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## **A time series for business profitability in twentieth-century Australia**

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### Abstract

Australia has historical time series for a wide range of economic data covering most of the twentieth century. These include statistical information relating to national income, demography, prices, external trade, financial markets, and the government sector. However, we lack a long time series for business profits. We have calculations for some industries, especially banking, and national figures from 1985 using the IBIS database.

### Keywords

century, time, profitability, australia, series, twentieth, business

### Disciplines

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# **A Time Series for Business Profitability in Twentieth-Century**

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## **1. Introduction**

Australia has historical time series for a wide range of economic data covering most of the twentieth century.<sup>1</sup> These include statistical information relating to national income, demography, prices, external trade, financial markets, and the government sector. However, we lack a long time series for business profits. We have calculations for some industries, especially banking, and national figures from 1985 using the IBIS database.<sup>2</sup>

We offer a business profits time series to fill this lacuna. Constructing such a time series establishes the building blocks for addressing a range of investigative questions. To begin with, 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. Comparative business performance can be measured by

analysing a national series with estimates from individual firms. On a national level, our results will enable scholars to compare cyclical and secular trends in business activity with other time series, for example with national income to estimate business's share of national wealth. 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, Tafunell and Carreras 2003, Spoerer 1996, Cassis 1997, and Cassis and Brautaset 2003). In addition, it will throw light upon the relationship, if any, between comparative profitability and inflows of foreign direct investment, which has been a key feature of Australian experience (Blainey 1984, Forster 1964, Brash 1966, Department of Trade and Industry 1966, 1971, Australian Bureau of Statistics 1986-7, and Wheelwright 1963).

## **2. Methodology**

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.<sup>3</sup> 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. The latter consists of the paid up capital of ordinary shares plus accumulated reserves, which is assumed to include current retained earnings.<sup>4</sup> Thus, our calculation of nominal profitability can be expressed formally as:

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

where RoE is return on equity, NP is net profits, and TSF is 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 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 and Burroughs 1992, pp. 14-5 & 22). Similar practices occurred at brewers Tooths, where understatement or smoothing commonly occurred through the development of secret reserves prior to a major change in the Companies Act in 1961 (Wilson and Shailer 2004). There is no indication, however, as to how widespread such practices were in Australia, nor that

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, p. 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 organisation 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. 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.

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 rise or fall of a limited number of individual enterprises who may not typify the rise and fall of firms. 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 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 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. Twenty of the top 100 firms listed in Australia in 1930 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, p. 17 and appendix C). However, some multinationals operated branches in Australia without a local listing. 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 by 1921. From the outset this included companies from all of the main ANZSIC divisions, which is indicative of its broad coverage.<sup>5</sup> 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.<sup>6</sup> The number of companies included grew regularly from 111 in 1901 to 265 by 1919, representing 90 per cent of the *AID* number in its first year.

### *3.2 Australian Investment Digest (AID)*

*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.<sup>7</sup> 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 a 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 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.<sup>8</sup> 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 1931-33 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. In these years, at the depth of the depression, it was profit rather than shareholder funds that was particularly affected by the business cycle. *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, p. 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 on 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, indicating the limited number and proportionately smaller size of New Zealand companies.

### *3.3 Commonwealth Bank of Australia Statistical Bulletin (CBA)*

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, pp. 3-64).

#### *3.4 Reserve Bank of Australia Statistical Bulletin (RBA)*

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. 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.<sup>9</sup> 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 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 and average firm size since the 1960s helps to explain why coverage was increasing while the number of firms surveyed fell (Fleming, Merrett and Ville 2004, pp. 115-20).

#### **4. Results**

Table 1 provides the data for the profit series from 1901-86 and chart 1 expresses the results graphically. 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 1936-37.

#### **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 are 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 those 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.

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### **Endnotes**

1. For a very useful recent summary of available historical statistics see McLean, (2005). Many of the 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).

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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. 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).

4. 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. Australian Accounting Standard AASB 132 provides 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.

5. Insurance companies were excluded because of the problems interpreting declared 'underwriting profits'.

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6. For example Nash (1896-1914) and *Guide to Australian Business Records* (<http://www.gabr.net.au/>)
7. The shareholder funds employed by these companies in manufacturing in 1936 were equivalent to about one third of capital stock for that year in 1939 prices. Snooks (1987, p. 300).
8. Except for retailing firms whose share of total shareholder funds halved in 1927.
9. In fact the composition of the constant group fluctuated to reflect takeovers, new entries and reclassifications. Since all of the previous sources draw on current groups, we are not concerned at the changing composition of the RBA's group.

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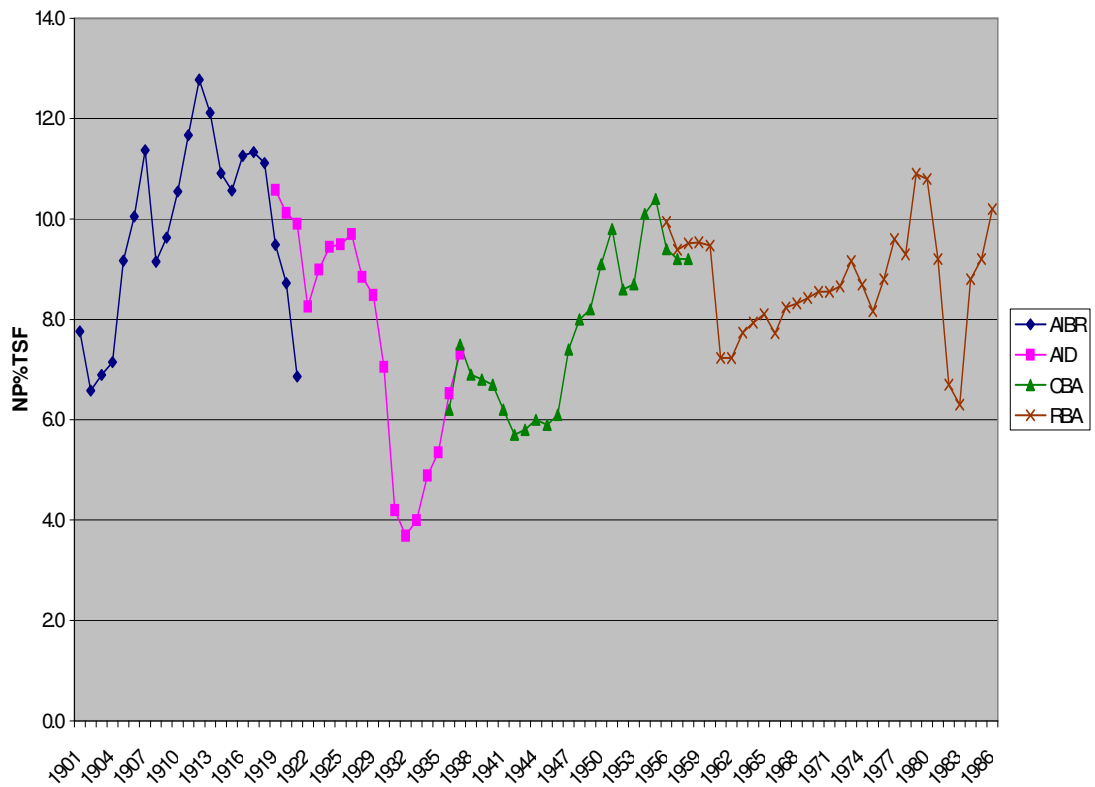
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**Figure 1 Business profitability in Australia, 1901-86**



**Table 1 Business profitability in Australia, 1901-86**

	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	9.0						
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	4.0						
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	6.0			
1945							583	433	5.9			
1946							572	438	6.1			
1947							542	444	7.4			

1948						653	519	8.0			
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											