Effect of the global financial crisis on the financial performance of public listed construction companies in Malaysia

Hui Ying Lai and Abdul Rashid Abdul Aziz

*School of Housing, Building and Planning, Universiti Sains Malaysia,
Georgetown, Malaysia, and*

Toong Khuan Chan

*Faculty of Architecture, Building and Planning,
The University of Melbourne, Melbourne, Australia*

Abstract

Purpose – The aim of this case study is to characterize the impact of the 2008 global financial crisis on the financial performance of public listed construction companies.

Design/methodology/approach – Financial analysis was conducted on 32 public listed construction companies in Malaysia. Twelve financial ratios were examined to determine the profitability, liquidity, activity, leverage and solvency of these companies over the period between 2005 and 2010. This was complemented by a distress analysis using Altman's Z-index. The study also used a content analysis of the Chairman's or Managing Director's statement to shareholders to uncover the responses and strategic initiatives undertaken by the management in response to the financial crisis.

Findings – The only direct impact of the financial crisis was a reduction in profitability. Total revenues and total assets of these companies continue to grow due to increased demand for construction from year 2007 following two large capital investment programs initiated by the Malaysian Government to mitigate the potential effects of the financial crisis. Net profits rebounded back to 5 per cent by year 2010. These companies immediately responded to the crisis with more prudent financial management; curtailing expenses, cutting dividends, reducing bank borrowings, increasing equity; and to the extent of disposing of assets to mitigate losses.

Research limitations/implications – The sample of only 32 public listed companies out of a total of more than 60,000 construction companies may be considered small, but these 32 companies represent nearly 20 per cent of the total construction volume for 2010.

Practical implications – The study documents the effects of increased capital spending by the government to mitigate the loss of investor confidence followed by a slowdown in economic growth during a period of global financial distress. Key findings will inform on prudent financial management to withstand future financial crises.

Originality/value – The responses and strategies adopted by the management to mitigate the effects and to enhance future performance of these companies have been uncovered. These are important considerations in managing construction companies; the analysis and observations will be invaluable to researchers intending to study how the construction industry responds to a future slump in demand.

Keywords Financial analysis, Business management, Global financial crisis, Malaysia

Paper type Case study

Introduction

The recent financial crisis of 2008 may be regarded as the worst since the Great Depression of the 1930s. A number of large financial institutions suffered major losses which required the intervention of national governments to bail out distressed banks. This culminated in the filing for bankruptcy of Lehman Brothers in September 2008. By then, many of the world's developed economies were facing downturns in their stock markets, and the recession has turned out to be known as the 2008 global financial crisis (GFC).

Malaysia, being a small open and export-dependent economy, was affected when the economies of its major trading partners fell. The impact of GFC was transmitted to the economy in the fourth quarter of 2008 when exports and industrial outputs deteriorated, while the outflow of portfolio investments increased. This was in conjunction with a 50 per cent reduction in foreign direct investments. Growth in gross domestic product (GDP) in the fourth quarter of 2008 was significantly lower at only 0.1 per cent compared to an average of 6 per cent in the first nine months of the year (Bank Negara Malaysia, 2009). GDP for the following three quarters fell 5.8, 3.7 and 1.1 per cent when compared to similar quarters from the previous year, showing clear indications of a recession (Figure 1). The main benchmark of the stock market, the Kuala Lumpur Composite Index fell to 829 on 29 October 2008 from a peak of 1,516 during 7 January 2008 – a drop of 45 per cent.

On 4 November 2008, the Government of Malaysia announced a RM7 billion stimulus package to reinforce and stimulate the economy (Ministry of Finance, 2008). The funds were allocated to projects that had high impact on the economy such as infrastructure and construction. Contribution by employees to the state-managed mandatory pension fund was reduced by 3 per cent for two years (from January 2009 to December 2010) to
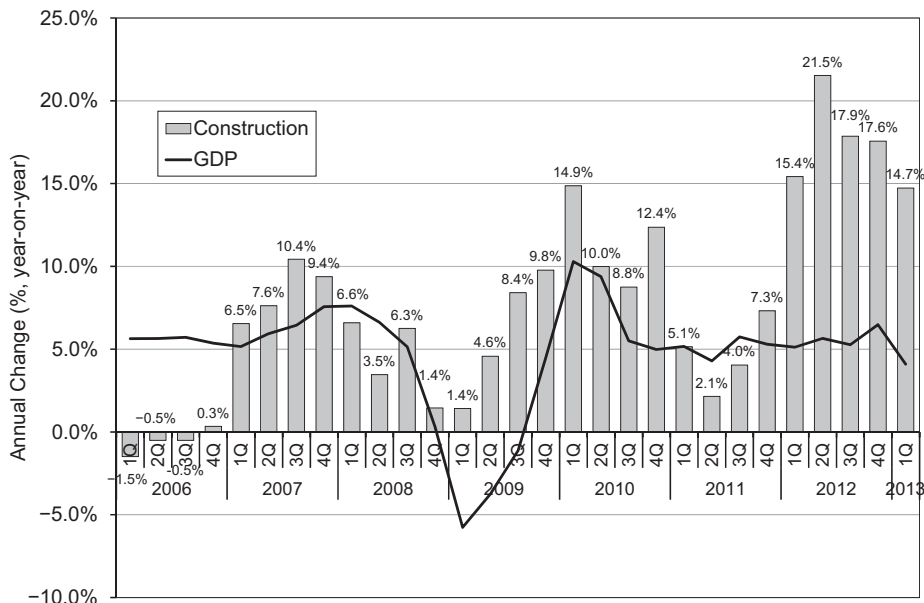

Figure 1.
Annual percentage
change in GDP and
construction output

boost private consumption. Furthermore, the central bank cut the overnight policy rate from 3.5 to 3.25 per cent in December 2008 and further reduced it to 2.5 and 2.0 per cent in January and February 2009, respectively. The loosened interest rate policy was to encourage the banking sector to provide continued access to credit. In cognisance of the depth of the GFC, a second stimulus package was announced on 10 March 2009 which involved RM60 billion of funding to a broader range of economic activities. Full details of these stimulus packages are available from Ministry of Finance (2009).

Numerous papers have been published on the causes and impact of the GFC on the Malaysian economy (Nambiar, 2009, Goh and Lim, 2010, Ooi, 2010, Ong *et al.*, 2011), but none have specifically assessed the impact of financial crisis on the construction industry. Country-specific research has been limited to the UK (Degiannakis *et al.*, 2012) and Australia (Thangaraj and Chan, 2012), while a broader survey covering Europe, India, China, Hong Kong, Singapore, Korea, the Middle East, Africa, Australia and South America was reported by De Valence and Runeson (2011). The question of how severely the GFC has affected the construction industry in Malaysia remains unanswered. Nambiar (2009) reported that the impact of the crisis was felt most strongly in the manufacturing and construction sectors in the fourth quarter of 2008. A fall in new sales permits in July 2008 and the reduction in the number of housing approvals in October 2008 were key indicators for the decline of the construction industry. The construction industry had just recovered from a three-year slump (2004-2006), with an annual growth of 8 per cent in 2007 and an average of 5.5 per cent in the first three quarters of 2008. This was followed by a marginal 1.4 per cent growth in the fourth quarter of 2008 (Bank Negara Malaysia, 2009 and Figure 1).

This case study characterises the impact of the 2008 GFC on the construction industry in Malaysia by measuring the financial performance of public listed construction companies. The objectives are to assess the ability of these companies to weather an economic slowdown of a global scale, to examine the severity of the impact and to evaluate the efficacy of the stimulus packages. The strategies adopted by these construction companies to mitigate the effects of the financial crisis and to enhance future performance are examined and discussed. The findings will inform investors, financial managers and construction professionals in devising strategies for prudent financial management and to prepare to respond to a slump in demand or withstand future financial crises.

The Malaysian construction industry

The Malaysian construction industry was facing a period of stagnation where its real value of output dropped for three consecutive years in 2004-2006. By 2006, major construction companies had secured projects abroad in the face of excess capacity locally with reduced demand in the civil engineering sector and fewer project launches in the residential sector. The industry contributed a mere 2.8 per cent to the GDP in 2006. Annual demand for construction increased to RM93.3 billion in 2007; a 50 per cent growth over the previous year due to a number of large capital projects by the government. At the same time, significant confidence in the local market resulted in a large increase in private sector investment in construction.

A total of 62,884 construction companies were registered with the Construction Industry Development Board (CIDB) before the onset of the GFC (Construction Industry Development Board (CIDB), 2006). There was significant fragmentation in the market

with more than half of the total being small companies that were eligible to bid for projects of less than RM200,000 in value. The highest category consisted of 3,751 companies that were classified as G7, i.e. with no limit on project size.

Previous research on company performance and the use of financial ratios

Horrigan (1968), in a review on the history of financial ratio analysis, described how financial ratios were used in the late nineteenth century for credit analysis, as well as for managerial analysis that emphasised profitability measures. The need for comparison of financial performance across firms over a consecutive period of time encouraged the usage of financial ratios. Beaver (1966) and later Altman (1968) conceived statistical models based on financial ratios to predict the risk of company failures. Evidence suggested strongly that financial ratios could be fairly efficient predictors of a variety of financial difficulties. More recently, Ellis *et al.* (2006) suggested that the financial health of a company can be determined by five indicators: return on assets, return on equity, fixed asset ratio, debt-to-equity ratio and working capital turnover. Ong *et al.* (2011) demonstrated that five financial ratios, namely, activity ratios, cash flow ratios, solvency ratios, liquidity ratios and profitability, had been found to be significant and useful for the prediction of corporate failures in Malaysia.

The use of these ratios for research in construction, although common in other industries, is rather limited. Financial ratios were initially used by financial managers to assess past performance of construction companies and to evaluate business profitability. Financial ratios now assist clients in contractor selection, as well as provide construction companies with a strategic management tool. Fadel (1977) conducted one of the earliest studies on financial ratio analysis for the construction industry and ascertained that sales turnover had a great impact on the profitability of the UK enterprises. Another detailed analysis of the UK construction industry by Akintoye and Skitmore (1991) showed that the profitability of 80 UK general contractors was positively correlated with company size. The findings also indicate that profitability was enhanced with diversification into speculative residential projects with a profit margin four times larger more than that of general contractors. Langford *et al.* (1993) applied both ratio analysis and Altman's Z model to three construction companies which had failed. It was shown that financial ratios could be useful in highlighting areas of concern and for making inter-firm comparisons, whilst the Z-score can provide an overall view of company performance. McCall (2006) ascertained that the most important ratio to be used to evaluate a construction company is the working capital ratio. This is a direct indicator of a contractor's short-term financial strength and is used to determine its ability to fund construction projects. Pamulu *et al.* (2007) conducted a ratio analysis of construction companies in Indonesia in a study on business strategy. The research indicated that Indonesian construction companies earned high profits as a result of a high leverage ratio reaching, in some cases, to three times their equity. Balatbat *et al.* (2011), in a study of 30 construction companies, listed in the Australian Stock Exchange, found that these firms performed better than the All Ordinaries Index and 25 per cent higher than blue chips companies. Contrary to common perception that construction companies are strongly leveraged, debt ratios were more favourable than that of blue chip companies, indicating that these companies were better placed to weather unexpected fluctuations or industry contractions.

The shortcomings of ratio analysis include the absence of an explicit theoretical structure. There is considerable debate about which ratios should be used and what their proper levels should be. Nevertheless, ratio analysis remains a simple and quick method that will enable a comparison of financial statements between firms and over time. It follows that financial ratio analysis can be extended to predict the risk of financial distress. Beaver (1966) observed that there were differences in 30 financial ratios among groups of failed and non-failed companies as early as five years before the companies failed. Altman (1968) combined ratio analysis and multiple discriminant analysis to formulate a statistical tool for bankruptcy prediction. This finding eliminates the possibilities of uncertainly in relying on a single ratio because this tool enabled a combination of ratios to be analysed. Altman's (1968) Z-index is as follows:

$$Z = 0.12 \, X_1 + 0.014 \, X_2 + 0.033 \, X_3 + 0.006 \, X_4 + 0.999 \, X_5 \tag{1}$$

where, $X1$ = liquidity measure, $X2$ = cumulative profitability measure, $X3$ = productivity of firm's assets, $X4$ = equity and debt measure and $X5$ = sales generating ability of firm.

Altman suggested that firms scoring below 1.81 were prone to bankruptcy; firms scoring above 2.99 were fairly stable, while those that scored 1.81-2.99 were identified to be in a gray area that meant that their position towards bankruptcy was uncertain. These models, based solely on financial statements, were, at best, indicators of company performance. Mason and Harris (1979) applied the Z-model to the UK construction industry by examining the accounts of 20 construction companies that failed since 1969 and compared these to 20 continuing companies that were thought to be particularly sound. They asserted that these models might be able to identify companies that were at risk of failure but could not predict whether a company would actually fail. Companies that were at the brink of bankruptcy could still try to transform, change strategies and recover from financial distress. Studies by Langford *et al.* (1993) on three construction companies which had failed seem to indicate that the Mason and Harris (1979) model could be useful in highlighting areas of concern but would require financial ratios to be recorded for a period of time so that a trend of the construction industry's Z-score can be made available. A study by Ng *et al.* (2011) determined that the predictive power of Mason and Harris's Z-score model on the insolvency of Chinese contractors was questionable and proposed a combined seven financial ratio model instead.

Data and methodology
While a survey of the entire construction industry is preferable to obtain a well-defined assessment of the performance of the sector, the cost and effort involved would be prohibitive. As an exploratory research, the evaluation was limited to construction companies listed on the local bourse, Bursa Malaysia (www.bursamalaysia.com). The required financial data for the analysis were readily obtainable from the companies' annual reports filed with Bursa Malaysia. It must be noted that there was significant market fragmentation in the local construction industry with more than 60,000 registered construction entities, but only 40 publicly listed companies in the construction sector. The selection criteria for these companies:

- were listed on the Bursa Malaysia prior to the 2006 financial year and remained active throughout to the period of study;

- had more than 50 per cent of the revenues were generated from construction activities; and
- had no restrictions imposed by the regulatory authorities for breaching the listing rules (usually indicating financial distress) at the start of the study period.

This filter resulted in a total of 32 companies that complied with the criteria and hence formed the research sample. It must be acknowledged that the sample of only 32 companies is very small compared to the 60,000 contractors registered with the Construction Industry Development Board (CIDB) (2006). These 32 companies, with a combined revenue of RM18 billion in 2010, constituted nearly 20 per cent of the total construction output and provide a reasonable representation of the performance of the entire construction sector. This focus on large companies also addressed the concern that if these companies were to encounter financial distress or become insolvent, a number of major construction projects may be in jeopardy, possibly leading to greater losses for the chain of sub-contractors and suppliers.

The financial performance of these companies was derived from the financial statements filed with the regulator and published in their Annual Reports. To determine the performance of these companies before, during and after the GFC, data were collated for financial years 2005 until 2010. The impact of the GFC on the financial performance of these companies was tracked by observing the underlying pattern in a trend analysis. A financial ratio analysis on the five main areas of profitability, liquidity, activity, leverage and solvency provide detailed report on corporate performance. The cost structure of the production process was examined with the cost of goods sold, expenses, depreciation, amortization, interest and profits presented as a percentage of the revenue to track changes due to challenging market conditions. A distress analysis was conducted using the Altman Z-index to compare the risk of corporate failure.

In addition to the financial analysis, a content analysis of the annual report to shareholders was conducted to determine the response of the companies in three pertinent areas: finance; operations and procurement; and business strategy. To discern the strategies of the larger and smaller companies, the list of 32 companies was sorted the in order of revenues for the year 2010 and the top four companies were designated as large (hereinafter referred to as A1, A2, A3 and A4), the bottom four as small (C1, C2, C3 and C4), and the middle four as median (B1, B2, B3 and B4). Bettman and Weitz (1983) supported the use of annual reports in analysing organisational performance, although these are not formally audited (only the financial statements are audited), they are "subject to a great deal of public scrutiny from stock analyst, shareholders and others". Bowman (1984) demonstrated that content analysis of annual reports has some value to analysts of corporate strategy and as an alternative data source which may be readily available.

Results and observations

Despite high growth rates in the past 30 years, the Malaysian construction sector began to show signs of stagnation between 2000 and 2006 after the completion of several large-scale building and infrastructure projects in the late 1990s. The construction industry was beginning to show signs of recovery in 2007 with the launch of the Ninth Malaysia Plan when the GFC struck. It was estimated that the sector used a million workers at that time (Bank Negara Malaysia, 2007).

The development budget of RM200 billion contained in the Ninth Malaysia Plan (Economic Planning Unit, 2006) drove total construction demand (measured as total value of projects awarded during the year) in 2007 to a high of RM93.3 billion but fell gradually to RM85.5 and RM75.0 billion in 2008 and 2009, respectively. The drop in 2008 was attributed to a loss of investor confidence, and therefore, delayed private investments into commercial and high-end residential building projects. Although a large proportion of an initial RM7.0 billion stimulus package, announced in November 2008, was channelled to public infrastructure projects, the global economic conditions worsened, and a second package amounting to RM60 billion was announced in March 2009. Out of this RM60 billion, approximately half was allocated for schemes to provide continued access to credit and loans to encourage businesses to invest, and the remaining for improving infrastructure and facilities in rural areas, providing training and reducing unemployment, providing subsidies to assist vulnerable groups and for private finance initiatives. The effectiveness of the fiscal stimulus was limited by the time lag between the launch of these policies and the actual construction activity. Goh and Lim (2009) reported that only RM2.3 billion of the first stimulus package was actually spent as of June 2009, after a period of 8 months. Wider participation of the private sector in the delivery of infrastructure via private finance initiatives drove demand up significantly in 2010. The demand from the public sector continued to decline from 2008 until 2010 as a result of the combined effect of a large fiscal deficit in the government expenditure and the funnelling of available development expenditure to the trade and industry, defence and education sectors.

As a consequence of the market collapse, property sales shrunk significantly as buyers delayed buying decisions, hoping for asset prices to fall. The property market was at a near standstill in the second half of 2008. Growth in the construction sector dropped to a low of 1.4 per cent during the fourth quarter of 2008 and the first quarter of 2009. Growth strengthened to 8.4 per cent during the third quarter of 2009 driven by the implementation of projects under the stimulus packages such as the construction of schools and hospitals as well as on-going construction of commercial buildings. The residential sub-sector only started to improve in the fourth quarter of 2009. Figure 1 clearly shows that the construction industry was adversely affected for only two quarters and avoided a decline by the combined effect of a large build-up of projects awarded in the preceding years and the increased public spending on infrastructure. The economic recovery by mid-2009 propped up private sector demand to RM41.7 billion for the year, continuing to increase to RM69.1 billion in 2010. The launch of the Tenth Malaysia Plan (Economic Planning Unit, 2010) in 2010 with an RM138 billion investment in construction, together with a further RM20 billion facilitation fund specifically designed to bring in an additional RM200 billion in private sector construction spending pushed the annual construction demand to a peak of RM94 billion in 2011.

Contrary to the business sentiment in the national economy and the drop in construction demand in 2008 and 2009, the sum of revenues of the companies studied increased substantially in 2007, 2008 and 2009. Table I presents the total revenues, total assets and total profits of these 32 companies. Assets and equity continued to grow in 2007 and 2008, but started to exhibit signs of distress in 2009 with a drop of less than 1 per cent in each category. Profits increased in line with revenues in 2007 and 2008, but suffered a drastic drop in 2009 of more than 30 per cent. It must be noted that although

there was a drop in profits, these companies remained profitable throughout the period of study. Net profit which was slightly above 5 per cent in the years preceding the GFC, fell to 3 per cent in 2009, and recovered quickly in 2010 to 4.8 per cent. These construction companies have attributed the fall in profits to price increases for fuel and construction materials.

The financial ratios are divided into five categories. Table II lists the financial ratios within each of these categories that make up the basic list for this study. These ratios were calculated for each company individually and later averaged to obtain a mean value for the entire sample of 32 companies. To capture the greater influence of company A1 with a revenue of RM2.4 billion in 2008 compared to company C4's revenue of only

Year	2005	2006	2007	2008	2009	2010
Total revenue (change, %)	10.2	10.9 (7.5)	14.4 (31.1)	19.0 (32.2)	21.1 (11.1)	17.0 (−19.4)
Total assets (change, %)	18.6	20.1 (8.3)	23.6 (17.7)	28.4 (20.0)	28.5 (0.5)	31.2 (9.4)
Total equity (change, %)	8.7	9.3 (6.2)	11.1 (20.4)	11.9 (6.9)	11.9 (−0.4)	13.1 (10.2)
Net assets (change, %)	15.4	16.6 (7.5)	20.7 (25.0)	23.7 (14.3)	23.6 (−0.6)	25.6 (8.6)
Profit before tax (change, %)	0.91	0.80 (−11.9)	1.03 (29.1)	1.30 (26.0)	0.89 (−32.0)	1.09 (23.1)
Net profit (change, %)	0.57	0.55 (−2.2)	0.73 (32.2)	0.98 (33.7)	0.62 (−36.9)	0.81 (31.9)

Table I.
Total revenue, total assets, total equity, net assets, net profit and profit before tax (RM billion) from 2005 to 2010

Ratios	2005	2006	2007	2008	2009	2010
Profitability ratios						
Net profit margin (%)	5.6	5.1	6.3	5.2	2.9	4.8
ROAA (%)		6.4	6.5	4.9	4.3	2.7
ROAE (%)		10.5	16.7	10.3	2.4	5.7
Liquidity ratios						
Current ratio	1.72	1.75	1.64	1.57	1.55	1.64
Quick ratio	1.64	1.65	1.55	1.49	1.48	1.58
Leverage ratio						
Debt ratio	0.53	0.55	0.56	0.59	0.60	0.59
Debt to equity	1.52	1.70	1.61	1.92	1.85	1.88
Market ratio						
Earnings per share (RM)	0.12	0.11	0.15	0.15	0.04	0.05
P/E ratio	9.11	11.45	17.39	13.90	14.15	14.80
Cash flow ratio						
Operating cash flow ratio	0.046	0.091	0.146	−0.009	0.201	0.112
Cash flow to debt ratio	0.046	0.058	0.114	0.016	0.136	0.086
Distress analysis						
X1 (working capital/TA)	0.20	0.23	0.21	0.19	0.16	0.19
X2 (retained earnings/TA)	0.12	0.12	0.08	0.10	0.10	0.09
X3 (EBTI/TA)	0.03	0.03	0.04	0.04	0.02	0.02
X4 (market cap./TL)	0.93	0.99	1.70	0.82	1.14	1.27
X5 (revenue/TA)	0.53	0.54	0.69	0.42	0.42	0.57
Z-score	1.62	1.68	2.22	1.40	1.50	1.75

Table II.
Financial ratios and Z-scores

RM160 million, each company's ratio was weighted based on the proportion of revenues earned during each financial year.

Profitability ratios measure the ability of a company to generate profits from its sales or activities. The net profit margin had been consistent around 5 per cent in 2005 to 2008 before the GFC. The onset of the financial crisis seemed to be linked to a number of events such as the increase in the open market price of diesel fuel, steel reinforcements and cement in mid-2007. Most building contracts did not include a price variation clause and caused profits to be driven down in 2009 to 2.9 per cent. Once price stability was achieved and certainly of supply re-established in mid-2009, profit margins quickly recovered to 4.8 per cent for the 2010 financial year.

The return on average equity (ROAE) measures the return of shareholders' equity invested in the company. The high values for ROAE indicate that the construction companies do not require substantial equity investments to earn substantial profits. The return of average asset (ROAA), on the other hand, measures the effectiveness of the company in utilising its assets to generate profits. When a company is leveraged with debt, ROAE increases, usually leading to improved financial performance, albeit with higher risks. In line with the drop in profits in 2009, both ROAE and ROAA dropped correspondingly. The larger drop of ROAE from 10.3 per cent in 2008 to 2.4 per cent in 2009 indicates the most severe impact of the GFC during this financial period. In comparison, ROAA fell in both years 2009 and 2010.

Liquidity ratios measure the ability of a company to fulfil its various financial obligations over the short term without undue stress. The pre-GFC current ratio was a healthy 1.7 in 2005 and 2006, but reduced slightly to 1.6 in 2007 and 2008 and eventually dropping to a low of 1.55 in 2009. The more severe quick ratio dropped to 1.48 in 2009, indicating that these companies' short-term assets were more than able to pay off its short-term liabilities during this crisis. These values compare rather favourably with the findings from Cheah et al. (2004) where the majority of large international contractors were found to have a current ratio of slightly more than 1. Australian construction companies produced current ratios between 1.3 and 1.4 in the years leading up to the GFC (Balatbat et al., 2011).

The use of debt to finance the company's assets is evaluated by the leverage ratios that measure the company's long-run ability to meet its financial leverage or obligations. The debt ratio between 0.5 and 0.6 signifies that the companies had low leverage and were financially healthy. Slightly elevated debt ratio of 0.6 was obtained in 2008 and 2009, indicating an increase in total liability that was greater than the increase in total assets in these two financial periods. Debt-to-equity ratios had been increasing throughout the period examined, as many of these companies took on debts at a faster rate than the build-up of equity. This can be seen in the increase in "borrowings" and "trade and accounts payable" item in the balance sheets.

Market ratios are based on the current value of each share traded in the local bourse. Earnings per share exhibited the greatest drop in value compared to other profitability ratios, from a high of RM0.15 in 2007 to RM0.04 in 2009. The price-earnings (P/E) ratio shows how much investors are willing to pay per dollar of earnings and directly measures the valuation of the future earnings for the company. As expected, the low confidence of investors at the depths of the GFC at the end of 2008 led to a low average P/E value of 13.9 which only rebounded slightly to 14.1 at the end of 2009.

The most important indicator of financial health is the ability to generate cash flow. Operating cash flow ratio indicates how well the cash generated by the operations of a company covers its immediate liabilities. Cash flows from investing and financing activities were not taken into account in this analysis. Normally, a value of 1.0 would be preferred, but this depends largely on the industry business model. The operating cash flow ratio, which is defined as operating cash flow divided by current liabilities, showed an improving ratio from 2005 to 2007. In 2008, the ratio reversed to a negative value of 0.9 per cent, indicating a severe financial condition of having to draw down on loans to maintain liquidity. The four of the largest five companies exhibited negative operating cash flows during this financial period. The data showed that receivables and amounts due from clients increased substantially during this financial period, indicating that these construction companies were waiting longer periods to realise gains. At the same time, the uncertain price movements for construction materials such as steel and cement led to shorter credit periods by their suppliers, further compounding the problem. The operating cash flow to total equity ratio quickly improved in 2009 to 20.1 per cent when the market conditions improved and the price of construction materials stabilised. Cash flow to debt ratio identifies the ability of the company to pay for total liabilities from the annual cash flow. This ratio increased sharply to 11.4 per cent in 2007 but fell to a low of 1.6 per cent in 2008. It recovered to 13.6 per cent in 2009.

Cost structure
The cost structure of the sample companies (cost of sales, expenses, depreciation, amortization, interest and profit) is examined in this section. These values were reported as a percentage of total revenue in Figure 2. The largest proportion of costs was from cost of sales which was defined as direct costs attributed to the production of the goods sold, i.e. cost of materials, direct labour and sub-contract costs. The cost structure provided a clear depiction of changes on how cost of sales have increased in 2008 and 2009, leading to a squeeze on profits during this period. The proportion of depreciation, finance and taxation in the cost structure did not change significantly. There was a
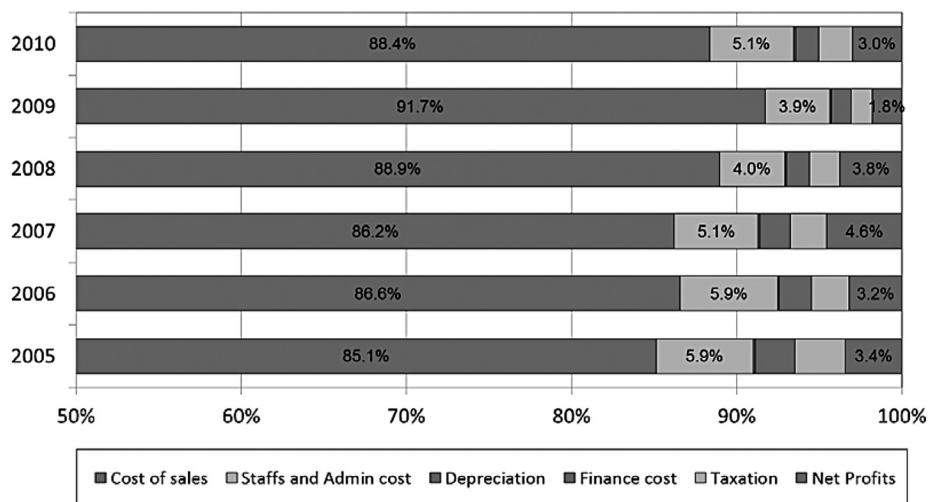

Figure 2.
Company cost structure
from 2005 to 2010

small reduction in staff and administration costs as companies tried to cut payroll and overheads at times of financial distress. Note that the net profit reported in this section was essentially from construction operations and differs slightly from the net profits reported in the financial ratios which may include profits from other activities (e.g. subsidiaries, joint ventures, other investments).

Distress analysis
In this final section, the risk of bankruptcy for these companies was evaluated by calculating Altman's Z-score. Table II highlights an increasing Z-score from 2005 to 2007, indicating improving financial health during this period of growth. It then decreased to 1.40 in 2008 when the effects of the GFC started to be felt. The Z-score improved slightly to 1.50 in 2009 and further increased to 1.75 in 2010. It must be noted that although scores below 1.81 were prone to bankruptcy, as suggested by Altman (1968), these scores must be examined in the context of the local market conditions and business environment. The most significant change to the Z-score in 2008 was the drop in market capitalisation (X4) when the share prices of these companies fell in concert with the collapse of the stock market. The marginal improvement in 2009 was driven mainly by a recovery in the share prices but held down by the onset of low earnings (X3). Other ratios remained largely similar during the period of analysis. This analysis revealed that the effect of the GFC was contained within a period of two years, and the post-GFC financial ratios did not retain any adverse effects. It can be concluded that the construction companies investigated were able to withstand the effects of the GFC without any bankruptcies.

Responses and strategies to mitigate the effects of the GFC
The companies with revenues less than or equal to RM100 million were worst hit by the financial crisis with companies C3 and C4 facing sanctions from the stock market regulator for having net assets valued at less than or equal to 25 per cent of the total paid-up capital, including one with a subsidiary defaulting on loan repayments. Both these companies were advised to recapitalise or rectify its conditions within 12 months, failing which trading in their stocks will be suspended. A close examination of company C3's report to shareholders indicated that it was classified as "distressed" in July 2008 after suffering significant losses on local and overseas projects. Its efforts to recover from financial distress include capital reduction, raising additional equity through a share placement, selling non-core assets and entering into a joint-venture to develop existing land. However, it was later reported that the joint development project resulted in litigation with the partners and remained unresolved by 2010. Although financial performance of company C4 in 2006 and 2007 was healthy, losses in preceding years led to company being issued a "distress" condition in 2006 when its net assets were less than 25 per cent of the total paid-up capital. Despite the difficult conditions in 2008 and 2009, the company managed to repay all bank borrowings and recovered from the PN17 condition in 2010 when the shareholder equity requirement for the stock market was relaxed. On average, these companies were reported to be loss making, paid no dividends choosing to retain cash or were forced to dispose of assets to raise working capital. Notable changes in procurement strategies were their preference for entering into negotiated contracts or turnkey projects as opposed to the open bidding for projects in a highly competitive market.

In comparison, the four median-sized companies suffered only reduced profits during the period of the GFC attributing the reduced profit margins to increases in the cost of construction materials and fuel, in concert with intense competition in the local market. The management of company B3 proposed a strategy to diversify into oil palm plantations and water concessions whereas company B1 altered their plans from building medium-high cost apartments to medium cost apartments given the weaker purchasing capacity of buyers during the financial crisis.

The response from the largest four companies was fundamentally similar with mentions of further diversification into property development and road concessions (given that companies A1, A2 and A3 were essentially diversified into manufacturing, toll roads and property investments, compared to company A4 with almost 90 per cent of their revenues from construction activities), cutting dividends, increasing capital, managing cash flows by curbing expenses and deferring expansion plans and being more selective in bidding for projects. Company A1, being the company with the largest asset base, reportedly stockpiled key construction materials during the period of price increases and shortage. A summary and comparison of the strategies of the small, median and larger companies are tabulated in Table III.

Dimension	Revenue >RM1.2 billion	Revenue between RM250 −350 million	Revenue ≤RM100 million
Finance	Increase equity Reduce gearing Manage cash flow Cut dividends. Defer expansion	Liquidate investments to strengthen cash flow; Reduce bank borrowings	Pay no dividends; Retain cash; Dispose of assets to mitigate loss or to raise working capital; Restructure capital; (PN17–Net assets less than 25 % of paid-up capital); (PN17–Subsidiary defaulted on loan repayments)
Operations and procurement	Selective bidding (select clients). Stockpile key construction materials	Shift focus from medium-high cost to medium cost housing developments; delay launch of new development projects	Seek to negotiate directly for contracts Seek turnkey projects Selective bidding Seek PFI projects Delay launch of new development projects
Business strategy	Diversify into other business segments (eg. property development) Expand overseas	Diversify into property development, oil palm plantation and water concession	

Note: PN17 stands for Practice Note 17/2005 and is issued by Bursa Malaysia when a listed company is faced with financial difficulties

Table III.
Strategies and responses to address the effects of the global financial crisis

Discussion

The GFC hit Malaysia at the time where the construction industry was at the cusp of recovery after nearly a decade of slow growth. The doubling of public spending in 2007 combined with increased investor confidence as a result of global financial stability and an increasing demand for exports to China provided much needed boost to the construction industry. Demand for private sector construction was fuelled by easy access to finance, and the continued success of new retail and office space in the Klang Valley, and demand for high-end residential buildings. The first sign of decline in the construction sector was a slowdown in the sales for new residential units and a 12 per cent drop in the loans approved for construction in the third quarter of 2008 (Bank Negara Malaysia, 2008). In the following quarter, slower disbursement of development expenditure initiated a decline in public investment leading to lower activity in the civil engineering sub-sector.

During the first half of 2009, the sharper contraction in private investment activity more than offset the initially higher public development spending. All major indicators for construction, i.e. new sales permits, housing approvals and loans for construction, fell during the first half of 2009. The sustained performance of the construction sector during this period was supported by projects awarded in the previous year and by the gradual launch of projects related to the stimulus packages. Growth returned during the second half of 2009 when the stimulus packages and the Ninth Malaysian Plan projects were fully underway.

By 2010, private sector investment made a modest recovery, while public sector capital investment was channelled into education, rural and transportation sectors. Public sector demand for 2010 and 2011 remained low compared to private sector investments which continued to increase as a result of positive business sentiment after recovering from the GFC. The fiscal policy of two stimulus packages to substitute private sector investment with public capital expenditure in times of economic distress had succeeded in preventing a collapse of the construction sector. A large proportion of the second stimulus package was to support the availability of finance for capital investments which maintained the pace of construction in the office and retail sub-sector.

These measures by the government had resulted in maintaining growth in the revenues for the construction companies examined. This continued growth in revenues, despite a slowdown in project awards, was also observed in a number of countries. Thangaraj and Chan (2012) observed that the construction industry in Australia exhibited an increase in revenue, despite the drop in total building starts in 2008 and 2009. This was partly due to the large investments in schools and infrastructure construction as part of the federal government's stimulus packages. De Valence and Runeson (2011) also stated that in the UK, the impact of the GFC on the construction industry was rather insignificant because there were many public sector projects that were in progress during the GFC, and thereafter more new major projects announced when these projects were completed. The cumulative annual growth rate (CAGR) in the total revenue of these companies from 2005 to 2010 of 11 per cent (CAGR 2005-2009 was 20 per cent) indicated a robust demand for construction to support population growth and Malaysia's export led economy.

The observed fall in profits from 6 per cent in 2007 to 2.9 per cent in 2009, and rapid recovery to 4.8 per cent in the following year was indicative of a healthy demand for

construction in Malaysia. The drop in profits was mainly attributed to the sharp increase in prices of construction materials rather than the aggressive discounting to win jobs in times of reduced demand. The net profit before and after the GFC was certainly better than the margin of 3.23 per cent of the 80 general contractors in the UK as reported by Akintoye and Skitmore (1991) during the mid-1980s. During the depths of the crisis, the profit margin was no worse that the margins achieved by the construction companies in Hong Kong after the 1997 crisis. Chan *et al.* (2005) reported that the construction companies in Hong Kong only registered 1 to 2 per cent profit after the 1997 Asian Financial Crisis.

The net assets of construction companies had increased more than 60 per cent from 2005 to 2010, indicating that substantial additional investments were made into these companies. Although revenue, total assets and other elements remained high, the profit before tax and net profit were adversely affected. These companies had incurred higher input costs relative to revenues during the period of the GFC while the contract sums remain locked in.

Although the construction companies were liquid, the liquidity ratios decreased from 2007 to 2009. This was due to the amount payables of the construction companies which increased by 28 per cent as compared to the previous year of 2007. The amount payables could have increased by delaying payments to sub-contractors. Delaying payment is common among construction companies when faced with cash flow difficulties.

The construction companies examined exhibit debt ratios of around 57 per cent. This showed that these companies had low leverage and were able to pay interest on their debts from their profits. This figure is not much different from the debt ratios of Australian construction companies as reported by Thangaraj and Chan (2012). The cash flow ratio registered a negative figure of 0.9 per cent, and this indicates that the companies were facing difficulties turning sales into cash. The construction companies recovered quickly in 2009 as the ratio improved to a positive 20.1 per cent.

Investor confidence fell in October 2008 as indicated by the drastic decrease in market capitalisation. In 2009, market capitalisation improved as the Bursa index recovered, indicating the return of the investor confidence and in response to the government's stimulus packages that allocated almost half of the amount of the second stimulus package to focus on promoting investor confidence. The high CAGR for the construction sector provided investors with confidence to push the P/E ratio back to pre-GFC levels in 2010 on the expectation of higher revenues and profits from the development allocations in the Tenth Malaysia Plan.

The Z-score of the construction companies fell into the distress region, primarily due to reduced market capitalisations in 2008 and 2009, but recovered to 1.75 in 2010, indicating a rapid recovery as soon as confidence returned to the market. Thangaraj and Chan (2012) reported a similar decline in Z-scores for Australian construction companies – falling from a high of 4.97 in 2006 to a low of 4.00 in 2010. Although the average Z-score of Australian construction companies was significantly higher than those calculated for Malaysia, two construction companies in the study sample have failed: St. Hillier's Construction in May 2012 and Reed Construction in July 2012. In comparison, the Z-score for construction companies in Hong Kong fell from 2.33 immediately after the 1997 Asian Financial Crisis to 1.41 in 2001-2002 due to severe competition and reduced demand for property (Chan *et al.*, 2005). These results seem to

indicate that the lower Z-scores for these Malaysian construction companies may not accurately reflect the financial health of these companies.

In a global survey of construction professionals, De Valence and Runeson (2011) found that the impact of GFC had significant differences between developed and developing countries. Developed economies suffered substantial downturn due to a tightening of credit, while the construction sector in developing countries continued to expand due to population growth that necessitated ever increasing provision of residential buildings and infrastructure. This case study offers evidence on the performance of construction companies in a developing economy.

Conclusion

Results indicate that the GFC had a direct impact on the profitability of Malaysian public listed construction companies by causing a sharp increase in the price of building materials and fuel. Net profit margins of approximately 5-6 per cent before the onset of the GFC were reduced to 2.9 per cent in 2009. Other performance measures of total revenue and total assets continued to increase reflecting the higher demand for construction from 2007 onwards compared to earlier years. The large increase in construction demand in 2007 followed by two stimulus packages announced by the government at the height of the GFC served to boost public capital investment in infrastructure when private sector demand declined. The lag time between projects awarded in 2007 and the actual construction activity also ensured that these construction companies remained active, even though the total value of projects awarded in 2008 and 2009 were less than the value in 2007. Many construction companies suffered from cash flow problems in 2008 and 2009 with higher receivables and delayed payments from clients.

As expected, the construction companies' cost structure for construction activities remained fairly constant over this period except for an increase in the cost of raw materials leading to an observed drop in net profits. A slight reduction in salaries and administrative costs is consistent with measures to cut-back on expenses in times of economic uncertainty. The proportion of depreciation, finance cost and taxation remained fairly constant.

The application of the Z-score to the financial performance of these companies indicated that the risk of corporate failure was elevated for two financial years 2008 and 2009. The safe score of 2.22 in 2007 was the result of increased confidence in the construction sector and a high market valuation of their shares during this financial year.

Overall, the effect of the GFC on the construction companies in Malaysia was limited in time and scope. Liquidity, leverage and cash flow ratios and distress scores returned to pre-GFC levels in 2010. More importantly, net profits returned to a healthy 4.8 per cent by 2010.

The sample companies' response to these financial difficulties ranged from more prudent financial management, paring back of short term debts to lower risks, increasing equity and stockpiling materials for the larger companies. The smaller and financially weaker companies had to resort to liquidating assets to mitigate losses or to raise working capital, increasing capital, and seeking to obtain construction projects either through direct negotiations, turnkey or private finance initiatives. Business

strategies to enhance financial performance include diversifying into property development, involvement in water and road concessions and expanding overseas.

The managements' expectation was for the government to continue with the fiscal policy of continued public spending on infrastructure to maintain economic growth for the period after the GFC. Both median and larger construction companies in the sample were reportedly confident of winning a number of large public sector infrastructure jobs. There is considerable debate on the government's policy of running a budget deficit to fund the stimulus packages and the level of public debt at 51.3 per cent of GDP in 2010 will not allow further capital investment to be made compared to an initial level of 42.8 per cent in 2006 (Bank Negara Malaysia, 2006 and 2010). The construction sector now relies heavily on the private sector investment in commercial construction, high-end residential and increasingly on private financing of public works to sustain growth.

Limitations of the study and implications for future research
This study was limited due to the sample being comprised the largest construction companies in Malaysia. It is recognised that these 32 companies represent only a very small proportion of the 60,000 construction companies registered with the CIDB. Future research will extend the study to a longer period post-GFC, possibly to examine the risk of insolvency after 2010, and to examine the effects on other players further down the construction supply chain. An important but largely unexplored sector of the construction industry is the small- and medium-sized companies that predominantly trade as sub-contractors to the larger companies. A different approach, perhaps interviews with the management of a cross-section of these enterprises, will be required as these companies are not required to disclose their financial statements.

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About the authors
Hui Ying Lai is a Research Student at the School of Housing, Building and Planning, Universiti Sains Malaysia.

Abdul Rashid Abdul Aziz is a Professor in the School of Housing, Building and Planning, Universiti Sains Malaysia. He has published his work in various books, journals and conferences. His areas of expertise are internationalization of construction companies, public housing, knowledge management and labour issues in construction.

Toong Khuan Chan is a Senior Lecturer in the Faculty of Architecture Building and Planning, The University of Melbourne, Australia. His areas of expertise are construction technology, construction economics and industry strategy. Toong Khuan Chan is the corresponding author and can be contacted at: tchan@unimelb.edu.au