CHAPTER 2 THEORITICAL FOUNDATION

2.1 Understanding Merger

Many people are familiar with the word merger and acquisition. But sometimes, they just think that those two words have the same meaning. In accounting term, merger and acquisition is often called as ***business combination.*** According to Larsen (2003, p.170) based on *FASB Statement No.141,* "Business Combination" (Norwalk: FASB, 2001), par.9, the Financial Accounting Standard Board define business combination as,

[A] business combination occurs when an entity acquires net assets that constitute a business or acquires equity interests of one or more other entities and obtains control over that entity or entities.

However, according to Block and Hirt (2005, p. 585), merger can be defined as,

A combination of two or more companies in which the resulting firm maintains the identity of the acquiring company.

Additionally, below is the list of more definition of Merger and Acquisition taken mostly from the Internet.

1. **Definition of Merger**

    a. **According to Investopedia**

        (http://www.investopedia.com/terms/m/merger.asp), means

1) The combining of two or more companies, generally by offering the stockholders of one company securities in the acquiring company in exchange for the surrender of their stock.

2) Basically, when two companies become one. This decision is usually mutual between both firms

b. **According to Investorwords**

(http://www.investorwords.com/3045/merger.html), means

1) The combining of two or more entities into one, through a purchase acquisition or a pooling of interests.

c. **According to Free Dictionary (http://www.thefreedictionary.com/merger**),

means

1) The act or an instance of merging; union.

2) The union of two or more commercial interests or corporations.

3) *Law* The absorption of a lesser estate, liability, right, action, or offence into a greater one

d. **According to http://dict.die.net/merger/**, means,

1) The combination of two or more commercial companies.

2) An occurrence that involves the production of a union

2. **Definition of Acquisition**

a. **According to Investorwords**

(http://www.investorwords.com/80/acquisition.html), means

1) Acquiring control of a corporation, called a target, by stock purchase or exchange, either hostile or friendly. also called takeover.

b. **According to Free Dictionary,**

   (**http://www.thefreedictionary.com/acquisition**), means

   1) The act of contracting or assuming or acquiring possession of something; "the acquisition of wealth"; "the acquisition of one company by another"

   2) The cognitive process of acquiring skill or knowledge; "the child's acquisition of language"

c. **According to Investopedia**

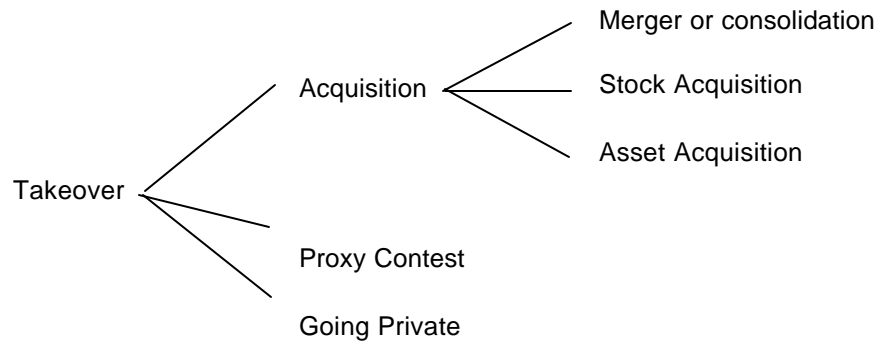   (**http://www.investopedia.com/terms/a/acquisition.asp**)**,** means

   1) When one company purchases a majority interest in the acquired.

   2) Acquisitions can be either friendly or unfriendly. Friendly acquisitions occur when the target firm agrees to be acquired; unfriendly acquisitions don't have the same agreement from the target firm.

Based on those definition regarding mergers and acquisition, it can be seen that merger is a part of acquisition. The difference between those two is merger is a unification of two companies, for example the merger between Carrefour and Continent. The new companies use the name Carrefour with Continent as the management. On the other hand, acquisition is the process of acquiring companies, which is the buyer, acquires all the seller's assets and liabilities.

However, those words often abbreviate as Merger and Acquisition (M&A) which refers to the aspect of corporate strategy, corporate finance, and management dealing with buying,   selling,   and   merging   of   different   companies

(http://en.wikipedia.org/wiki/Merger). Below is some diagram of the acquisition categorical.

Figure 2.1

The Acquisition Categorial

```
                                              Merger or consolidation
                         Acquisition          Stock Acquisition
                                              Asset Acquisition
        Takeover
                         Proxy Contest

                         Going Private
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Source: Livingstone (2001)

Additionally, according to Larsen (2003, p.170), there are several parties that involved in doing the Business Combination or in common word Merger and Acquisition. Those parties are,

1. **Combined Enterprise** ➔ The accounting entity that results from a business combination.

2. **Constituent Companies** ➔ The business enterprise that enter into a business combination.

3. **Combiner** ➔ A constituent company entering into a purchase – type business combination whose owners as a group end up with control of the ownership interest in the combined enterprise.

4. **Combinee** ➔ A constituent company other than the combinor in a business combination.

2.2 Motives of Merger

As common ordinary people, we might confuse why such companies do merger. According to Brealey and Myers (1984, p.704 – 710), there are several reasons why company do merger. The reasons are as follow,

1. **Economies of Scale**

   The economies of scale might be one of the most common motives for mergers. This reason turn out that every managers want to enlarge their firm so that it would be more competitive. They rushed to put together larger groups of firms. By putting two companies into one, those companies can share central services, such as office management and accounting, financial control, executive development and top – level management. Therefore, it would reduce cost and increase profit.

2. **Economies of Vertical Integration**

   The reason why people make vertical integration is to make coordination and administration easier. It turns out that large industrial companies commonly like to gain as much control as possible over the production process by expanding back toward the output of the raw material and forward to the ultimate consumer.

3. **Eliminating Inefficiencies**

   By doing merger, it could eliminate inefficiencies because there are always affirms whose earnings could be increased by better operating or financial management.

4. **Unused Tax Shields**

   Through merger, a company that have potential tax shields but not have the profits to take advantage of them can generate taxable profits so that the tax – loss carry – over could be used.

5. **To Surplus Fund**

   Many companies doing merger to increase its funds so that it could be more competitive in the market, which can indirectly increase its market share. For example, a company might acquire another company that riches in cash, so that it would make the cash position of the new entity look better. Therefore, it would indirectly increase the price of the new share.

6. **Combining Complementary Resources**

   Many small firms that are acquired by large ones can provide missing ingredients necessary for the overall firm's success. The small firms may have a unique product, but lack the engineering and sales organization necessary to produce and market it on a large scale. In other words, each firm have complementary resources, which means each has what the other needs, so later those two firms decided to merge.

All of the reasons of merger above mostly positive or in other word are the benefits that the company might gain when they are doing merger. All of them so far all make economic sense. However, there are some arguments said that merger are dubious activity. Below is the example of the argument,

1. **Diversification**

   It is said that by doing diversification the company can reduce risk, but is it really a gain from merger? The problem with this diversification argument is that diversification is easier and cheaper for the stockholder than for the corporation. No one has shown that investors pay premiums for diversified firms – in fact, discount are common. For example, Kaiser Industries was dissolved as a holding company in 1977 because its diversification apparently subtracted from its value. Kaiser Industries' main assets were shares of Kaiser Steel, Kaiser Aluminium, and Kaiser Cement. These were independent companies and the stock of each was publicly traded. Therefore, its industries can be valued by looking at the stock prices of Kaiser Steel, Kaiser Aluminium, and Kaiser Cement. The Kaiser Industries' stock was selling at a price reflecting a significant discount from the value of its investment in these companies. The discount vanished when Kaiser Industries revealed its plan to sell its holdings and distribute the proceeds to its stockholders.

2. **The Bootstrap Game: Mergers and Earnings Per Share**

   During the 1960s some conglomerate companies made acquisition which offered no evident economic gains. However, the conglomerates' aggressive acquisition strategy produced several years of rising earnings per shares and stock prices. Below is the case example the acquisition of Muck and Slurry by World Enterprises.

Table 2.1

World Enterprise and Muck and Slurry Before and After Merger

		World Enterprises (Before Merger)	Muck and Slurry	World Enterprises (After acquiring Muck and Slurry)
1.	Earnings per share	$2.00	$2.00	$2.67
2.	Price per share	$40.00	$20.00	$40.00
3.	Price – earnings ratio	20	10	15
4.	Number of shares	100,000	100,000	150,000
5.	Total Earnings	$200,000	$200,000	$400,000
6.	Total Market Value	$4,000,000	$2,000,000	$6,000,000
7.	Current earnings per dollar invested in stock (Line 1 divided by Line 2)	$0.05	$0.10	$0.067

Note: When World Enterprises purchases Muck and Slurry, there are no gains. Therefore, total earnings and total market value should be unaffected by the merger. But earnings per share increase, World Enterprises only issues 50,000 of its shares (priced at $40) to acquire the 100,000 Muck and Slurry shares (priced at $20)
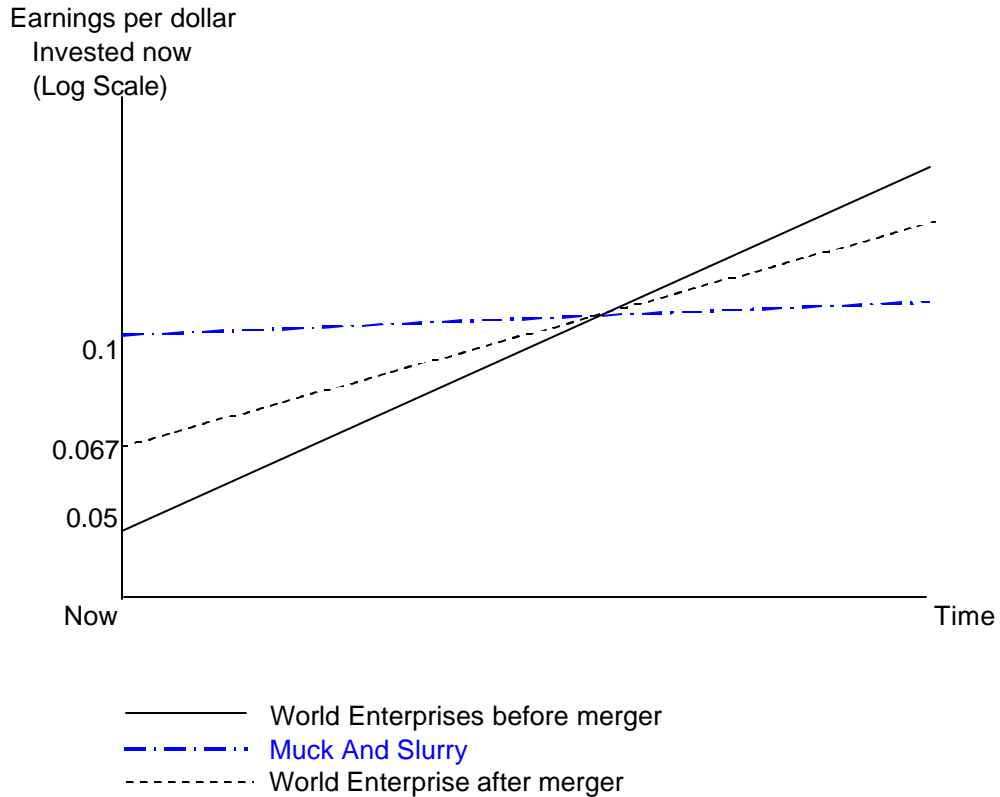
Source: Brealey and Myers (1984)

Based on the table above, it can be seen that Muck and Slurry has poor growth rate. It is indicated by price – earnings ratio which is 10 points lower than World Enterprises. In this case the merger between World Enterprises and Muck and Slurry did not have any benefit at all. Therefore, the market value of World Enterprises should be equal to the sum of the separate value of the two firms (line 6). It can be seen also that World Enterprises sell its stock at double price than Muck and Slurry, therefore it can acquire 100,000 share of Muck and Slurry for 50,000 of its own shares. The earnings per share rise by $0.67. This is called a *bootstrap effect* since there is no real gain created by the merger and no increase in the two firms' combined value.

By merging with Muck and Slurry, World Enterprises increases current earnings but accepts a slower rate of future growth. Its stockholders should be no better or worse off unless investors are fooled by the bootstrap effect. (*Sources:* S.C. Myers, "A Framework for Evaluating Merger, " in S.C. Myers, ed., *Modern Development in Financial Management, Frederick a. Praeger, Inc.,New York, 1976, fig. 1,p. 639)*

Source: Brealey and Myers (1984)

As can be seen from the Figure 2.2 above regarding the Effects of Merger on Earnings Growth, before the merger $1 invested in World Enterprises bought 5 cents of current earnings and expectation of rapid growth. On the other hand, $1 invested in Muck and Slurry bought 10 cents of current earnings but slower growth prospects. However, if the total market value is not altered by the merger, then $1 invested in the merged firm gives 6.7 cents of immediate earnings. Therefore, World enterprises' shareholders see a jump in immediate earnings but slower growth, and the Muck and Slurry shareholders get lower immediate earnings but faster growth. There is no gain or loss from both sides.

3. **Lower Financing Cost**

   It is said that merged firm are able to borrow more cheaply than the separate units. The word 'cheap' here does not refer to borrowing costs, but it refers to the lower interest rates than if borrow as separate unit. The firms' shareholders do gain from the lower rate but they lose by having to guarantee each other's debt. They get the lower interest rate only by giving bondholders better protection.

2.3 Types of Merger

Basically, there are several opinions regarding the type of merger. According to Brigham and Daves (2004, p.870) there are four types of mergers – Horizontal, Vertical, Congeneric, and Conglomerate Merger. However, according to Brealey and Myers (1984, p.703 – 704) there are three types of mergers – Horizontal, Vertical, and Conglomerate Merger. Below is the summary of those two opinions regarding the types of mergers.

1. **Horizontal Merger**

   Based on Brigham and Daves (2004, p.870), this type of merger occurs when one firm combines with another in its same line of business and most of the mergers around the turn of the century were of this type (Brealey and Myers 1984, p.704).

2. Vertical Merger

This type of merger occurs when the buyer expands forward in the direction of the ultimate consumer or back toward the source of raw material (Brealey and Myers 1984, p.704). For example, steel producer's acquisition of one of its own suppliers, such as an iron or coal mining firm (Brigham and Daves 2004, p.870).

3. Congeneric

According to Brigham and Daves (2004, p.870), *Congeneric* means "allied in nature or action". This type of merger involves related enterprises but not producers of the same product (horizontal) or firms in a producer – supplier relationship (vertical). For example, the AOL Time Warne merger.

4. Conglomerate

This merger occurs when unrelated enterprises combine (Brigham and Daves 2004, p.870). For example, Mobil Oil's acquisition of Montgomery Ward, a department store chain.

However, in the vast majority of merger situations, according to Brigham and Daves, one firm (generally larger of two) simply decides to buy another company, negotiates a price with the management of the target firm, and then acquire the target company. This kind of action can be categorized as 'takeovers'. There are two kinds of takeovers that are common. They are,

1. **Friendly Takeovers**

   It occurs when the target company agrees with the price that is offered by the acquiring company.

2. **Hostile Takeovers**

   It occurs when the target company resists the merger because they feel that the offered price is too low, but then the acquiring company still pursue to acquire the target company.

In addition, below are some examples of merger and acquisition within the year 2000 – 2006 (http://en.wikipedia.org/wiki/Merger).

1. **In United States**

   a. Hewlett-Packard; with Compaq (Announced September 2001 - final May 2002) ($25 billion)

   b. Paramount Pictures/Viacom; acquiring DreamWorks for $3.1 billion

   c. The Walt Disney Company; acquiring Pixar, announced January 2006, $7 billion.

2. **In Europe**

   a. Royal Dutch Petroleum buys Shell Transport and Trading for US$75 billion in October 2004

   b. Air France and KLM Royal Dutch Airlines, 2004.

   c. Adidas acquires Reebok (announce April 3, 2005 and closed January 2006, USD 3.8 billion)

3. **In Indonesia**

   a. The merged of Bapindo, Bank Dagang Negara (BDN), Bank Bumi Daya (BBD), and Bank Exim, into new bank Bank Mandiri

Having read all those type of mergers, it can be seen that there are quite a lot type of merger. It is just depends on the management inside the company what type of merger they are going to use. Additionally, it not just only that the companies choose the type of merger; the management also has to synergy the strategy with the goal of the company. The management should think very carefully in making decision to merge company, so that they would be able to make a good and successful Merger and Acquisition (M&A strategy).

2.4 Method of Merger

Basically there are two types method of merger that is popular. According to Bliss on the book written by Livingstone (2001, p. 583 – 585), 2 types methods of merger are as follow,

1. **Purchase Method**

   This kind of method requires the acquiring corporation to allocate the purchase price to the assets and liabilities it acquires. All identifiable assets and liabilities are assigned a value equal to the fair market value at the date of acquisition. However, the difference between fair market value and purchase price is called goodwill.

2. Pooling of Interest Method

The other method in doing merger is Pooling of Interest method. When using this method, the assets of two firms are combined, or pooled, at their historic book values. The revaluations of assets to reflect market value and goodwill do not exist. However, this method requires that the acquired firm's shareholders maintain an equity stake in the surviving company and used primarily in acquisition for stock

In addition, to gain further understanding about the Purchase Method VS Pooling Interest Method, below the example is given.

B.B Lean Inc. ($ Million)					**Dead End Inc. ($ Million)**				
Cash	$ 6	Equity	$ 28		Cash	$ 3	Equity	$ 12
Land	22				Land	0		
Building	0				Building	9		
Total	$ 28		$ 28		Total	$ 12		$ 12

Assuming that B.B Lean offers to purchase Dead End for $18 Million worth of its stock and use the purchase method. Dead End's building has appreciated with current market value of $12 Million. Therefore, the merger balance sheet between B.B Lean and Dead End using the Purchase method is as follows,

B.B Lean Inc. ($ Million)			
Purchase Method			
Cash	$ 9	Equity	$ 46
Land	22		
Building	12		
Goodwill	3		
Total	$ 46		$ 46

.

The acquired building has been written up to reflect its market value of $12 Million. The difference between the acquisition price ($18 Million) and market value of assets acquired ($15 Million) can be considered as goodwill.

On the other hand, using the Pooling Method, the balance sheet will produce different number compared to Purchase Method. Below is the example of Pooling Method.

B.B Lean Inc. ($ Million)				
Polling Method				
Cash	$ 9	Equity	$	40
Land	22			
Building	9			
Goodwill	0			
Total	$ 40		$	40

When using the Pooling Method, there is no goodwill and also the acquired assets are put on B.B Lean's balance sheet at their book value.

As an accountant, it is quite difficult to choose whether using Purchase Method or Pooling Method. According to Walter (1999), there are some certain rules that allow accountant to use the Pooling Method. The rules itself are mean differentiate between two types of combination. The first type is represent the firms joining forces, the second type represent a firm buying the asset and liabilities of another firm. However, still the acquirers prefer to use the pooling method. Their reason relied on the fact that by using pooling method, the acquirers can have some tax advantage and improved retains earning. The tax advantage might be that the shareholders of the targeted firm do not need to pay the taxes from the capital gain (goodwill). The improving retains earning comes from that there will be no reduction in net income due to goodwill amortization. In addition, for the certain rules of Pooling Method, please refer to the Appendix 1.

2.5 Economic Value Added (EVA)

2.5.1 Understanding of EVA

Economic Value Added (EVA) is common word that people often heard in daily conversation with other people, especially when they are doing their own business or working in the bank. But do they really understand the word EVA? Many people just know the word, but they do not really understand the clear definition of EVA.

According to Investopedia, basically Economic Value Added (EVA) is a performance metric that calculates the creation of shareholder value. It distinguishes itself from traditional financial performance metrics such as net profit and EPS: EVA is the calculation of what profits remain after the costs of a company's capital - both debt and equity - are deducted from operating profit

Economic Value Added (EVA) was developed by Stern Stewart, the management consulting firm. According to Stern Stewart & Co, it gives guidance to client companies through the implementation of a complete EVA-based financial management and incentive compensation system that gives managers superior information - and superior motivation - to make decisions that will create the greatest shareholder wealth in any publicly owned or private enterprise.

As the time goes, there are several reasons why every company mostly needed the calculation of EVA. According to Stern Stewart & Co on http://www.sternstewart.com/evaabout/whatis.php there are several reasons related to the need of the company to reveal the true 'economic' profit.

1. **Profits the Way Shareholder Count Them**

   The capital charge is the most distinctive and important aspect of EVA. Under conventional accounting, most companies appear profitable but many in fact are not. As Peter Drucker put the matter in a *Harvard Business Review* article, "Until a business returns a profit that is greater than its cost of capital, it operates at a loss. Never mind that it pays taxes as if it had a genuine profit. The enterprise still returns less to the economy than it devours in resource. Until then it does not create wealth; it destroys it." EVA corrects this error by explicitly recognizing that when managers employ capital they must pay for it, just as if it were a wage.

   By taking all capital costs into account, including the cost of equity, EVA shows the dollar amount of wealth a business has created or destroyed in each reporting period. In other words, EVA is profit the way shareholders define it. If the shareholders expect, say, a 10% return on their investment, they "make money" only to the extent that their share of after-tax operating profits exceeds 10% of equity capital. Everything before that is just building up to the minimum acceptable compensation for investing in a risky enterprise.

2. **Aligning Decision With Shareholder Wealth**

   Stern Stewart developed EVA to help managers incorporate two basic principles of finance into their decision making. The first is that the primary financial objective of any company should be to maximize the wealth of its shareholders. The second is that the value of a company depends on the extent to which investors expect future profits to exceed or fall short of the cost of capital.

By definition, a sustained increase in EVA will bring an increase in the market value of a company. This approach has proved effective in virtually all types of organizations, from emerging growth companies to turnarounds. This is because the level of EVA isn't what really matters. Current performance already is reflected in share prices. It is the continuous improvement in EVA that brings continuous increases in shareholder wealth.

3. **A Financial Measure Line Managers Understand**

EVA has the advantage of being conceptually simple and easy to explain to non-financial managers, since it starts with familiar operating profits and simply deducts a charge for the capital invested in the company as a whole, in a business unit, or even in a single plant, office or assembly line. By assessing a charge for using capital, EVA makes managers care about managing assets as well as income, and helps them properly assess the tradeoffs between the two. This broader, more complete view of the economics of a business can make dramatic differences.

4. **Ending the Confusion of Multiple Goals**

Most companies use a numbing array of measures to express financial goals and objectives. Strategic plans often are based on growth in revenues or market share. Companies may evaluate individual products or lines of business on the basis of gross margins or cash flow. Business units may be evaluated in terms of return on assets or against a budgeted profit level. Finance departments usually analyze capital investments in terms of net present value, but weigh prospective acquisitions against the likely contribution to earnings growth. And bonuses for line managers and

business-unit heads typically are negotiated annually and are based on a profit plan. The result of the inconsistent standards, goals, and terminology usually is incohesive planning, operating strategy, and decision making.

EVA eliminates this confusion by using a single financial measure that links all decision making with a common focus: How do we improve EVA? EVA is the only financial management system that provides a common language for employees across all operating and staff functions and allows all management decisions to be modelled, monitored, communicated and compensated in a single and consistent way - always in terms of the value added to shareholder investment.

2.5.2 Calculating the EVA

Basically there are 4 steps to calculate the EVA according to http://www.investopedia.com/articles/fundamental/03/031203.asp. They are,

1. Calculate Net Operating Profit After Tax (NOPAT)

2. Calculate Total Invested Capital (TC)

3. Determine a Cost of Capital (WACC)

4. Calculate EVA = NOPAT – WACC% X TC

The formula itself to calculate the EVA, as stated by Mäkeläinen, are as follow,

EVA = NOPAT – CAPITAL COST
EVA = NOPAT – (COST OF CAPITAL x CAPITAL EMPLOYED)

If the rate of return is defined as NOPAT/CAPITAL, the formula could be as follows,

EVA = NOPAT – (RATE OF RETURN – COST OF CAPITAL) x CAPITAL

Or in simplified and common way, the formula is as follows,

EVA = NOPAT – (WACC x Invested Capital)

Where,

Rate of Return   ➔ Net Operating Profit After Tax (NOPAT)/CAPITAL

Cost of Capital   ➔ Weighted Average Cost of Capital (WACC)

2.5.2.1 Calculating NOPAT

NOPAT can be said to match with operating profit along with net income, but it is after taxes. Therefore, the formula for calculating NOPAT is as follows,

$$\text{NOPAT = EBIT (1 – tax rate)}$$

EBIT ➔ Earning Before Interest and Taxes.

Below is the example of NOPAT calculation, taken from journal done by Durant (1999),

Example of XYZ Company

|	
Sales	$ 2,436,000
Cost of Good Sold	1,700,000
Gross Profit	*736,000*
Selling, General & Admin.Expenses	(400,000)
Operating Profit	*336,000*
Taxes	134,000
NOPAT	**202,000**

2.5.2.2 Calculating Invested Capital or Capital Employed

The second step is calculating the Invested Capital or Capital Employed. According to Durant (1999), there are two kinds of profits from economist point of view, they are accounting profits and economic profits.

The economic profits can be described as total revenues less total costs, where the costs are mostly include also the full opportunity cost of the factor of production. However, the opportunity cost is not included when calculating the accounting profit. Hence, in order to be able to calculate the Invested Capital or Capital Employed, the short and long – term assets should be included along with other investments that had been calculated using accrual accounting methods, such as research and development, leases, and training.

In addition, below is the diagram comparison between regular balance sheet and EVA balance sheet, considering that invested capital relates to the source of finance of the net assets used to generate income (Escalona, 2002)

Figure 2.3

Regular vs. EVA Balance Sheet

Regular Balance Sheet   EVA Balance Sheet
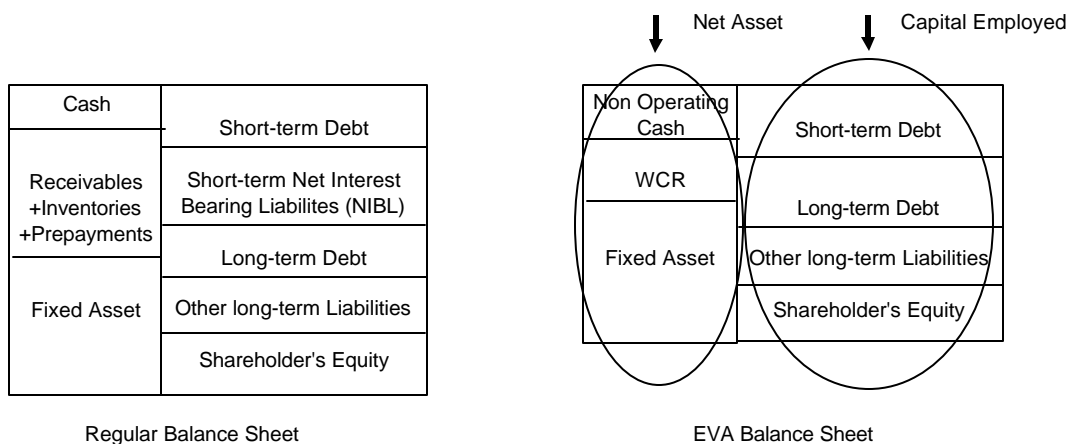
Sources: Escalona (2002)

Below is the formula to calculate the Invested Capital or Capital Employed,

Capital = Total balance sheet minus non-interest bearing debt in the beginning of the year

Additionally, in the following page, it is also given the example of Invested Capital

Calculation taken from Investopedia.

Figure 2.4

Example of Calculation of Invested Capital

Walt Disney Co (Ticker:DIS)
Balance Sheet, End of Fiscal Year 2004

Current Assets		Current Liabilities	
Cash		Accounts payable	5,623
Net Receivables		Other Current Liabilities	1.343
Inventory		Short-Term Debt	4,093
Other current assets		Total Current Liabilities	11,059
Total Current Assets			
		Long-Term Debt	9,396
Long-Term Assets		Other Liabilities	3,619
Long-Term Investments		Deferred Income tax	2,950
Fixed Assets		Minority Interest	798
Goodwill		Total Liabilities	27,821
Intangible Assets			
Other Assets		Shareholders' Equity	26,081
Total Assets	53,902	Total Liabilities & Equity	53,902

Disney's Invested Book Capital:

Total Assets - NIBCLS = 53,902 - (5,623 + 1,343)
=46,936

Source: Investopedia

2.5.2.3 Calculating Weighted Average Cost of Capital (WACC)

According to Durant (1999), there are two types of capital, they are borrowed and equity.

Thus, before being able to calculate the WACC, the borrowed and equity capital should

be calculated first.

1. *Calculating Borrowed Capital*

The first component of WACC is Borrowed Capital which is the cost of debt of a company. The cost of borrowed capital, according to Durant (1999) is the interest rate charged by the bondholders and the banks. On the other hand, according to Wikipedia, it is composed of the interest paid (interest rate), including the cost of risk (the risk of default on the debt). Below is the formula to calculate the borrowed capital or cost of debt according to Block and Hirt (2005, p.315)

$$K_d = Y \times (1 - T)$$

Where,

Kd → Cost of Debt

Y → Yield to Maturity

T → Tax

However to calculate the Yield to Maturity, the following formula should be used,

$$Yield = \frac{Interest}{Principal}$$

Additionally, below is the example of how to calculate Cost of Debt based on Block and Hirt (2005, p. 314 – 315)

Inflation premium	4%
Increase Inflation Premium	6%
Interest per year	$101.50
Selling Price	$940
Maturity Payment	$1,000
Tax	35%

$$\text{Yield} = \frac{101.5 + \dfrac{\$1000 - \$940}{20}}{0.6(\$940) + 0.4\,(\$1000)}$$

$$= \quad 10.84\%$$

$$\text{Kd (Cost of Debt)} = \quad 10.84\%\ (1\text{-}0.35)$$
$$= \quad \textbf{7.05\%}$$

2. *Calculating Equity Capital*

The second component of WACC is the Equity Capital, which is the cost of equity of a company. According to Durant (1999), the equity capital is provided by the shareholder and it is also called the Required Rate of Return. The rate of return on an investment equals to risk free rate plus market price for the risk assuming with the investment. This cost of equity can be calculated using the Capital Assets Pricing Model (CAPM), with the following formula according to Block and Hirt (2005, p.318).

$$\mathbf{K_j = R_f + \text{ß}\ (K_m - R_f)}$$

Where,

K_j➔Required Expected Return on Bond

R_f ➔Risk – free rate of return

ß ➔Beta Coefficient, which measures the historical volatility of an individual stock's return relative to a stock market index.

K_m➔Return in the market as measured by an appropriate index.

The formula above is applied for bond, however if it is applied to stock or share, it will have the same formula, with different symbols The symbols would be as follows,

$$R_s = R_f + \beta (R_m - R_f)$$

Where,

$K_j = R_s$ ➔ Firm's Cost of Equity Capital

$K_m = R_m$ ➔ Cost of Equity for the market

As for beta (ß), the data that is used is the stock price of a company, the formula is as follows,

$$\beta = \frac{Co\ Variance_{Rs,\ Rm}}{Variance_{Rm}}$$

However, to calculate CoVariance and Variance, some certain formulas also have to be taken into consideration. The formula is as follows,

$$Covariance = \frac{\sum_{i=1}^{n}[Rs_i - \overline{Rs}][Rm - \overline{Rm}]}{n}$$

$$Variance = \frac{\sum_{i=1}^{n}[Rm_i - \overline{Rm}]^2}{n}$$

Where,

Rs_i ➔ Return Share Price Per Year

Rm ➔ Return IHSG Per Year

$\overline{Rs}$ ➔ Average Return Share Price Per Year

$\overline{Rm}$ ➔ Average Return IHSG Per Year

To gain further understanding about ß, below is the example of how to calculate ß

taken from http://clem.mscd.edu/~mayest/Welcome.html.

Beta calculation for the portfolio of Julie Martinez

	1 J.M	2 % J.M	3 Diff from Mean	4 S&P	5 %S&P	6 Diff from Mean	7 Product (3 X 6)
	100000			100000			
	100055	0.00055000	-0.00577716	100360	0.00360000	-0.00109828	0.00000634
	101706	0.01650092	0.01017377	102765	0.02396373	0.01926545	0.00019600
	101100	-0.00595835	-0.01228551	101912	-0.00830049	-0.01299877	0.00015970
	100409	-0.00683482	-0.01316197	100520	-0.01365884	-0.01835712	0.00024162
	103158	0.02737802	0.02105087	102318	0.01788699	0.01318871	0.00027763
Avg		0.006327156			0.004698277		0.00017626
Variance		0.000180838			0.000210452		
Beta		**0.837526061**					

The first and fourth columns are the Julie Martinez and S&P values for the year 1997.

The second and fifth columns reflect the percentage returns. The amount of average

in column 2 and 5 reflect the average weekly return for five weeks. The amount in

column 3 and 6 are the result of percentage in column 2 and 5 minus the average

return each week. The seventh column is the result of multiplying column 3 with

column 6, then sum all of it to get the average on column 7. The amount of beta is the

result of average in column 7 (0.00017626) divided by amount in variance column 5

(0.000210452)

$$ß = \frac{0.00017626}{0.000210452}$$
$$= \mathbf{0.837526061}$$

 As already stated above, the calculation of Cost of Equity includes Expected Return

and Risk – free interest rate. Based on Durant (1999), the risk of a company can be

divided into two parts. The first component can be eliminated by combining the

investment with diversified portfolio, which often referred to non – systematic risk.

For the second component, it is non – diversifiable and it is called systematic risk. It creates the risk premium required by the investor and in the security market, the non – diversifiable risk is measured by the firm's beta. The higher a company's non – diversifiable risk, the larger the beta. The expected return of investor increases along with the increase in beta. For example, the 0.8 of beta means the performance deviation of a company times the performance deviation of market, in this case is the economic actors in Indonesia.

Below is the example of calculating Cost of Equity capital using the CAPM as stated by Block and Hirt (2005, p.318). The risk free rate of return is 5.5%, Return in market is 12%, and beta coefficient is 1.

$$R_f = \quad 5.5\%$$
$$R_m = \quad 12\%$$
$$\beta = \quad 1.0$$

$$R_s = \quad 5.5\% + 1.0\,(12\% - 5.5\%)$$
$$= \quad 5.5\% + 6.5\%$$
$$= \quad \mathbf{12\%}$$

According to Mayes and Shank (2004, p.271), the firms' WACC is not constant. It could be change as the firms raises more new capital. Hence, it will increase its WACC, since there is also an increase in supply relative to demand for the firms' securities. In addition, below is the definition and description of how to calculate WACC according to Kislingerová (2000).

Figure 2.5

Definition of Weighted Average Cost of Capital (WACC)
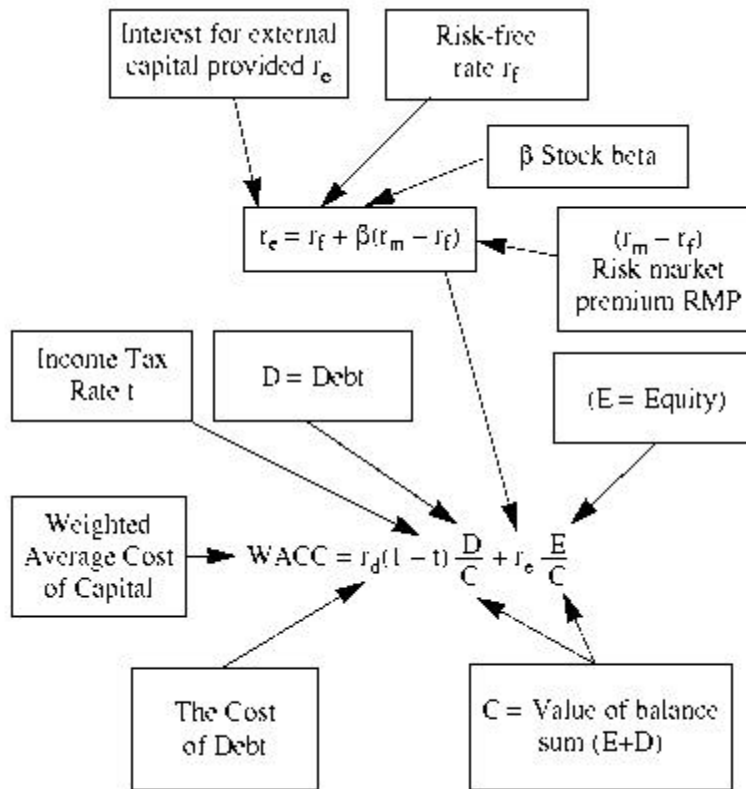
Source: Kislingerová 2000

Below is given an example of how to calculate WACC based on Figure 2.3 (Kislingerová 2000)

Entering data: set the value of ALFA Ltd. to the Dec.31, 1998 if knowing the following data.

a) Information from the balance sheet:

Debt (D)	55 mil. Kč $\Rightarrow$ D/C = 0.29
Equity (E)	134 mil. Kč $\Rightarrow$ E/C = 0.71
Long Term Invested Capital (C)	189 mil. Kč $\Rightarrow$ Σ = 1.00

b) After – Tax Debt Cost

Cost of External Capital r_d	15 %
Income Tax Rate (t)x100	35 %
Effective Cost of Debt r_d	15(1 – 0.35) = 9.75 %

c) Cost of Internal Capital

Cost of Internal Capital r_e (CAPM[2] model)

$$18.,42\% = 10.5 + (1.1 \times 7.2)$$

– Risk-free rate r_f (by CNB to Dec.31. 98)	10.5 %
– Stock beta (β) (by Broker's company)	1.1
Equity risk premium in CR ($r_m - r_f$)	5.5%[3] + 1.7%[4]

d) Information from financial strategy of ALFA, Ltd. made for the period of 1999 – 2001:

YEAR	NOPAT	Capital Invested (C)
1999	41	205
2000	44	222
2001	48	241
2002	50	260

Work schedule

1. Calculation of Weighted Average Cost of Capital (WACC)

We implement entering data introduced in above to the equation:

WACC = 9.75 x 0.29 + 18.42 x 0.71 = 2.83 + 13.08 = 15.91%
WACC is 15.91%.

2. Calculation of EVA for the period of 1999 to 2001 and after

ALFA, Ltd. presumes that the structure of the capital will remain stable (it corresponds with the planes of a company), it does not expect any change in risk and therefore in cost of capital, too. WACC can be therefore used for the second phase of the calculation, too.

YEAR	EVA = NOPAT – WACC x C	
1999	8.38 = 41 – 0.1591 x 205	the first phase
2000	8.68 = 44 – 0.1591 x 222	the first phase
2001	9.66 = 48 – 0.1591 x 241	the first phase
2002	8.63 = 50 – 0.1591 x 260	– the second phase

Moreover, there is another method to calculate WACC that is simpler and easier to be understood, especially for college student. The formula is,

$$\text{WACC} = (\text{W Debt} \times \text{Kd}) + (\text{W Equity} \times \text{Ke})$$

Where,

W Debt ➔ Portion of Debt

W Equity ➔ Portion of Equity

Kd ➔ Cost of Debt

Ke ➔ Cost of Equity

To understand more of how to calculate WACC based on the formula above, please refer to Chapter 4.

2.5.2.4 Calculating EVA

Having calculated all the component of EVA, the real EVA now can be calculated with the formula that have been stated above. The simplified and common way in calculating the EVA, by using the following formula,

$$\text{EVA} = \text{NOPAT} - (\text{WACC} \times \text{Invested Capital})$$

For further explanation of how to calculate EVA, on the following page is given a simple example of EVA calculation.

Example of EVA Calculation XYZ Company

NOPAT	$ 202,000
Charge for Capital	
Capital Employed	$1,500,000
Cost of Capital	11.3%
Capital Charge	$ 169,500
ECONOMIC VALUE ADDED	$ 32,500

2.5.3 Advantage of EVA

Along with limitation, everything always have a positive or benefit. This is the same with EVA. There are also some benefits regarding EVA. According to journal written by Damodaran (2005), there are some benefits that can be taken as consideration in using EVA. The benefit is as follows,

1. EVA is closely related to NPV. It is closest in spirit to corporate finance theory that argues that the value of the firm will increase if you take positive NPV projects.

2. It avoids the problems associates with approaches that focus on percentage spreads - between ROE and Cost of Equity and ROC and Cost of Capital. These approaches may lead firms with high ROE and ROC to turn away good projects to avoid lowering their percentage spreads.

3. It makes top managers responsible for a measure that they have more control over - the return on capital and the cost of capital are affected by their decisions - rather than one that they feel they cannot control as well - the market price per share.

4. It is influenced by all of the decisions that managers have to make within a firm - the investment decisions and dividend decisions affect the return on capital (the dividend

decisions affect it indirectly through the cash balance) and the financing decision affects the cost of capital.

Furthermore, there also different advantages of EVA as stated by Sharma (2004), which is as follows,

1. EVA eliminates economic distortions of GAAP to focus decisions on real economic results. GAAP recognizes provision, such as provision for loan losses which reduces the net income. However, the provision itself sometimes is never really paid.. On the other hand, EVA calculates the real expense of a company, not the estimates expenses.

2. EVA provides for better assessment of decisions that affect balance sheet and income statement or tradeoffs between each through the use of the capital charge against NOPAT

3. EVA decouples bonus plans from budgetary targets

4. EVA covers all aspects of the business cycle

5. EVA aligns and speeds decision making, and enhances communication and teamwork

2.5.4 Limitation of EVA

According to Escalona (2002), there are limitations in using EVA, since it is subjective and there are a lot of possible adjustment and criteria involve in defining what are the most appropriate changes required by the accounting to measure performance more in accordance with economic return. He also said that, identifying items should be capitalized, what kind of amortization should be used, or identify the expected life of an

item are not really important. Therefore, this thing become bias and result in different opinion within the EVA experts.

Escalona also stated a really big and important question regarding EVA. The question would be, "Does the implementation of EVA going to lead to a better performance?". The implementation of EVA requires a vast effort that might not be traduced in a change of behaviour towards value creation. Therefore, it is necessary to make the creation and implementation of EVA easy and transparent to be understood.

Another limitation is also said by Hock (1999) in article, stated that basically limitations of EVA realize on 4 areas, they are,

1. **Size Difference**

   As stated by Hock, EVA does not control for size differences across plants or divisions. Therefore, a larger plant or division will tend to have a higher EVA relative to its smaller counterparts.

2. **Financial Orientation**

   In this area, according to Hock, EVA is a computed number that relies on financial accounting methods of revenue realization and expense recognition. Moreover, there is a possibility of managers to manipulate these numbers by altering their decision making processes

3. Short – term Orientation

This short – term orientation focuses on how to match the employees' effort, ingenuity, and accomplishments with their compensation. It is said so, because every time there is a project that need to be done by the manager, the cost and expense related to the project are the first to be recognized by the accountant, instead of the revenues and benefit. Thus, EVA in this case becomes another manager remote control that forces manager to put undue emphasis on the short – term bottom line.

4. Result Orientation

This result orientation can be said as a limitation of EVA since EVA is charges for the result of the problem in the end, for instance, the accountants' reports state the obvious - that performance was less than expected - but then, they do not help by offering any solutions to the non - accounting business managers who are responsible for continuously improving the value delivered to customers.

According to http://www.investopedia.com/articles/fundamental/03/031203.asp if carried out consistently, EVA should help us identify the best investments, that is, the companies that generate more wealth than their rivals. All other things being equal, firms with high EVAs should over time outperform others with lower or negative EVAs. In line with research conducted by Stern Stewart, EVA is a critical driver of a company's stock performance. If EVA is positive but is expected to become less positive, it is not giving a very good signal. Conversely, if a company suffers negative EVA but is expected to rise into a positive territory, a good buying signal is given.