

## CHAPTER 3

### RESEARCH METHODOLOGY

#### Data

The acquired companies in this study consists of a sample of the companies listed in the Kuala Lumpur Stock Exchange. These companies were taken over by others during the period 1989 to 1991, the time when Malaysian economy was emerging out from the recession period of 1985-86. During the recession, there were relatively few takeover cases as compared with the period under study. The number of takeovers recorded during the recession are 3 in 1986, 4 in 1987, 3 in 1988. Since we are interested in takeover phenomenon during the reasonably healthy state of economic development of the country, those takeover cases during the recession is therefore excluded.

The acquired companies studied must remain listed in the Kuala Lumpur Stock Exchange after their acquisition and they must have at least two years of financial records available after the acquisition. Takeover cases involved restructuring of ailing companies during the study period are also excluded to avoid distortion of the result. Information on these acquired companies were obtained from the Kuala Lumpur Stock Exchange's Investor Digest and counterchecked with the write-up in the Kuala Lumpur Stock Exchange's Annual Companies Handbook and Kuala Lumpur Stock Exchange's Daily Diary in the KLSE's library.

## **Measures of Financial Performance**

The financial performance of a company may be measured in many ways, depending on what aspects we are looking at. Some investors may judge the company's performance based on its price performance, its price earnings ratio while others may prefer to look at the fundamentals of the firm. While it is true that the objective of the company is to maximise the shareholders' wealth, the share price shall therefore be the main measure of the company performance. However, the share price of a company is closely related to market sentiments and the unique risk of the firm or the industry, its measure may not reflect the true state of the firm's actual operational performance. For example, a firm may actually be making improvement in various aspects of its financial efficiencies, its share price may still be depressed due to the prevailing market sentiment. On the other hand, we would find this company improving in performance if we analyse its fundamentals. However, some critics may argue that there would not be any contribution towards the shareholders' wealth if the actual improved performance does not lead to better price performance. They may further argue that the fundamental analysis is based on the historical accounting data and does not represent the future prospects and perception of the market about the company.

In this study, we will examine both the price as well as the fundamental performance of the company. In general, share prices are viewed as a short term performance measure of a company while its fundamentals measure its long term performance. The performance of a company may therefore be classified as short and long terms and the parameters of these measures are as follows :-

A. Short term

Valuation ratio (VR)

Price earning ratio (PER)

B. Long term

Acid test ratio

Gearing ratio (GR)

Debt-equity ratio (DE)

Net profit margin (NPM)

Return on capital employed (ROCE)

Return on investment (ROI)

Total asset turnover (ATR)

Dividend yield (DY)

Dividend times covered ratio (TC)

Earning per share (EPS)

Net tangible asset backing (NTAB)

### **Financial Ratios**

The financial performance of the acquired companies are measured based on the accounting and share price data given in the Kuala Lumpur Stock Exchange's Annual Companies Handbook. A total of 13 financial ratios are used for measurement and comparison, some of them measuring similar aspects of the company and hence have strong positive co-relationship with one another. They are included in the study for the sake of completeness because they are the most commonly used ratios in financial analysis

and have been used by some researchers in earlier studies. These financial ratios can be categorised into six groups, namely price ratios, liquidity ratios, leverage ratios, profitability ratios, activity ratios and dividend policy. Those ratios are described below :

### **Price Ratios**

Price ratios refer to those financial ratios which are directly affected by the stock price of the firm traded in the KLSE. The most commonly used price ratios are valuation ratio and price earnings ratio.

#### **The Valuation Ratio (VR)**

The valuation ratio is defined as

$$VR = \frac{\text{Share price}}{\text{Net asset per share}}$$

where net asset is gross assets minus liabilities and preference shares.

Share price represents the investors' perception of the value of the acquired company in an efficient market. Since share price fluctuates constantly in response to the market forces, we shall therefore use the average of the highest and lowest stock prices of the calendar year for analysis so as to minimise distortion by market speculation on the stock during a particular period. While this average share price can be established easily, the denominator is more difficult to measure. In this study, we have to rely on the balance sheet figures provided by the company and these balance sheet data rarely represent either the break-up values of the assets or their economic value. Furthermore, some of the assets have not been revalued for some times and they may have been under- or over-stated. This therefore makes the valuation ratio somewhat tenuous.

If the ratio is less than unity then the company is undervalued. The lower the ratio, the greater is the likelihood that it will become a takeover target. Except for peculiar cases the share price will only fall below the value of the assets when the firm is performing very badly.

### **Price-Earnings Ratio (PER)**

Price-earning ratio is defined as

$$\text{PER} = \frac{\text{Share price}}{\text{Earnings per share}}$$

where earnings is the earnings after interest and tax.

This ratio can be interpreted to indicate the number of years it will take to recover the investment in the firm's shares. A low PER as compared with the industry average means either the share price is under-valued by the market or that the market expects the company's performance to decline. However, interpretation of PER without regard to direction of earnings can be misleading. A company with high PER may be caused by an declining earnings while the price stayed the same. Other reason for a high PER may be that the price declined less than the earnings, or the price rose while earnings stayed the same. In general, a company with higher PER than its industry average is indicative of investors enthusiasm and confidence in the growth of the company. Studies by Nicholson (1968) and Williams (1966) showed that the low PER stocks would generally yield higher return on investment. Likewise, companies with low PER may become attractive targets for takeovers as the acquirers are confident of improving the performance of the acquired companies under new management.

To calculate the PER, the choice of the stock prices of a specific date will not be appropriate as the prices of some stocks may be specifically affected by some current

market news. To minimise the effect of distortion of PER that may be associated with fluctuating stock prices, the average price of the highest and lowest stock prices of the calendar year is used for the analysis.

### **Liquidity Ratio**

Liquidity ratio measures the ability of the company to meet its current liability at short notice. The most commonly used liquidity ratios are current ratio, acid test ratio and cash ratio. In this study, we will use the acid test ratio to measure the liquidity of the company.

### **Acid Test Ratio**

This ratio is defined as:

$$\text{Acid test ratio} = \frac{\text{Current assets} - \text{inventories}}{\text{Current liabilities}}$$

The choice of acid test ratio over the current ratio is because of the more stringent criterion that not all current assets can be easily liquidated. In particular, inventories or stocks can sometimes prove almost unsaleable. It should also be noted that if a company's inventories have a strong seasonal pattern, it may be difficult to make meaningful comparison with others. If a company chooses a slack period for their financial year-end, the inventories level at that time is generally fairly low and the cash balance is high.

### **Leverage Ratio**

Leverage ratios measure the extent a company uses debts to finance its operation. The extent of debt financing has an impact on the market valuation of the company. The

traditional view of the financial analysts is that some debts afford an opportunity for earning higher return and market valuation but that too much debts reduce the market value of the firm because of the additional risks involved. According to this traditional view, there is an "optimum" debt/equity ratio which will maximise the market value of the company. In general, the more highly leveraged is a company, the more risky is its stock. As a firm take on more debts, it is faced with higher interest cost. Since the fixed interest costs are insensitive to economic downturns or fluctuation in earnings, they cause the highly leveraged companies to incur lower earnings and price instability. However, these highly leveraged companies will generally outperform the market during market upturn but will underperform during the market downturn.

### **Gearing Ratio (GR)**

Gearing ratio measures the extent to which long term debt is used in the company's capital structure. It is defined as

$$\text{GR} = \frac{\text{Long -term debt}}{\text{Long -term debt} + \text{Shareholders' equity}}$$

Gearing ratio is an important consideration in any takeover exercise. In general, companies with low gearing will be more attractive targets for acquisition as they will not increase gearing of the acquiring companies even though debt is used for the acquisition. On the other hand, if the acquiring firm uses debt to finance the acquisition of a highly leveraged company, the new debt and the existing debt of the acquired company will make the acquiring company more highly geared. As mentioned earlier, the shares of more highly leveraged company will become more risky, their prices will be lower.

### **Debt-Equity Ratio (DE)**

Debt-equity ratio essentially measures the same thing as gearing ratio. Its formulation is defined as :

$$\text{Debt-equity ratio} = \frac{\text{Total liabilities}}{\text{Shareholders' equity}}$$

However, instead of using the long term liabilities to measure the financial risk of the company, the debt-equity ratio takes into account of the risk associated with both the short-term and long-term liabilities. Like the gearing ratio, the higher the debt-equity ratio, the riskier is the company to the creditors and the shareholders.

### **Profitability Ratio**

Profitability ratios measure a company's efficiency in using its resources to generate income for the company as well as its stockholders. It is one of the most important consideration in any investment decision. Because of the differences in the business nature and environment, different industries will have different measures of efficiencies. If our market is efficient, the economic theory tells us that profitabilities of various businesses will be in equilibrium with the risks associated with them. However, if a company has low profitability ratios as compared with the industry's average, it may then becomes attractive target to acquirers who think they can improve the profitability of the acquired company through better management. The most commonly used profitability ratios are net profit margin, return on capital employed, return on investment and earnings per share.



## Net Profit Margin (NPM)

It is defined as :

$$\text{Net profit margin} = \frac{\text{Net earnings before interest and tax (EBIT)}}{\text{Sales turnover}}$$

The above ratio measures the profitability of a business in relation to its sales turnover. While it is a good indicator on the profitability of the firm, caution must be exercised in its use and interpretation. For example, a high profit margin on sales turnover may indicate that profits are above their long term equilibrium level, or it may mean that the assets have been heavily depreciated. Furthermore, a high net profit margin but a low volume of business may not necessarily means that its return on investment is just as good.

## Return on Capital Employed (ROCE)

The formulation of ROCE is expressed as :

$$\text{ROCE} = \frac{\text{Earnings before interest and tax (EBIT)}}{\text{Capital employed}}$$

The capital employed comprises share capital, reserves, minority interest, loan capital and overdraft. The total of the capital employed is also the total asset of the company. This ratio measures the efficiency with which management manages the long term resources under its control. However, during periods of rapid expansion or contraction of the firm's business, the ratio may not be an appropriate measure of efficiency under those circumstances.

## Return on Investment (ROI)

Return on investment is defined as :

$$\text{ROI} = \frac{\text{Earnings after interest and tax}}{\text{Total assets}}$$

Unlike ROCE, ROI measures the efficiency of a firm in generating returns on the total assets of the company after deducting interest and corporate tax. ROI has a positive relation with the ROCE. However, the higher is the debt-equity ratio of the firm, the lower is its ROI given the same ROCE.

## Earnings Per Share (EPS)

Earnings per share is defined as :

$$\text{Earnings per share} = \frac{\text{Earnings after interest and tax}}{\text{Number of shares}}$$

EPS is useful indicator of the trend of performance of a company if its number of outstanding shares remains the same over the period. The EPS has a direct relation with both the net tangible assets backing per share (NTAB) and the stock price of the company. The higher the NTAB, the higher is the expected EPS. High EPS also means high share price in general if the company's PER is comparable to the industry's PER.

## Activity Ratio

Activity ratios, also known as asset management ratios, are designed to measure how effectively the firm is managing its assets to generate sales. The most commonly used activity ratios are inventory turnover ratio, fixed asset turnover ratio and total asset

turnover ratio. However, the problem with using these ratios are concerned with the fair valuation of the firm's various assets. This study uses the total assets turnover ratio.

### **Total Assets Turnover Ratio (ATR)**

The total assets turnover ratio measures the turnover or utilisation of all of the firm's assets. It is calculated by dividing the sales by the total assets.

$$\text{Total assets turnover ratio (ATR)} = \frac{\text{Sales}}{\text{Total assets}}$$

A low total assets turnover ratio would indicate ineffective use of firm's assets in generating sales and this would generally result in low profitability to the firm.

### **Dividend Policy**

The return on the investments of the shareholders are measured by the capital gains and the dividends distributed by the firm. There are various theories on the effects of dividend policy on the performance of the firm's stock price. Some researchers suggested that a high dividend policy reflects that the management is confident of the future earning and this projection of confidence may lead to better performance of the stock price. Other researchers suggested that the investors do prefer the dividend to the capital gain later because a dollar received now is better than a dollar received tomorrow. However, some researchers argued that the dividend policy will not have any effect on the stock price of the firm in the long run. In general, the dividend policy is affected by a host of other considerations like investment policy and government taxation policy on dividend and capital gain. We will be looking at the following two financial ratios to track the dividend

policy of the firm :

### **Dividend Yield**

$$\text{Dividend yield (DY)} = \frac{\text{Dividend}}{\text{Market price of stock}} \times 100\%$$

### **Dividend Times Covered Ratio**

$$\text{Dividend times covered ratio (TC)} = \frac{\text{Earnings per share}}{\text{Net dividend per share}}$$

The dividend times covered ratio measures the proportion of the firm's earning distributed to shareholders as dividend.

### **Other Ratios**

#### **Net Tangible Asset Backing (NTAB)**

NTAB is defined as :

$$\text{NTAB} = \frac{\text{Shareholders' fund} - \text{intangible assets}}{\text{Number of shares}}$$

NTAB of a firm may vary greatly from other firms mainly because of the difference in the number of outstanding shares. If the number of issued shares of a firm has not been increased for a number of years, the NTAB of the firm will generally be higher because of the of the accumulation of the retained earnings. The EPS of the firm will also increase with the NTAB.

The above financial ratios of the acquired companies are measured at four different time period, one in the year when it was acquired ( $t=0$ ), the others in each subsequent year after acquisition where  $t=1, 2$  and  $3$ . The financial performance of the company after the takeover is compared with those of the control over the respective years which is deemed to represent the industry average of the company. The comparison will help to determine if the improved performance over the years (if any) is due to the general economic climate or real improvement against the industry. It will also help to avoid the effect of economic and regulatory policies that may be affecting some but not all the industries.

The general criteria for selecting the non-acquired companies to be used as control are :

1. They must be listed and traded in the Kuala Lumpur Stock Exchange.
2. They must be in the same sector as the acquired company, and
3. They must have comparable market capitalisation as the acquired company in the year when the acquisition occur.

For each acquired company, one non-acquired company will be selected as control.

### **Data Analysis Techniques**

The financial ratios will then be analysed using univariate statistical analysis method. Since the sample size of the acquired companies and the control group is only 22, student t-test will be used to analyse the difference in the means between the acquired companies and the control group. The significance level of the test is set at 10%.