balance sheet repair. Section 4 brings together this information and draws some tentative conclusions about the current pressures on investment.

An important conclusion of the paper is that many companies have significantly improved their balance sheets in the last few years. Leverage has been reduced. Nominal interest rates have also declined sharply with the progressive easing of

² Also, see Lowe and Shuetrim (1992).

³ The paper complements a more technical paper currently in production on the influence of financial factors on investment (Mills, Morling and Tease (1993)).

monetary policy and the reduction in inflationary expectations. The interest cover and cash flows of the corporate sector have improved. Thus, the extent to which investment is *constrained* by the financial position of firms is much lower than it was a few years ago. There may be some incentive in the short term for firms to continue the process of financial restructuring, given: considerable excess capacity and hence subdued investment; a relative decline in the real cost of equity; and an apparent tendency for those companies that reduce gearing to have a better short-term share price performance.

Looking beyond the short term, it appears that the rate of return to investing in capital is relatively high, at least when judged against the standards of earlier periods of weak growth. This, coupled with the extremely low rates of investment relative to GDP at present, suggests that when some of these disincentives pass and confidence strengthens, investment could rebound strongly.

2. INVESTMENT AND FINANCE

Traditional theory has tended to treat investment and financing decisions as separable. Assuming that capital markets are perfect, firms are not liquidity constrained and their investment decisions are unaffected by their capital structure. Recent theoretical developments, however, have focused on interactions between investment and financing decisions: the investment opportunities available to a firm will influence the size and structure of its balance sheet. Also, financial factors will influence the extent to which firms can undertake potentially profitable investment.

One strand of the new literature focuses on imperfect capital markets. Capital market imperfections can have significant effects on business decision making. Liquidity constraints and the lack of perfect substitutability between internal and external financing, for example, can limit a firm's ability to obtain funds for investment or boost the cost of those funds.⁴ Because of this, the availability of adequate cash flows is important for investment. One reason for this is that not all firms have effective access to external capital markets. This is particularly true of

⁴ See McKibbin and Sieglhoff (1987), Wizman (1992) and Whited (1989) for models incorporating liquidity constraints. For models incorporating imperfect substitutability between internal and external sources of funds see Myers and Majluf (1984), Gertler and Hubbard (1988) and Jensen and Meckling (1976).

small firms. Woo and Lange (1992), for example, note that “limited access may arise as a result of prohibitions or barriers to entry that specifically preclude small firms from gaining funds, either through regulation or in terms of the costs involved”. For some companies internally-generated cash flows may be the primary, and in some cases the only, source of funds. If internal funds are inadequate, or if lending institutions tighten the availability of credit during periods of uncertainty, some value-increasing investment projects may not be undertaken.

Furthermore, even for firms with access to external funding, internal cash flows are a relatively cheap source of finance. Incentive problems (agency costs), financial distress costs and asymmetric information increase the cost of external relative to internal finance.⁵ A financing hierarchy results, in which internally generated cash flows are relatively cheap, debt is more expensive and external equity is the most expensive form of finance.⁶

These theories have a number of important implications for capital structure and investment decisions. First, the cost of capital is in some sense endogenous. For example, maintaining adequate cash flows directly provides funds for investment and reduces a firm’s need to raise higher-cost external funding. Furthermore, a rise in cash flows will strengthen a firm’s balance sheet which, in turn, will reduce the cost of obtaining external funding. This is because it increases the collateral that can be used to back external finance, reducing the information risk that outside lenders face. Firms can reduce this risk in other ways by, for example, maintaining a stock of easily collateralisable assets. This is based on the idea of “reliquification” described by Eckstein and Sinai (1986) and Whited (1991). Firms accumulate financial assets in order to increase their financial health prior to undertaking new investment projects. If firms do not have access to external finance, they will be forced to retain earnings and accumulate financial wealth in order to finance lumpy investment projects. If firms do have access to external finance, but at a premium, the accumulation of financial wealth reduces the agency cost of these funds. Therefore, even if investment incentives are high, firms may prefer to build up

⁵ See Gertler (1988) for a survey of the issues.

⁶ A number of studies confirm the existence of financing hierarchies. Chaplinsky and Niehaus (1990) and Amihud et al. (1990), for example, find evidence that firms prefer internally sourced funds to external funds. Direct management surveys such as Allen (1991) and Pinegar and Wilbricht (1989) confirm these findings.

working capital balances (and reduce debt levels) before undertaking significant new investment projects.

Thus capital structure decisions can influence investment. Indeed, it can be shown that the level of investment is positively related to corporate balance sheet positions (Bernanke and Gertler (1986, 1987) and Mills, Morling and Tease (1993)).

Furthermore, the desirability of investment will influence a firm's balance sheet. The financial hierarchy implies that firms will have a preference for cash flows as a means of funding. The extent to which they take on new debt or raise new equity will be a function of the demand for investment. When expected returns on investment are high, firms will be willing to undertake new raisings of external funds up to the point where the marginal return to doing so equals the marginal cost of a unit of external finance.

Even abstracting from capital market imperfections, the sequential separation of real and financial decisions is unrealistic. In a more complete theoretical framework, real and financial decisions are determined simultaneously as part of a broader portfolio allocation decision in which expected risk-adjusted returns are compared (see Kohli and Ryan (1987)). Investment in physical capital is only one possible use of a firm's funds. It is possible that in some periods accumulation of financial assets or the repayment of debt may be the optimal use of funds.

So far we have emphasised financial market imperfections and their possible effects on business behaviour. However, there are also other characteristics of investment expenditures that are not adequately captured in the standard models. Pindyck (1991), for example, notes that investment expenditures are often irreversible and that they can generally be delayed.⁷

Pindyck likens an irreversible investment opportunity to a financial call option - a right to pay an exercise price at some time in the future and receive an asset. The "option" has value because delaying a project - that is, not exercising the option - means that a firm will obtain more information about the viability of the project. Like a financial option, the more uncertain the environment, the higher the value of

⁷ Investment is, in many cases, irreversible because the capital is industry or firm specific. A blast furnace, for example, cannot readily be adapted to an alternate use (Pindyck (1988)).

waiting. This uncertainty may take the form of uncertainty about future cash flows, relative prices, interest rates or institutional arrangements. When a firm exercises the option by irreversible investment, it forgoes the opportunity of waiting for new information. This lost value is part of the cost of the investment. The opportunity cost of exercising the option can be large and may be very sensitive to uncertainty.⁸ When uncertainty is high, other inducements may have to be very high to offset this cost and to encourage investment expenditure.

3. TRENDS IN FUNDING AND INVESTMENT

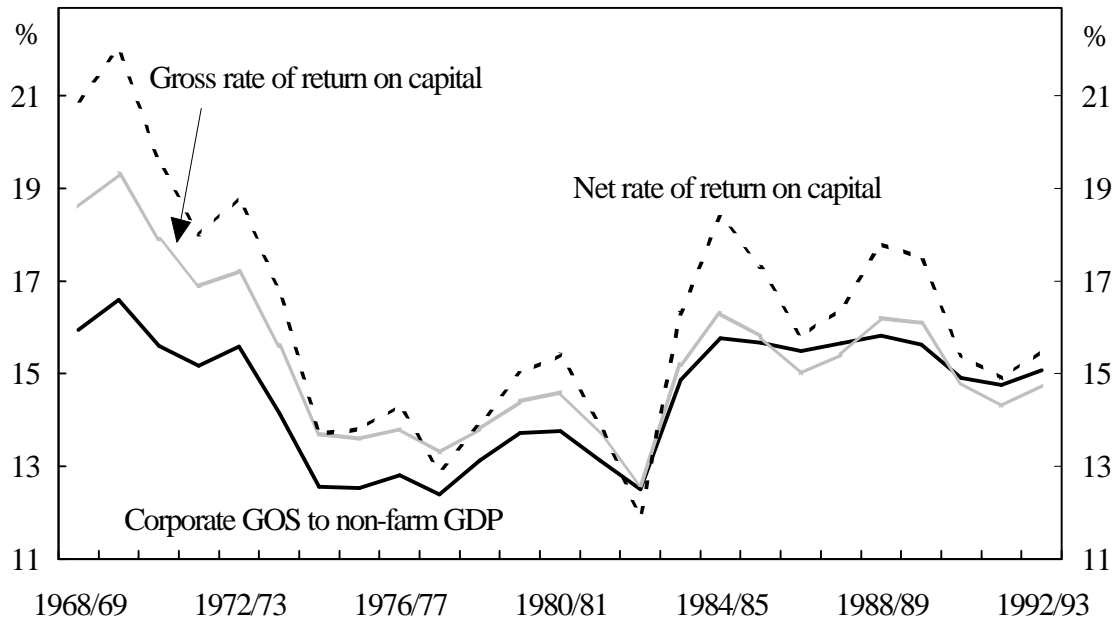
3.1 Balance Sheet and Investment Expansion 1984/85 - 1989/90

There have been several distinct phases in the evolution of corporate balance sheets over the past decade. Early in the 1980s, investment was declining sharply after a large rise at the end of the 1970s, which had been associated with the rise in real energy prices at that time. Factors driving the downturn were the big rise in labour costs, in an environment of weakening real growth. This depressed profitability, and incentives to invest fell sharply.

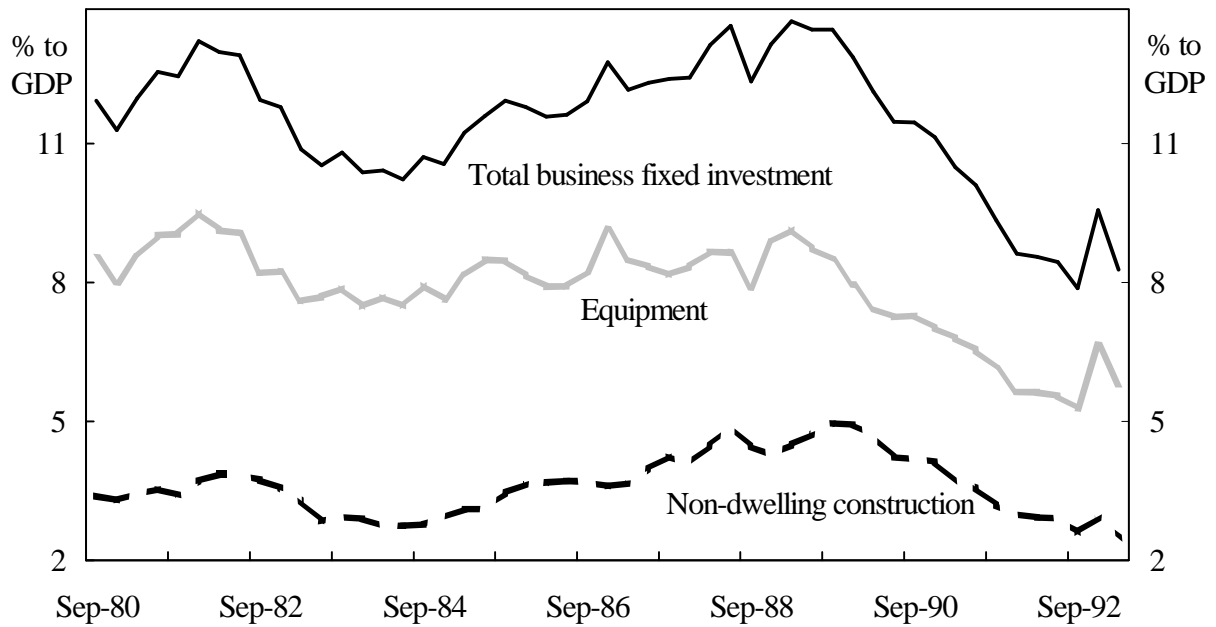
This phase came to an end in the second year of the recovery from the 1982/83 recession. By that time, output was rising strongly, in the context of a rapid international recovery. Wages policies had simultaneously allowed a rapid restoration in the share of national income going to profits. Consequently, incentives to invest improved. Graph 1, for example, shows two measures of the rate of return on the aggregate capital stock taken from the ABS, and a conventional measure of the ratio of corporate gross operating surplus to GDP.

All these measures show a sharp rise in 1983/84 and a further increase in 1984/85. By the latter year, investment in real assets - both plant and equipment and construction - by the business community was responding strongly to the enhanced incentives (Graph 2). Share prices rose rapidly, reflecting the financial markets' confidence in future profitability.

⁸ McDonald and Siegel (1986), Brennan and Schwartz (1985), Majd and Pindyck (1987) and Pindyck (1988).

Graph 1: Profit Share and Returns on Capital

*1992/93 is an estimate.

Graph 2: Business Fixed Investment

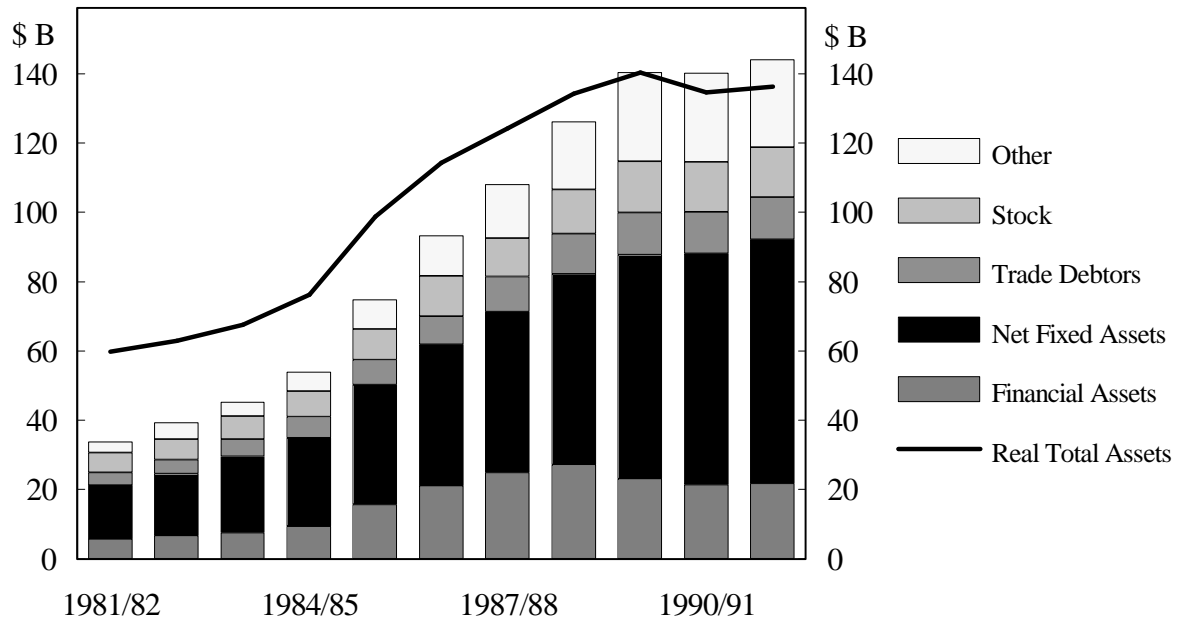
This period of strong profitability, confidence and rising investment continued over several years. Between 1983/84 and 1989/90, aggregate measures of the profit share averaged levels not seen since the late 1960s; real business investment doubled; the private corporate sector's aggregate capital stock increased by over a quarter in real terms; and the share-market value of the listed company sector more than trebled, despite the fall in share prices in October 1987.

These trends were reflected in accounting measures of the corporate sector's balance sheets. Corporate balance sheets grew very quickly until 1989/90 (Graphs 3 and 4).⁹ Total assets of the corporate sector increased fourfold in nominal terms and more than doubled in real terms. They also increased relative to corporate sales. The ratio of assets to sales stood at 0.97 in 1981/82 and increased to 1.15 in 1989/90.

The structure of the corporate sector's balance sheet also changed over time. On the asset side, both fixed and financial assets became a larger part of the sector's total assets (Table 1 and Graph 3). Stocks have been steadily declining as a share of total assets. Financial assets have been the fastest growing component of total assets.

⁹ The data are a sample of 80 large non-financial companies obtained from the Australian Stock Exchange (ASX) STATEX service. See Appendix for a detailed definition of the data.

Graph 3: Total Assets



Graph 4: Total Liabilities and Equity

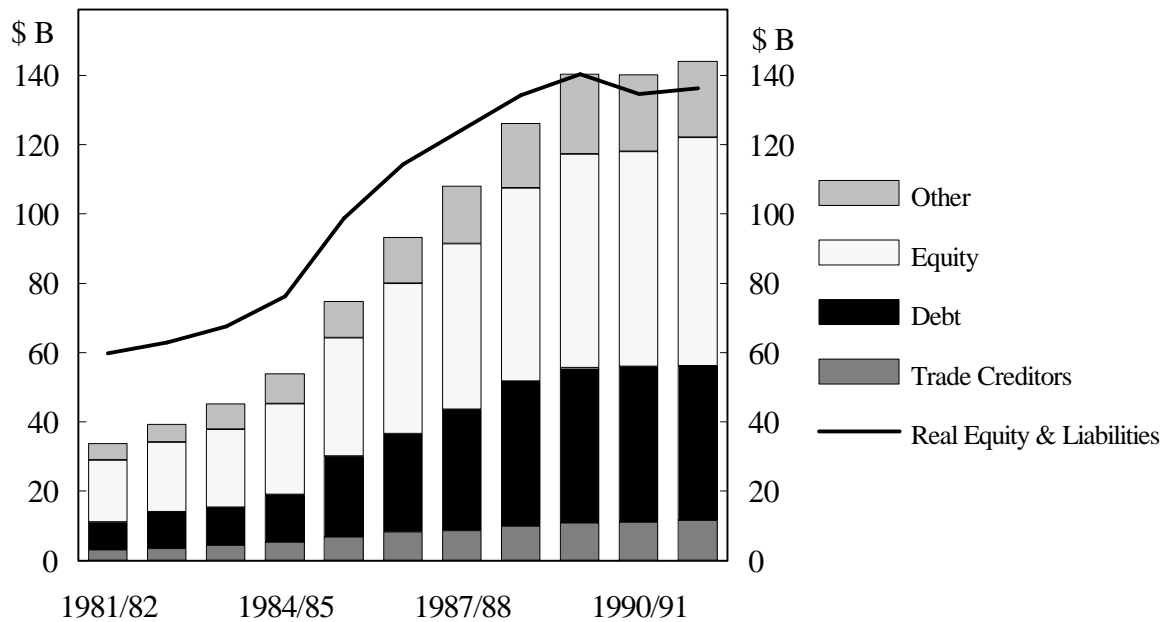


Table 1: Financial Ratios¹⁰

Ratio	Company Finance Sample		STATEX Sample		
	1971/72- 1975/76	1976/77- 1980/81	1981/82- 1985/86	1986/87- 1990/91	1991/92
STOCKS					
Liabilities					
Debt/Total Assets	0.23	0.22	0.26	0.32	0.31
Equity/Total Assets	0.53	0.51	0.50	0.45	0.46
Assets					
Stock/Total Assets	0.22	0.23	0.15	0.11	0.10
Financial/Total Assets	0.12	0.14	0.18	0.20	0.15
Fixed/Total Assets	0.46	0.43	0.47	0.45	0.49
Financial/Fixed Assets	0.26	0.32	0.38	0.44	0.31
FLOWS					
Total Sources/ Δ Fixed Assets	2.41	2.16	1.88	2.26	2.88
Δ Debt/ Δ Fixed Assets	0.53	0.45	0.63	0.64	-0.09
Δ Equity/ Δ Fixed Assets	0.27	0.29	0.36	0.32	1.10
Cash Flow/ Δ Fixed Assets	1.60	1.41	0.89	1.31	1.87

¹⁰ The STATEX sample is that referred to in footnote 9. The earlier data were obtained from Reserve Bank of Australia *Bulletin*, Company Finance Supplements.

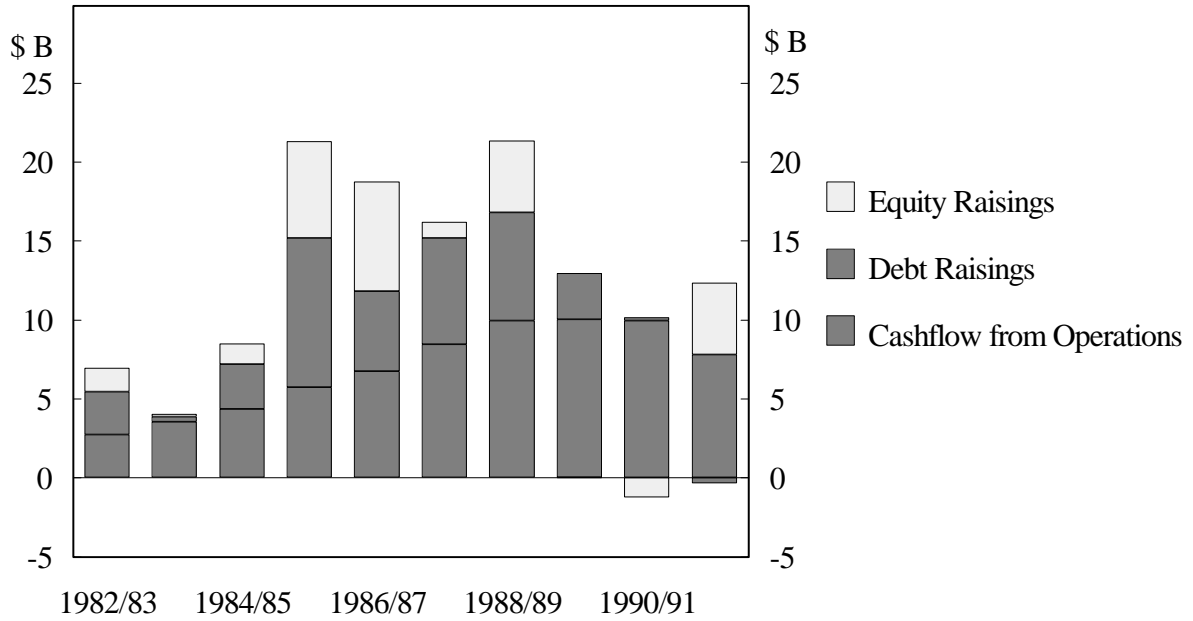
On the liabilities side, debt became a more important source of finance, increasing from just over 20 per cent of total assets in the early 1970s to 31 per cent in the second half of the 1980s (Table 1 and Graph 4).

Graphs 5 and 6 provide more detail on the sources and uses of corporate funding in the 1980s. As always, the corporate sector relied on a number of sources of finance to fund the expansion in assets (Graph 5). The recovery in profits, the liberalisation of financial markets and the increase in share prices during the 1980s was conducive to increases in all sources of funding. The recovery in economic activity and the increase in the profit share had a profound effect on cash flows, which are the dominant source of funding for the bulk of companies. Cash flows rose continually after 1982/83 until plateauing in 1988/89. However, with the strong incentives to invest, investment (in both fixed and financial assets) outstripped cash flows and companies increased external raisings of funds. Both sources of external funding - debt and new equity raisings - grew rapidly. However, over the course of the decade there was a shift towards greater reliance on debt. Debt raisings were particularly high between 1985/86 and 1988/89. This increased indebtedness was supported by higher cash flows and rising equity prices which boosted the perceived collateral of many companies.

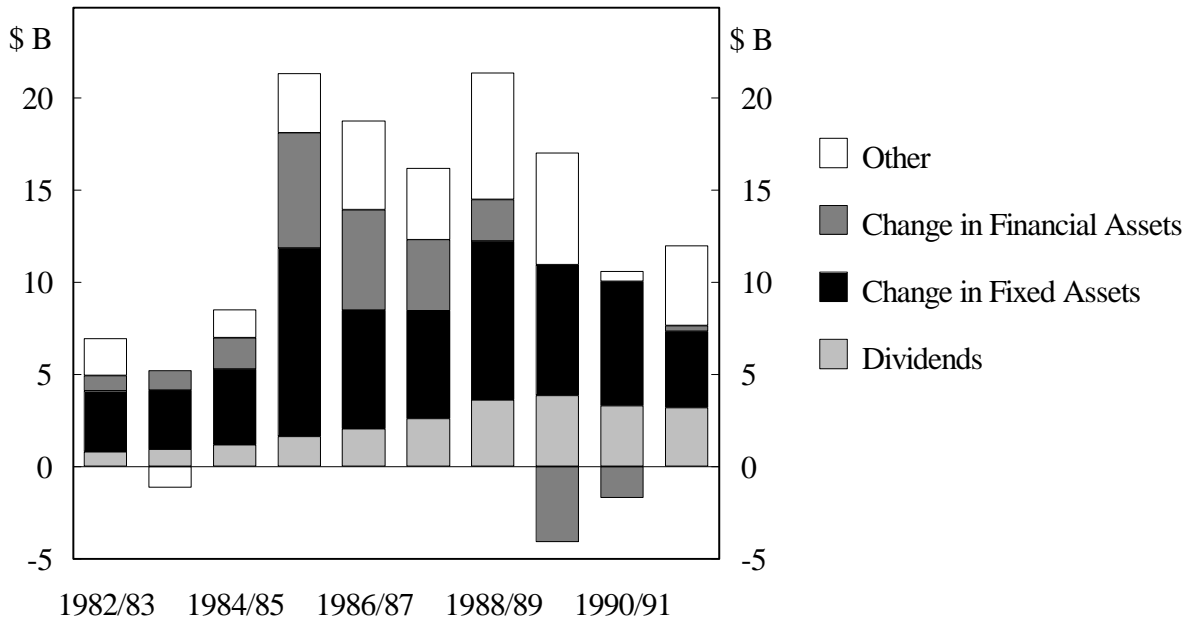
One of the legacies of the switch towards debt financing in the 1980s is higher levels of corporate gearing. Graph 7a shows a measure of gearing using book values of debt and equity and Graph 7b shows a measure using the market value of equity. The factors contributing to this rise in gearing have been documented elsewhere.¹¹

¹¹ See MacFarlane (1989, 1990) and Stevens (1991).

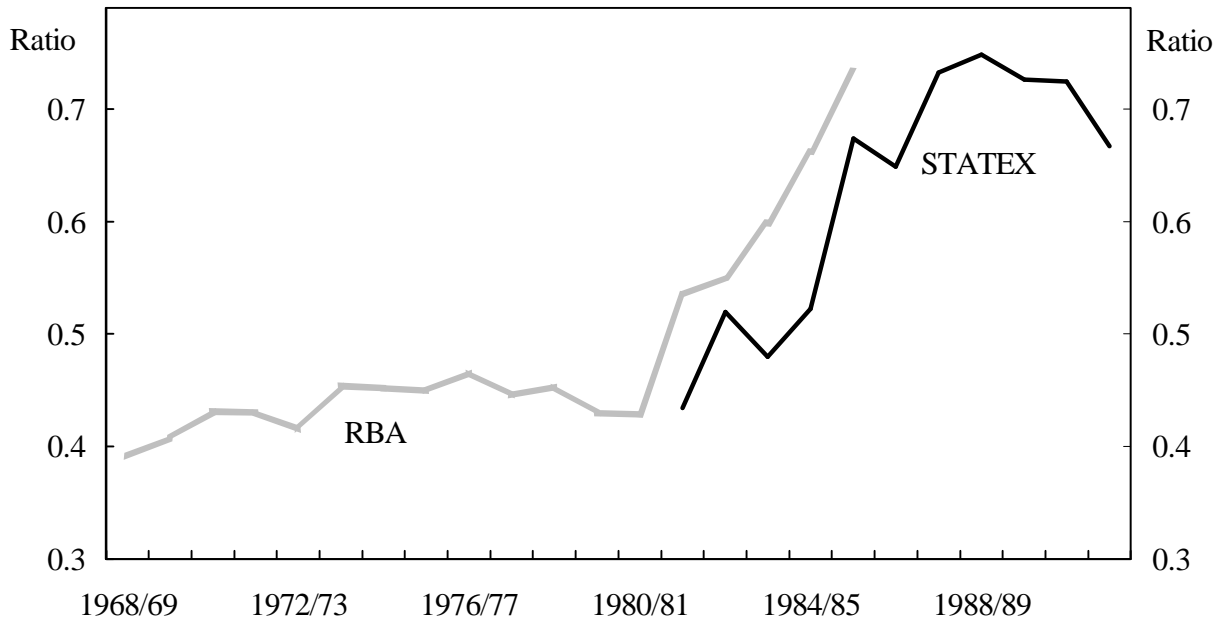
Graph 5: Sources of Funds



Graph 6: Uses of Funds



Graph 7a: Debt to Equity

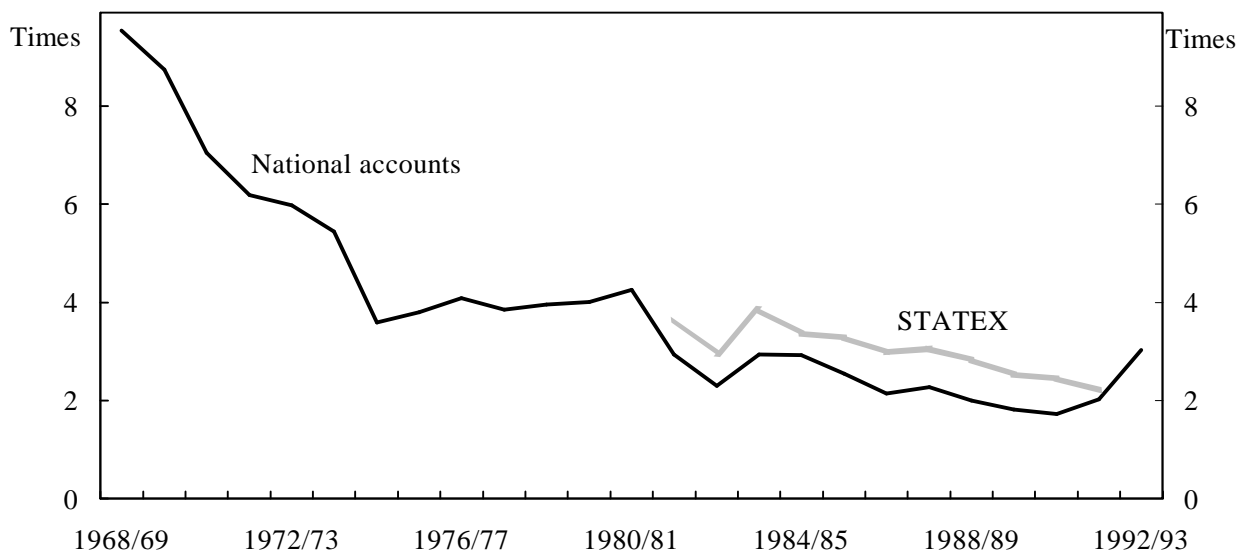


Graph 7b: Debt to Market Capitalisation



As a result of this higher gearing the proportion of profits needed to repay interest expenses rose sharply. Graph 8 plots the ratio of operating profits to net interest payments. This is a measure of firms' current capacity to meet debt obligations. Interest cover has been declining since the 1970s reflecting higher nominal interest rates and the build-up of debt.

Graph 8: Interest Cover



*1992/93 is an estimate

Rising interest rates between 1988 and 1990 and the ensuing slowdown in the economy and earnings in 1990 saw interest cover slip further. In addition, the value of collateral backing corporate debt fell sharply. These factors resulted in the financial distress of some of those firms that over-borrowed and ushered in the second phase of the development: the period of balance sheet consolidation and falling investment.

3.2 Balance Sheet Restructuring Post 1989/90

3.2.1 Process and Extent of Repair

The period of rapid corporate balance sheet expansion came to a halt and balance sheet growth has been very sluggish since 1988/89 (Graph 3).¹² In addition, firms

¹² The measured fall in the size of corporate balance sheets in 1990/91 is partly due to a new accounting standard (AASB 1024), which forced companies to consolidate all subsidiaries

began to restructure their balance sheets. The restructuring has occurred on both the asset and liability sides.

On the liability side, firms began to reduce raisings of external finance from about 1989/90 (Graph 5 and Table 2). Recourse to external finance fell sharply between 1989/90 and 1991/92. The increase in debt of our sample of companies in the listed corporate sector in 1989/90 was half that of the previous year. It was negligible the following year, and firms actually reduced debt outstanding in 1991/92. The other source of funds, equity raisings, were negligible through 1989/90 and 1990/91 as the weak equity market made the perceived cost of equity raisings high.

Table 2: Change in Corporate Financial Position¹³
(\$ billion)

	1989/90	1990/91	1991/92	1992/93 Sept	1992/93 Dec
Change in:					
Liabilities	24.5	8.7	3.1	2.1	3.5
-Debt	23.6	9.3	-9.7	0.0	-1.7
-Equity	0.9	-0.6	12.8	2.1	5.2
Financial Assets	-6.2	-5.6	-2.4	-1.5	2.5

This adjustment was taking place against a background of declining cash flows. This constrained the extent to which firms could use internal funds to restructure their balance sheets. As a result, the need to adjust the liabilities side of corporate balance sheets had repercussions for firms' operating procedures and for their asset structure. Investment in fixed assets was pared back (Graphs 2 and 6). The fall in investment has been very large by historical standards. Non-residential construction

under their control without exception. This has influenced the financial accounts of companies affected by the standard; one of these effects has been to reduce shareholders' funds by removing items to prevent "double counting". This change effects the data from 1990/91 onwards. Adjusting for this does not alter the picture of weak balance sheet growth after 1988/89.

¹³ These numbers are taken from ABS Financial Accounts, Cat. No. 5232.0 (December quarter 1992). Debt includes "other financial claims".

has fallen sharply, which was to be expected given the oversupply of commercial property space in most central business districts. The fall in plant and equipment investment has been even more dramatic. In 1991/92, at around 6 per cent of GDP, it was at its lowest point in the past 40 years. Furthermore, firms began to reduce their holdings of financial assets in 1989/90 and 1990/91 in an attempt to fund the reduction in external finance (Graph 6 and Table 2). This reduction in financial assets will mitigate to some extent the improvement in corporate balance sheets resulting from lower debt exposures.

As a result of balance sheet restructuring, aggregate gearing has been reduced. Graph 9 contains a number of measures of corporate indebtedness. The first plots gearing - the ratio of debt to the book value of equity - of the 80 companies taken from the STATEX sample. This measure shows that gearing peaked at around 75 per cent in 1988/89 and then fell by around 8 percentage points to 67 per cent in 1991/92. This probably understates both the rise and subsequent fall in gearing. This is because the measure shown here is based on a constant sample of companies which have been in operation continuously over the ten years ending in 1991/92. Companies that geared up significantly during the 1980s and subsequently failed are excluded from this sample. Adding back some of these companies, in the top line in Graph 9, shows a much bigger rise and fall in gearing during the late 1980s.¹⁴

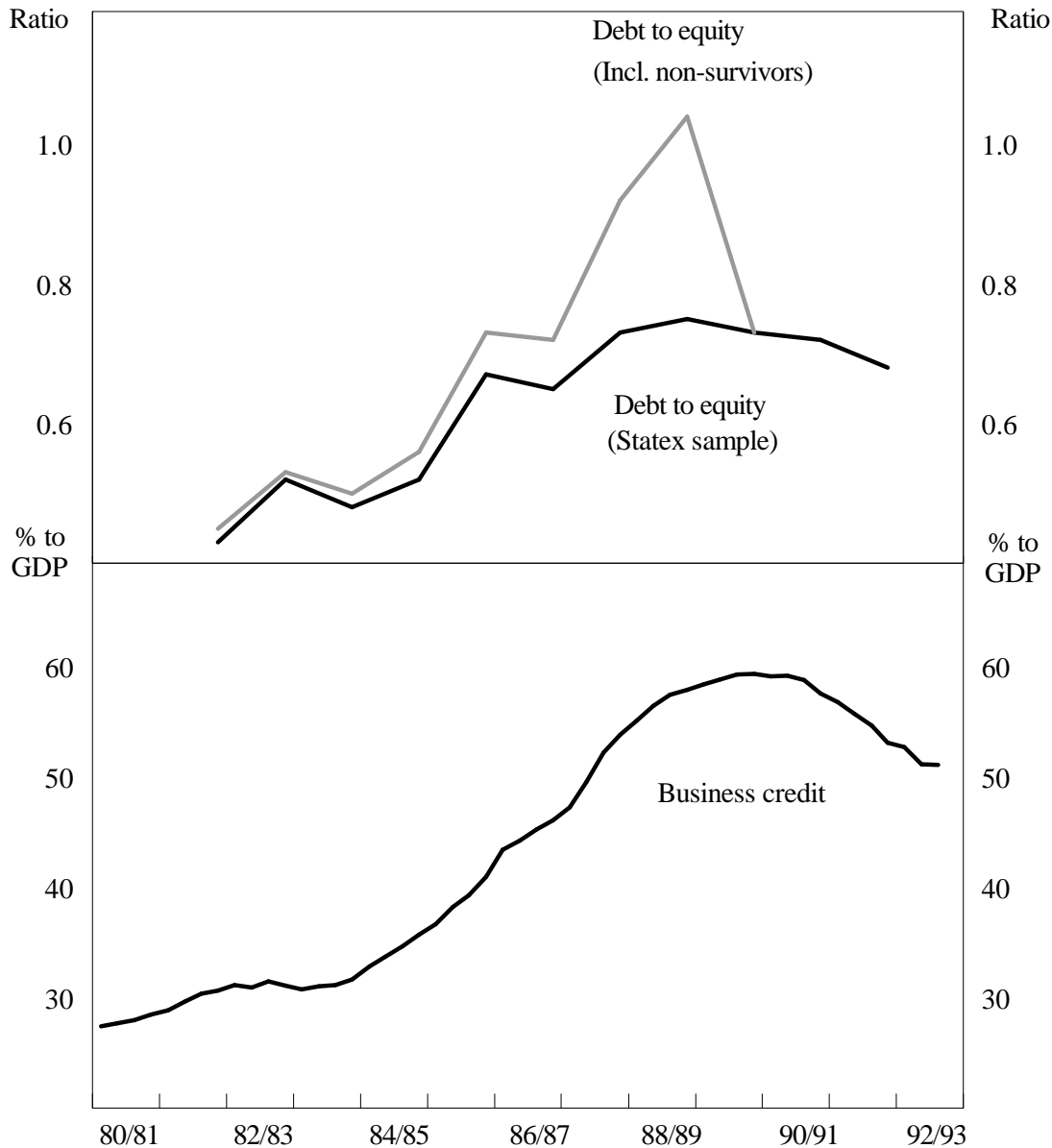
The comprehensive balance sheet data are only available up to 1991/92. The ratio of business credit to GDP - the line in the bottom panel of Graph 9 - suggests however, that the process of deleveraging has continued during 1992/93. Furthermore, new equity raisings gathered pace in 1992 (Table 2), as expectations of recovery led to somewhat higher share prices. This enabled a more rapid reduction in debt without major asset sales.

The process of balance sheet repair has been ongoing for several years and by 1992 more than 50 per cent of companies had reduced debt levels to around, or below, those that existed in the early 1980s. Graph 10 shows gearing for a sample of companies in 1988/89 and 1991/92. Most companies have lower gearing in 1991/92 than in 1988/89. Furthermore, most companies appear to be clustered around gearing levels that are not high; 64 per cent of companies in the sample had

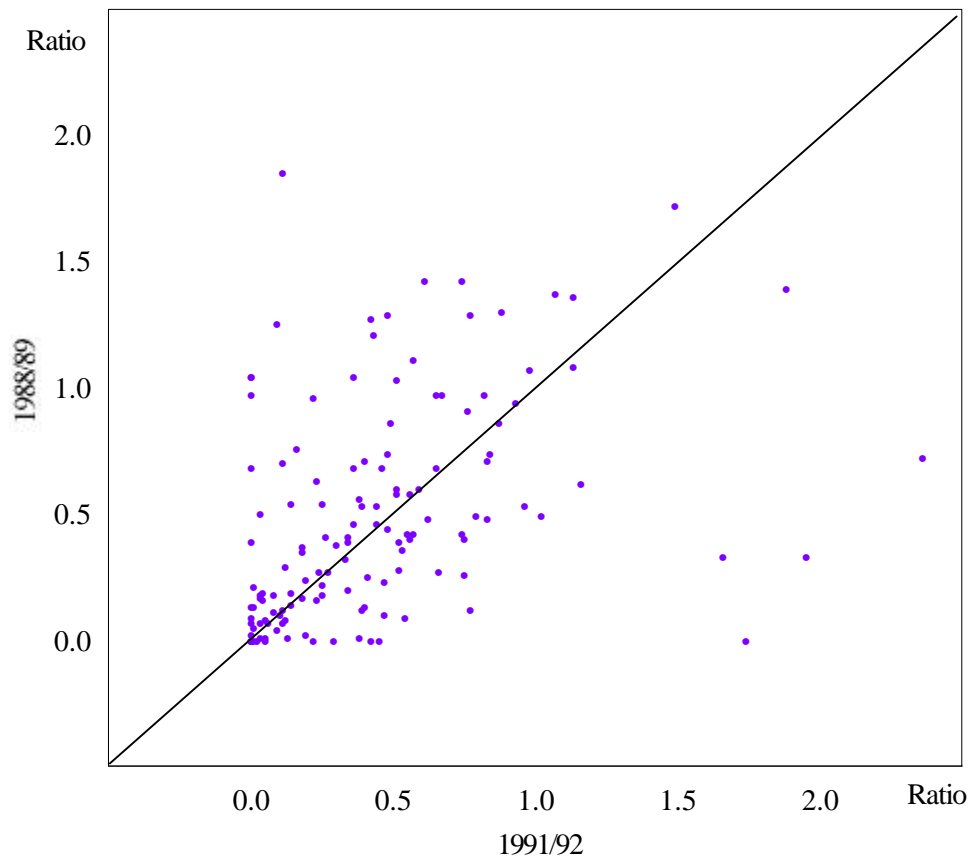
¹⁴ The line including “non-survivors” is obtained by adding in the amount of debt and shareholders funds for 13 failed companies to the totals for the 80 company sample.

gearing ratios of less than 50 per cent per cent in 1991/92. Indeed, gearing levels of large Australian companies are lower than the levels in many major industrial countries.¹⁵

Graph 9: Corporate Gearing

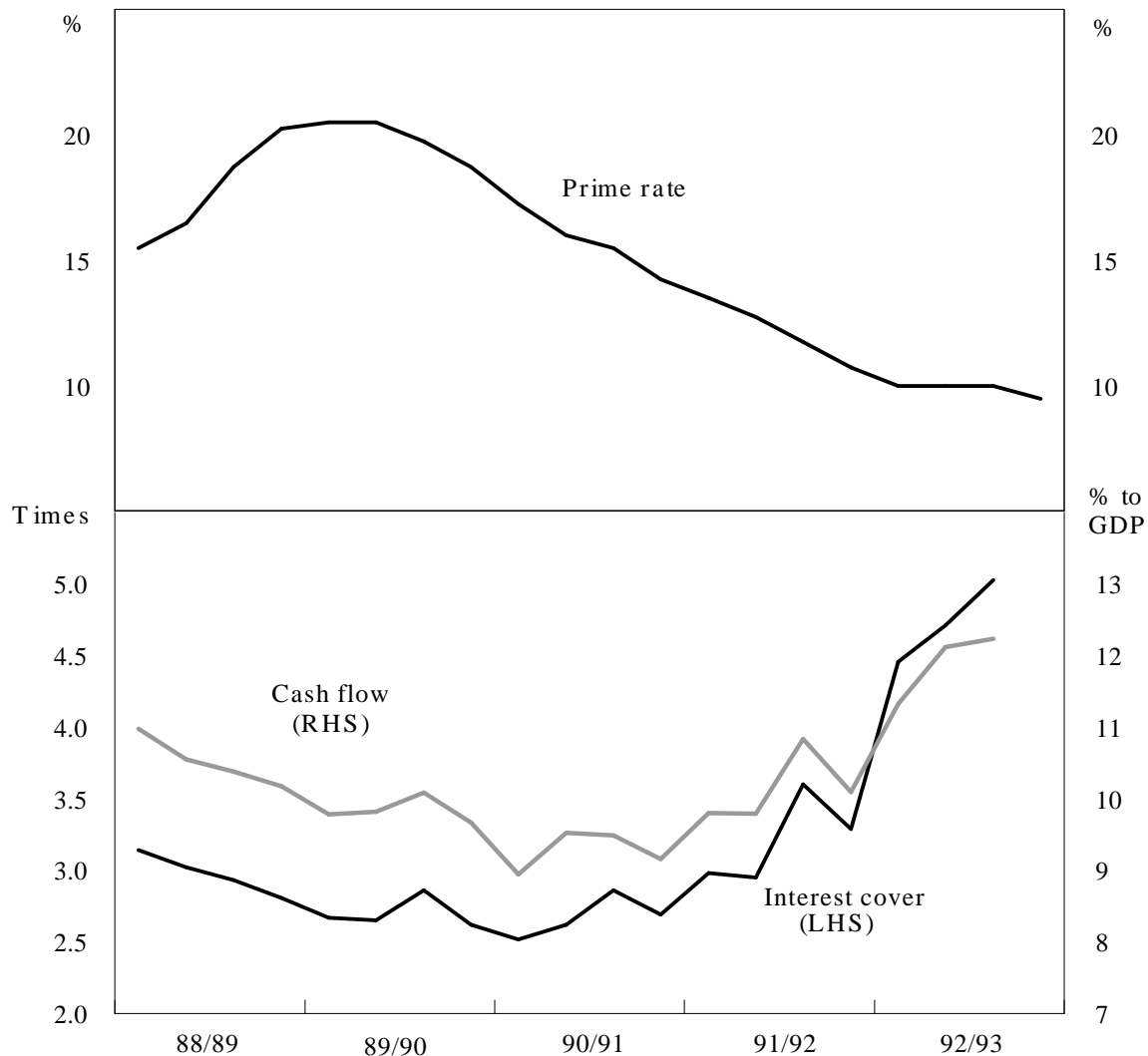


¹⁵ International comparisons are difficult because of the difference between the banking systems, corporate structures and tax regimes across countries. However debt/equity ratios in Australia in 1992 were well below the level of the major industrialised countries reported in a recent OECD study (O'Brien and Browne (1992)). These countries included the U.S., Japan, Germany, France, U.K., and Canada. In 1989, gearing in the United States was the lowest amongst these countries at just below 70 per cent. Japan recorded the highest gearing of around 260 per cent.

Graph 10: Debt to Equity Ratios

Some companies are still very highly geared and many have continued to increase leverage. This suggests that while gearing has declined in aggregate and for most companies, there may still be some companies that need to continue or start the process of restructuring. Overall, however, corporate debt burdens have clearly fallen.

The lower gearing of the corporate sector has helped boost its cash flow and interest cover. This has been greatly aided by the reduction in nominal interest rates which, in turn, reflect the progressive easing of monetary policy and the sharp reduction in inflationary expectations (Graph 11). Cash flows and interest cover are now significantly above their troughs, even though the recovery in profits before interest payments has been relatively modest.

Graph 11: Prime Rate, Interest Cover and Cash Flow

3.2.2 Factors Behind the Financial Restructuring

Many factors have provided firms with an incentive to restructure their financial position. For some firms, the restructuring was forced - sharp declines in interest cover against a backdrop of weak sales and falling asset-backing of debt meant that exposure to debt had to be reduced and cash flows conserved. More generally, at the end of the 1980s there was a change in the relative price of debt and equity:

- real borrowing costs rose in both pre and post-tax terms;
- a long-standing bias favouring debt finance over equity was reduced with the introduction of dividend imputation. The cost of equity fell relative to the cost of debt; and

- market sentiment shifted away from highly leveraged firms.

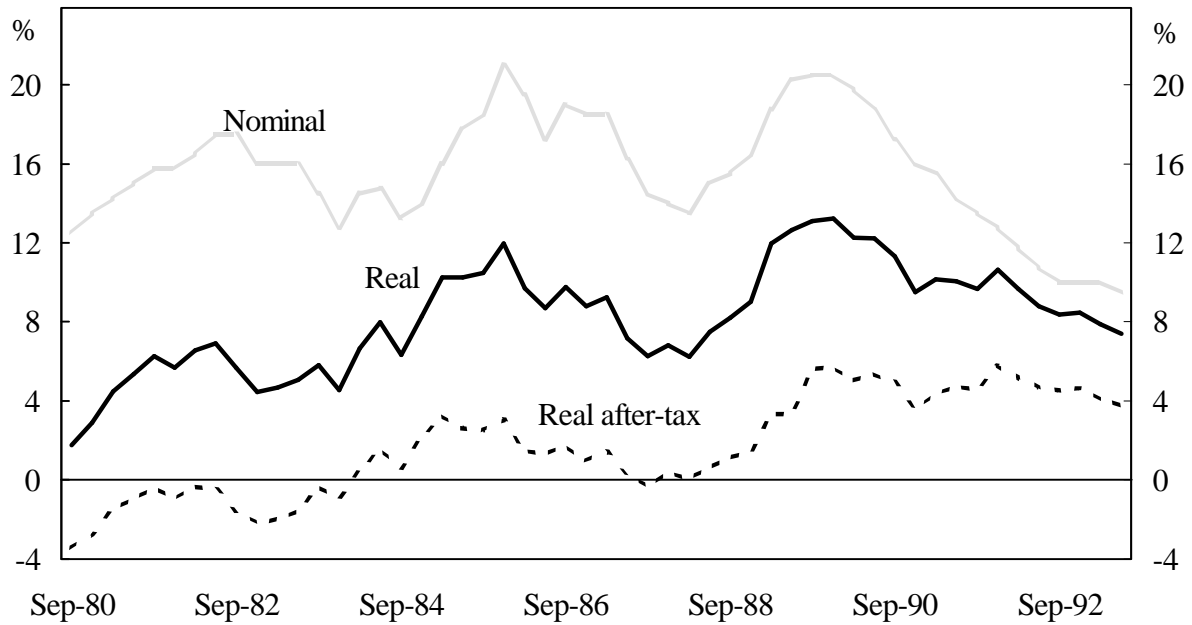
At the beginning of the period of balance sheet restructuring, real borrowing rates were high, in comparison to earlier standards, in both pre and post-tax terms (Graph 12). The real pre-tax prime rate peaked at around 13 per cent around the end of 1989. Measured in post-tax terms, the peak was around 5-1/2 per cent. These rates were around 2-1/2 percentage points above the previous peak. This would have encouraged firms - even those with healthy balance sheets - to reduce debt outstanding or slow the rate of new debt raisings.

There are two reasons for this. Firstly, for firms wishing to finance a given risky project, the “optimal” degree of leverage will be negatively related to the real interest rate. A higher real interest rate implies that part of the expected return of a project received by equity holders is reduced. They will thus prefer less leverage.¹⁶ Secondly, for firms deciding where to allocate their funds - acquiring capital, paying dividends, acquiring financial assets or repaying debt - the marginal return to paying off debt (effectively the real after-tax borrowing rate) was apparently high by historical standards.

An apparent trend decline in the cost of equity relative to debt provided further incentive for firms to restructure their financial position (Table 3).¹⁷ The gap between the real cost of equity and debt began to narrow in the early 1980s as equity prices rose and post-tax real interest rates began to rise. This narrowing continued later in the decade. The introduction of dividend imputation can explain part of the convergence in the late 1980s. Financial deregulation and innovation have also blurred the boundaries between various types of debt instruments and equity and possibly the risk-return tradeoff associated with the various asset classes. For example, some instruments such as convertible debt, preference shares and subordinated debt have some characteristics of both debt and equity.

¹⁶ Ryan (1990) provides an analysis of the relationship between leverage and real interest rates.

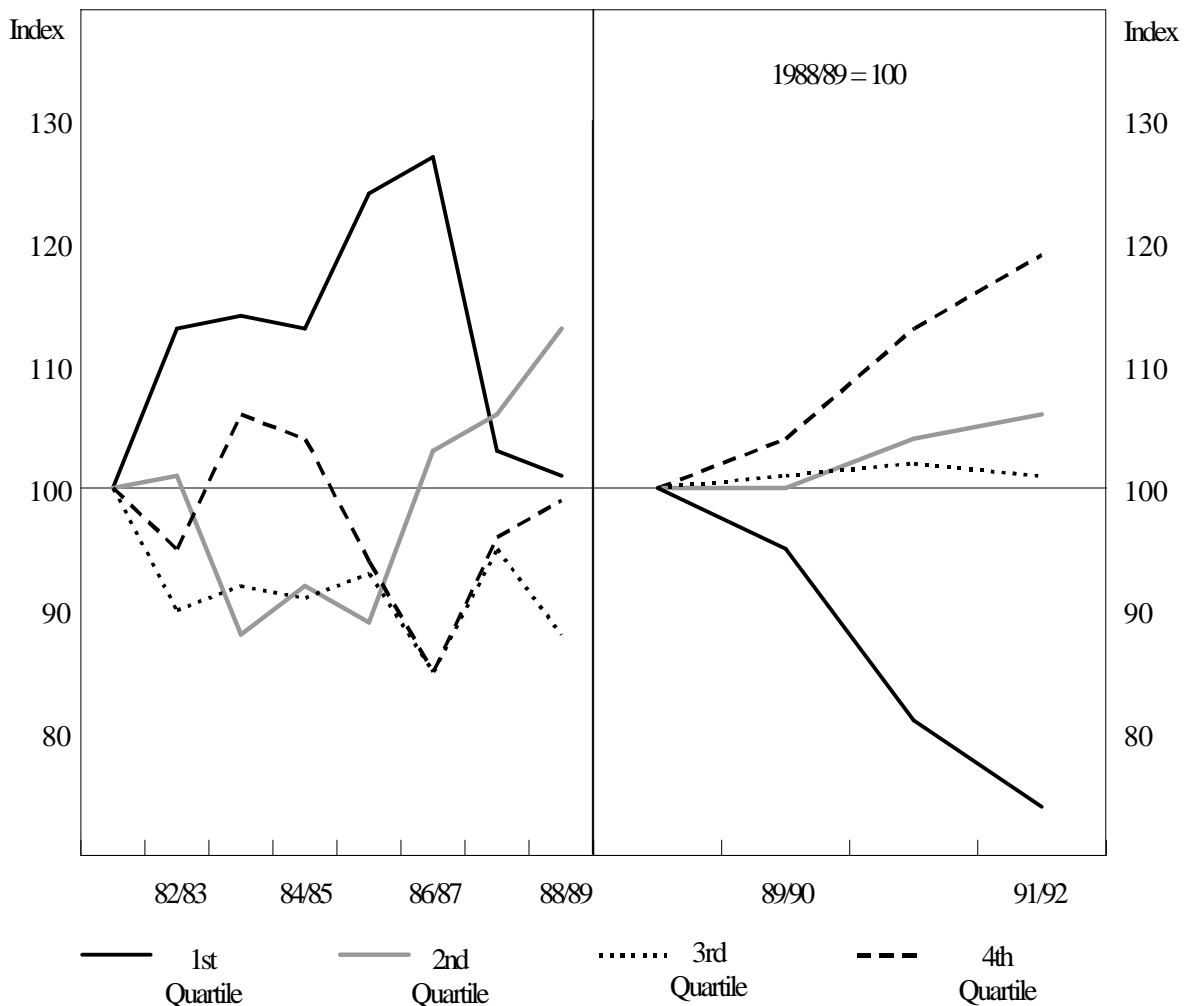
¹⁷ The cost of equity in the table is measured using a simple earnings/price model in which the required return on equity equals the sum of the earnings-price ratio and the expected growth in real earnings. The latter was estimated as a 10-year moving average of growth in real non-farm GDP. The cost of debt was calculated using the average overdraft rate, adjusted by the marginal corporate tax rate and expressed in real terms.

Graph 12: The Prime Rate**Table 3: Real After-Tax Cost of Debt and Equity (%)**

	Debt	Equity	Cost of Equity over Debt
1969/70-73/74	-3	14	17
1974/75-78/79	-6	17	22
1979/80-83/84	-2	14	16
1984/85	3	13	10
1985/86	2	12	10
1986/87	1	10	9
1987/88	1	11	10
1988/89	2	13	11
1989/90	5	12	7
1990/91	4	11	7
1991/92	5	8	3

On the last point, it appears that changing market attitudes towards gearing may have increased the risk premium on highly indebted firms. The following graph (Graph 13) plots the relative share price performance of companies based on changes in their gearing. In the left hand panel, companies are ranked in order of increased gearing between 1981/82 and 1988/89. Thus, the first quartile are the 25 per cent of companies that increased gearing the most.¹⁸ Conversely, the fourth quartile are the 25 per cent of companies that increased gearing the least. In the right hand panel, companies are ranked in order of decreased gearing between 1989/89 and 1991/92. The first quartile are the 25 per cent of companies that reduced gearing the least while the fourth quartile are those that reduced it the most.

Graph 13: Relative Share Price Performance



¹⁸ The change in gearing is measured as the absolute change in the ratio of the book value of debt to the book value of equity.

The graph points to a change in market perceptions. In the period up to 1988/89 companies that increased gearing the most (the first quartile) also recorded the largest increase in share prices. The share prices of those companies that increased gearing the least (the fourth quartile) performed relatively poorly.

It is not clear which direction causality runs in this case. Higher share prices may have encouraged some firms to increase leverage and may have also increased the willingness of banks to fund them. Blundell-Wignall and Gizycki (1992) find that credit supply is positively related to the net worth of the corporate sector. Alternatively, higher gearing may have been encouraged by the market if it perceived that firms were moving from non-optimal levels (due to regulation) to their optimum in response to financial liberalisation. Both factors were probably important. The second episode is markedly different. The share prices of companies that recorded the largest reductions in gearing (the fourth quartile) outperformed all others while those that reduced gearing the least (the first quartile) performed the worst.

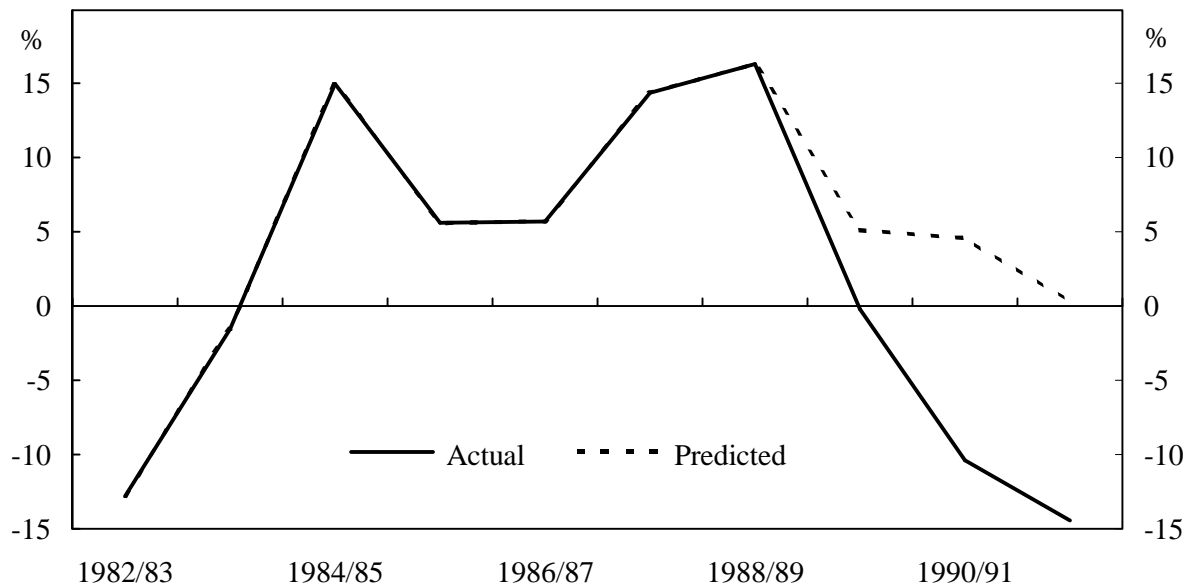
4. IMPLICATIONS FOR INVESTMENT

The recent behaviour of corporate balance sheets and investment has been related through two channels. First, firms in financial distress have been effectively constrained by the state of their balance sheets from expanding investment. Second, the shift in the relative cost of external funds has encouraged firms with healthy balance sheets to reduce leverage and investment - firms perceived that the return to financial restructuring exceeded that of physical investment. These factors exacerbated the normal effects of a slowdown in the economy on investment. Consequently, the fall in investment has been historically large despite the fact that other factors thought to influence investment - returns to capital, Tobin's 'q' and cash flows - have not behaved atypically.

The extent of the deviation from past behaviour can be illustrated using a simple aggregate investment equation containing a measure of Tobin's 'q' and cash flow as explanatory variables. This was estimated up to 1989. Graph 14 plots the out-of-sample predictions of the equation. Although the model predicted that investment growth would slow considerably over the period, the actual fall in investment was

much larger.¹⁹ This is consistent with the hypothesis that firms have responded to balance sheet constraints and shifts in the cost of funding at the expense of investment.

**Graph 14: Business Fixed Investment
(Actual v Predicted Change)**



In the near term, some focus on financial restructuring may remain. A few firms are still highly geared and have problems to work through. For many firms, however, the process of restructuring appears to have advanced a long way (though the extent to which it has been completed is conjectural - theory does not provide a clear

¹⁹ We use an investment equation based on McKibbin and Sieglhoff (1987) in which the percentage change in real business fixed investment is a function of the percentage change in Tobins 'q' and the percentage change in real business cash flows. The model is estimated by OLS using annual data over the period 1961/62 to 1988/89. Independent variables are lagged to allow for the timing difference between investment decisions and recorded investment expenditures. The model is:

$$\Delta I_t = 3.41 + 0.201\Delta q_{t-1} + 0.408\Delta C_{t-1} \quad (1)$$

(2.33) (2.95) (2.59)

Adjusted R Square = 0.35 DW=2.36

t-statistics in brackets

This simple equation is not a comprehensive investment model. Rather it should be interpreted as a simple baseline against which to compare current investment behaviour.

yardstick to judge empirically the optimal capital structure). Overall, the reduction in leverage and improved interest cover suggest that the imperative for most firms to reduce debt further should now be considerably reduced, and that many should be in a better position to expand investment when other factors are favourable.

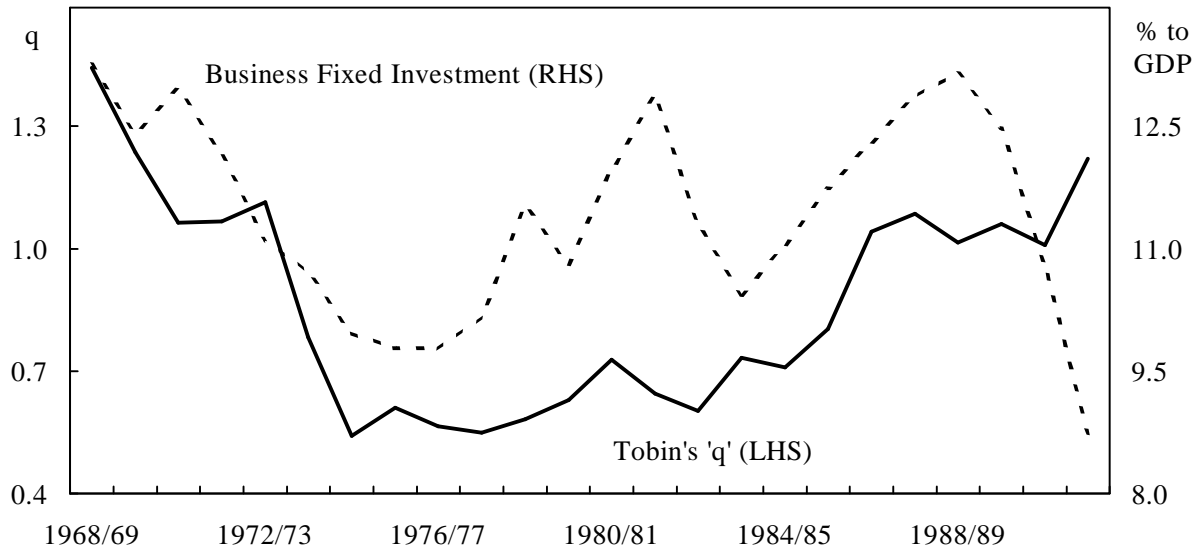
Some of these factors are falling into place. Measures of the profit share are relatively strong for this point in the cycle. A common feature of the falls in investment in 1974/75 and 1982/83 was that there was a marked shift in factor shares away from profits due to rapid increases in real wages. The reduction in real wages during the 1980s helped to raise the profit share over the course of the decade. Despite some fall in profits in the most recent downturn, the profit share remained relatively high (Graph 1). Trends in various measures of the average rate of return on the existing capital stock show a similar pattern (Graph 1). While each measure of the return to capital has declined from the pre-recession peaks, they are well above the trough in 1982/83 and above the levels of the 1970s.

More forward-looking measures, incorporating information from share prices, point to expectations of further strong gains in profits. Graph 15 plots Tobin's 'q' - the ratio of the market value of capital relative to its replacement cost. When the market value exceeds the costs of replacing capital - i.e. when the ratio is greater than one - firms have an incentive to acquire new capital. While the measure does not explain short-run movements in investment very well, the broad trends do seem to be related. This is not surprising since share prices and investment should both be driven by the same factors. For example, when share prices were weak in the mid to late 1970s so too was investment and conversely for the second half of the 1980s. On this measure, incentives to invest are relatively high compared with earlier periods.

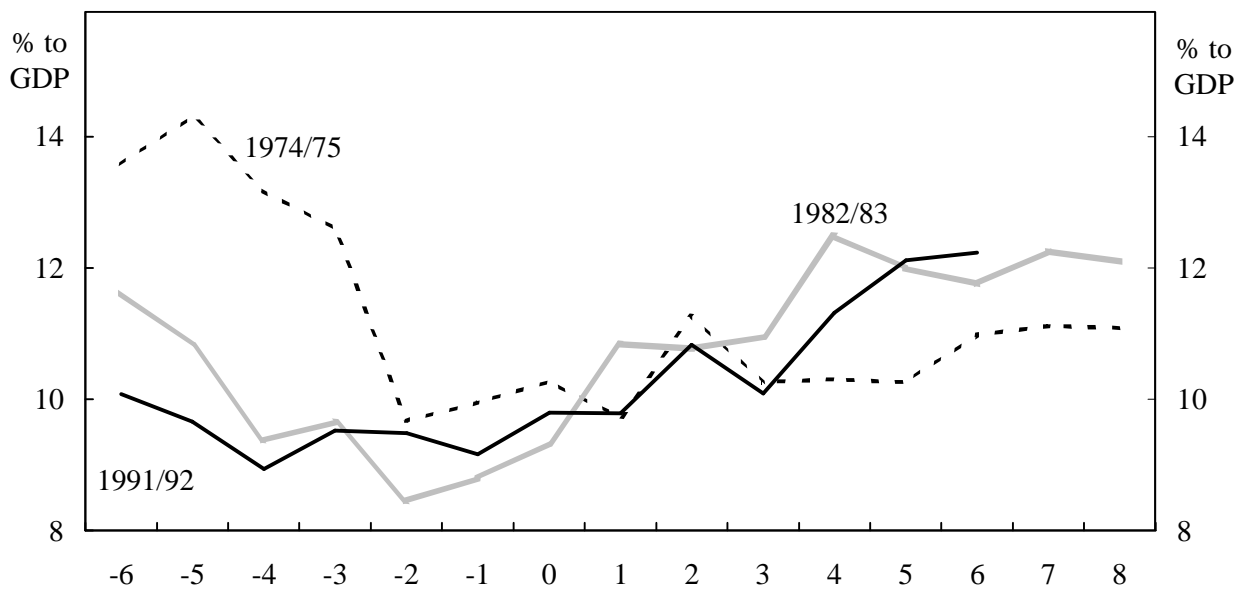
Cash flows have also improved strongly (Graph 16). The theory outlined earlier suggested that there would be a positive correlation between investment and cash flows and that cash flows would be a major source of finance for investment. The results in equation 1 show that there is a significant relationship between cash flows and investment. Mills, Morling and Tease (1993), using a database of major Australian companies, find similar evidence. Cash flows are also clearly the most important source of finance (Graph 17, Table 1). Graph 17 plots the sources of funds as a ratio to investment using the STATEX sample. Total funds raised by the corporate sector are typically much larger than required to finance new fixed

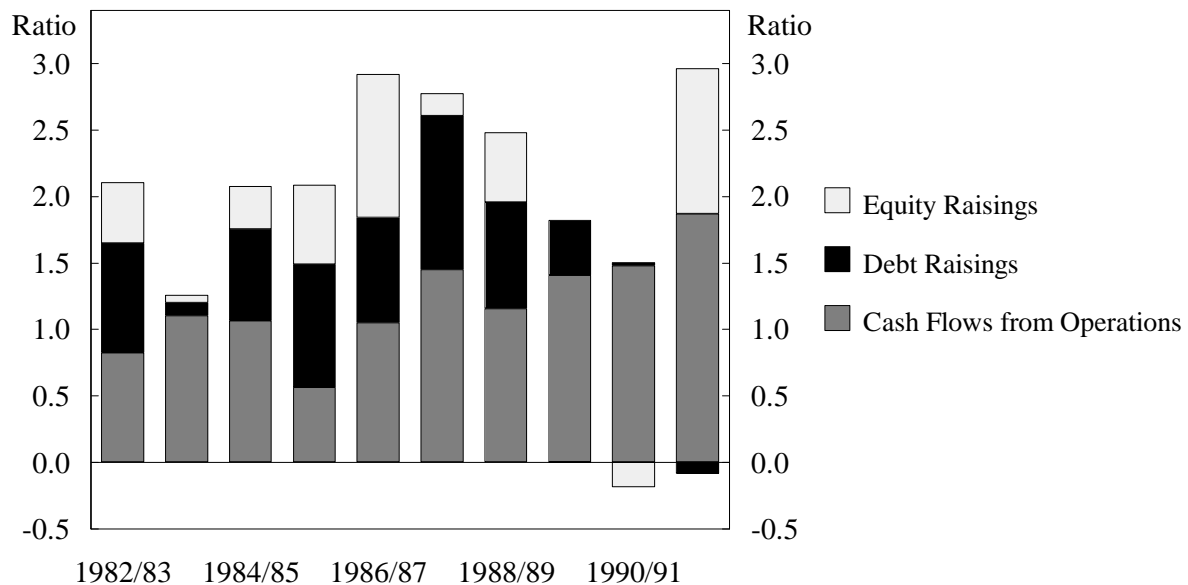
investment - they are also used, for example, to pay dividends, acquire financial assets and to cover depreciation. Cash flows have traditionally been the largest source of funds and generally are well above fixed capital expenditures. New debt raisings have been the next most important source followed by new equity raisings.

Graph 15: Tobin's 'q' Ratio



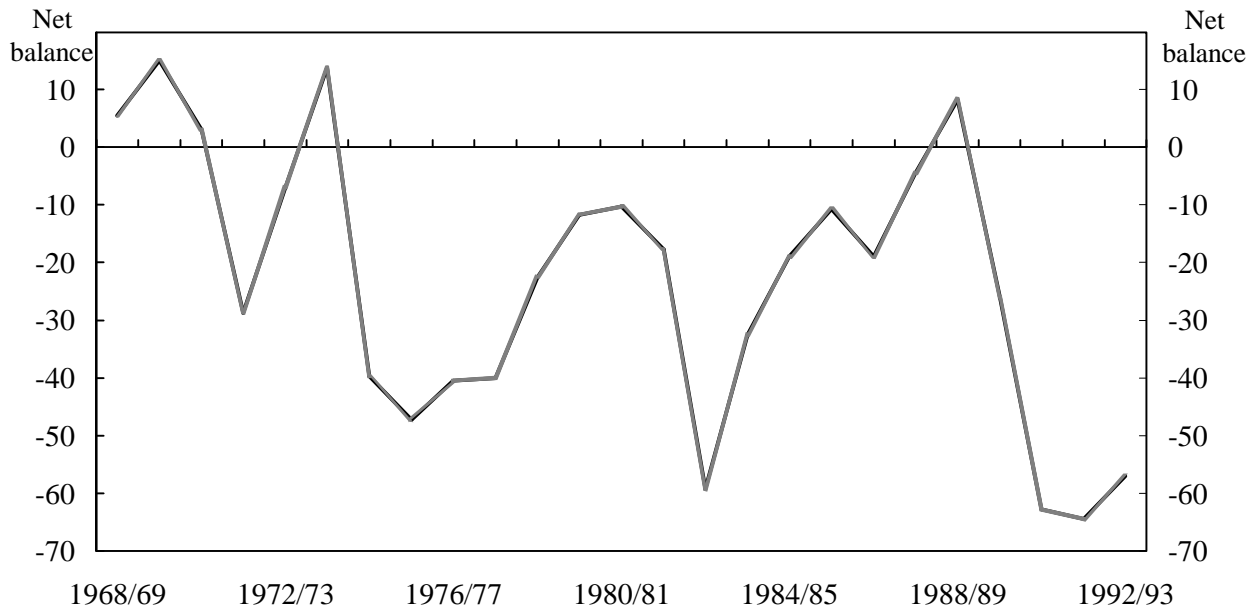
Graph 16: Cash Flow over the Cycle



Graph 17: Funding Sources as a Ratio to Investment

Cash flows fell as the economy entered recession but have since recovered. The recovery in cash flows is much the same as in the 1982/83 episode and somewhat stronger than 1974/75 (Graph 16). Investment has responded differently to cash flows this cycle, however. One reason for this, apart from balance sheet restructuring, may be that the pick-up in cash flows did not reflect a substantial rise in corporate sales and revenue. Hence, it did not signal a rise in demand that would encourage investment. Rather, the improvement has come from cost cutting and productivity gains, and from the reduction in net interest payments stemming from reduced corporate gearing and lower nominal interest rates. The sluggishness in corporate revenues reflects the fact that output growth has been relatively weak since the recovery from the trough in June 1991. This weak output growth has meant that firms are operating at well below capacity. While it is difficult to measure the degree of spare capacity, available measures suggest that firms are operating with excess capacity at around the levels of the 1982/83 recession (Graph 18).²⁰ An acceleration of growth and reduction of excess capacity, or at least a higher level of confidence about future growth prospects will be important for the recovery in investment.

²⁰ The capacity utilisation data are taken from the ACCI/Westpac survey.

Graph 18: Capacity Utilisation

* 1992/93 is an estimate.

5. CONCLUSION

The early 1990s to date has been a period of balance sheet repair. Borrowings have been cut back and repaid. New equity raisings have taken place. Aggregate measures of debt to equity declined and business credit fell. The restructuring was necessary for some firms while others responded to the incentives provided by changes in the costs of external funding. This process exacerbated the effects of other factors holding back investment. As a result, investment fell more sharply than in earlier downturns despite the fact that many of its determinants held up relatively well.

The advanced state of balance sheet repair means that firms are in a good position to respond to improved economic conditions in the future. Some short-term focus on restructuring may remain given the excess capacity and short-term uncertainty about the outlook. An acceleration of growth and a reduction in excess capacity and a higher level of confidence would, however, mean that firms could focus less on balance sheet restructuring and more on the positive underlying fundamentals for investment. This should be compatible with relatively rapid growth in new capital spending.

APPENDIX: DATA SOURCES AND CONSTRUCTION

Graph 1: Corporate GOS and non-farm GDP are from ABS Cat. No. 5206.0, *Australian National Accounts (ANA)*. Gross and net rates of return on capital are from ABS Cat. No. 5221.0, *ANA, Capital Stock*.

Graph 2: Nominal business fixed investment, and nominal gross fixed capital expenditure on equipment and non-dwelling construction data are from ABS Cat. No. 5206.0, *ANA*. Nominal non-farm GDP is from the same publication.

Graph 3: Data are from the Australian Stock Exchange STATEX service.²¹ Total Assets are defined as the sum of the following items:

- (i) Financial assets consists of cash and liquid assets and investments. Cash and liquids consist of cash and its equivalent such as cash in hand, cash at bank, and short term deposits. Investments include listed shares, options, land and buildings held for income producing purposes, non-listed shares, and joint ventures.
- (ii) Trade debtors are equal to net accounts receivable (that is after provision for bad and doubtful debts).
- (iii) Net fixed assets includes land, buildings, plant, and machinery.
- (iv) Stocks consist of raw materials, work-in-progress, finished goods, and tools.
- (v) 'Other' is calculated as a residual item and would include other current and non-current assets not separately identified such as pre-payments, future tax benefits, rights, and intangibles.

Real Total Assets are calculated by deflating nominal Total Assets by the non-farm GDP deflator.

Graph 4: Data are from STATEX. Total Liabilities and Equity are defined as the sum of the following items:

²¹ The STATEX service covers a sample of companies in the All Ordinaries Index. In this paper, we use a sub-sample of 80 non-financial companies for which data are available for an 11 year period. Data are provided to the RBA in accordance with the STATEX service agreement.

- (i) Total equity is calculated as the sum of ordinary equity, preference capital, minority interest, and intangibles.
- (ii) Debt is calculated as the sum of both short and long-term securities and loans, and bank overdraft.
- (iii) Trade creditors (or accounts payable to suppliers).
- (iv) 'Other' includes all other liabilities not separately identified such as accruals, and tax payable.

Real Total Liabilities and Equity are calculated by deflating nominal Total Liabilities and Equity by the non-farm GDP deflator.

Graph 5: Data are from STATEX. Sources of Funds are defined as the sum of the following items:

- (i) Cash flow from operations, defined as net profit after tax, plus depreciation.
- (ii) Debt raisings, defined as the increase in debt holdings between any two financial years.
- (iii) Equity raisings, defined as the increase in total equity, defined as for Graph 4 less retained earnings (which are already implicitly included in cash flow from operations) and asset revaluations (which are a non-cash item as they are not yet realised).

Graph 6: Data are from STATEX. Uses of Funds are defined as the sum of the following items:

- (i) The change in net fixed assets (defined as in Graph 3).
- (ii) The change in financial assets (defined as in Graph 3).
- (iii) Dividends.
- (iv) 'Other' is calculated as a residual item to balance sources and uses of funds and includes items not separately identified such as other non-cash items not adjusted for in cash flow from operations.

Graph 7a: Data are from STATEX and from the Reserve Bank of Australia *Bulletin*, Company Finance Supplements. Debt to equity is defined as total debt (at book value) divided by total shareholders funds (at book value). Debt is defined as the sum of short and long-term securities and loans, and bank overdrafts. Total shareholders funds are defined as the sum of ordinary equity, preference capital, minority interest, and reserves.

Graph 7b: Data are from STATEX. The ratio is calculated as total debt (defined as for Graph 7a) divided by the market value of equity.

Graph 8: Data are from STATEX and from ABS Cat. No. 5206.0, ANA and ABS Cat. No. 5204.0, ANA. The National Accounts interest cover is calculated as net operating surplus of corporate trading enterprises divided by net interest paid by corporate trading enterprises. The STATEX measure is defined as aggregate earnings before interest and taxes (EBIT) divided by aggregate interest paid.

Graph 9: Data in the top panel are from STATEX. The STATEX ratio of debt to equity is for the full sample of 80 companies. The STATEX ratio including non-survivors is the ratio of debt to equity for the above sample, after 13 failed companies have been added back in.

The bottom panel business credit data comes from internal sources, and non-farm GDP is obtained from ABS Cat. No. 5204.0, ANA.

Graph 10: Data are from a sample of 140 companies from the STATEX database.

Graph 11: Prime rate comes from Reserve Bank of Australia *Bulletin*, Table F.3. Cash flow and interest cover are derived from ABS Cat. No. 5206.0, ANA. Cash flow is defined as corporate GOS less net interest paid, and is taken as a ratio to non-farm GDP. Interest cover is defined as the ratio of corporate GOS to net interest paid.

Graph 12: The prime rate is from the Reserve Bank of Australia *Bulletin*, Table F.3. The real prime rate is obtained by deflating the nominal rate by the consumption deflator. The real after-tax rate is the prime rate, adjusted by the corporate tax rate, and deflated by the consumption deflator. The corporate tax rate is from Reserve Bank of Australia, *Australian Economic Statistics 1949-50 to*

1989-90 (Occasional Paper No. 8, Table 2.23), Commissioner of Taxation and *Budget Statements*. The consumption deflator comes from ABS Cat. No. 5206.0, ANA.

Graph 13: Data are from STATEX. Companies are split into four quartiles based on the absolute increase in leverage over 1981/92 to 1988/89, and the absolute decrease in leverage over the period 1988/89 to 1991/92. An index for each quartile is calculated by averaging indexes of the share prices of each of the companies in the group. This is expressed as a ratio to an aggregate index calculated by averaging indexes of all the companies in the sample.

Graph 14: Real business fixed investment is from ABS Cat. No. 5206.0, ANA. The predicted values are from the regression equation described in footnote 19.

Graph 15: Real business fixed investment is obtained from ABS Cat. No. 5206.0, ANA and is the sum of non-dwelling construction and equipment. Real non-farm GDP is from ABS Cat. No. 5206.0, ANA. Tobin's 'q' is calculated as in Dews, N., "Research Report: "Tobin's q" - some Updated Data", Reserve Bank of Australia *Bulletin*, June 1986, B6-B11.

Graph 16: Cash flow is from ABS Cat. No. 5206.0, ANA and is defined as corporate GOS less net interest paid.

Graph 17: Data are from STATEX. Cash flows from operations, debt raisings, and equity raisings are as defined in Graph 5. Investment is defined as the change in fixed assets less asset revaluations, plus depreciation.

Graph 18: Capacity Utilisation data are from the ACCI-Westpac Manufacturing Survey, and is the average response over the year to the following question: "At what level of capacity utilisation are you working? Net Balance". A positive number indicates that proportion of net respondents who are operating above normal capacity utilisation, and a negative number that proportion of net respondents working below normal capacity.

REFERENCES

- Allen, D.E. (1991)**, “The Determinants of the Capital Structure of Listed Australian Companies: The Financial Manager’s Perspective”, *Australian Journal of Management*, 16, 2, pp. 103-127.
- Amihud, Y., B. Lev and N.G. Travlos (1990)**, “Corporate Control and the Choice of Investment Financing: The Case of Corporate Acquisition”, *Journal of Finance*, 45, pp. 603-616.
- Bernanke, B.S. and M. Gertler (1986)**, “Agency Costs, Collateral, and Business Fluctuations”, NBER Working Paper No. 2015.
- Bernanke, B.S. and M. Gertler (1987)**, “Financial Fragility and Economic Performance”, NBER Working Paper No. 2318.
- Brennan, M.J. and E. S. Schwartz (1985)**, “Evaluating Natural Resource Investments”, *Journal of Business*, 58, 2, pp. 135-157.
- Blundell-Wignall, A. and M. Gizycki (1992)**, “Credit Supply and Demand and the Australian Economy”, Reserve Bank of Australia Research Discussion Paper No. 9208.
- Chaplinsky, S. and G. Niehaus (1990)**, “The Determinants of Inside Ownership and Leverage”, Working Paper, University of Michigan.
- Cutler, D.M., J.M. Poterba and L.H. Summers (1990a)**, “Speculative Dynamics”, NBER Working Paper No. 3242.
- Cutler, D.M., J.M. Poterba and L.H. Summers (1990b)**, “Speculative Dynamics and the Role of Feedback Traders”, NBER Working Paper No. 3243.
- Devereux, M. and F. Schiantarelli (1989)**, “Investment, Financial Factors and Cash Flow: Evidence from UK Panel Data”, NBER Working Paper No. 3116.
- Dews, N., J. Hawkins and T. Horton (1992)**, “Measuring the Cost of Capital in Australia”, Reserve Bank of Australia Research Discussion Paper No. 9205.

Eckstein, O. and A. Sinai (1986), “The Mechanisms of the Business Cycle in the Postwar Era”, in R.J. Gordon (ed.), *The American Business Cycle: Continuity and Change* Univ. of Chicago Press, Chicago.

Edey, M. and M. Britten-Jones (1990), “Savings and Investment in the 1980s”, Reserve Bank of Australia Research Discussion Paper No. 9003.

EPAC (1992), “Investment and the Cost of Capital”, Council Paper No. 52, Australian Government Publishing Service, Canberra.

Fazzari, F.M., R.G. Hubbard and B. C. Petersen (1988), “Financing Constraints and Corporate Investment”, *Brookings Papers on Economic Activity*, 1, pp. 141-195.

Fazzari, S. and M. Athey (1987), “Asymmetric Information, Financing Constraints and Investment”, *Review of Economics and Statistics*, 69, pp. 481-487.

Fazzari, S. and T. Mott (1986/87), “The Investment Theories of Kalecki and Keynes: An Empirical Study of Firm Data, 1970-1982”, *Journal of Post Keynesian Economics*, Winter, 9, pp. 171-187.

Gertler, M. (1988), “Financial Structure and Aggregate Economic Activity: An Overview”, NBER Working Paper No. 2559.

Gertler, M. and R.G. Hubbard (1988), “Financial Factors in Business Fluctuations” in *Financial Market Volatility*, Federal Reserve Bank of Kansas City.

Jensen, M.C. and W.H. Meckling (1976), “Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure”, *Journal of Financial Economics*, 3, pp. 305-360.

Kent, C. and P. Scott (1991), “The Direction of Australian Investment From 1985/86 to 1988/89”, Reserve Bank of Australia Research Discussion Paper No. 9106.

Kohli, U. and C.J. Ryan (1987), “Investment and Interest Rates: An Econometric Dissection”, *Journal of Macroeconomics*, 4, 3, pp. 373-389.

Lowe, P. and G. Shuetrim (1992), “The Evolution of Corporate Financial Structure: 1973 - 1990”, Reserve Bank of Australia Research Discussion Paper No. 9216.

Macfarlane, I.J. (1989), “Money, Credit and the Demand for Debt”, Reserve Bank of Australia *Bulletin* May, pp. 21-31.

Macfarlane, I.J. (1990), “Credit and Debt: Part II”, Reserve Bank of Australia *Bulletin*, May, pp. 27-34.

Majd, S. and R.S. Pindyck (1987), “Time to Build, Option Value and Investment Decisions”, *Journal of Financial Economics*, 18, 1, pp. 7-27.

McDonald, R. and D.R. Siegel (1986), “The Value of Waiting to Invest”, *Quarterly Journal of Economics*, 101, 4, pp. 707-727.

McKibbin, W. and E.S. Sieglhoff (1987), “A Note on Aggregate Investment in Australia”, Reserve Bank of Australia Research Discussion Paper No. 8709.

Mills, K., Morling S. and W. Tease (1993), “The Influence of Financial Factors on Corporate Investment”, Reserve Bank of Australia Research Discussion Paper, (forthcoming).

Myers, S.C. (1977), “Determinants of Corporate Borrowing”, *Journal of Financial Economics*, 5, pp. 147-176.

Myers, S.C. and N.S. Majluf (1984), “Corporate Financing and Investment Decisions When Firms have Information that Investors Do Not”, *Journal of Financial Economics*, 13, pp. 187-221.

O’Brien, P.F. and F. Browne (1992), “A “Credit Crunch”? The Recent Slowdown in Bank Lending and Its Implications for Monetary Policy”, OECD Economics and Statistics Department Working Papers, No. 107.

Pindyck, R.S. (1988), “Irreversible Investment, Capacity Choice, and the Value of the Firm”, *American Economic Review*, 78, 5, pp. 969-985.

Pindyck, R.S. (1991), “Irreversibility, Uncertainty, and Investment”, *Journal of Economic Literature*, Vol. XXIX, pp. 1110-1148.

Pinegar, J.M. and L. Wilbricht (1989), “What Managers Think of Capital Structure Theory: A Survey”, *Financial Management*, 18:4, Winter, pp. 82-91.

Rae, D. (1991), “Disaggregated Investment Forecasting Equations”, Reserve Bank of New Zealand Discussion Paper G91/4.

Ryan, C.J. (1990), “Inflation and Corporate Taxation in Australia”, Reserve Bank of Australia Research Discussion Paper No. 9011.

Stevens, G. (1991), “The Rise in Private Debt in the 1980s: Why Did it Happen, and Will it Continue in the 1990s”, from *The Surge In Australia’s Private Debt: Causes, Consequences*, *Outlook: Office of Economic Planning Advisory Council*, June, pp. 43-63.

Whited, T.M. (1989), “Debt, Liquidity Constraints, and Corporate Investment: Evidence from Panel Data”, Board of Governors of the Federal Reserve System, mimeo, January.

Whited, T.M. (1991), “Investment and Financial Asset Accumulation”, *Journal of Financial Intermediation*, 1, pp. 307-334.

Wizman, T.A. (1992), “What Moves Investment? Cash Flows in a Forward-Looking Model of Capital Expenditures”, Federal Reserve Bank of New York Research Paper No. 9201.

Woo, L. and H.P. Lange (1992), “Equity Raising by Australian Small Business: A Study of Access and Survival”, Monash University Department of Accounting and Finance Discussion Paper, No. 19/92.