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# Comparative performance of publicly listed construction companies: Australian evidence

MARIA C.A. BALATBAT<sup>1</sup>, CHO-YI LIN<sup>2</sup> and DAVID G. CARMICHAEL<sup>2\*</sup>

<sup>1</sup>*Australian School of Business, The University of New South Wales, Sydney, Australia*

<sup>2</sup>*School of Civil and Environmental Engineering, The University of New South Wales, Sydney, Australia*

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Understanding the performance of publicly listed Australian construction companies, in comparison with other Australian listed companies, is vital to the construction sector's continuous access to capital from the public equity market. Evidence on the performance of construction companies that do business in building and/or civil infrastructure is presented and compared with the Australian All Ordinaries Index and a portfolio of publicly listed (blue chip) companies. Using fundamental analysis, a comprehensive assessment on a range of financial and performance indicators is provided (including share prices, equity valuation multiples and profitability ratios) over the 10-year period, 1998 to 2007. The results show that, apart from the period when the Goods and Services Tax was introduced in 2000, the performance of publicly listed Australian construction companies in most of the indicators assessed is comparable to the largest traded shares on the Australian Securities Exchange. The empirical evidence is encouraging and could potentially elicit interest and confidence for investors to invest in construction companies.

**Keywords:** Financial ratios, company performance, market performance.

## Introduction

Construction companies have been found to be highly levered, to have weak financial positions and to be subject to large business cycle fluctuations. Consequently, share prices tend to overheat when the economy grows quickly, and then collapse when the economy goes into recession (Wagle, 2006). These fluctuations lead to volatility in the share prices of construction companies, making them less appealing to investors such as portfolio managers. The question then arises whether these fluctuations follow from economic fundamentals, or whether it is a self-fulfilling prophecy. Literature on the performance of Australian construction companies is scant. Consequently, the aim is to provide some evidence, using time series financial ratios and performance indicators to assess the performance of publicly listed construction companies in Australia and how these compare with benchmark companies. The results of the research address the debate on generalizations in the construction economics literature involving a slanted perception of

the construction industry. For example in the UK, Ball *et al.* (2000, p. 734) point out that it is odd that there is a general notion that building contracting produces long-term low and constant rates of return.

The relevant literature is outlined first, and also an introduction is given to the historical development of the fundamental analysis implemented below. A full list of financial ratios and measurements is provided, along with an indication of the method in selecting the sample of construction companies studied. The remainder of the paper discusses the results and conclusion.

## Literature review

Some of the first, and most detailed, financial ratio analyses on construction firms focused on the probability of business failure. This stream of the literature was motivated by reports that contractors around the world seemed to fail at higher rates and with more devastating effects than companies from other industry sectors

\*Author for correspondence. E-mail: D.Carmichael@unsw.edu.au

(Mason and Harris, 1979). Kangari *et al.* (1992) described the failure rate of construction companies in the US in the 1980s as reaching 'a critically high level' (p. 349). This view was further echoed by Edum-Fotwe *et al.* (1996), who believed corporate collapses in Britain were at record levels at the time of their writing. Other studies focusing on contractors with financial difficulties include Abidali and Harris (1995), Singh and Tiong (2006) and Pilateris and McCabe (2003). From an overview of models evaluating construction companies' insolvencies, it can be concluded that financial ratio based models only give an indication, rather than a prediction of the future performance of companies, and that suitable financial models for construction companies remain undeveloped and unrealized. Given this situation, it is believed that it is better to present unweighted, raw financial data and let interested parties form their own perspectives about the companies.

It is still unclear how financial ratios influence investors' behaviour, but one thing is certain, namely that financial ratios are the only hard information available on which investors and external users can base their opinions on construction companies (Langford *et al.*, 1993).

### Share performance of construction companies

Share prices for construction companies have been observed to fluctuate more widely than the general market index (Hood *et al.*, 2006; Wagle, 2006). Abdul-Rasheed and Tajudeen (2006) examined the investment performance of listed property and construction companies from 1998 to 2005, and report that the risk-adjusted performance of the companies was not better than other stocks in the market. They also suggest that the low correlation between the share prices of construction companies and the performance of the share market offers diversification possibilities for investors. Hood *et al.* (2006) point out that institutional investors have demonstrated grave concerns over the financial strength and attractiveness of construction companies as investments and should these concerns increase, it would significantly undermine their ability to attract investment and raise additional capital.

### Financial performance of construction companies

The fluctuating nature of construction shares does not necessarily signal unstable financial positions of construction companies. Mason and Harris (1979) state that 'construction is recognized as a high risk business', but also concede, 'the larger companies were regarded as being reasonably secure' (p. 301). Ball *et al.* (2000) studied the profitability of 48 medium-size

publicly listed construction companies over the five-year period 1990 to 1994 and found these companies to be profitable, with house-building median profitability consistently higher than contracting services. This is consistent with the findings of Akintoye and Skitmore (1991) who found that profitability as a ratio of turnover for British construction firms was fairly stable at 3% despite price competition in the construction markets. The 2007 survey by the Construction Financial Management Association (Ellis *et al.*, 2007) found that 93% of its members in the US had been operating for at least 10 years. Further, Ellis *et al.* (2006, 2007) found that US contractors have a healthy return on assets (ROA) of 6.7% and return on equity (ROE) of 23.7%. One possible explanation for this competitive yet profitable performance is the continuous pursuit of innovation and efficiency in the industry (Hillebrandt *et al.*, 1995; Ball *et al.*, 2000).

Studies have also illuminated differences in construction industry performance between countries, even with increasing globalization. For example, Cheah *et al.* (2004) and Yee and Cheah (2006) examined the profitability of large construction firms in the US, Europe and Japan, and noted a lack of correlation between a firm's profitability and size. Competition in these different markets is noted to be markedly different. This result is consistent with that of earlier works (Singh and Whittington, 1968; Lea and Lansley, 1975; Asenso and Fellows, 1987). However, these conclusions are in contrast to those of Hall and Weiss (1967), Samuels and Smyth (1968) and Akintoye and Skitmore (1991), who attribute higher profitability to better management strategies of larger companies.

The extant literature on the use of financial ratios to assess past performance of construction companies appears to be limited to ROA and ROE. The development below expands the measurements that could potentially be used to assess company performance. Moreover, current evidence excludes Australia in most studies in this research area, ignoring its significant contribution to the global construction industry. These shortcomings in the literature are addressed here.

The construction industry in Australia experienced sustained growth in the two decades up to 2007 making this sector the fifth largest industry in the Australian and New Zealand Standard Industrial Classification (ANZSIC) (ABS, 2008). In terms of the gross value added (GVA), the industry has grown steadily from 6.3% to 7.4% of total GVA at basic prices from 1998 to 2007 (ABS, 2007a). When considering income generated, the industry contributed up to 7.1% of total factored income, and accounted for 8.7% of total employment (ABS, 2007b). Over recent years, it has been observed that the industry has expanded its business activities overseas.

## Data and research method

### Sample selection

The sample was determined by isolating Australian Securities Exchange (ASX) companies listed under Global Industry Classification Standards (GICS) industry group 'Capital Goods' and by establishing which companies were engaged in construction. This search yielded 84 construction companies. Companies not purely engaged in construction and companies engaged in start-up mining operations were excluded from the analysis, leaving 30 construction firms in the sample.

Table 1 reports the sample characteristics. The company size represented by total assets or market capitalization indicates that the sample is comprised of very large and medium-sized companies. The short-term and long-term solvency, captured in the current and debt-to-equity ratios, respectively, are reasonable levels except for several companies whose ratios appear to indicate financial difficulty, but none of the sample firms experience going concern issues.

It is also worthwhile to note in Table 1 that the financial statements of the construction companies are audited by large accounting firms (four exceptions), and that the boards are largely comprised of non-executive directors (three exceptions). The ownership is concentrated in the top 20 shareholders (mean of 70% holdings). The influence of blockholders (defined as shareholders with greater than 5% interest) is measured by whether the sum of their holdings is more than half the holdings of the top 20 shareholders. As reported in Table 1, blockholders dominate the voting rights in 21 companies.

The sample of construction companies is further distinguished by the different operating fields of

construction. The Australian Bureau of Statistics categorizes them into three broad areas: residential building, non-residential building, and engineering construction (ABS, 2008). Prior evidence categorized the industry into general building, heavy civil, and real estate (Pilateris and McCabe, 2003; Basha *et al.*, 2007). Here, construction companies are classified into two broad groups, hereafter referred to as Property (property development) and Civil (civil infrastructure).

Residential and non-residential building was combined to make up the Property group, but is distinguished from civil infrastructure construction. This was done for a number of reasons. In Australia, most property development companies are privately owned businesses (and not listed on the ASX), and hence only a small number of them can contribute to the present analysis. Also, those who have become publicly listed tend to diversify in order to capture a different market and stay competitive. In fact, studies have established linkages between profitability and diversification in the construction industry (Akintoye and Skitmore, 1991). There are only a few companies that diversify their businesses in both property and civil construction activities. The sample yielded 12 Property and 18 Civil construction companies.

Mining-related construction companies have evolved from the strength of the Australian mining industry. There are a growing number of firms that specialize only in construction for the exploration and winning of natural resources. These companies prosper because Australia is rich in natural resources, and population and infrastructure are sparse relative to landmass. However, most of these companies are relatively newly listed, and hence there is an insufficient amount of data to create a separate group. In the future, it may warrant a separate category, because their workload is related to the mining industry's activities and can be separate

**Table 1** Sample descriptives (2007)

	Mean	Median	Std Dev.	Min.	Max
Market capitalization (in A\$ millions)	1578	317	3187	23	13 465
Total assets (in A\$ millions)	1645	260	3296	17	13 701
Current ratio (Current assets/Current liabilities)	1.43	1.215	0.74	0.33	3.43
Debt-to-equity ratio	2.10	1.70	1.88	0.50	9.00
Firm age (in years)	24	22	16	2	63
Size of board	6	6	2	4	12
Independent board (Yes = 1; No = 0)	89%	1	32%	0	1
Large independent auditor (Big 4 = 1; Non-big 4 = 0)	86%	1	36%	0	1
Ownership of top 20 shareholders	70%	76%	13%	46%	92%
Blockholder dominance (Yes = 1; No = 0)	71%	1	46%	0	1

from that of the general trend of the construction industry.

For benchmarking, 10 companies were selected to represent some of the major sectors of the Australian economy. These are referred to as the blue chip portfolio below. They cover commercial banking, retailing, insurance, manufacturing and telecommunication sectors. This portfolio contains the most popular publicly listed companies measured by trading volume and market capitalization and are in the top 20 ASX traded shares. Another benchmark used in the paper is the All Ordinaries Index, covering nearly all ordinary shares listed on the ASX. That is, the performance of the construction industry sector is benchmarked with the best (blue chip portfolio) and the average (the All Ordinaries Index) of the Australian capital market.

### Method and data sources

A method known as fundamental analysis is adopted in this research (also referred to as financial ratio analysis) where the measurements used are all publicly available data obtained from annual reports and financial statements. These measurements include share market performance, equity valuation, and financial ratios often used as indications of a company's financial performance and business characteristics and future prospects (Barnes, 1987), and arguably give an informed view of the structure and health of companies (Langford *et al.*, 1993). This method is frequently used by financial analysts to assess the performance of companies and rate them against industry norms and benchmarks (Yee and Cheah, 2006). The use of financial ratios in research studies is popular for the reason that they are easy to apply and understand (Mintzberg and Waters, 1989). Moreover, numerous studies have concluded that the usefulness of statistical prediction models developed from financial ratios is increased by focusing on individual industries (Argenti, 1983; Kangari, 1988; Kangari *et al.*, 1992).

The annual equity and financial performance measurements of all sample companies are calculated and the average is obtained for each measurement over the 10-year period, 1998 to 2007. The paper presents unweighted, raw financial data to allow interested parties to easily form their own perspectives about the companies. These measurements are then compared with benchmark companies to assess whether the construction industry is over- or underperforming in a given measurement.

Annual share returns and all other financial ratios of companies are obtained through the authorized access of *FinAnalysis* and *DataAnalysis* databases. Beta estimates are obtained from the Centre for Research in Finance at the Australian School of Business. Financial

ratios for the All Ordinaries Index are collected through the licensed use of the *Bloomberg* electronic database. This database contains all listed companies for all years examined.

### Financial ratios and performance indicators

A total of 16 measurements are used.

#### *Market performance (two measurements)*

- Annual share returns
- Change in market value over the 10-year period

#### *Equity valuation and performance ratios (seven measurements)*

- Earnings per share (EPS)
- Dividend per share (DPS)
- Dividend yield
- Price to earnings ratio
- Enterprise multiple
- Market capitalization to trading revenue ratio
- Price to book (P/B) value

#### *Profitability ratios (seven measurements)*

- Return on equity (ROE)
- Return on assets (ROA)
- Return on invested capital (ROIC)
- Earnings before interest and taxes (EBIT) margin
- Earnings before interest, taxes, depreciation and amortization (EBITDA) margin
- Net profit margin
- Net operating profit less adjusted taxes (NOPLAT) margin

Appendix A lists the formulae used for these ratios. The results of the analysis are summarized in the order of this list; see Appendices B and C.

### Market performance

Investors typically analyse historical share returns when choosing to buy or sell shares of listed companies because they represent the gain an investor obtains from their invested capital. The annual returns were obtained by cumulating share returns divided by the number of trading days in a year. This is equivalent to a buy-hold investment strategy where the shares are purchased at the beginning of the period and investors hold on to the shares until sold at the end of the year.

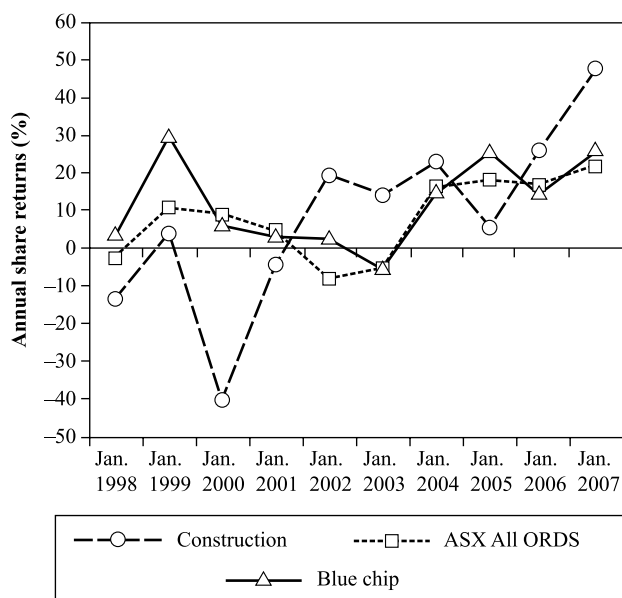
As shown in Figure 1, the annual share returns of construction companies, on average, outperformed both the All Ordinaries Index and the blue chip



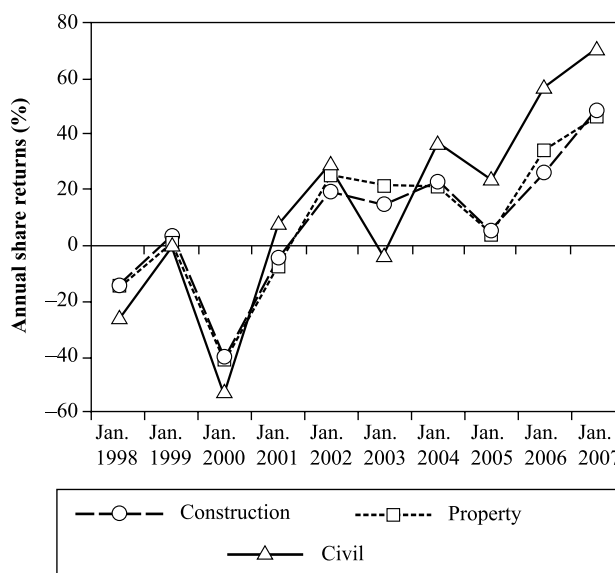
portfolio since 2001, with the exception of 2005. As illustrated in Figure 2, the lacklustre performance of the industry in 2005 was largely attributed to the poor performance of the Property group. The property sector experienced a market correction following a boom market during this period. After 2001, a clear advantage can be observed by the Civil group over the blue chip companies; double-digit returns occurred in four of the seven years, with the other years being marginally better or worse. The Property group delivered stable annual returns, outperforming the blue chip portfolio in five of the seven years post-2001.

Figure 1 also shows that the introduction of the Goods and Services Tax (GST) in 2000 had a negative effect on the share prices of construction companies, confirming that the construction industry is quite sensitive to tax changes (ABS, 2008). GST affected this sector of the economy the most and caused a dramatic contraction throughout the construction industry.

Another commonly used market return measure is the percentage change in share price over time ('arithmetic return'). Table 2 shows that the construction companies have by far outperformed all other groups, including the blue chip companies. A high percentage increase was experienced by construction companies across all different company sizes, and not just the large or well-known companies. Overall, in the 10-year period, two-thirds of the construction companies outperformed the market index. The lack of correlation between the construction share prices and the market index is supported by Abdul-Rasheed and Tajudeen (2006) in their assessment using the Sharpe ratio (Sharpe, 1966, 1994).



**Figure 1** Annual share returns (in %) of the construction industry, All Ordinaries Index and blue chip portfolio



**Figure 2** Annual share returns (in %) of the construction industry, Property and Civil construction groups

**Table 2** Percentage increase in share prices and indices from 1998 to 2007

Index group	% change
All construction	373
Blue chip	277
All Ordinaries Index	134
Inflation (CPI)	32

The beta estimate is a measure of market risk and is obtained by an ordinary least squares linear regression of the company share returns on the returns of the market index calculated over a period of 48 months ending 30 June 2007. By definition, the market beta is equal to unity. Table 3 shows that the market risk of construction companies is no different from that of the blue chip portfolio. Some construction companies are relatively sensitive to market movements, having a maximum beta value of 2.74 (blue chip companies = 2.17) while others are relatively insensitive to market movements with a minimum beta value of 0.27 (blue chip companies = 0.19).

**Table 3** Beta estimates over a 48-month period ending 30 June 2007

Index group	Beta estimate (range)
All construction	0.27–2.74
Blue chip	0.19–2.17
Property	0.27–1.74
Civil	0.52–2.74
All Ordinaries Index	1.00

In summary, the construction industry outperformed the largest traded shares and the Australian capital market, a result that challenges the generalizations in the literature that the construction industry produces long-term low and constant rates of return.

### Equity valuation and performance

While the historical movements in share prices are value-relevant to investors, this is not an indicator of the overall performance of a company. Hence, it is usual to assess a company's ability to generate earnings and, more importantly, its capacity to pay dividends. Consequently, companies frequently report their earnings and dividend ratios in order to attract potential investors (Dong *et al.*, 2005).

#### Earnings per share (EPS)

Edum-Fotwe *et al.* (1996) argue that EPS is a financial ratio that is of importance to shareholders, management and financial institutions. It represents the net profit after tax attributable to each ordinary share. The data demonstrate why the blue chip companies are so popular among investors. While the construction companies display strong and sustained EPS, they are nowhere near as high as the blue chip companies. This, however, is an anticipated result, because the majority of the construction companies have much smaller market capitalization and little market dominance. A more effective comparison is one between construction companies and the ASX All Ordinaries Index. The average EPS of construction companies is more stable and superior compared to that of other ASX listed companies. It can be observed that the average EPS of all listed companies was extremely poor during the period between 1999 and 2002. This may be explained by the 1999 US technology meltdown accompanied by slower Australian economic growth during these periods. Yet, construction companies remained profitable during these years even when there was an apparent contraction in the construction industry after the introduction of GST in 2000.

EPS is often quoted in the financial press by analysts as a basis for earnings forecasts, but investors need to exercise caution in interpreting this ratio because it is sensitive to the number of ordinary shares on issue.

#### Price to earnings (PE) ratio

PE evaluates share price as a multiple of earnings and indicates whether the share price is too high or too low. Owing to speculation in the market, sometimes shares can be overvalued beyond what can be justified by the

reported earnings of a company. Conversely, a low PE ratio indicates that a company is undervalued and there is the potential for the share price to increase.

The PE ratios are favourable for the construction companies. Where the averages of all listed companies are valued at 25 to 35 times the companies' earnings, construction companies are only at 10 to 17 times. This is a strong indication that construction companies are not overvalued, and have been profitable with smaller market capitalizations. Indeed, a comparison with the blue chip portfolio also reinforces this point; and it was not until the end of the 10-year period that the construction companies' PE ratio rose to the blue chip portfolio's level.

#### Dividend per share (DPS)

As companies generate earnings, they can either retain profits in pursuit of future profitable opportunities or distribute dividends among their shareholders. DPS represents the amount of profit distributed for every share owned by the shareholders. This is additional to any capital gains attributable to holding the shares.

The DPS trend mirrors that of the EPS, where the DPS ratio of blue chip companies is generally over three times that of the DPS of construction companies. This is perhaps another reason why blue chip companies are popular with investors, even though a steady growth in the DPS can also be observed for the construction companies from 2001 onwards, where the average DPS doubled.

In comparison with the All Ordinaries Index, the construction companies performed better. The Property and Civil groups have strong DPS, reaching as high as five times that of the share market average. It is evident from these results that the construction companies are some of the strongest performing industry groups in the ASX.

#### Dividend yield

Another market indicator derived from DPS is the dividend yield. Dividend yield shows the relationship between DPS and share price. The data indicate that construction companies have a higher dividend yield ratio than that of blue chip companies. The peak in dividend yield in 2000 might be explained by the fall in the share prices of construction companies, yet they continued to maintain dividend payments. One interpretation of this result could be that shares of construction companies are undervalued. From 2006, however, the dividend yield of construction companies began to fall as many large companies experienced large increases in share prices. But dividend yield was still in excess of the blue chip companies.

### Enterprise multiple (EV/EBITDA)

Enterprise value (EV) is market capitalization plus total debt less cash. EBITDA is earnings before interest, taxes, depreciation and amortization. This ratio is useful for a cross-sectional comparison as it ignores taxes, interest and non-cash flow items. A low EBITDA ratio suggests that a company may be undervalued and hence an attractive target for takeover.

The data show an increasing trend on the enterprise multiple of construction companies (except in 2006) but lower than that of blue chip companies and the All Ordinaries Index. This suggests that they perform just as well as some of the most popular shares on the ASX despite their smaller size. The data show that the majority of the ASX companies have higher enterprise values relative to the earnings they are capable of making. The general trend for the construction companies is one of stability; that is, growth in net income is in line with growth in enterprise value. Consequently, the construction companies have the basis on which strong share returns can be supported by solid financial performances.

### Market capitalization to trading revenue ratio

Market capitalization to trading revenue ratio is similar to the EV/EBITDA ratio, but measures a company's worth on the share market relative to the size of its operation. The data show that market capitalizations for all groups grew more slowly than their trading revenues between 1998 and 2002. Then, from 2002 onwards, the ratio recovered, reflecting a rally on the ASX. The blue chip companies by 2007 had, on average, recovered to their original 1998 value. On the other hand, the construction companies reached new heights, even though they were still well below the blue chip companies. This is another signal that the construction companies are undervalued. There is also an apparent distinction between the Civil and the Property groups. For the Civil group, its market capitalization has been less than or equal to its trading revenue throughout the 10-year period.

### Price-to-book (P/B) value

Equity can be further valued by comparing the market value of a company's share price relative to net asset value per share. This is called the price-to-book (P/B) value. For a sound company, it is expected that its share prices will increase over time. However, equally, if a company's P/B value is too high relative to a comparable company in the same industry, then it can be viewed that the company is overvalued.

It can be seen from the data that the blue chip companies follow the trend of the market average

closely except for 2005. P/B values increased from 3 to 4.6 by 2007. The Property and the Civil groups stayed closely at below 2 for most of the 10 years, breaking away after 2005. The Civil group's P/B value increased dramatically and overtook the market average in 2007. The construction companies experienced a dramatic increase in their market capitalizations during 2006 and 2007 to just below that of the market average.

### Profitability ratios

Fellows and Langford (1980) argue that profitability is the most important criterion for activities in the construction industry. A company's ability to distribute healthy earnings is related to profitability. Higher profits usually lead to more dividend distributions. Also, profit growth is welcomed by the market because it demonstrates that the company is able to increase revenue while controlling cost. This section evaluates the financial performance of construction companies using several return and margin profitability measures.

### Return on equity (ROE)

One of the main profitability measures is return on equity (ROE), which is calculated from dividing net profit by net worth. The ratio measures the true return on shareholders' invested funds.

Of the construction companies, only about one-quarter have ever recorded one or more losses over the period from 1998 to 2007. The data show that there is a general trend of falling ROE from 1998 to 2001 before rising steadily from 2002 onwards. The fluctuations in the data are not large, staying within the 0–50% range.

The large and established construction companies exhibited strong and consistent profitable results throughout this period, similar to results reported by Akintoye and Skitmore (1991).

When comparing the average of the construction companies against the blue chip portfolio, the result is extremely encouraging. The construction companies' average ROE is either similar or only slightly lower than that of the blue chip companies. The effect of the introduction of GST in 2000 is one possible explanation for a small dip in net profit in 2001. Further, the Civil companies demonstrated their strength by outperforming the most popular companies on the share market, increasing from 2001. Edum-Fotwe *et al.* (1996) suggest that increases in ROE imply improvements in marketing and productivity.

Curtin (1993) suggests that a net income before tax to net worth ratio of 15% is a good return. The construction companies maintained a net income after



tax to net worth ratio of over 10%. This is a good indication that construction companies are in fact some of the most profitable companies listed on the ASX, even though most of them are not well known and relatively small in operational scale.

### Return on assets (ROA)

Return on assets (ROA) measures how effective a company is using its assets to generate profit. This ratio is very similar to ROE, except that the denominator is total assets (sum of total liabilities and shareholders' equity). Hence, it is expected that ROA will yield a lower value than that of ROE.

The data show that construction companies, on average, are as effective in generating profits as the blue chip companies. The ROA of these two groups only differ by one percentage point, except in 2005 and 2006. The Property and the Civil companies show fairly smooth performance throughout the 10-year period. An ROA of 6–8% over the period is considerably higher than that of the majority of international contractors in the empirical study of Cheah *et al.* (2004).

Table 4 demonstrates the profitability of Australian construction companies compared to the US. The Australian companies have higher ROA, but lower ROE. The explanation for this lies with the accounting principle that assets equal liabilities plus owner's equity. This means a company, through borrowing, can have a sizeable level of assets even with a small equity base. Hence, a conclusion can be drawn that the US construction companies are more highly leveraged than their Australian counterparts, and yet they still achieve a lower ROA. This view can be confirmed by comparing the lower Australian debt to equity ratios.

The construction companies clearly outperformed the All Ordinaries Index whose ROA has been as low as –25%, while the construction companies' ROA ratios have been less volatile than the market's average over the 10-year period.

### Return on invested capital (ROIC)

Return on invested capital (ROIC) measures how well the company generates cash flow based on the capital

**Table 4** Comparison between Australian and the US construction companies (\*Ellis *et al.*, 2006, 2007)

Ratio	Country	2006	2007
ROA	Australia	8.2%	8.2%
	US*	6.7%	7.7%
ROE	Australia	20.6%	12.9%
	US*	23.7%	26.2%

invested by shareholders and debtholders. Wright (1977) argues that this ratio most accurately reflects the financial achievement of a business.

The data show that construction companies derive healthy operating profits from their investment in operating capital. They are about 10% higher in ROIC than the blue chip companies. The Civil group performed the best and its ratio rose towards the end of the study period. This indicates that their returns on operating capital investment are substantial.

### EBIT and EBITDA margins

Another common profitability ratio is the earnings before interest and taxes (EBIT) margin. It is 'one of the key measures used by investment analysts to assess corporate performance' (Finch, 2008). It determines a company's earning power by dividing EBIT by operating revenue. For companies subject to high depreciation charges, the EBITDA margin (earnings before interest, tax, depreciation and amortization divided by operating revenue) is a more useful and appropriate measure. By definition, EBITDA will be larger than EBIT.

The data reveal that construction companies have been consistent in turning their revenues into profit. For the 10-year study period, their EBIT margin averaged about 7 to 14%, while their EBITDA margin stayed around 10 to 15%. In contrast, the blue chip portfolio were at similar margins with the construction companies in 1998, but improved over the years to 23% in 2007 for the EBIT margin.

When dividing the construction companies into categories, it is possible to identify this lack of growth. Over the 10-year period, the Property group improved its EBIT and EBITDA margins. However, the Civil group continued to operate at a tight margin. Its EBIT fell from 6.8% in 1998 to 2.3% in 2001, but recovered to 7.0% in 2007. Consequently, the overall construction group's average has been pulled down by the Civil group.

Nonetheless, construction companies still fare very well against the majority of companies on the ASX. The average of ASX companies yields negative EBIT and EBITDA for all 10 years, and they compare unfavourably to the construction companies in general.

### Net profit margin

When an investor is only interested in the final profit value, the best ratio would usually be the net profit margin. It divides net profit after tax (NPAT) by operating revenue.

The data show that construction companies yield much smaller net profit margins than the blue chip

companies over the 10-year period. As with the EBIT and the EBITDA margins, there is strong growth of net profit margins of the blue chip group, and a stagnate performance of the construction companies. Over the 10 years, the construction companies, including both the Property and Civil groups, managed to keep net profit margin steady at around 4%. Curtin (1993) recommends a value of above 2% to be good. Cheah *et al.* (2004) found most international large contractors have less than 3% net profit margins. The study of 80 British construction companies in the 1980s by Akintoye and Skitmore (1991) yielded an average of 3.2% as a pre-tax profit margin. Hence, despite the lack of growth, 4% net profit margin for Australian construction companies is a favourable result.

### NOPLAT margin

The NOPLAT (net operating profit less adjusted taxes) margin concentrates on the profit generated specifically from sales, while removing the effects of capital structure. Sometimes, companies borrow heavily to fund their profit generating activities. Hence, while they have healthy profitability ratios, they in fact have higher financial risks than those more reliant on equity funding.

The data and conclusions for the NOPLAT margin are similar to those for EBIT and EBITDA margins, indicating neither the construction nor the blue chip group are heavy borrowers. The blue chip group grew by 10% over the 10 years, while the construction companies' margins fell before improving in 2007. The Civil group's margin lowered the average of the construction group.

### Conclusion

An overview of publicly listed Australian construction companies has revealed their strengths and some notable characteristics. Construction companies have experienced some of the highest growths compared to other sectors over the decade 1998–2007. Based on market performance, construction companies have generally fared well compared to the general All Ordinaries Index and a portfolio of blue chip companies, with the exception of the period of introduction of GST in 2000.

Performance ratios such as EPS and DPS distinguish the construction companies from the blue chip portfolio. Investors are attracted to the blue chip companies for their high EPS and DPS ratios. However, construction companies on average have high dividend yields, even with increasing share prices. Analyses of equity valuation measurements, such as PE, EV/EBITDA, market capitalization/trading revenue and P/B ratios,

all show that construction companies' share prices are not overvalued. And even with rising share prices, the construction companies still appear attractive. One reason for some fluctuations in share returns was the introduction of GST in 2000 causing a contraction in the construction industry. However from 2002 onwards, the construction companies have consistently increased their share prices by more than the increase in the All Ordinaries Index, except in 2005. Indeed, a calculation of percentage increase over the 10-year period has showed that construction companies' share value has increased by an average of over 370%, compared to the blue chip companies and the All Ordinaries Index at around 280% and 135% respectively. Moreover the market risk of the construction sector, represented by beta estimates, is no different from that of the largest traded stocks in Australia.

The equity valuation indicated that construction companies are able to match their increase in share prices with higher earnings. Their ratios have consistently been better than the market average, and this demonstrates that their share prices were not overvalued. Even though the blue chip companies appeared to have higher EPS and DPS, construction companies have some of the highest dividend yields in the market.

All profitability ratios indicate that the construction companies are not as profitable per operating revenue dollar as the blue chip portfolio. However the high ROA implies that construction companies are effective in generating profit from their assets. The Civil group, for example, exhibited both high levels of operating revenue and low profit margins. The construction companies have exhibited resilience by posting stable profitability over the 10-year period. This is consistent with the findings by Akintoye and Skitmore (1991) on profitability of the British construction industry being relatively constant irrespective of the economic conditions.

The analysis presented here provides evidence of a strong and stable market and financial performance that is comparable with the best performers in the Australian capital market. The positive historical statistics are good news for publicly listed Australian construction companies and their investors.

### Future studies

From the above analysis, it has been concluded that construction companies have obtained secure financial positions and respectable earning capacities over the 10-year study period. However, reasons behind their strong performances have not been thoroughly investigated. While some of these factors have been discussed, further research is recommended. Some of these reasons may be localized. This view is echoed by Yee

and Cheah (2006) who demonstrated empirically the distinction of contractors' growth trends between continents. Indeed, if the historical evidence and data gathered here are combined with their validated causes, it is possible to build a model to estimate future performance of construction companies.

The study was completed before the global financial crisis in 2008. The impact of the 2008 events remains to be analysed.

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## Appendix A

### Formulae used in ratio calculations

Measurements	Formula
	SHARE MARKET PERFORMANCE
Share market return	$\ln \left( \frac{\text{price}_n}{\text{price}_{n-1}} \right); \text{period } n$
	EQUITY VALUATION AND PERFORMANCE
Earnings per share (EPS)	$\frac{\text{Net profit after tax} - \text{Preference dividends}}{\text{Average number of ordinary shares}}$
Price to earnings (PE) ratio	$\frac{\text{Market price per share}}{\text{Earnings per share (EPS)}}$
Dividend per share (DPS)	$\frac{\text{Ordinary dividends}}{\text{Number of ordinary shares}}$
Dividend yield	$\frac{\text{Dividend per share (DPS)}}{\text{Market price per share}}$
Enterprise multiple: Enterprise value (EV) to earnings before interest, tax, depreciation and amortization (EBITDA) ratio	$\frac{\text{Market capitalization} + \text{Total debt} - \text{Cash}}{\text{EBITDA}}$
Market capitalization to trading revenue ratio	$\frac{\text{Market capitalization}}{\text{Trading revenue}}$
Price to book (P/B) value	$\frac{\text{Closing share price}^*}{\text{Shareholders equity per share}}$
	* on the last day of the company's financial year
	PROFITABILITY RATIOS
Return on equity (ROE)	$\frac{\text{Net profit after tax}}{\text{Shareholders equity} - \text{Outside equity interests}}$
Return on assets (ROA)	$\frac{\text{Net profit after tax}}{\text{Total assets} - \text{Outside equity interests}}$
Return on invested capital (ROIC)	$\frac{\text{Net operating profit less adjusted taxes}}{\text{Operating invested capital before goodwill}}$
EBIT margin	$\frac{\text{EBIT}}{\text{Operating revenue}}$
EBITDA margin	$\frac{\text{EBITDA}}{\text{Operating revenue}}$
Net profit margin	$\frac{\text{NPAT before abnormals}}{\text{Operating revenue}}$
NOPLAT (net operating profit less adjusted taxes) margin	$\frac{\text{NOPLAT}}{\text{Operating revenue}}$
	where NOPLAT = EBITA less tax expense adjusted for the tax shield provided by interest expense



**Appendix B****Summary of equity and performance ratios**

	Jun-98	Jun-99	Jun-00	Jun-01	Jun-02	Jun-03	Jun-04	Jun-05	Jun-06	Jun-07
<i>Earnings per share (cents)</i>										
Construction companies	17.5	17.8	17.1	13.4	14.6	18.0	18.9	17.0	28.3	43.6
Property group	20.7	18.6	21.4	18.6	21.4	23.5	25.3	28.8	37.6	49.2
Civil group	21.2	20.3	17.7	15.3	12.9	17.6	15.0	27.3	39.7	61.0
Blue chip companies	63.2	65.7	85.4	90.5	76.6	82.2	108.7	166.2	205.8	233.0
All Ordinaries Index	-98.3	-73.2	-104.2	-37.0	-9.0	0.0	10.0	8.0	10.0	-98.3
<i>Dividend per share (cents)</i>										
Construction companies	13.7	13.2	15.1	11.8	12.0	13.6	15.9	19.5	20.1	26.7
Property group	16.1	15.9	20.2	16.7	14.7	15.6	19.6	22.9	25.6	33.3
Civil group	11.9	11.9	13.8	10.9	13.4	17.3	17.5	23.4	27.5	42.0
Blue chip companies	35.9	45.8	52.5	59.1	57.8	62.1	69.5	98.4	96.4	114.3
All Ordinaries Index	6.0	6.0	5.0	4.0	5.0	11.0	9.0	8.0	7.0	6.0
<i>Dividend yield (%)</i>										
Construction companies	6.7	6.3	7.6	6.0	6.8	6.2	5.8	7.1	5.6	4.4
Property group	6.8	6.1	7.6	7.1	7.3	6.7	6.8	8.0	6.4	5.2
Civil group	7.0	6.6	9.9	5.7	5.3	6.5	5.3	5.9	4.5	3.1
Blue chip companies	3.5	3.7	3.4	3.7	3.6	4.1	4.1	4.3	4.4	3.8
<i>Price to earnings ratio</i>										
Construction companies	7.8	9.8	8.3	13.2	11.8	10.4	12.8	8.6	11.4	17.7
Property group	10.2	9.8	9.3	11.4	9.2	11.0	13.3	11.3	11.6	14.8
Civil group	8.7	9.9	5.2	14.1	10.1	12.2	9.7	13.1	15.3	20.6
Blue chip companies	16.7	26.2	17.4	21.1	12.1	19.0	16.1	15.5	15.5	17.9
All Ordinaries Index	29.6	25.5	30.6	21.8	26.8	28.6	33.7	25.7	36.9	29.6
<i>EV to EBITDA</i>										
Construction companies	6.8	5.7	5.9	6.9	6.5	6.9	7.7	10.7	9.7	11.7
Property group	8.1	7.4	8.1	7.6	7.0	7.9	7.6	9.2	8.9	11.1
Civil group	3.7	3.9	2.9	4.6	4.5	4.1	5.7	6.3	7.7	11.9
Blue chip companies	16.7	26.2	17.4	21.1	12.1	19.0	16.1	15.5	15.5	17.9
All Ordinaries Index	16.6	20.3	22.9	43.4	26.9	27.6	27.1	37.2	36.4	16.6
<i>Market capitalization to trading revenue ratio</i>										
Construction companies	1.1	1.0	0.8	0.8	0.8	0.9	1.0	1.0	1.3	1.6
Property group	1.4	1.3	0.9	1.0	0.9	1.1	1.3	1.2	1.4	1.8
Civil group	0.4	0.3	0.2	0.2	0.3	0.2	0.4	0.5	0.6	1.0
Blue chip companies	2.3	2.0	1.7	1.5	1.4	1.5	1.5	1.8	2.0	2.3
<i>Price to book ratio</i>										
Construction companies	1.9	1.8	1.5	1.4	1.5	1.6	1.8	2.0	2.9	4.3
Property group	1.6	1.7	1.2	1.3	1.4	1.6	1.8	1.7	2.2	2.9
Civil group	2.5	2.2	1.3	1.3	1.7	1.5	2.1	2.9	4.0	6.2
Blue chip companies	2.8	3.9	3.3	3.1	3.0	2.8	2.9	3.9	4.1	4.6
All Ordinaries Index	2.8	3.5	2.8	2.5	3.1	3.3	6.3	3.9	5.4	2.8

## Appendix C

### Summary of profitability ratios

	Jun-98	Jun-99	Jun-00	Jun-01	Jun-02	Jun-03	Jun-04	Jun-05	Jun-06	Jun-07
<i>Return on equity (%)</i>										
Construction companies	20.5	11.9	12.8	7.7	12.1	15.4	14.5	6.1	20.6	12.9
Property group	19.5	2.8	9.5	12.4	15.5	17.7	16.8	16.8	20.8	18.9
Civil group	27.7	24.4	16.0	0.4	8.4	14.0	12.6	23.3	26.5	30.1
Blue chip companies	15.1	15.7	16.1	16.8	14.5	14.9	16.5	21.0	21.8	21.0
All Ordinaries Index	-17.3	-18.1	-35.7	-27.1	-22.8	-15.6	-19.6	-20.5	-23.8	-17.3
<i>Return on assets (%)</i>										
Construction companies	7.2	7.2	6.1	5.4	6.1	6.6	7.1	3.7	8.2	8.6
Property group	6.8	5.8	4.9	6.3	7.5	7.3	7.7	7.2	8.1	9.1
Civil group	8.9	8.7	6.1	3.4	4.5	6.5	6.0	8.3	9.1	10.9
Blue chip companies	5.5	5.6	6.2	6.3	5.7	6.1	7.1	8.5	9.6	8.2
All Ordinaries Index	-16.9	-17.3	-26.8	-23.9	-21.3	-26.4	-16.3	-20.4	-18.9	-16.9
<i>Return on invested capital (%)</i>										
Construction companies	25.2	24.6	24.3	23.0	28.0	40.8	32.0	19.5	38.2	46.3
Property group	22.4	10.3	26.7	28.6	35.1	39.7	44.7	31.2	37.0	40.2
Civil group	32.0	34.4	37.8	24.0	35.4	48.7	57.0	48.9	57.2	112.7
Blue chip companies	14.8	15.8	19.1	20.0	20.4	21.4	24.9	26.4	31.1	27.9
<i>EBIT margin (%)</i>										
Construction companies	11.8	11.5	10.5	8.5	8.5	8.9	12.0	7.1	13.3	14.3
Property group	13.8	13.3	11.4	10.2	11.2	11.4	16.6	14.0	19.7	19.3
Civil group	6.8	5.3	3.9	2.3	2.8	3.4	3.7	4.7	6.0	7.0
Blue chip companies	12.2	15.6	18.6	20.7	17.0	16.7	18.4	20.1	23.7	22.9
All Ordinaries Index	-181	-1585	-1923	-940	-832	-1930	-2494	-1474	-5357	-181
<i>EBITDA margin (%)</i>										
Construction companies	14.0	13.5	13.2	11.1	11.0	11.0	14.8	9.9	14.8	15.8
Property group	15.3	14.6	13.2	11.8	12.6	12.7	18.5	15.8	20.6	20.1
Civil group	9.9	8.5	8.6	5.8	6.0	6.3	8.0	7.5	8.5	9.3
Blue chip companies	14.3	19.4	21.0	21.7	16.4	21.1	22.3	25.6	30.6	30.3
All Ordinaries Index	-160	-1464	-1701	-751	-761	-1830	-2304	-1332	-4823	-160
<i>Net profit margin (%)</i>										
Construction companies	3.9	4.1	3.8	2.0	2.1	2.5	3.8	-1.1	5.2	4.1
Property group	2.6	1.0	1.4	2.6	2.3	2.5	2.6	3.5	4.0	4.5
Civil group	4.2	3.2	2.2	0.6	1.4	2.1	2.3	3.3	4.1	4.9
Blue chip companies	6.9	8.7	10.7	12.3	10.2	10.5	11.6	13.3	16.4	15.7
<i>Net operating profit less adjusted taxes (NOPLAT) margin (%)</i>										
Construction companies	9.6	9.4	8.2	7.0	7.1	7.4	10.1	6.5	9.8	11.1
Property group	11.7	10.6	9.2	8.9	9.1	9.3	13.6	11.7	15.1	14.7
Civil group	5.5	4.4	3.4	1.6	2.5	3.1	3.3	4.2	4.3	5.1
Blue chip companies	8.3	10.7	13.1	14.7	12.4	13.0	13.8	15.5	18.8	18.0