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Financing of Industry: Recent Trends
And Possible Policy Issues
B. de Boos, T. Valentine and P. Williamson
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FINANCING OF INDUSTRY: RECENT TRENDS AND POSSIBLE POLICY ISSUES

B.W. de Boos, P.J. Williamson and T.J. Valentine*

(1) INTRODUCTION

The past two decades have presented rather different sets of pressures and opportunities for change within Australian industry. These differences, in turn, have been reflected in financing trends.

During the 1960's the emphasis was primarily on securing funds for growth and exploitation of profitable opportunities within a relatively stable domestic and international macro-environment.

During the 1970's profitable opportunities were undoubtedly also to be found. They existed, however, within a much less stable operating context. In addition to much higher rates of inflation, very significant shifts in relative prices and international comparative advantage occurred. Real growth rates also varied quite markedly.

Sources of finance were therefore increasingly called upon to buffer external "shocks", to assist the restructuring of assets within the firms' balance sheets, and to smooth the reallocation of resources between firms and industries; in addition to the basic role of funding growth.

This shifting emphasis in the role of funds within the firm was, in turn, reflected in changes in balance sheet structure and revenue-expenditure-debt servicing relationships. Paralleling these trends have been changes in the types of funds supplied by the market, reflecting both the changing demands from industry and innovation by competitive financial intermediaries.

* Presently members of the Secretariat of the Australian Financial System Inquiry. It should be emphasized, however, that the opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the members of the Committee.
The financial structure of Australian industry which has emerged as a product of these forces has attracted considerable debate. Some writers have expressed concern about these developments, a concern which is based on three interrelated problems.

First, they see a debt servicing problem; industry increasing the proportion of debt to total funds in its financial structure, combined with pressures on profitability and cash flow reducing the resources available to meet interest and principal repayments. It has been suggested that these developments have created the potential for greater instability in the industrial sector in the form of insolvency or illiquidity.

Secondly, they see a profitability problem - declining real profitability, the result of failure of before tax earnings to keep pace with inflation, combined with increased taxation pressures associated with inadequacy of historic cost depreciation provisions and trading stock valuation. This development is seen as contributing to increased use of debt in order to "lever up" declining real shareholders' return, a squeeze on cash flow, unwillingness to raise new equity which would initially dilute the return on shareholders' funds, and reduced investment.

Thirdly, it is claimed that a maturity structure problem has developed in industry financing - specifically, an increase in the use of short term debt, declining maturity of "long term" debt and a declining liquidity buffer in the form of net working capital (current assets less current liabilities).

Viewing these developments in 1975, Bills, Love and Cocks (2) were concerned about their implications. Indeed, they spoke of a "current crisis". This interpretation receives some support from the work of Minsky (e.g. Minsky (8)) who would regard the developments as indicating an increasing fragility in the financial aspects of the economic system. The extreme case of fragility occurs when a large number of economic units are

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1. J. Rose
2. R.H. Allan

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- Figure 1: Long Term Debt Capacity and Earnings Stream
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involved in "Ponzi financing"; a situation in which a financing unit does not receive a sufficient net income to cover its interest commitments and must increase its debt in order to meet them. The present situation is far from the Ponzi case, but Minsky would argue that the increasing fragility of the system will make it vulnerable to disturbances such as increases in interest rates.

It is also part of Minsky's view that there exists an inherent tendency towards increasing fragility of the financial system in a period of inflation. A major aim of the present paper is to explore this view; that is, to examine the extent to which the development - mentioned above can be explained by changes in the economic environment within which firms function. Even if they can be fully explained in this way, however, we are still left with the question of whether the emerging financial structure is desirable or not. Some commentators have viewed both the long term and more recent trends in corporate financing as a conscious and appropriate response by industry to past and expected future developments in its operating environment. It is claimed that we now have a more flexible and resilient capital structure which makes more efficient use of scarce funds whilst maintaining adequate protection of solvency and liquidity.

Against this background our purposes in the present paper are as follows. First, we seek to outline the basic trends in Australian corporate financial structure over the past two decades. Here we draw on a detailed industry by industry database incorporating over 300 major listed companies which has been prepared as a commissioned study for the Campbell Committee, augmented by published statistics. Section II of the paper establishes a basis for the discussion with a brief outline of the methodology through which trends in corporate financing might be analysed. Within this framework, Section III discusses the major trends on an empirical level, and seeks to place them in perspective in terms of overall economic developments. Our second major objective is to draw-out some possible policy issues. This is the subject of Section IV.
Most of the analysis undertaken in this area to date has been based on highly aggregated "all industries" or broad sectoral data. Whilst such broad averages have been given considerable prominence in the present study, our highly disaggregated data source has enabled closer analysis of individual industries and different size classes of firms than previously possible. Some interesting divergences in trends between these sub-groups have therefore been isolated.

(II) ANALYSING TRENDS IN FINANCIAL STRUCTURE: SOME YARDSTICKS

In pinning down the essential trends and policy issues we feel there is virtue in commencing the analysis from first principles - returning to the decision making process of firms and individuals and the factors affecting them.

In essence, there are two major aims determining the method by which a firm finances its operations:

- The achievement of a "balanced" financial structure in terms of:
  - debt servicing capacity given the size and stability of its income stream and cash flow
  - matching the maturity and liquidity of its asset and liability structure
  - meeting the dividend vs re-investment preferences of its shareholders
  - minimising the cost of capital to the firm so as to maximise the net value of its operations.

Commonly, the firm may have to make trade-offs between these objectives, each of which bear more detailed consideration.

(1) Debt Capacity/Servicing

The size, stability and predictability of a firm's income stream and cash flow must place important constraints on its capacity to finance its operations via debt.

Firstly, required interest payments on long term debt should be kept below the firm's realistic minimum earnings before interest and taxes less other fixed charges. Clearly in this respect the firm with a higher and/or more stable earnings stream relative to its total assets has the capacity, other things being equal, to maintain a more highly geared structure in the long term.

In the case of short term debt it is often the predictability rather than the stability of earnings which is the major determinant.

Concurrently, the firm must ensure sufficient cash flow or liquid assets (or firm credit lines) in excess of operating requirements to meet that part of its debt repayment commitments which cannot easily be refinanced. Again size and stability of earnings and cash flow is of paramount importance.

As may be simply demonstrated by comparison of the firms in Figure 1, debt/equity structure must be viewed relative to the firms' operations rather than in any "absolute" sense. Clearly, for example firm 'B' has a significantly smaller capacity to absorb long term debt despite the same average earnings as firm 'A'. In view of this it would be useful to examine the stability and predictability of earnings before interest and taxes (EBIT) and gross cash flow. However, these are difficult to quantify without long runs of data.
A number of accounting ratios, which are readily calculated from available data, may provide useful insights into these interactions on an individual firm or industry level; viz

The "coverage ratio", defined as earnings before interest and taxes (EBIT) over fixed charges (including interest). This gives an indication of how large a reduction in earnings the firm can withstand before its ability to meet interest payments is placed in jeopardy.

The coverage ratio may also be recalculated on the basis of "potential fixed charges" by re-expressing debt servicing requirements in terms of current interest rates - reflecting the firm's position if refinancing of debt was necessitated. This takes a longer term perspective eliminating the "apparent coverage" due to the existence of "old" low interest debt in the balance sheet (or conversely the excessively adverse position reflected by high interest debt taken on in previous periods).

The ratio of short and long term debt to gross cash flow. This reflects the multiple by which debt outstanding exceeds that which could be retired, if necessary, from cash flow in the current period. Expressed another way, it

is the number of years it would take for existing cash flow to repay the debt. A rise in this ratio (with a given debt maturity pattern) exposes the firm to greater risk of illiquidity.

On a broader level we might postulate the following kinds of effects resulting from changes in the factors affecting the determinants of a firm's financing behaviour:

- Lower or less stable profitability must reduce gearing capacity, particularly if earnings decline relative to interest rates.

- At the same time, declining real profitability will encourage firms to take on more debt in order to maintain shareholder return through leverage.*

- Tighter monetary conditions (e.g. higher interest rates) put pressure on the refinancing of debt, resulting in greater calls on gross cash flow and EBIT.

- Increases in effective rates of company taxation reduce the capacity of firms to service debt, increasing the need for refinancing.

(ii) Minimising Cost of Capital vs Risk of Default

One of the most vexed questions in the business finance literature is that of choosing leverage so as to minimise the cost of capital to the firm whilst maintaining the risks of default within tolerable bounds (see Chen and Kim (4)).

We have already discussed some aspects of this problem in terms of debt servicing requirements in comparison to earnings, cash flow and refinancing available to the firm. Both the size and variability of these parameters and the importance of their minimum levels was emphasised.

* Given that the after tax cost of debt is usually less than the yield required to attract additional equity, the firm will be encouraged to use debt rather than equity finance for expansion in order to "shore up" existing shareholders rate of return.
The shareholder and the prospective lender, however, are likely to be interested in more than simply the firm's ability to meet its debt servicing requirements from earnings and cash flow. Specifically, they will wish to have some indication of the writedown in asset values, caused for example by rising interest rates, falling property prices or technological obsolescence, the firm can withstand at any point in time before becoming insolvent. (ie having insufficient value of assets to meet its outstanding liabilities.)* In essence this depends on two factors: the risk exposure associated with assets and the ratio of debt to equity (shareholders' funds). The most commonly utilised measures include:

- The ratio of long term debt to equity. This is probably the most important, since short term debt and other liabilities would normally be already covered by relatively low risk and fairly liquid assets. The risk exposure associated with short term debt is therefore better assessed by direct comparison of current assets and current liabilities.

- The ratio of short term debt to equity ratio which is mainly of importance when the volume or security of liquid assets is open to question. It is considered in conjunction with the long term debt to equity ratio, the total debt to equity ratio and the total external liabilities (including provision for future payments and creditors, as well as borrowings) to equity ratio.

- Total debt to the market value of equity. Conceptually this should be a better indication of solvency risk than measures based on the 'book value' of assets.

Even once a set of ratios has been decided upon, however, it is difficult to determine what the "appropriate" debt-equity structure should be. In essence, this decision involves a trade off between the advantages and disadvantages of debt financing to existing shareholders, viz:

- the opportunity to increase their rate of return by employing debt at lower cost than the equivalent return demanded by new equity;
- financing expansion without diluting ownership and control; and
- the increased danger of being forced into receivership/liquidation by creditors as the proportion of debt financing increases.

(iii) Matching Maturity and Liquidity

Much of the influence of maturity and liquidity matching may be summarised in the simple financing adage "long term assets should be covered by long term funds, short term assets with short term liabilities". This flows from the objective of maximising use of cheaper short term funds, whilst keeping the risk of a refinancing crisis within tolerable bounds.

The concept of "optimal" maturity matching might be expressed as in Figure 2.

* Individual lenders are also interested in the relative position of their security in the firm's debt structure.
Three accounting ratios are of particular importance within this context:

1. The "Current Ratio" (current assets over current liabilities) - expressing the size of "liquidity buffer" inherent in a firm's financing structure.
2. The "Liquid Ratio" (usually defined as current assets less stocks over current liabilities less bank overdraft) - thus providing a measure of the "short term liquidity buffer".
3. The Fixed Assets over Long Term Funds ratio.

As in the case of earnings and cash flow the "prudent" magnitude of these buffers is heavily influenced by the financial environment. As the capital market develops in terms of the range and negotiability of instruments (which has undoubtedly occurred in Australia's market for short term debt during the 1970s) the size of necessary buffer stocks may be reduced.

It is necessary to view the structure of a firm's liabilities very much in the light of the corresponding structure of its assets. What might appear initially as an undesirable trend in the maturity structure of funding might simply represent a rational and prudent response to adjustments in asset structure and maturity in line with a changing operating environment. For example, if current assets rise as a proportion of total assets, a corresponding increase in the proportion of current liabilities would be expected. Indeed, financial management would be ineffective if such growth of current assets were financed by relatively higher cost long term funds.

(iv) Profitability

Some of the important inter-relationships between corporate financing structure and profitability have already been mentioned. Trends in profitability are clearly also of interest in their own right.

The following measures are commonly calculated:

- Earnings before interest and taxes (EBIT) over Total Assets (%) - a measure of basic operating profitability, independent of leverage, taxation, etc.
- EBIT over long term funds (%)
- Earnings after interest and taxes over total assets (%) - a measure of operating profit after adjusting for the tax effect of leverage.
- Earnings after interest and taxes over long term funds.
- Earnings available to ordinary shareholders (after interest and taxes) over ordinary shareholder funds - a measure of profitability on equity funds after incorporating the effects of leverage associated with the tax deductibility of interest and generally lower before tax cost of debt funds to the firm (compared with the costs of additional equity).

In addition to examining these measures, it is often useful to quantify the total contribution of leverage to shareholder return. For this purpose, we may begin by calculating the rate of return to shareholders if the company financed its operations only by equity; viz:

\[
\text{Profit After Interest and Taxes + Interest} \times (1 - \text{Tax Rate}) \\
\text{Total Assets (or alternatively, Total Assets less trade creditors and provisions)}
\]

This may then be compared with the actual after tax return to shareholders observed given the company's financing structure; i.e:

\[
\text{Profit After Interest & Taxes} \\
\text{Shareholders Funds}
\]
The difference between these two series represents that part of their rate of return the shareholders owe to the benefits of leverage. As overall profitability is squeezed we might expect companies to support their rate of return to shareholders by increasing the proportion of debt in their balance sheets.

It has been widely recognised, however, that the usual accounting based measures of profitability may provide a poor reflection of the true profit position, particularly in an inflationary environment. In an attempt to overcome some of these problems we might also look at the rate of return, including capital gains and dividends which the investor would have received on his initial investment (of say $100) over a specified period. Such a measure of "investor return" may be computed by compounding monthly changes in share prices, after appropriate adjustments for stock splits/ bonus issues etc. Dividends and any "rights" value are usually assumed to be reinvested during the month after receipt. In the present study we have been restricted to 'accounting based' measures of profitability in the absence of investor return series of comparable coverage. However, the Committee is currently having figures on investor return prepared as part of the AFSI-STATEX study. We expect to publish these in a future technical report on our corporate financing data.

In addition to profitability measures the "effective" tax rate is also of interest. Whilst the company tax rate is set at 46.5% of earnings, the effective rate may vary from this figure as a result of various arrangements such as the Trading Stock Valuation Adjustment, Investment Allowances, Dividend Rebates, etc. Clearly this "effective" tax rate is of considerable importance both to the firm's cash flow and the funds available for distribution to shareholders.

(v) Dividend/Reinvestment Preferences of Shareholders

In purely theoretical terms, a good case can be made for the irrelevance of the split between dividends and retained earnings in corporate financing strategy at least in the short
run. (see for example Miller & Modigliani (7), Fama & Babiak (5)) However, in Australian financial markets there seems to exist a strong pressure for companies to make "reasonable" and "stable" dividend payments on a continuing basis.

Payment of dividends places two pressures on a firm's financing policy. In the first instance, it reduces the "potential equity base" in the sense of total shareholders funds available to the firm. Secondly, it reduces the "free cash flow" available to the firm for the purposes of new investment and debt servicing.

During periods when cash flow comes under pressure, due for example to low profitability relative to interest rates and difficulties in refinancing debt, payout ratios (defined as dividends over earnings after interest and taxes) would clearly be expected to decline.

A parallel attempt to augment the supply of equity with new issues would also be expected. When this is impracticable as a result of low share prices / high cost of equity, the response will take the form of reduced capital investment. Whilst we have not specifically taken up this issue in the present paper, it might be noted that data drawn from the AFSI-STATEX study shows evidence of a significant decline in payout ratios over the past decade.

(iii) MAJOR TRENDS IN CORPORATE FINANCIAL STRUCTURE OVER THE PAST TWO DECADES

We turn now to an empirical examination of major trends in corporate financial structure, incorporating the points made in Section II. Emphasis is on the three areas about which concern has been expressed: debt capacity, profitability and maturity structure.

(i) Debt vs Equity

We shall regard the debt/equity decision as the key one in our analysis. Given that it is the debt-equity ratio which is at the centre of the present debate, this seems both natural and convenient. The AFSI-STATEX study confirms that, on average, the total debt/equity ratio in recent years has been higher than those prevailing during the early-mid 1960's (Graph 1). This general trend is evident in both long and short term debt to equity ratios although their movements within the overall period have differed quite markedly (Graph 2). In addition, it might be noted that much of the overall increase in debt occurred in the late 1960's before the major inflationary surge.

In the present paper we shall examine a number of possible explanations for these developments:

- When real after-tax profitability (ie relative to inflation) is squeezed firms may seek to maintain returns to shareholders by increasing debt equity ratios; thereby "levering up" the return on shareholders' funds (as discussed in Section II). This is particularly likely in the case of long term debt which in some senses may provide a realistic substitute for equity capital.

- When firms are operating at or near full capacity due to strong growth in demand, the funds necessary to enable a rapid and perhaps short lived increase in output are likely to be met by debt rather than equity; particularly short term debt.

- A third possible explanation is a long term trend toward increased use of debt due to growing sophistication of financial management in Australian companies and the development of stronger secondary markets in debt, particularly commercial bills. Both of these trends may allow stable operation on higher debt-equity ratios.
Bain, Day and Wearing (1) discuss the role of "credit tightness" in influencing the optimum balance sheet structure of corporations. An implication emerging is that the debt/equity ratio may be influenced by the extent to which credit is rationed. In particular, a regime of rationing which makes it more difficult for firms to borrow (such as an attempt by the Reserve Bank to restrict credit) may lead to a reduction in the debt/equity ratio.

In an attempt to isolate the relative importance of these trends in explaining movements in the debt/equity ratio a number of statistical relationships were fitted to the series for total, long term and short term debt to equity ratios using multiple regression analysis. The alternative approach is to examine the relationship of the debt/equity ratio and the variables determining it on a pairwise basis. The danger with this approach is that movement in the ratio caused by one variable may be wrongly attributed to another. For example, if our sample period starts in a year when credit was restricted and ends with a period of credit ease, this may induce an upward trend in the ratio. In estimating the multiple regression equation, we correct for the degree of credit rationing and, therefore, remove the apparent trend. The program used to estimate the equations is described in Pagan (10).

Paralleling the above hypotheses, the following variables were tested:

- "real profitability" - as measured by profit after tax divided by total assets (PATA) less the rate of inflation (PT) which is defined as the percentage rate of change of the GDP deflator.
- Capacity utilisation (CU); as measured in the Australian Treasury - ABS National Income Forecasting Model. The value used is the average of the four quarters of the financial year.

A measure of credit restriction obtained from the ACMA survey was also tested. This was the percentage of respondents who saw finance as the factor most limiting their ability to increase production. It was insignificant in all the equations in which it was tested.

The variables included in the equation can be classified according to whether they exert their influence through the demand for funds or the supply of funds. The first two variables are demand variables while the fourth is a supply variable.

The following equation explains the total debt-equity ratio (DE) of the all industries group. It has been estimated from data for the period 1962/63 to 1977/78.

$$DE = 39.8 + 83.1 \, CU + 0.387 \, TME - 0.988 \, (PATA - PT)$$

$$\begin{align*}
1.06 & \quad (2.19*) \quad (1.31) \\
1.31 & \quad (3.87**) \\
\end{align*}$$

$$R^2 = 0.825 \quad d = 1.99 \quad SE = 3.11$$

The figures under the coefficients are t-values and the asterisks attached to them indicate the level at which they become significant. One asterisk denotes significance at the five percent level and two asterisks indicate significance at the one percent level. $R^2$ is the coefficient of determination, $SE$ is the standard error of the regression and $d$ is the Durbin Watson statistic.
A number of conclusions are suggested by this equation. First, when "real" after tax profitability has been squeezed companies have increased the ratio of total debt to equity in their funding. Conversely, during periods of profit recovery firms have used at least some of these gains to reduce the proportion of total debt in their balance sheets.

Second, the level of capacity utilisation has a positive effect on the total debt to equity ratio; ie as firms begin to come up against capacity constraints during cyclical swings they tend to absorb additional debt as a means of financing increased output. As could be expected, debt funds are the first to be shed during a downswing in activity.

Third, even after the influence of these external variables has been accounted for, there is some evidence of a long term time trend in corporate total debt to equity ratios. As suggested above, this may be due to development of stronger markets in corporate debt since the early 1960's paralleled by increasingly sophisticated financial management.

Fourth, the variable for RBA quantitative restrictions on bank lending was statistically insignificant. This appears to have resulted at least in part, from high substitutability between bank lending and finance from non-bank institutions and to some extent debenture issues (Graph 3).

Some indication of the relative importance of these effects can be gleaned from the simulations presented in Graph 4 which compares the actual ratio of total debt to equity, and the simulated path given that "real" profitability (PATA - PT) remained at the average level for 1963-65 throughout the period. Specifically, the simulation suggests a very substantial proportion of the rise in the debt to equity ratio since 1970 may be attributed to pressure on real profitability.

* In order to test whether the near significance of the time trend was simply a product of lagged adjustment, a lagged dependent variable was tried. The time trend, however, appeared the more robust.
The following equations explain the long-term debt to equity ratio (LDE) and the short-term debt to equity ratio (SDE).

\[
\begin{align*}
\text{LDE} & = -20.8 + 45.8 \text{ CU} - 0.724 \text{ (PATA - PT)} & \text{R}^2 = 0.798 & \text{d} = 1.26 & \text{SE} = 1.88 \\
& \quad \quad (0.96) & \quad (2.08**) & \quad (6.92**) & \\
\text{SDE} & = -4.4 + 25.5 \text{ CU} - 0.508 \text{ (PATA - PT)} & \text{R}^2 = 0.754 & \text{d} = 2.04 & \text{SE} = 1.60 \\
& \quad \quad (0.24) & \quad (1.35) & \quad (2.88**) & 
\end{align*}
\]

In this case the time trend is very insignificant when it is added to the equations. The estimated equation for the long term debt to equity ratio exhibited a stronger response to real profitability than that of short term debt. Somewhat surprisingly, however, it also appears to be more sensitive to changes in capacity utilization. However, when the equation for LDE was run with a time trend, the coefficient of CU became much smaller and its omission may explain the result obtained from the equation above.

It is also informative to examine the debt-equity decision on a disaggregated basis. The results in Table 1 were obtained by disaggregating by the size of the firms in the sample. The companies were ranked according to their average market capitalisation for the years 1963-1965. We are therefore able to compare trends among constant groups of firms who commenced the period as "small" or "large", etc. Some variables which were very insignificant have been omitted.

<table>
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<th>Table 1: Debt/Equity Decision by Size Groups</th>
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| DE = 36.8 + 0.690 \text{TME} - 0.161 \text{(PATA - PT)} & \text{R}^2 = 0.773 & \text{d} = 1.87 & \text{SE} = 2.38 \\
& \quad \quad (20.89**) & \quad (3.09**) & \quad (0.87) & |
| **Second Quartile**                          |
| DE = 22.6 + 15.6 \text{ CU} + 0.153 \text{(PATA - PT)} & \text{R}^2 = 0.281 & \text{d} = 1.97 & \text{SE} = 1.92 \\
& \quad \quad (0.99) & \quad (0.67) & \quad (1.43) & |

* There are of course many other bases on which firms could be ranked according to size. All are faced with the problem of instability in the size groups as firms grow at different rates over time. Comparisons of the rankings of our sample in 1963-65 and in 1976, however, suggest that this has not been a major problem.

The equations indicate that there is a substantial variation in behaviour amongst the size groups. Apart from the equation for the second quartile, however, the signs of the coefficients are those suggested by the hypotheses outlined at the beginning of this section. One important aspect of these results is that there is much stronger evidence of a time trend in debt to equity ratios than in the aggregate equation. In the group consisting of the largest companies, this variable appears to be the sole determinant of the debt to equity ratio. As we move to smaller companies the other variables assume greater importance. The companies in the fourth quartile are much more sensitive to changes in capacity utilisation and real profitability than the larger companies.

It is also interesting to note that the debt to equity ratios of the companies in the fourth quartile are affected by Reserve Bank lending restrictions. No evidence of such dependence was found for the larger companies. In terms of Graph 3, this suggests that smaller firms have less access to alternative sources of debt finance - an implication which fits what we know of the capital market. The result provides some support for the view that these lending restrictions have an unequal impact on different classes of borrowers.
Equations of the same form as those discussed already were also estimated for sixteen of the twenty industry groups included in the study. Again there was considerable variability amongst industries, but in almost all cases the independent variables had the expected signs. Capacity utilization had a positive and significant coefficient in the investment and diversified; paper, glass and packaging; light engineering and engineering supplies; and developers and contractors industries. There was a significant positive time trend in the equations for the investment and diversified; clothing; paper glass and packaging; beverages and media industries and a significant negative trend in the equations for retailers; coal; and heavy steel and engineering industries. The variable for Reserve Bank lending restrictions was significant in only one equation - that for the investment and diversified industry - but it was close to significance in the equations for the pastoral and paper, glass and packaging industries.

(iii) Debt Servicing

The trends in corporate debt-equity ratios outlined above combined with recent movements in interest rates have had a noticeable impact on debt servicing relationships. Graph 5 compares both 'cover' (EBIT/Fixed Charges) and 'potential cover'. As discussed above, the coverage ratio provides an indication of the "buffer" against inability to meet interest and other fixed commitments in the face of a decline in earnings. Care must be taken in interpreting this measure, however. If the firm carries a substantial quantity of "old" low interest debt, its coverage ratio may reflect a "false sense of security", given the substantial change in cover which would occur when the firm was forced to refinance at current rates of interest. In this case the comparison between current cover and potential cover, (which recalculates the ratio on the basis of current interest rates) is particularly interesting.

* The median rather than 'mean' values are used here, given the possibility of large distortions in the mean value from "outlier firms" which, if they have almost no debt, have very large coverage ratios, in some cases approaching infinity.
Specifically, whilst coverage has fallen considerably from the high levels of the early 1960's there has been a strong covariance of current and potential cover. Thus, whilst the size of the earnings buffer has declined, the magnitude of the risk, in terms of firms being faced with steep rises in interest costs when refinancing debt, has also been reduced, given current interest rate levels.

It is worthwhile examining some of these trends in a little more detail. The percentage change in potential cover (PCV) can be written

\[ \% \Delta \text{PCV} = \% \Delta (\text{EBIT/TA}) - \% \Delta R - \% \Delta \text{DTA}, \]

where TA is total assets, R is the interest rate used in the calculation of PCV (the average of rates paid on long-term corporate bonds) and DTA is the ratio of debt to total assets. In the present discussion we are regarding the rate of return (EBIT/TA) and the interest rate as exogenous to the firm. The ratio DTA will be determined by the debt/equity decision discussed in the previous section. Potential cover is, therefore, determined by the identity given above.

It may appear surprising that cover is determined in a residual fashion. This arises from the assumption mentioned in the previous section, that the debt/equity decision is the central one made by the firm. What may be more difficult to accept is the implicit assumption that the debt/equity decision is made without reference to its effect on cover. However, this assumption will be valid if firms seek to keep actual cover above a "safe" minimum level but pay little attention to it otherwise. In any case, the small number of observations available in the present study prevented us from examining the effect of PCV on the debt/equity ratio.

## Table 2: The Major Determinants of Potential Cover

<table>
<thead>
<tr>
<th>Year Ended June 30</th>
<th>% Change in PCV</th>
<th>Interest Rate</th>
<th>Contribution of Change in: Debt to Total Asset Ratio</th>
<th>Profitability</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>-8.18</td>
<td>-6.00</td>
<td>-4.47</td>
<td>-0.88</td>
<td>4.06</td>
</tr>
<tr>
<td>1968</td>
<td>7.35</td>
<td>0.00</td>
<td>2.71</td>
<td>6.72</td>
<td>-2.09</td>
</tr>
<tr>
<td>1970</td>
<td>-3.67</td>
<td>0.00</td>
<td>-5.38</td>
<td>2.38</td>
<td>-0.66</td>
</tr>
<tr>
<td>1972</td>
<td>-7.61</td>
<td>0.00</td>
<td>0.12</td>
<td>0.25</td>
<td>-7.98</td>
</tr>
<tr>
<td>1973</td>
<td>16.8</td>
<td>6.25</td>
<td>3.70</td>
<td>6.07</td>
<td>0.79</td>
</tr>
<tr>
<td>1974</td>
<td>-39.15</td>
<td>-43.04</td>
<td>-10.87</td>
<td>0.64</td>
<td>14.12</td>
</tr>
<tr>
<td>1975</td>
<td>-12.93</td>
<td>-4.08</td>
<td>-0.63</td>
<td>-2.81</td>
<td>-5.14</td>
</tr>
<tr>
<td>1976</td>
<td>15.42</td>
<td>4.08</td>
<td>12.57</td>
<td>9.73</td>
<td>-10.97</td>
</tr>
<tr>
<td>1977</td>
<td>1.37</td>
<td>0.00</td>
<td>1.51</td>
<td>3.23</td>
<td>-5.37</td>
</tr>
</tbody>
</table>

The results for the earlier part of the period are not given because the interest rate was not available for those years. It is clear from the Table that the major changes in cover have been caused by changes in the interest rate. This is particularly evident in 1967, 1971 and 1974 (especially). Profitability has had relatively little effect, but changes in the debt/total assets ratio have been important in some years.

In addition to earnings cover over interest and fixed charges, the level of a firm's cash flow relative to its debt, and consequent refinancing needs, are of interest. In particular, the latter relationship is an important indicator of firms' susceptibility to tight financial market conditions, along with the length of time receivers might expect to await repayment if the firm continued to operate.

Graph 6 plots two commonly used measures, defined in terms of debt over gross cash flow (i.e. profit after tax plus depreciation). Most clearly evident is the peak during the credit squeeze in 1974-75. The rapid recovery from this high debt/cash flow ratio is also notable. Little long term trend
is evident in the long term debt to cash flow measure, although the ratio appears to have increased somewhat during the early seventies. The relative stability of this measure, as opposed to the debt-equity ratio and interest cover, can be largely explained by the fact that debt is valued in terms of historic costs, whilst a large part of cash flow relates directly to current values (i.e. profit). Thus, in inflationary times existing debt tends to become a smaller proportion of cash flow.

It is also possible that a variable reflecting the relationship between debt and cash flow might enter directly into the determination of the debt-equity ratio. Alternatively, as we postulated in the case of "interest cover", it may act as a residual so long as debt to cash flow remains below some "safe" level. As a test of these hypotheses, cash flow to debt variables (before and after allowance for payment of dividends) were tested in our debt-equity equations. In all cases the cash flow variables proved insignificant; a result consistent with the "safe level" explanation. However, this might at least in part reflect some relative neglect of cash flow variables by Australian companies until recent years (perhaps rationally so, given the relatively stable economic conditions prevailing).

(iii) Profitability

We have already alluded to the central role of profitability in the determination of a firm's financial structure, growth and investment. As noted above, concern has been expressed that profitability has shown a long term decline resulting, in turn, in a lower flow of funds from internal sources for financing investment, servicing debt and maintaining an adequate return on shareholders' funds. Given the underlying importance of profitability, it is worthwhile to look more closely at some of the factors influencing the rate of return and, in particular, the evidence for a fundamental downward trend in the long term.
As with the debt/equity ratio, we employ the multiple regression technique. The first equation explains the value of (EBIT/TA) for all industries:

\[
\text{EBIT/TA} = 175.0 + 90.2 \text{CU}_{-3} + 0.713 \text{PT}_{-1} - 0.764 \text{TME} \\
\text{(3.47**)} \quad \text{(3.80**)} \quad \text{(2.49**)} \\
R^2 = 0.635 \quad d = 1.57 \quad SE = 1.90
\]

Various lags on the independent variables have been tested and the formulation reported is the one which gave the best results.

The coefficients of this equation have the expected signs, but the role of PT requires some comment. There are at least two reasons for assuming that it will affect profitability. First, it is likely that the rate of inflation is one of the determinants of the actual rate of profitability (see Neville (9)). Secondly, reported profitability figures which are based on historical cost accounting will, in part, reflect the effects of inflation even if actual profitability remains unchanged. See, for example, Cagan (3).

The most interesting aspects of the above equation is that it provides evidence that there is a significant downward trend in profitability even when the influence of other determining variables is taken into account. It was argued above that firms will try to maintain the return on shareholders' funds by increasing the debt/equity ratio in such situation. This proposition is subjected to a further test in the next equation which explains the ratio of ordinary earnings (after preference dividends, interest and taxes) to ordinary shareholders' funds (ER) for all industries.

\[
\text{ER} = -0.947 + 11.1 \text{CU} + 0.172 \text{PT}_{-2} - 0.61 \text{TME} \\
\text{(0.08)} \quad \text{(0.85)} \quad \text{(1.90)} \quad \text{(0.74)} \\
R^2 = 0.567 \quad d = 2.61 \quad SE = 0.529
\]

In this case it is difficult to predict the signs of the variables because they are likely to have a strong influence on the denominator of the ratio as well as on the numerator. For example, it is to be expected that capacity utilization will have a positive effect on earnings but it may also have a
positive effect on shareholders' funds (as investment rises). Its effect on the ratio is, therefore, unclear. This is also true of the rate of inflation. To the extent that this variable has an independent effect on the financing decision - and the results reported in the previous section suggest that it does - this will be confounded with the effects mentioned above.

It is clear from the equation that there is little evidence of a time trend or an effect of capacity utilization over the sample period used in the present study. It may be thought that the insignificance of the time trend is due to its collinearity with the other regressors. However, when capacity utilization is dropped from the equation, $PT_2$ becomes highly significant but the time trend remains insignificant. If $PT_2$ is omitted from the equation, both $CU$ and $TME$ are significant but $TME$ has a positive coefficient. These results are consistent with the proposition that firms have offset the trend evident in (EBIT/TA) by altering their debt/equity ratios to maintain the return on shareholders' funds. A further tentative conclusion suggested by these experiments is that the rate of inflation is the most important variable in explaining the earnings ratio and that once it is taken into account, there is little evidence of any independent effect of time and capacity utilization.

The magnitude of the coefficient on inflation is also of considerable interest. Given the similar average size of inflation rates and earnings yields this coefficient reflects the proportion of a 1% rise in the inflation rate which is offset by a rise in nominal earnings during any one year. Our estimated equation implies that, even after a two year lag, profitability rises only 0.1721% for each 1% rise in the rate of inflation. Clearly, therefore, and as past experience suggests, rises in the rate of inflation rapidly undermine real profitability.

Our understanding of these relationships can be further advanced by an examination of Graphs 7 to 9. The fact that after-tax profitability on ordinary shareholders' funds has been considerably more responsive to inflation than overall operating profitability (as measured by the before-tax return on total assets) reflects two basic developments.

- increased gains from leverage (as discussed above)
- a recent fall in the effective rate of taxation.

Some indication of the total effect of leverage can be gleaned by calculating the rate of return shareholders would have achieved if otherwise equivalent operations were financed without recourse to external liabilities (be they in the form of debt, trade creditors or provisions) and comparing this with actual returns. The results of applying this procedure, as outlined in Section II, are shown in Graph 8.*

A continued rise in the contribution of leverage to shareholders' rate of return is evident throughout the period, boosting return by around 3.5% in recent years. As noted in our discussion of the debt-equity structure, however, this may have been at the expense of some additional risk to shareholders.

Graph 9 (comparing profit after tax on total assets with the tax rate), documents the impact on shareholders' return of changes in the effective rate of taxation. Part of the recent recovery in nominal after-tax profitability would appear to be due to taxation effects, notably the Trading Stock Valuation Adjustment and investment allowances.

* Further calculations are being made on the assumption that trade creditors and provision are excluded from the definition of 'leverage'. This assumption will of course reduce the effect of leverage on profitability.
As we have already found, however, industry averages can be quite misleading. We have therefore estimated the equation for earnings for size groups and for individual industries.

Some examples of the results obtained are reported in Table 3 and 4.

Again there is considerable variability amongst the different groups. Responses to inflation vary markedly both in the size of the offset against increases in inflation and the speed of adjustment. One disturbing feature of these results is the evidence of the existence of a time trend which they provide. In the case of disaggregation by size, the significant trends are negative but in Table 4 some of them are positive. The explanation of the significance of the time trend in the aggregate equation may be that these effects tend to cancel out over all industries. The reasons for the positive time trends in the earnings ratios of industries such as Chemicals and Textiles and Clothing have not been investigated in any detail, but it may be relevant to note that these two industries have been undergoing significant rationalisation over much of the period investigated, compared with other industries. The effect of protection from competition from imports, which is particularly high for Textiles and Clothing and was increased significantly for much of the industry in 1974 and later in terms of import quotas, may have also been important.

Table 3: Earnings Equations for Different Size Groups.

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Equation</th>
<th>( R^2 )</th>
<th>( d )</th>
<th>( SE )</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Quartile</td>
<td>[ ER = 9.62 - 0.045 \text{ PT} - 0.101 ]</td>
<td>0.101</td>
<td>1.14</td>
<td>0.755</td>
</tr>
<tr>
<td></td>
<td>( (32.60^{**}) ) ( (1.26) )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Quartile</td>
<td>[ ER = -1.94 + 12.5 \text{ CU} + 0.151 \text{ PT} - 0.179 \text{ TME} ]</td>
<td>0.579</td>
<td>1.63</td>
<td>0.410</td>
</tr>
<tr>
<td></td>
<td>( (0.39) ) ( (2.45^{*}) ) ( (3.42^{<strong>}) ) ( (3.80^{</strong>}) )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Quartile</td>
<td>[ ER = 32.6 - 24.0 \text{ CU} - 0.11 \text{ PT} + 0.085 \text{ TME} ]</td>
<td>0.373</td>
<td>1.62</td>
<td>0.647</td>
</tr>
<tr>
<td></td>
<td>( (3.37^{**}) ) ( (2.44^{*}) ) ( (1.48) ) ( (1.16) )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth Quartile - Top 40%</td>
<td>[ ER = 8.95 + 0.135 \text{ PT} - 0.190 ]</td>
<td>0.290</td>
<td>1.76</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>( (20.22^{**}) ) ( (2.39^{*}) ) ( (2.00) ) ( (1.20) )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Determinants of Profitability

<table>
<thead>
<tr>
<th>Industry</th>
<th>Equation</th>
<th>( R^2 )</th>
<th>( d )</th>
<th>( SE )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Sales and Manufacturing</td>
<td>[ ER = 12.2 + 0.45 \text{ PT} - 0.710 \text{ TME} ]</td>
<td>0.697</td>
<td>1.89</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>( (17.41^{<strong>}) ) ( (3.80^{</strong>}) ) ( (5.27^{**}) )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building and Construction Materials</td>
<td></td>
<td>0.362</td>
<td>2.02</td>
<td>0.673</td>
</tr>
<tr>
<td>Textiles and Clothing</td>
<td>[ ER = 56.7 - 0.313 \text{ PT} + 0.643 \text{ TME} - 52.3 \text{ CU} ]</td>
<td>0.613</td>
<td>1.56</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td>( (2.75^{<strong>}) ) ( (2.04^{*}) ) ( (3.59^{</strong>}) ) ( (2.45^{*}) )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The coefficient of \( u_1 \) is the estimated first order autocorrelation coefficient.

(iv) Maturity Structure

In Section I we identified a concern on the part of some commentators regarding a general increase in the utilisation of short term debt by the corporate sector. It was emphasised however, that interpretation of any such trend must take full account of corresponding changes in the level of current assets. Should an increase in the proportion of current assets in the balance sheet have occurred for example, one would expect a corresponding rise in short term liabilities.

In fact, our average statistics for firms' current and liquid ratios suggest that growth in current assets and liabilities have largely been in parallel. Whilst there was a marginal overall decline in these ratios during the late 1960's both have remained remarkably stable since 1970. (Graph 10)
Graph 11 breaks down the overall change in current assets as a proportion of the total balance sheet into its major components: stocks, cash and liquids and trade debtors.

There are few consistent long-run trends, but the following developments might be noted. First, cash and liquids have risen significantly as a proportion of total assets since the early 1970's, particularly since 1973-1974, after being at relatively low levels during the second half of the 1960's. Presumably this trend reflects a response to increased demands on cash and liquids in the more volatile climate of recent years, along with greater opportunities for investment of short term funds, which have reduced the 'opportunity cost' of maintaining a liquid buffer.

Secondly, stocks have grown as a percentage of total assets over the period, except during the rapid expansionary phase between 1970-73.

Finally, whilst trade debtors have not shown evidence of a long-term trend they have at times placed considerable demands on financing, particularly in 1974. As might be expected however, increased trade credit has offset most of the rise in debtors, although unevenness between firms may have added considerable strains.

It may be, for example, that smaller firms face an increase in debtors during periods of tightness in the financial markets whilst being forced to reduce their accounts payable by larger creditors with greater bargaining power. Any conclusions in this regard must remain tentative, given the few examples of significant credit squeezes for which data are available and the exclusion from our data base of proprietary companies and unincorporated enterprises, which probably tend to be smaller on average than the public companies included. However the two main periods of liquidity tightness covered by our study; 1965-66 and 1974-75, nonetheless bear some examination. Here
we focus on deviations from the long term trend* reflected in the variable 'NDC' - trade debtors less trade creditors as a percentage of total assets. Table 5 presents this data for each size group for these two years.

It is evident here that for the smallest firms the debtors have risen relative to creditors during periods of liquidity tightness. Larger firms, by contrast, have generally been able to expand trade creditors faster than trade debtors during the liquidity squeezes. Moreover, their ability to successfully do so, would appear to increase with size.

<table>
<thead>
<tr>
<th>Size Group</th>
<th>Table 5: Trade Debtors vs Trade Creditors</th>
<th>Debtors less Creditors (Deviation from long term trend)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1965-66</td>
</tr>
<tr>
<td>First Quartile</td>
<td></td>
<td>-1.38</td>
</tr>
<tr>
<td>(largest firms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Quartile</td>
<td></td>
<td>-0.55</td>
</tr>
<tr>
<td>Third Quartile</td>
<td></td>
<td>-0.82</td>
</tr>
<tr>
<td>Fourth Quartile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top 40%</td>
<td></td>
<td>-0.25</td>
</tr>
<tr>
<td>Fourth Quartile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second 40%</td>
<td></td>
<td>1.20</td>
</tr>
<tr>
<td>Source: AFSI-STATEX Study</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Deviations from the long term trend in NDC have been estimated as:

\[
\text{DEV} = \hat{\alpha} + \hat{\beta} \times \text{TIME},
\]

where \( \hat{\alpha} \) and \( \hat{\beta} \) are coefficients estimated by regressing NDC against a constant term and a linear time trend, using OLS.

(IV) CONCLUSIONS

Some tentative conclusions can be drawn from the discussion in this paper. First, we shall deal with the results produced by our analysis of aggregate "all industries" data. The most striking of these is that most of the observed developments and "trends" in company financing can be attributed to firms' reactions to changes in the economic environment within which they function. There is evidence of a downward trend in profitability and firms have apparently reacted to this and to the present high levels of inflation by increasing their debt/equity ratio so as to maintain the return on shareholders' funds. This has tended to reduce "cover", which has also been affected very strongly by increases in interest rates. Once these factors have been taken into account, there is little evidence of an independent trend in the return on shareholders' funds, the debt/equity ratio or cover. To the extent that a trend does remain, it can be readily explained in terms of improvements in funds management and an increase in the efficiency of the financial markets in which firms deal.

This conclusion does not necessarily imply, however, that the developments should not cause concern. It does indicate that if they are regarded as undesirable, policies to deal with them should be aimed at changing the environment in which firms work. This could be done, for example, by policies which reduce the rate of inflation, but which, at the same time, increase the basic profitability of industry. It is not within the scope of the present paper to explore ways in which this might be done, but an obvious possibility is changes in wages policy. Policies which reduce the interest rate (for example, policies which reduce the rate of inflation) will also have the effect of increasing cover.

Our results suggest that direct intervention in firms' financing decisions would not, in general, be a productive response to the developments described in this paper. Rather, our analysis underlines the importance of firms' ability to react to changes in their external environment. This points to
the need for a flexible institutional structure, capable of facilitating adjustments with minimum disruption. Among other factors, a financial system which is responsive to the changing needs of industry, constrained by a minimum of regulation, may make major contribution toward this end. At the same time, measures which serve to increase the profitability of industry may be useful. An obvious way to achieve this is to reduce the "effective" tax rate. Measures such as the Trading Stock Valuation Adjustment and investment allowances have been useful in the past but the underlying rate of company tax should not be overlooked.

There is however, another important result of this study which undermines, to some extent, the conclusions discussed so far. There is evidence of considerable variation in financing behaviour amongst firms in different industries and firms of different sizes. In particular, when we look at the data at this disaggregated level, there is much stronger evidence of time trends which are not accounted for by the economic variables which are thought to determine financing behaviour. Perhaps these trends could also be explained in a more comprehensive analysis. Even if this is not the case, their presence does not indicate the necessity for intervention in firms' financing decisions. The form of the trend varies considerably from case to case and all we can conclude is that each industry must be dealt with as a special case. In addition, the analysis of disaggregated data provided support for the view expressed above that substantial changes in financing behaviour could be achieved by altering the external parameters which determine firms' decisions.

One interesting aspect of our results is the information which they yield on the effect of the restriction on credit on financing behaviour. We were not able to detect any effect at all at the aggregate level, but our analysis of the data disaggregated by size of firms suggested that credit restrictions did impinge on the smaller firms in the sample. This result provides some evidence in support of the view that the burdens of a restrictive monetary policy are not distributed equally over all borrowers.

References

COMMENTS BY DISCUSSION OPENER

L. J. Rose

This paper deals with a subject which is central to the work of the Commonwealth Inquiry into the Financial System. The subject is an important one, for we have already heard in this conference how industry is likely to expand greatly its demands on the capital market in the coming years.

The research reported has involved the analysis of certain financial trends in respect of 300 major companies listed on the stock exchange during the 1960s and 1970s. The authors look at the question of whether the financial structure of firms has become more fragile, and they are also concerned to draw attention to the policy issues which arise from their findings.

Pages 4 to 13 present a useful, clear summary of the standard principles governing the financial structure of companies in Australia. In the context of that discussion, there are several brief comments passed about the capital market generally. Reference is made (p10) to the great expansion in the range of securities traded in the short-term market in the 1970s, and the improved negotiability of many instruments of short-term debt. The authors note that listed companies in Australia are subject to strong pressure to follow a "reasonable" and "stable" dividend policy; and it is also pointed out that there has been a significant decline in the proportion of reported profits paid out as dividends over the past decade. These interesting comments are dropped in passing, without elaboration.

In summarising the rest of the paper it is convenient to organise the remarks around graphs.

Graph 1 shows the changes since the early 1960s in the ratio of corporate debt to equity, with equity measured both at book and market values. There was a fairly consistent rise in this ratio up to about 1973, and then a sharp increase in 1974-1975. After those difficult years in the mid-1970s, the ratio fell, but in 1978 it was still well above the level of the mid-1960s.

For the purposes of their analysis, the authors regard the management decision about the relationship of debt to equity as the key one, and in Graph 2 they take the analysis further by examining the relationship between, first, long-term and then short-term debt to equity funds. For these purposes long-term is defined as greater than one year, which is, of course, hardly a general market definition.

The graph shows that in both cases the gearing rose through the 1960s, increased sharply in 1974-1975, particularly in the case of short debt, fell quite quickly in 1976, and has since (to 1978) remained steady. From both Graph 1 and Graph 2 it is clear that the increase in gearing was well under way in the 1960s, long before the inflationary surge of the mid-1970s.

The authors turn next to examine a number of possible explanations for these trends. Their first finding is that, when real after-tax profitability has been squeezed, companies have increased the ratio of debt to equity. Conversely, during periods of profit recovery, firms have used at least some of these funds to reduce their gearing ratios.

Second, as firms reach full operating capacity during cyclical swings, they take in additional debt as a means of financing higher output; and fixed-interest funds are the first to be shed during a downturn.

There is some evidence of a long-term trend in the debt-to-equity ratios, and the authors wonder whether this might be related to the
widening of the debenture and fixed-interest markets and the spreading of managerial skills in funds management.

A fourth finding is that Reserve Bank restrictions on bank lending do not seem to have had much impact on these companies, though that is probably not surprising in that listed companies do not usually rely significantly on banks as a source of funds to finance growth.

In Graph 3, attention is drawn to the various forms of fixed-interest borrowings available to companies, and the scope for substitution between the different forms and markets. There was a striking rise in trading bank lending, 1973-75, followed by a sharp fall. Non-bank advances show a sharp rise in the 1975-77 period while the banks were declining in their significance. But the authors do not say much about their graph, or the findings in this area; one is left wondering about such new and major developments as commercial bills in their various forms and leasing finance.

The question arises as to whether there is a variation in debt-equity ratios between firms based on their different sizes. It appears that the decision of the largest companies to "gear-up" during the period was not due to pressure to maintain the profitability of shareholders' funds. Larger companies, apparently, simply decided to make use of the debt markets which were developing in Australia in the 1960s. Certainly, in one or two instances involving major Australian companies, it took a long time before the directors were convinced of the advantages of funding through debenture issues. Before the 1960s, they had regarded equity as the only sound way to fund their businesses; an attitude arising from the experience of the pre-World War II years.

In this type of analysis it is also important to allow for the growth in the second half of the 1960s of the massive investment in new mines which involved some of the big groups in high gearing, with most of the fixed-interest funds being raised overseas.

Turning to look at the smaller companies in their sample, the authors find that changes in gearing ratios are more sensitive to movements in profitability; and it appears that restrictions on bank lending have rather more effect on these companies.

Graph 5 is used to illustrate the changes which have been taking place in the "coverage ratio"; that is, the extent to which earnings before interest and tax, "cover" the interest and other fixed commitments. The cover has been decreasing, indicating higher risk, for lenders as well as company shareholders. In other words, a sudden decline in earnings would not now have to bite so deeply before companies could run into trouble. However, in the 1960s the firms had debt outstanding at low interest rates, and once the coverage ratio is reworked on the basis of the potential refinancing costs, the cover is seen to be not so high in the 1960s, and hence the decline through the 1970s not so marked. The authors think that company managers generally tend to keep the "coverage ratio" above some "safe", minimum level, and otherwise give it little attention. They do not think it plays a major role in financial management, which is probably right.

Another financial ratio looked at is that showing the relationship of debt outstanding to cash flow. In Graph 6 it is seen that, in the case of total debt to gross cash flow, the ratio increased slowly through to 1974, jumped in the next year, but then fell back. In the case of the ratio of long-term debt to cash flow, there appears to have been a small rise from the mid-1960s to early 1970s, but no trend since then. The debt in this calculation is recorded at historical cost, while the retained profits element of cash flow is derived from sales at current values. Hence during an inflationary period the existing debt tends to become a smaller proportion of cash flow.
The paper stresses the central role of profitability in determining corporate growth, investment and financial structure. The major finding is that there has been a significant downward trend in profitability which firms have offset by increasing their debt to equity ratios to maintain the return on shareholders' funds. Although Graph 7 shows a moderate rise in the ratio of earnings before interest and tax to total assets since the mid-1960s, this is a ratio based on nominal earnings. Real profitability declined.

Graph 8 shows clearly the significant contribution of leverage to the return on shareholders' funds. In the first half of the 1970s, this contribution has been consistently well above that of the late 1960s, with a further significant lift in the contribution in the late 1970s. Without this contribution from leverage, the return on shareholders' funds as shown in Graph 7 would not have been maintained through the decade to 1975, nor have risen so much since then.

The authors' conclude that the rate of inflation is the most important variable in explaining the earnings ratio; and the paper goes on to note that rises in the rate of inflation rapidly undermine real profitability.

The profitability equations calculated for disaggregated groups and quartiles showed significant differences, particularly for textile and clothing, but also for the chemical industry.

Graph 9 records the significant decline in the effective tax rate on companies since 1975, after a long rise before that year. This decline in the effective tax bite (arising from investment allowances and a stock valuation adjustment) helps to explain why, in Graph 7, the ratio showing the return on shareholders' funds has improved more rapidly since 1975 than the ratio of earnings - before interest - and - tax to total assets.

From time to time concern has been expressed about the increase in the short-term debt of companies. Graph 10 shows that there was a steady, moderate decline in the current ratio from the early 1960s through to the mid-1970s, and a less significant decline in the liquid ratio over the same period. In the second half of the 1970s, the current ratio has risen a little and the liquid ratio has been steady.

Graph 11 shows the changes which have occurred in the composition of current assets. Cash and liquid funds have risen as a proportion of total assets since about 1974; the stock ratio has increased over the years, apart from the rundown during the expansionary period in the early 1970s; and debtors show no long-term trend. Debtors did rise strongly as a percentage of total assets in 1974-75, and that was accompanied by an increase in trade creditors, particularly in the case of the larger firms.

The authors suggest at the beginning of the paper that they will comment on whether the corporate financial structure is desirable or not, but they do not really come clean with their views. Surprisingly, there is little attention given to the strengthening financial position of companies in recent years, and there is no discussion of whether there is now a sounder base from which expansion can take place with a relatively greater reliance on external capital raisings.

In the conclusion they say that if the structure is seen as undesirable, appropriate policies would be those which led to a reduction in inflation while also increasing real company profits. They refer to a wage policy, but do not elaborate. Reference is also made to the effect of lower inflation on interest rates and the opportunity this would provide for increasing the coverage ratio. They also refer to measures which reduce the effective tax rate on companies. The paper comes down firmly against direct intervention by government in firms' financing decisions and concludes - correctly, in my opinion - by stressing the continuing need for a flexible, open capital market which can respond to the needs of companies.
On balance one is left with the view that the corporate sector and the capital market have coped fairly well with the changing economic and financial conditions of the 1970s.

profitability of the sample companies, but it wisely remains within its brief and does not venture too far into an area fully deserving of a parallel study of similar thoroughness.

Unfortunately, the policy issues which are drawn from the paper are only briefly discussed - understandably so, with the interim report of the Campbell Committee yet to be released. The clear message of the final section is that the role of government authorities is to provide a satisfactory climate for economic development, with "policies aimed at changing the environment in which firms work". De-regulation is endorsed, as is the encouragement of entrepreneurship through a reduction in taxation disincentives and insufficient allowances for the impact of inflation on real profitability.

At present large firms are able to benefit from the financial buffer zone provided by lender of last resort facilities through the official short-term money market, and by their flexibility in switching between various financial instruments. Smaller firms are denied both of these avenues, and cash flow appears to be a critical factor in their survival - as is their continuing reliance on bank credit and therefore their vulnerability to RBA directives to the banks. It is hoped that any relaxation of controls over banks and towards greater reliability on the market will not be at the further expense of small businesses, which are often among the least profitable of the banks' customers.

At the longer end, the increasing integration of Australian and overseas capital markets coupled with the anticipated upsurge in demand for both equity and debt finance in Australia in the early 1980's - particularly in the area of minerals and energy - implies that the parameters influencing the supply and demand conditions for industry are likely to change. This means that the Australian financial markets will be subject to some severe pressures in the near future if sufficient funds are to be found from domestic sources at reasonable cost to finance even the known range of investment projects.
A major aim of the paper is to investigate whether Minsky’s view that the financial system tended toward increasing instability in a period of inflation held in Australia. The paper provides evidence of a reduction in the "cover" of the firms in the sample, but does not extend to an examination of the financial markets which service these companies. Certainly in 1974-75 the financial markets’ performance was unimpressive, but the lessons have been at least partially learned and applied, and the financial market appeared considerably more mature at the start of the 1980s than was the case in the mid-seventies. The secondary market remains thin in many areas – notably debentures, semi-government securities and non-bank bills – but in general the range of securities, stand-by facilities and lines of credit have considerably increased the resilience of the financial system to market shocks.

The study itself takes a sample of 300 listed firms as its basis, which means that even the smallest company is relatively large by Australian standards – and has the added and considerable advantage of listing on the stock exchanges. Yet the study shows that, although financial limitations were insignificant in all equations tested, smaller firms were apparently the only ones significantly affected by RBA lending restrictions. This appears to be the tip of a financial iceberg, for in a study of small firms currently being undertaken at the University of Melbourne, it is the small firm which faces the twin disability of scarcity of debt financing on acceptable terms plus exposure to domestic monetary policy restrictions. It would be most interesting to see whether results of the present study would be even more clear-cut if the sample was extended to small unlisted companies. Perhaps the Macmillan gap still needs considerable bridging in Australia.
Throughout the paper there is an underlying and explicitly-stated assumption that the aim of firms is assumed to be that of minimising the cost of capital within the context of a balanced financial structure. The paper goes on to analyse some of the evidence on the basis of this assumption - for example, the tendency towards higher gearing as illustrated in Graph 2 of the paper. However, it could equally be argued that in a sample dominated by managerial capitalism, the major aim is the long term continuity of the firm, with the return on shareholders funds being a secondary rather than a prime consideration. The acceptance of this aim results in some different interpretations of the results. For example, in Graph 5 there are several possible explanations for the downward trend in coverage. One is that it is a deliberate re-adjustment by firms in line with the improved effectiveness of the financial markets, and the greater range and flexibility of market instruments. A second, that firms of necessity decreased coverage in order to maintain the return on shareholders' funds. A third, that the trend was an involuntary one reflecting the increasing cost of re-financing (a possibility well handled in the paper by adding a second trend showing the extent of cover if debt was re-financed at current interest rates). Whether the move towards reduced coverage is deliberate or involuntary - and this greatly affects the policy issues to be drawn from this trend - depends to a significant degree on how the aims of the firm are assessed, and the extent to which the financial markets can still be described as fragile.

Overall, the paper provides a concise examination of trends and patterns of change in the four areas of gearing, debt servicing, profitability and maturity structure of debt for the sample over the past two decades. The analysis raises some intriguing although as yet unanswered questions - such as how the cash flow of these companies varied over the period, and how the average time to maturity of debt has changed. It also indirectly illustrates the impact of inflation and its rapid undermining of the