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**A New Macroeconomic Time Series:
Business Profitability in Twentieth-Century Australia**

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1. Introduction

Australia has historical time series for a wide range of economic data. These include statistical information relating to national income, demography, prices, external trade, financial markets, and the government sector covering most of the twentieth century.¹ However, we lack a long national time series for business profits. We have calculations for some industries, especially banking, and national figures from 1985 using the IBIS database.² Business historians in Australia have tended to focus on alternative research agendas such as business strategy, behaviour, and the evolution of individual industries and companies; much less attention has been devoted to measuring and analysing quantitative elements of modern business development such as trends in profitability and investment.³

We offer a business profits time series to fill, in part, this lacuna. Constructing such a time series establishes the building blocks for addressing a range of investigative questions. Our results will enable scholars to look more closely at cyclical and secular trends in business activity. On an aggregate level, we are interested in the distributional question of business's share of national wealth as reflected in the trend relationship between profits and GDP. Business profitability is a major indicator of the direction and rate of development of a market economy. This is particularly due to its signalling impact on investment and savings and, through them, on capacity, productivity and competitiveness. The returns to entrepreneurship and to shareholder risk, the equity premium, can be estimated by a comparison of a profits series with existing data on interest rates. The performance of our corporate leaders can also be brought into focus by comparisons with nationwide rates of return. Industry level disaggregations will be added in due course, enabling us to examine relative performance and its likely impact on investment decisions. Our understanding of Australia's economic development in the twentieth century has been enriched by analyses that place it in a comparative context. Comparing a profitability series with those compiled for other countries will add to international benchmarks of Australian economic performance (Arnold 1999; Tafunell 2000; Marseille 1995), and it will throw light upon the relationship, if any, between comparative profitability and in-

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flows of foreign direct investment, which has been a key feature of Australian experience.⁴

2. Methodology

In this paper, therefore, we construct a time series of business profits in Australia for 1901-86. This constitutes the initial results of an Australian Research Council Discovery project.⁵ There are a variety of methods for calculating profitability, depending upon the data available, perspectives on the theory of profitability, and the investigative goals being pursued, which include the return on assets, capital, or equity, the EBDIT (earnings before depreciation, interest and taxation) margin, and the holding return.⁶ The historical data available to us will focus our investigation on the measurement of the return on shareholder equity. This will be derived from declared profit, net of taxes and interest charges, as a percentage of total shareholder funds as reported annually by each company. Total shareholder funds consists of the paid up capital of ordinary shares plus accumulated reserves, which is assumed to include current retained earnings.⁷ Thus, our calculation of nominal profitability can be expressed formally as:

$$\text{RoE (\%)} = [\text{NP/TSF}]100$$

where RoE is return on equity, NP net profits, TSF total shareholder funds.

The time series draws upon four sequential sources of published data, namely *Australasian Insurance & Banking Record* (1901-21, hereafter *AIBR*), *Australian Investment Digest* (1919-37, hereafter *AID*), *Commonwealth Bank of Australia Statistical Bulletin* (1936-58, hereafter *CBA*), and *Reserve Bank of Australia Statistical Bulletin* (1956-86, hereafter *RBA*). Each source contains year to year information on net profit and total shareholder funds.

3. Accuracy, completeness and consistency of data sources

Questions of accuracy and completeness need to be considered in handling each of these data sources, together with issues of consistency between sources. All four sources derive from published data reported by individual companies. Given the limited disclosure requirements of companies for much of the century, this raises questions regarding the accuracy of reported information and its consistency between companies. Attempts to falsify profits and the related creation of hidden reserves, would indicate a mismatch between actual and reported returns. Australian trading banks followed British practice in smoothing profits through transfers in and out of 'inner reserves' until 1979 (Arndt and Blackert 1977; Burroughs 1992: 14-15, 22).⁸ Similar practices occurred at brewers Tooths, where, prior to a major change in the Companies Act in 1961, understatement or smoothing commonly occurred through the development of secret reserves (Wilson and Shailer 2004). There is no indication, however, as to how widespread such practices were in Australia, nor whether their incidence would bias results between industries or over time in such a way as to invalidate the large dataset used here. Evidence has been produced for Britain and Germany of underdeclaration of profitability in good years and overdeclaration in poor years, creating a cyclical smoothing effect rather than an upward or downward bias (Arnold 1999: 56; Napier 1991; Spoerer 1998). As reporting requirements became more extensive and consistent later in the century, so the corporation became a more complex and sophisticated institution through multiple subsidiaries and joint ventures in particular, providing further challenges to honest and consistent reporting.

The alternative methodology of several recent writers, including Arnold (1999), Capie and Billings (2001), and Cassis (1997), is to focus on the unpublished

archival accounts of a constant sample of companies as a means of overcoming some of these methodological problems.⁹ Such an approach may more closely approximate to actual profits but even unpublished material will contain errors, omissions, and inconsistent practices. Discretionary expenditure (for example, non-depreciated new investments and salary bonuses) is often undertaken in highly profitable years and delayed in poor years, thus exerting a further smoothing effect and a mismatch between underlying and accounting estimates of profitability. Legitimate smoothing can also occur in relation to denominator values for shareholder funds. Thus, in periods of poor performance firms may choose to adjust the balance of funding from equity to debt.¹⁰

Our intention in the current paper is to estimate profit performance nationally, so the need is for encompassing coverage of current companies rather than tracking the progress of a limited number of individual enterprises who may not typify the rise and fall of firms and industries. All four sources, therefore, incorporate a large number of public companies, ranging from between 111 and 279 for *AIBR*, 292 to 585 for *AID*, 542 to 912 for *CBA* and 583 to 1015 for *RBA*. The aim of the data compilers in most cases seems to have been to include all public companies listed on the state stock exchanges, with some noted exceptions. Reference to other information sources suggests, at the minimum, good coverage among large and medium scale enterprises in Australia. Data is available for all years, 1901-86, except 1928 and the number of companies covered is lower in some interwar years due to the absence of information covering companies reporting in some quarters.

The large number of foreign multinationals operating in Australia created methodology problems for contemporary compilers as well as subsequent historians. Australia, as noted earlier, has traditionally hosted many multinationals. Multinationals would be locally listed where a subsidiary was incorporated in Australia or where a dual listing occurred. In the 1920s there was a large influx of American and British firms.¹¹ In 1930 20 of the top 100 firms listed in Australia were foreign registered and at least another five were locally registered subsidiaries of foreign firms. These included major corporations such as British Tobacco, Dunlop, Nestles, Goodyear, and Peters (Fleming, Merrett and Ville 2004: 17 and appendix C).

Table 1: Foreign ownership of top 100 companies by sector, 1910-97

	Number	Assets %
1910	31	49
1930	20	25
1952	9	12
1964	36	41
1986	24	16
1997	30	22

Note: For all years prior to 1964, foreign companies were identified by place of registration. From 1964 forwards, identification was on the basis of majority ownership of shares in foreign hands. The list excludes financial institutions

Source: Fleming, Merrett, Ville 2004, p. 17.

However, some multinationals operated branches in Australia without a local listing, making the task of separating out their Australian accounts, including profitability, virtually impossible. Unavoidably, therefore, our figures will not include all foreign companies although it does include many of them. Conversely, P & O Shipping, although listed in Australia, was omitted by *AID* on the grounds that its

predominantly overseas activities meant that it was little affected by local conditions, and because its large size would distort the overall picture presented.

It is to be expected that an exercise of this scale would bring with it some typographical (numbers transposed), aggregation, and printing (columns duplicated) errors. In most identified cases of source error, it was possible to rectify the mistake, but in a few, largely minor, cases the data had to be left unaltered. We now turn to methodological issues related to each source in turn.

3.1 Australasian Insurance and Banking Record

The *Australasian Insurance and Banking Record* (AIBR) first began publication in 1877. While it initially concentrated upon reporting on financial companies, by the 1890s it had expanded considerably into a relatively broad based investment journal, which included brief annual financial statements for most major Australian and New Zealand companies. It provided no regular profits information by industry or higher levels of aggregation, and therefore our figures for 1901-21 were constructed company by company, a laborious process involving 279 companies annually by 1921. From the outset this included companies from all of the main ANZSIC divisions, which is indicative of its broad coverage.¹² Nonetheless, unlike the subsequent three sources, there is no indication of the basis on which companies were included in *AIBR*. The *AIBR* was the principal source for lists, assembled by historians, of the top 100 non-financial and top 25 financial companies in 1910, which have been widely cross-checked against other primary and secondary sources.¹³ The number of companies included grew regularly from 111 in 1901 to 265 by 1919, representing 90 per cent of the *AID* number in the latter's first year.

A benefit of company-by-company compilation is that we are clear as to exactly which companies have been included and how they are distributed across the economy by various characteristics such as size, sector, and geographic location. However, there are inconsistencies in the manner in which profits and total shareholder funds were declared. In many cases, these were simply stated in aggregate form only. In other cases, these figures had to be calculated from various data. In the earlier years in particular, net profit was sometimes not given, especially for mining companies. In these cases, the term 'trading profit' was normally recorded to which interest and other income were added; less depreciation expenses, establishment costs, royalties, debenture, and other interest paid, and taxation. The calculation of reserves and retained earnings is made more difficult by different practices with regard to profit and loss accounts. Also known as retained profits, revenue account or appropriation account, companies variously referred to balances brought forward from the previous year or balances carried forward to the next year. The specific problems, highlighted at the company level, remind us of the inconsistency of accounting practices at this time.

3.2 Australian Investment Digest

Australian Investment Digest, also periodically known as *Jobson's Investment Digest*, or the *Investment Digest*, was a monthly (later fortnightly) publication compiled by Alex Jobson from 1920 and included, 'a summary of all Australian company reports published...up to the latest moment' (*Australian Investment Digest* June 1920, p. 3). *AID* also included aggregated data and regular reports on business profitability. This information was extracted from balance sheets in the individual company reports and then reported by major industry groups on a year-by-year basis. The extent of the data brought together by *AID*, on over 500 companies in many full years, is highly impressive in terms of its aggregate size, annual regularity, and its

distribution across sectors.¹⁴ In 1928 Jobson provided a list of public companies, which amounted to 985. The first full year of profit returns after this, 1930, listed 585 companies, implying coverage of around 60 per cent. A 1930 directory identifies about 1012 enterprises, confirming a similar sample share of the population of companies (Jobson and Pooley 1930).

However, *AID* provides no industry data for 1928. For 1927, 1929, 1935, and possibly 1937 we have data aggregated from annual company reports declared in only three of the four reporting quarters of the year, although this does not appear to have built in a particular bias between industries in terms of numbers of firms covered.¹⁵ We have only half a year's data for 1938 and only about a third of companies reporting, so this year has been omitted since we already have much larger CBA data from 1936 onwards. For the years 1931-3 no data is provided on total shareholder funds. Therefore, we have taken the average of the preceding and subsequent years, 1930 and 1934 respectively. For most industries there are only modest variations of less than 5 per cent in shareholder funds between the two years.¹⁶ In these years, at the depth of the depression, it was profit rather than shareholder funds that was particularly affected by the business cycle. New capital issues, for example, were at a very low nadir at this time. *AID* initially claimed to draw its data from all companies listed on the stock exchanges of the Commonwealth. However, there were some omissions as it conceded. It excluded life assurance companies, 'owing to the impossibility of stating their net annual profit as a group' (*Australian Investment Digest* June 1920: 1). Mining companies were also stated to have been excluded although the data includes many 'coal' companies and, later in the period, also lead and zinc.

Some New Zealand companies were included: large firms such as New Zealand Insurance are to be found but also smaller ones that did not conduct business operations in Australia. They would appear to be the companies listed on the New Zealand stock exchanges but no explicit statement of this has been found, nor is it clear when they were first included. Perhaps significantly, from 1924 New Zealand, with Australia, was included in the name of the *Digest*. It was not until the end of the 1920s that the two countries were distinguished in the profit data and then only in the national figure rather than by industry. In 1930 New Zealand accounted for 14 per cent of the number of companies in the data but only 6 per cent of total shareholder funds. This indicates the proportionately smaller size of New Zealand companies but also their limited impact upon the profitability calculations.

3.3 *Commonwealth Bank of Australia Statistical Bulletin*

This source was less problematic in terms of errors and omissions. Often, later editions of the *CBA* revised earlier profits information. In each case the later figure, assumed to be of greater accuracy, was included as long as it also included the number of companies. Profit rates were reported without providing separate information on net profits from which they would have been derived, and therefore an indication of the number of companies covered was helpful. Total shareholder funds were also indicated. The number of companies grows fairly consistently throughout the period except for a dip during World War Two. In terms of coverage, in 1952 848 companies were included in the survey and 1145 listed on the Australian stock exchanges, representing a 74 per cent sample (*Rydge's* 1952: 3-64).

3.4 *Reserve Bank of Australia Statistical Bulletin*

As part of the organisational changes occurring in Australian central banking after World War Two, the RBA took over from CBA responsibility for the production of a range of economic statistics including profitability. However, in this case net

profits and total shareholder funds are again reported separately and calculated in the manner described in section 2.¹⁷ According to the information provided, the RBA Bulletins draw on surveys of information (subsequently aggregated) from the financial accounts of primarily publicly listed non-finance companies “other than those engaged in mining or primary industry or operating mainly overseas.” The surveys covered both a “constant group” and an “all companies” group. The data we have used is for the “constant group” only, since it includes mining from 1976 and extends through to 1986, the current group ending in 1975.¹⁸ The results for the two series of industrials are very similar, less than 0.5 per cent difference in profit rates in most years, with a correlation coefficient between the two series of 0.76, or 0.95 if one excludes the first two years, 1956-7, when the profit rate in the constant group was about 1.8 per cent higher. Total shareholder funds are also similar between the two series, varying by no more than five per cent in most years.

Based on the final year for which CBA provided disaggregated industry level information, 1951, the primary sector consisted of less than 1 per cent of total companies or shareholder funds, and finance 16 per cent respectively on both measures. When mining was reintroduced in 1976 it constituted nearly 10 per cent of companies and 19 per cent of funds. In terms of aggregate completeness, in 1967 the Bulletin reported that their coverage “appears” to be around 40-50 per cent (based on tax office comparisons). This estimate was increased to 60 per cent in January 1975 and 70 per cent in January 1982. In January 1982, a group of 62 large unlisted industrial companies (mostly overseas owned) were included for the first time. The rapid growth in the corporate takeover market since the 1960s helps to explain why coverage was increasing while the number of firms surveyed fell (Fleming, Merrett and Ville 2004: 115-20).¹⁹

4. Results

Chart 1 expresses the profitability results graphically. Table 2 provides the full data for the profit series from 1901-86, which includes the number of companies covered, the value of total shareholder funds, and profit rate. Chart 1 in effect splices the four data sources into a single series, and therefore possible problems of truncation need to be assessed. Several years of overlapping data in each case aids comparison between results. Not surprisingly, there is substantial continuity in trend and magnitude between CBA and RBA, the latter taking over data collection responsibility from the former. One would also expect to find relatively closely correlated results between *AIBR* and *AID*, both were investment journals publishing the annual reported results of large numbers of publicly listed companies. The trend in the overlap years is similar although the magnitude is somewhat higher for the earlier series. This may reflect our alternative methodology, relying on industry data interwar but having to collect company by company data before 1921. The latter process required making some judgements about unconsolidated financial results. The most likely discontinuity, therefore, is between *AID* and *CBA*. Here the trend and magnitude are very similar for 1936-7.

5. Conclusion

This paper reports the construction of a time series for business profitability in twentieth-century Australia, thereby filling a major omission in the wide range of historical economic statistics available. It draws upon four sequential data sources of net profits as a percentage of shareholder funds, that is, the return on equity achieved by a firm’s management. No historical data is perfect and we have reported on some relevant issues especially inconsistent accounting practices and reporting, the

treatment of multinationals, and some omissions or unwanted inclusions of data by year or sector. That said, the coverage in terms of aggregate completeness and sectoral distribution is mostly good, and there appears to be only limited problems of truncation between sources, suggesting no strong effects of changes in reporting practices over time. The robustness of this data may be further tested in the future by extracting profits data from the archives of a selection of individual firms, a practice used in several historical studies overseas. Our focus in this paper, however, was an inclusive estimation of business profitability in Australia. This new time series, we believe, provides an exciting foundation for a range of future research agendas in Australian economic and business history.

Figure 1 Business profitability in Australia, 1901-86

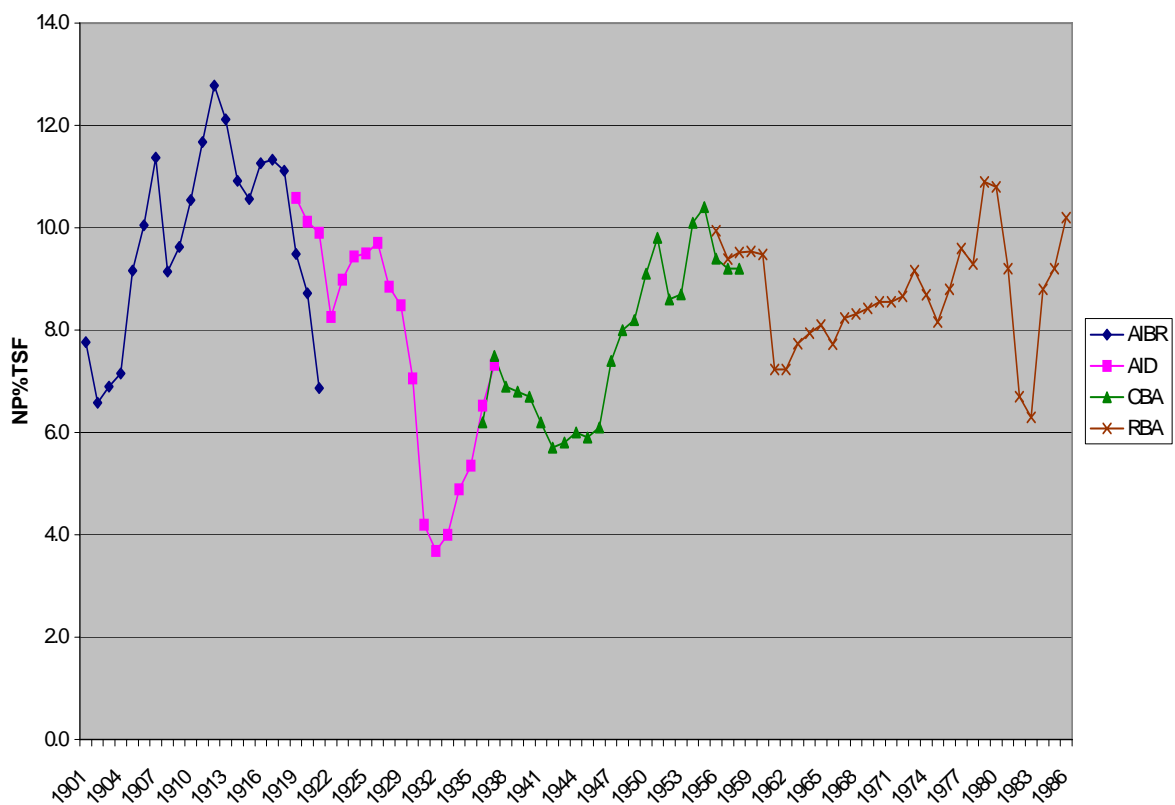


Table 2 Business profitability in Australia, 1901-86

Year	AIBR			AID			CBA			RBA		
	# cos	TSF (£m)	Profit (%)	# cos	TSF (£m)	Profit (%)	#cos	TSF (£m)	Profit (%)	# cos	TSF (£m)	Profit (%)
1901	111	48	7.8									
1902	115	45	6.6									
1903	113	46	6.9									
1904	127	54	7.1									
1905	150	63	9.2									
1906	161	77	10.1									
1907	175	67	11.4									
1908	180	74	9.1									
1909	184	78	9.6									
1910	201	90	10.5									
1911	205	91	11.7									
1912	220	104	12.8									
1913	230	115	12.1									
1914	244	125	10.9									
1915	258	128	10.6									
1916	248	129	11.3									
1917	252	135	11.3									
1918	252	144	11.1									
1919	265	152	9.5	292	125	10.6						
1920	269	165	8.7	292	136	10.1						
1921	279	175	6.9	363	161	9.9						
1922				429	199	8.3						
1923				501	200	9						
1924				468	208	9.4						
1925				513	239	9.5						
1926				520	261	9.7						
1927				368	177	8.8						
1929				489	238	8.5						
1930				585	322	7.1						
1931				585	324	4.2						
1932				585	324	3.7						
1933				585	324	4						
1934				585	325	4.9						
1935				486	271	5.3						
1936				521	292	6.5	na	370	6.2			
1937				505	291	7.3	na	392	7.5			
1938							na	409	6.9			
1939							628	401	6.8			
1940							640	420	6.7			
1941							631	428	6.2			
1942							617	434	5.7			
1943							617	439	5.8			
1944							577	429	6			
1945							583	433	5.9			
1946							572	438	6.1			
1947							542	444	7.4			
1948							653	519	8			
1949							692	561	8.2			
1950							707	619	9.1			
1951							786	774	9.8			
1952							848	889	8.6			
1953							899	983	8.7			
1954							912	1106	10.1			
1955							705	1133	10.4			
1956							835	1258	9.4	924	1099	9.9
1957							835	1356	9.2	968	1234	9.4
1958							835	1597	9.2	949	1352	9.5
1959										979	1516	9.5
1960										957	1750	9.5
1961										927	4066	7.2
1962										964	4506	7.2
1963										952	4838	7.7
1964										1013	5436	7.9
1965										1015	6027	8.1
1966										976	6415	7.7
1967										954	6754	8.2
1968										897	7270	8.3
1969										827	7844	8.4
1970										734	8375	8.6
1971										723	8880	8.5
1972										703	9797	8.7
1973										676	10828	9.2
1974										654	11934	8.7
1975										636	13624	8.2
1976										739	19257	8.8
1977										851	23281	9.6
1978										937	26180	9.3
1979										941	30271	10.9
1980										878	35189	10.8
1981										715	41832	9.2
1982										679	46675	6.7
1983										654	49105	6.3
1984										627	53741	8.8
1985										604	59380	9.2
1986										583	66745	10.2

Sources: As discussed in text

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Endnotes

1. For a very useful recent summary of available historical statistics see McLean, 'Historical statistics'. Many of the main series were published in Vamplew (1987). ANU's, 'Source papers in economic history' provides more detail of the origins and interpretation of much of the data found in Vamplew (1987). Useful data can also be found in Butlin (1977) and Maddison (2003).
2. Feeny and Rogers (1998) have calculated profitability from 1985. Also see McDonald (1999). For estimates of the profitability of private trading banks from 1925 to 1975 see Arndt and Blackert (1977), and from 1985 Rushdi and Tennant (2003); hire purchase companies from 1946 to 1963 see Runcie (1969, Table 13, p. 55); for public companies from 1946 to 1955 see Hall, (1956). We have indices for share prices (1875-1985) and dividend yields (1882-1983) as a measure of shareholder returns in Pope (1986, tables 5 and 6) and Pope (1987, pp. 241-2). The thinness of the equity market and the constant dividend policy of many firms for the earlier part of the twentieth century weakens the effectiveness of this source as a guide to business performance.
3. For a recent analysis of the development of big business in Australia see Fleming, Merrett and Ville (2004). Boyce and Ville (2002) provide an overview of some of the major contributions to Australian business history since British settlement.
4. A research agenda of the influence of profitability on historical changes in investment is advocated by Tafunell and Carreras, (2003), Spoerer (1996) and Cassis (1997). For a current and more ambitious comparative project see: Cassis and Brautaset (2003). On inward flows of FDI to Australia, see Blainey (1984, pp. 183-210), Forster (1964, Appendix III, pp. 230-2), Brash (1966), Department of Trade and Industry (1966, 1971), Australian Bureau of Statistics (ABS) (1986-7) and Wheelwright (1963).
5. 'Business Profitability and Long Term Industrial Change in Twentieth-Century Australia' (project 0557412). The chief investigators are Professors Simon Ville and David Merrett.
6. Economists often prefer EBDIT as the most accurate measure of the price-cost margin. Further discussion of the relative merits of these alternative forms of measurement can be found in Gow and Kells (1998), Arnold (1999), Capie and Billings (2001) and Cassis and Brautaset (2003).
7. Preference shares are generally excluded from the definition of shareholder funds. It is a much debated point whether they constitute part of the equity of a firm or should be regarded as a form of financial liability. For example redeemable preference shares are generally regarded as a liability. Australian Accounting Standard AASB 132 provides some detailed discussion. The effect of including preference shares in our series would be to reduce nominal profit returns by up to 1 per cent in the early part of the century, declining to around 0.1 per cent by later in the

century. Between 1929 and 1938 preferences are not listed separately from total shareholder funds and are assumed therefore to be included.

8. The 'inner reserves' of the English, Scottish & Australian Bank from 1894 until 1941 are shown in Jones (1993, Appendix 5).

9. The latter also confined his study to selected benchmark years.

10. Fleming, Merrett and Ville 2004, fig 6.2 p. 154 indicates the high degree of year to year fluctuations in debt's share of new capital raisings.

11. Forster, 1964, pp. 230-2 cites 85 British and American firms that began manufacturing in Australia in the 1920s or 'substantially expanded their operations'.

12. We opted to exclude insurance companies from our data because of the problems interpreting declared 'underwriting profits'.

13. For example Ville and Merrett (2000); Nash (1896-1914); and *Guide to Australian Business Records* (<http://www.gabr.net.au/>)

14. The shareholder funds employed by these companies in manufacturing in 1936 represents about one third of an estimate of capital stock for that year in 1939 prices, as seen in Snooks (1987, p. 300), while Boehm (1972, pp. 8-9) provides sectoral distributions.

15. Except for retailing firms whose share of total shareholder funds halved in 1927. Time and cost willing, it would be possible to go through all of the company annual reports for years in which *Jobson's* summarised data was missing or incomplete but it would then mix methodologies for the same source.

16. The exceptions are largely industries undergoing expansion (airways, electricity, insurance, metallic mining, printing, and sugar) or those severely affected by the depression and drawing down reserves including some wholesale, retail, farming, and motor trading.

17. From the early 1970s, profit rates are also reported separately from their net profit and shareholder funds components, resulting in slightly higher returns. In order to maintain consistency with most years in our time series we continued to calculate rates.

18. In January 1977 and all subsequent *Supplements*, they report that 'data ...may differ from those published in previous *Supplements* [because] takeovers, new entries and reclassifications have changed the composition of the "constant group"' since the previous supplement was compiled. Since all of the previous sources draw on current groups of companies, we are not concerned at the changing composition of the RBA's group; indeed its numbers fluctuated considerably before the 1977 comment.

19. The average shareholder funds of firms in the survey grew from £5m to £115m, 1964-86.