

**Optimal Capital Structure Analysis: A Study
from Indonesia Telecommunication Companies
Listed in Indonesia Stock Exchange Period
2009-2011**

— *Review of* —
**Integrative
Business &
Economics**
— *Research* —

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ABSTRACT

Telecommunication is an important sector that support the economic growth in Indonesia. Growth from this sector and transportation sector is the highest compared to other sectors in first quartal of 2012. The economic growth in Indonesia gives telecommunication companies great opportunity to expand their business. To support their business activities, those companies need more capital and determining the right proportion of capital is important in order to reach the optimal value of the firm. Researcher uses cost of capital approach to define the optimal capital which for cost of equity uses capital asset pricing model, while cost of debt calculation uses synthetic rating approach. The results show that optimal capital structure for the companies in telecommunication sectors is 9%. The analyze has been made about factors that influence optimal capital structure.

Keywords: Telecommunication Companies, Cost of Capital, Optimal Capital Structure

1. INTRODUCTION

Most firm attempt to maintain a desired optimal mix of debt and equity financing to maximize its value. The main goal of financial management is to maximize the stockholders' wealth and the minimizing cost of capital is one of the way to reach this goal. The proportion of the debt and equity are used to finance the assets in the company in order to support business activities. Moreover, because of its interrelationship with other financial decision variable, poor capital structure decision can result in a high cost of capital and then lowering the company's value.

Telecommunications is one sector that supports economic growth in Indonesia. Based on data from Badan Pusat Statistik (BPS), the growth of telecommunication sector in the first quartal of 2012 compared with the same quartal of 2011 reached up to 10, 3% together with the transport sector. This growth is the highest compared with other sectors. Gross domestic product (GDP) of the telecommunications sector also continued to increase throughout the year 2011. Listed telecommunication companies

also have good performance in the capital market. According to Fact Book of Indonesia Stock Exchange (IDX) the market capitalization from this sector is 7.8% from the total, which is 253,845 billion rupiah.

Similar with other developing country, in Indonesia, the improvement and modernization of telecommunication infrastructure become an important. Besides, the large population and the positive economic growth in this country have led to high demand in telecommunication services. Telecommunication companies possess great opportunities to grow its business. In expanding its business, those companies need more capital in order to do more innovation for their services. Therefore, it is important for the telecommunication companies determine the right proportion of their source of fund in order to reach the optimal capital structure.

This paper summarizes the optimal capital structure for telecommunication companies listed in Indonesia Stock Exchange in three years, 2009-2011. There are five telecommunication companies that are listed in Indonesia Stock Exchange; they are Bakrie Telecom, XL Axiata, Indosat, Inovisi Telecom, Telekomunikasi Indonesia, and Smartfren Telecom.

2. THEORITICAL FOUNDATION

2.1 Optimal Capital Structure

Capital structure is strategy of company in deciding the proportion of each element of capital sources to maintain its financial performance related to fund of capital expenditure and to support of business activities. To maximize the value of the firm, every company needs to make a right proportion of its sources of capital, which are debt and equity. This right proportion then will be determined as optimal capital structure. According to Damodaran (2001), cost of capital is one of the alternative that can be used as approach in determining the optimal capital structure. Gitman on Managerial Finance also define the optimal capital structure as *“the capital structure at which the weighted average cost of capital is minimized, thereby maximizing the firm’s value.”*

2.2 Cost of Capital Approach

In order to have an optimal capital structure, also because of the difference in cost between debt and equity, the company is required to have an optimal mix of these source of capital. Cost of debt is usually cheaper than cost of equity. However, the more the corporate has the long-term debt, the more default risks it will face and the higher probability of bankruptcy will be. As the company improve the proportion of

its debt, the investor then will give a high required return to avoid the default risk, and this will result in higher cost of debt. Thus, it is important for the company to implement the right proportion of debt and equity to result in the minimum cost of capital.

2.1.1 Cost of Equity

According to Ross, cost of equity is “*the return that equity investors require on their investment in the firm*” (2008: 481). Capital asset pricing model is one approach in determining cost of equity and it is used in this paper. The equation of CAPM is:

$$R_E = R_f + (\beta \times (R_m - R_f)) \quad (2.1)$$

Where,

R_E = cost of equity

R_f = risk free rate of return

β = beta coefficient

R_m = market return

To know the beta coefficient is required, as the measurement of a company’s volatility relative to the entire market. According to Damodaran, it can be measured by several approach such as using the company historical data on market prices, estimating the fundamental beta (using the bottom-up beta method) and using accounting data. The writer uses the company historical data on market prices in determining the current beta of each company. Moreover, average of BI (Bank Indonesia) rate for each year is used for the risk free rate and return of Jakarta stock exchange (JKSE) is used for the market return.

Current beta is the covariance between the security’s return and market’s return, divided by the variance of the market return. The second step in calculating beta is calculate the unlevered beta based on the current beta. The equation is:

$$\beta_{\text{unlevered}} = \frac{\text{Current Beta}}{1 + (1 - T_c) \left(\frac{\text{Debt}}{\text{Equity}} \right)} \quad (2.2)$$

Where,

T_c = Corporate tax rate

Debt= Actual debt capital

Equity = Actual equity capital

In determining the optimal capital structure, it needs to change the proportion of debt and equity that effect the beta of the company. Thus, it requires the calculation of the levered beta for each of debt equity ratio. The equation of levered beta is:

$$\beta = \beta_{\text{unlevered}} \left[1 + (1 - T_C) \frac{D}{E} \right] \tag{2.3}$$

Where,

$\frac{D}{E}$ = Debt equity ratio

2.1.2 Cost of Debt

Cost of debt is considered as a function of the firm’s default risk and the level of interest rate in the market. It is commonly measured by using yield to maturity on corporate bond. However, in this paper, cost of debt will be measured by using rating systems, because not all companies are issuing bond. The rating system is created base on the financial ratio and each company will be assigned a rating according to its ratio.

Damodaran (2001) already defined the relationship between bond rating and interest coverage ratio. This ratio is also used by both Standard and Poor’s and Moody’s to determine bond rating because it changes as the firm changes its financing mix.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}} \tag{2.4}$$

Where,

EBIT = Earning before interest and tax

Table 2.1 is based on the analysis of the interest coverage ratio of small manufacturing firms in different rating classes by Damodaran.

Table 2.1 Bond Rating and Interest Coverage Ratio (Source: Damodaran, 2012)

Interest Coverage Ratio	Rating	Typical Default Spread (%)
>12.50	AAA	0.35
9.50 – 12.50	AA	0.50
7.50 – 9.50	A +	0.70
6.00 – 7.50	A	0.85
4.50 – 6.00	A -	1.00
4.00 – 4.50	BBB	1.50
3.50 – 4.00	BB+	2.00
3.00 – 3.50	BB	2.50
2.50 – 3.00	B +	3.25
2.00 – 2.50	B	4.00
1.50 – 2.00	B -	6.00
1.25 – 1.50	CCC	8.00

0.80 – 1.25	CC	10.00
0.50 – 0.80	C	12.00
< 0.50	D	20.00

This rate should be adjusted to Indonesian market interest rate to define the interest rate of the company’s debt base on the rating. This interest rate would be the cost of debt before tax of the company. Table 2.2 shows the Indonesia market interest rate according to Harry (2007).

Table 2.2 Indonesia Market Interest Rate (Harry, 2007)

Rating	Indonesian Market Interest Rate (%)
AAA	12.20
AA	12.72
A +	13.24
A	13.76
A -	14.28
BBB	14.80
BB +	15.32
BB	15.84
B +	16.36
B	16.88
B -	17.40
CCC	17.92
CC	18.44
C	18.96
D	19.48

2.1.3 Cost of Capital

Based on Ross (2008), WACC is one of the method to calculate the firm’s overall cost of capital. Gitman also stated that weighted average cost of Capital (WACC) reflects the expected average future cost of funds over the long run; found by weighting the cost of each specific type of capital by its propotion in the firm’s capital structure.

$$WACC = W_E \times R_E + W_D \times R_D \times (1 - T_C) \tag{2.5}$$

Where,

WACC = Weighted average cost of capital

W_e = Weight of equity capital

W_d = Weight of debt capital

R_D = Cost of debt before tax

2.2 Optimal Capital Structure and Cost of Capital

As mentioned before, based on the cost of capital approach, the capital structure of a

firm would be optimal when its cost of capital is minimize. Gitman (2009) already modificate the function of value of the firm as:

$$\text{Value of the firm} = \frac{EBIT \times (1 - T_c)}{WACC} \tag{2.6}$$

The value of the firm is maximized by minimizing the weighted average cost of capital with the assumption that EBIT of the firm is remain constant. The graph below will show the optimal capital structure as the effect of changes in WACC.

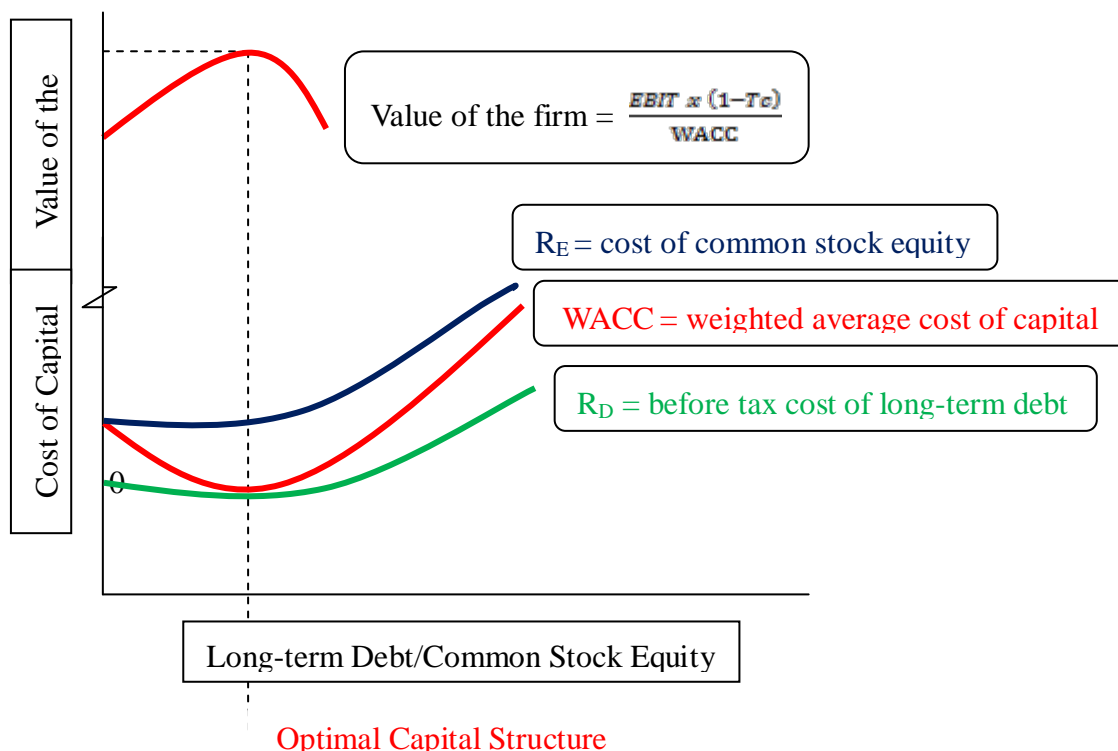


Figure 2.2 Optimal Capital Structure

3. METHODOLOGY

In the calculation, there are some steps to do, such as:

- a. Cost of equity:
 - Beta: current beta, unlevered beta, levered beta
 - Risk free rate: average of BI rate
 - Market return: JKSE return, using geometric calculation
- b. Cost of debt:
 - Interest coverage ratio
 - Bond rating of Damodaran (2012) and Indonesian market interest rate of Harry (2007)
- c. Weighted average cost of capital for some debt ratio

- d. Value of the firm for some debt ratio
- e. Optimal capital structure for each companies every years (five telecommunication companies listed in Indonesia Stock Exchange)
- f. Average of optimal capital structure for telecommunication sector

All the calculation then will be proceed to get the final result which is the optimal capital structure.

4. ANALYSIS AND RESULT

4.1 Research Data Collection

There are 13 data from 5 companies from year 2009 until 2011 that are used as sample in this research. The amount of debt that is collected for the calculation is the longterm debt that has correlation with capital structure according to Damodaran, such as bank loans, bonds payable, and leasing. On the other hand, the amount of equity is from total equity that is stated in the financial report of the company.

Table 4.1 below summarizes risk free rate, market return, and tax rate for every year.

Table 4.1 Risk Free Rate and Market Return

No.	Year	Risk Free Rate (%)	Market Return (%)	Tax Rate (%)
1	2009	7.15	56.71	28
2	2010	6.50	36.33	25
3	2011	6.58	2.50	25

4.2 Actual Capital Structure

From data collection, table 4.2 presents the actual condition of capital structure from every company from year 2009 until 2011 in telecommunication sector. The fact show that the actual debt ratio is vary among the companies and even in one company but from different time.

Table 4.2 Actual Capital Structure

No.	Year	Company Code	Actual Debt Ratio (%)	Debt (million IDR)	Equity (million IDR)	EBIT (million IDR)	WACC (%)	Value of the Firm (million IDR)
1	2009	BTEL	45	4,052,456	5,036,931	288,418	48.25	430,393
2		EXCL	56	10,988,237	8,803,113	2,463,844	26.49	6,697,615
3		ISAT	54	21,194,460	17,957,690	3,213,015	28.02	8,255,183
4		TLKM	27	14,457,663	38,989,747	22,603,141	35.68	48,296,000
5	2010	BTEL	35	2,856,164	5,194,830	190,803	25.09	570,332
6		EXCL	44	9,201,951	11,715,074	5,164,487	19.64	19,718,247
7		ISAT	53	19,781,009	17,850,646	3,473,944	22.35	11,656,887
8		INVS	0	324	924,091	101,427	48.97	155,345
9		TLKM	27	16,655,754	44,418,742	22,491,120	23.47	71,863,696
10	2011	EXCL	34	6,906,014	13,692,512	4,665,000	7.21	48,532,939
11		ISAT	50	18,564,132	18,815,973	2,830,099	9.63	22,034,174
12		INVS	0	-	1,824,272	131,420	5.18	1,903,828
13		TLKM	36	12,958,000	60,981,000	21,695,000	6.51	250,133,618

4.3 Cost of Equity Calculation

The calculation uses XL Axiata year 2009 as the sample. The first step in calculating cost of equity is determining the current beta. This current beta will be used to calculate the unlevered beta using the equation 2.2. Table 4.3 below consists of unlevered beta for each company every research year.

Table 4.3 Unlevered Beta

No.	Year	Company Code	Current Beta	Debt/Equity (Actual)	Beta Unlevered
1	2009	BTEL	1.33	0.80	0.77
2		EXCL	0.73	1.25	0.39
3		ISAT	0.75	1.18	0.41
4		TLKM	0.78	0.37	0.61
5	2010	BTEL	0.76	0.55	0.54
6		EXCL	0.66	0.79	0.41
7		ISAT	0.84	1.11	0.46
8		INVS	1.42	0.00	1.42
9		TLKM	0.74	0.37	0.58
10	2011	EXCL	0.28	0.50	0.20
11		ISAT	0.46	0.99	0.26
12		INVS	0.34	0.00	0.34
13		TLKM	0.16	0.21	0.13

Furthermore, to get optimal capital structure, the calculation of levered beta in every debt ratio is required. It can be obtained using the equation 2.3. After that, the levered beta, risk free rate, and market return in every debt ratio generate cost of equity based on equation 2.1. Table 4.4 is summarized the calculation cost of equity for EXCL 2009.

Table 4.4 Cost of Equity EXCL 2009

Debt Ratio (%)	Debt (million IDR)	Equity (million IDR)	D/E	Levered Beta	Cost of Equity (%)
0	-	19,791,350	0.00	0.39	26.26
10	1,979,135	17,812,215	0.11	0.42	27.79
20	3,958,270	15,833,080	0.25	0.46	29.70
30	5,937,405	13,853,945	0.43	0.50	32.16
40	7,916,540	11,874,810	0.67	0.57	35.44
50	9,895,675	9,895,675	1.00	0.66	40.03
60	11,874,810	7,916,540	1.50	0.80	46.91
70	13,853,945	5,937,405	2.33	1.03	58.38
80	15,833,080	3,958,270	4.00	1.50	81.31
90	17,812,215	1,979,135	9.00	2.88	150.12

4.4 Cost of Debt Calculation

Interest rate for each debt level have to be defined since this rate would be the before tax cost of debt for the companies. Interpreting the interest rate for this research is by using interest coverage ratio according the equation 2.4 and then translate it into Damodaran bond rating and Indonesia market interest rate. To find out the interest rate for each debt ratio, this bond rating interest rate has to be readjust with the previous interest rate. The first column in table 4.5 is debt ratio as the scenario and the next column is the amount of debt based on its scenario.

Table 4.5 Cost of Debt EXCL 2009

Debt Ratio (%)	Debt (million IDR)	Interest Rate on Debt (%)	Interest Expense (million IDR)	EBIT (million IDR)	Interest Coverage	Bond Rating	Adjusted Tax Rate (%)	Cost of Debt (%)
0	-	12.20	-	2,463,844	-	AAA	28	0.00
10	1,979,135	12.72	251,746	2,463,844	9.79	AA	28	9.16
20	3,958,270	14.80	585,824	2,463,844	4.21	BBB	28	10.66
30	5,937,405	16.36	971,359	2,463,844	2.54	B+	28	11.78
40	7,916,540	17.40	1,377,478	2,463,844	1.79	B-	28	12.53
50	9,895,675	17.92	1,773,305	2,463,844	1.39	CCC	28	12.90
60	11,874,810	18.44	2,189,715	2,463,844	1.13	CC	28	13.28
70	13,853,945	18.44	2,554,667	2,463,844	0.96	CC	28	13.28
80	15,833,080	18.44	2,919,620	2,463,844	0.84	CC	28	13.28
90	17,812,215	18.96	3,377,196	2,463,844	0.73	C	28	13.65

Adjusted tax rate for each level of debt is needed for the high debt ratio condition where the interest expense exceeds its EBIT. This new tax rate is considered as the new tax benefits for this condition. For EXCL 2009, there is no need to adjust the tax rate because its EBIT can cover the interest expense up to 90% debt ratio. The calculation of adjusted tax rate is following the step below.

1. Maximum tax benefit = EBIT x Tc
2. Adjusted tax rate = Maximum tax benefit / Interest expense

4.5 Cost of Capital Calculation

After obtaining the cost of equity and cost of debt for each level of debt, the next step is calculating weighted average cost of capital by using the equation 2.5. Next, the last calculation in this research is determining the value of the firm based on the equation 2.6. Table 4.6 is the calculation for WACC and value of the firm from XL Axiata (EXCL) 2009.

Table 4.6 Optimal Capital Structure EXCL 2009

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio (%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
11	9.53	89	27.97	25.94	6,839,357
12	9.53	88	28.14	25.91	6,847,196
13	9.91	87	28.32	25.93	6,842,183
14	9.91	86	28.50	25.90	6,849,038

15	9.91	85	28.69	25.88	6,855,906
16	10.28	84	28.89	25.91	6,846,921
17	10.28	83	29.08	25.89	6,852,793
18	10.28	82	29.29	25.86	6,858,676
19	10.28	81	29.49	25.84	6,864,569
20	10.66	80	29.70	25.90	6,850,605
21	10.66	79	29.92	25.88	6,855,492
22	11.03	78	30.15	25.94	6,838,603
23	11.03	77	30.38	25.93	6,842,485
24	11.40	76	30.61	26.00	6,822,711
25	11.40	75	30.85	25.99	6,825,591
26	11.40	74	31.10	25.98	6,828,474
27	11.78	73	31.35	26.07	6,804,869
28	11.78	72	31.62	26.06	6,806,756
29	11.78	71	31.89	26.05	6,808,644

This WACC, 25.84%, is the minimal percentage of cost that XL Axiata need to pay. At this cost, value of the firm is maximal, which is 6,864,569 million rupiah. Furthermore, 19% debt ratio is the optimal debt ratio for EXCL in 2009. Decreasing debt ratio affects firm value to be smaller and so does for additional debt. Thus, to get the maximal value of the firm, this company has to make its capital structure optimal by taking the right proportion of debt. Figure 4.1 and 4.2 describes the optimal debt ratio condition which is consistent with the theory on figure 2.2.

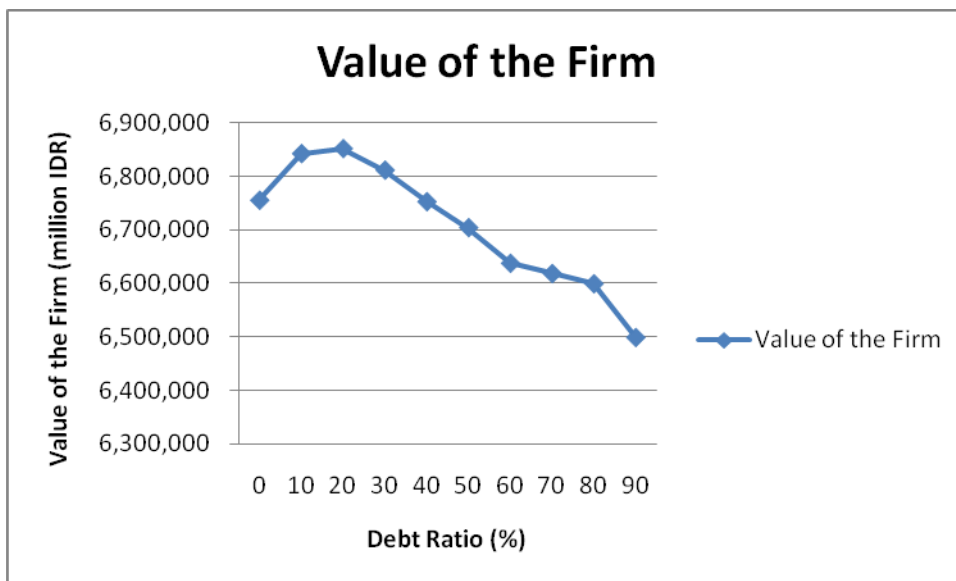


Figure 4.1 Value of the Firm EXCL 2009

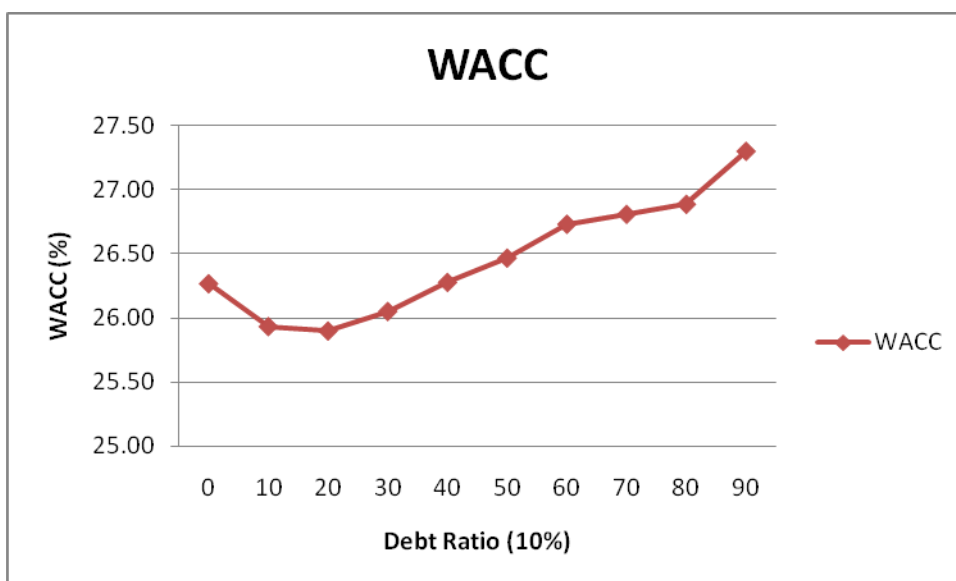


Figure 4.2 Weighted Average Cost of Capital (WACC) EXCL 2009

4.6 Actual and Optimal Capital Structure

After further calculation, the optimal capital structures of all companies every year have been obtained. Next, this optimal capital structures are compared to the actual companies' condition. Table 4.8 below presents this comparison.

Table 4.8 Actual and Optimal Capital Structure

No.	Year	Company Code	Actual Debt Ratio (%)	Actual Value of the Firm (million IDR)	Optimal Debt Ratio (%)	Optimal Value of the Firm (million IDR)	Incremental Value of the Firm (million IDR)
1	2009	BTEL	45	430,393	17	465,547	35,154
2		EXCL	56	6,697,615	19	6,864,569	166,954
3		ISAT	54	8,255,183	12	8,581,613	326,430
4		TLKM	27	45,614,495	99	48,296,000	2,681,505
5	2010	BTEL	35	570,332	1	636,460	66,128
6		EXCL	44	19,718,247	16	20,676,491	958,243
7		ISAT	53	11,656,887	6	12,940,300	1,283,413
8		INVS	0	155,345	60	161,777	6,432
9		TLKM	27	71,863,696	24	72,021,290	157,594
10	2011	EXCL	34	48,532,939	0	60,792,444	12,259,505
11		ISAT	50	22,034,174	0	38,578,266	16,544,093
12		INVS	0	1,903,828	0	1,903,828	-
13		TLKM	18	250,133,618	0	269,813,652	19,680,034

There are some facts that can be summarized according to the table above. First, almost all companies have not reached their optimal capital structure. Only Inovisi Telecom in 2011 which has optimal capital structure. The second, similar with the actual debt ratio, the optimal debt ratio for every companies are different, even for one company but from different period. There are factors that influence these differences. To become optimal, some companies at some period need to increase the debt ratio while the other need to decrease it.

The third, in 2011, optimal capital structure for all companies are in 0% debt ratio. This optimal debt ratio means that it is better for all companies not to increase its debt ratio. There are more explanation about this condition in sub chapter 4.6.1 The last, companies actual condition which are not optimal give significant impact to their value of the firm. There are quite big incremental value if those companies can make their capital structure optimal.

In 2010, Indosat loss its opportunity to maximize value up to more than one trillion rupiah. It is the incremental value that this company should have if it optimizes its capital structure. The optimal debt ratio for Indosat in 2010 according to the table is 6% while its actual ratio is 53%. It means that Indosat is better not to increase its debt amount.

4.7 Factors that Influence Optimal Capital Structure

Capital market condition and earning before interest and tax (EBIT) that can be obtained by the companies are factors that most influence the optimal capital structure. Capital market condition affects cost of equity and EBIT affect cost of debt of the company.

4.7.1 Capital Market Condition

Capital market condition can be interpreted by using market return on Jakarta Stock Exchange (JKSE). This market return is different every year and it influence companies' optimal capital structure. As stated before, market return affect cost of equity of the company that make lower market return result lower cost of equity.

In 2011, according to table 4.1, market return which come from JKSE (Jakarta Stock Exchange) is smaller than in 2009 and 2010. The decreasing of JKSE is effect from global crises that occur in this year. This small market return makes the cost of equity become smaller. The decreasing of cost of equity makes WACC become more minimal when the weight of equity is bigger than debt, because in this situation, cost of debt is bigger than cost of equity. Table 4.10, 4.11, and 4.12 below shows the calculation of optimal capital structure for TLKM in for every year.

Table 4.10 Optimal Capital Structure TLKM 2009

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio (%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0	0.00	100	37.54	37.54	43,354,802
10	8.78	90	39.97	36.85	44,163,599
20	8.78	80	43.01	36.16	45,003,146
30	9.16	76	46.91	35.59	45,730,442
40	9.53	70	52.12	35.09	46,382,433
50	9.91	60	59.42	34.66	46,951,636
60	10.28	50	70.36	34.31	47,431,243
70	10.66	40	88.59	34.04	47,815,322
80	11.40	30	125.05	34.13	47,676,933
90	11.78	20	234.45	34.05	47,800,735
99	11.78	10	2203.55	33.70	48,296,000

Table 4.11 Optimal Capital Structure TLKM 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio (%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0	0	100	23.82	23.82	70,801,563
10	9.15	90	25.27	23.66	71,304,726
20	9.15	80	27.07	23.49	71,815,092
24	9.15	76	27.93	23.42	72,021,290
30	9.54	70	29.39	23.44	71,971,731
40	10.32	60	32.49	23.62	71,414,492
50	10.71	50	36.82	23.76	70,982,115
60	11.10	40	43.32	23.99	70,325,506
70	11.88	30	54.14	24.56	68,685,044
80	12.27	20	75.80	24.98	67,538,601
90	12.27	10	140.77	25.12	67,151,756

Table 4.12 Optimal Capital Structure TLKM 2011

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio (%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0	0	100	6.03	6.03	269,813,652
10	9.15	90	5.98	6.30	258,221,048
20	9.54	80	5.93	6.65	244,679,587
30	10.32	70	5.85	7.19	226,185,620
40	10.71	60	5.76	7.74	210,290,902
50	11.49	50	5.62	8.55	190,212,864
60	11.88	40	5.41	9.29	175,092,062
70	12.27	30	5.07	10.11	160,946,839
80	12.66	20	4.38	11.00	147,860,761
90	13.05	10	2.32	11.98	135,852,129

There is decreasing in percentage cost of equity from 2009 to 2011, while the change in cost of debt is not significant. This condition make the WACC in 2011 lower than in 2010, and make the capital structure in 2011 become optimal at 0% debt ratio.

4.7.2 Earning Before Interest and Tax (EBIT)

By using interest coverage ratio in determining the cost of debt, EBIT is an important factor. A good company with large EBIT have more capability to borrow more from the lender because its default risk is relatively low. Large EBIT make company's interest

coverage ratio higher and this high interest coverage ratio result in lower interest rate. This capability make capital structure optimal at higher debt ratio when market return is normal.

In 2009 for example, when capital market condition relatively normal, Telekomunikasi Indonesia (TLKM) debt ratio is optimal at 99%. It is because it has high EBIT which is 22,5 trillion rupiah. This amount of EBIT is quite large compared to its total debt and equity, and make its interest coverage ratio high up to 99%. This high interest coverage ratio make the cost of debt of TLKM also lower. Looking at table 4.10, cost of debt TLKM with 99% debt ratio is much more lower compared to its cost of equity. Therefore, TLKM in 2009 is optimal in 99% debt ratio.

In 2010 where market condition is relatively normal, there are two companies that have low optimal debt ratio, which are Bakrie Telecom (BTEL) at 1% and Indosat (ISAT) at 6%. From the financial report in 2010, EBIT of BTEL and ISAT are 190 billion rupiah and Rp 3,5 trillion rupiah respectively.

This amount of EBIT for those companies are relatively small if compared with the total capital they need which are 8 trillion rupiah for BTEL and 37.6 trillion rupiah for ISAT. This small EBIT make those companies better to have low debt ratio to maximize their value, because their capability to meet the interest are low, therefore it make their cost of debt higher for higher debt ratio compared to other companies which have higher EBIT. Table 4.13 shows the calculation of optimal capital structure of BTEL in 2010.

Table 4.13 Optimal Capital Structure BTEL 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio (%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0	0.00	100	22.50	22.50	636,078
10	13.44	90	23.83	22.79	627,872
20	16.00	80	25.50	23.60	606,437
30	17.51	70	27.64	24.60	581,734
40	18.00	60	30.50	25.50	561,244
50	18.30	50	34.50	26.40	542,149
60	18.49	40	40.49	27.29	524,310
70	18.63	30	50.49	28.19	507,608
80	18.74	20	70.49	29.09	491,937
90	18.82	10	130.48	29.99	477,204

4.8 Average Optimal Capital Structure for Telecommunication Companies

From table 4.8, almost all the optimal capital structures from telecommunication companies are in the range between 0%-25%. However, there are TLKM 2009 and INVS 2010 which are out of the range with optimal debt ratio 99% and 60%. Therefore, in the calculation of average optimal capital structure, these sample are not included. With 11 samples, table 4.15 summarizes the average by 9% debt ratio. It is an overview of optimal capital structure for companies in telecommunication sector.

Table 4.15 Average Optimal Debt Ratio

No.	Year	Company Code	Optimal Debt Ratio (%)
1	2009	BTEL	17
2		EXCL	19
3		ISAT	12
4	2010	BTEL	1
5		EXCL	16
6		ISAT	6
7		TLKM	24
8	2011	EXCL	0
9		ISAT	0
10		INVS	0
11		TLKM	0
AVERAGE OPTIMAL DEBT RATIO			9

To reach the average optimal capital structure become 9%, some samples need to reduce its debt ratio and other need to enhance this ratio. Reducing debt ratio can be done by decreasing debt capital or by increasing equity capital. Decreasing debt capital without increasing equity capital will result in lower amount of capital and it can make the companies difficult to operate their business. Therefore, increasing equity capital is required in order to reduce debt ratio.

One of the choice to raise the equity capital is by issuing more stock outstanding. Based on Fact Book from IDX (Indonesia Stock Exchange), stocks trading from telecommunication subsector have good performance. Almost all companies have been in the 50 most active stocks from all categories which are trading frequency, trading volume, and trading value.

Inovisi Infracom (INVS) which is the only company that has not been in the 50 list, also has positive growth, such as in trading value. INVS's total trading value is growing rapidly by 26 billion rupiah from 2010 to 74 billion rupiah in 2011. This growth is more than 100%. From this fact, it can be summarized that these companies can raise the equity capital because investors are interested to trade their stocks.

In the other condition, for the companies that need to enhance their debt ratio, they can add their debt capital, or reduce the equity capital. Reducing equity capital without adding debt capital will result the total capital become smaller, and make the companies also difficult to expand their business. In order to increase debt ratio, increasing debt capital is necessary.

The additional debt capital can be obtained by two alternatives which are issuing bond and borrowing from bank. Increasing debt capital is not difficult for the companies who have great credibility in fulfilling the obligations. All companies on this research, except INVS, have good credibility according to data in IDX year 2010. Table 4.16 is the summarize of their rating.

Table 4.16 Company Rating

No.	Company Code	Company Rating
1.	BTEL	A-
2.	EXCL	AA+
3.	ISAT	AA+
4.	TLKM	AAA

These rating makes companies in this sector can attract the investor to give loan or to buy their new issued bonds. Afterward, those companies can have additional debt capital and reach the optimal debt ratio, and then their value of the firm can be improved. The other hand, Inovisi Infracom is not rated by IDX because this company does not have bond outstanding. INVS does not have many debt capital and it has opportunity to issue bonds as additional debt capital. Moreover, with a well growing EBIT and relative low debt capital, INVS has high interest coverage ratio. It means that this company has ability to pay its coupon and attract investor to buy its bonds.

Nevertheless, it is not easy for these companies to change their capital structure. Moreover, based on table 4.17, some companies can have lower value of the firm if they following this average ratio. However for TLKM and INVS which will have lower value if they change their capital structure, and also for other companies which

can not change their capital structure easily, they can use this 9% average as the guideline while choosing the capital structure for funding their new projects.

Table 4.17 Actual Debt Ratio and Average Optimal Debt Ratio

No.	Year	Company Code	Actual Debt	Actual Value of the Firm (million IDR)	AODR (%)	Value of the Firm with AODR (million IDR)	Incremental Value of the Firm	
							(million IDR)	%
1	2009	BTEL	45	430,393	9	475,952	45,560	9.57
2		EXCL	56	6,697,615	9	6,806,091	108,476	1.59
3		ISAT	54	8,255,183	9	8,525,936	270,753	3.18
5	2010	BTEL	35	570,332	9	631,337	61,005	9.66
6		EXCL	44	19,718,247	9	20,605,137	886,889	4.30
7		ISAT	53	11,656,887	9	12,820,910	1,164,023	9.08
9		TLKM	27	71,863,696	9	71,254,088	(609,608)	-0.86
10	2011	EXCL	34	48,532,939	9	57,924,450	9,391,512	16.21
11		ISAT	50	22,034,174	9	35,151,560	13,117,387	37.32
12		INVS	0	1,903,828	9	1,722,905	(180,923)	-10.50
13		TLKM	18	250,133,618	9	261,698,668	11,565,049	4.42

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Every company in telecommunication sector has different capital structure for every year. This actual capital structure results weighted average cost of capital (WACC) and define value of the firm. Unfortunately, after the calculation using cost of capital approach to determine the optimal capital structure for those companies, almost all companies have not reached their optimal. The choice of source of capital affects the cost of capital and value of the company.

Optimal capital structure is determined at debt ratio that have the lowest cost of capital and create highest value of the firm. The condition while actual capital structure of the companies are not optimal make their firm values become not maximal. Their cost of capital are high because of the proportion of debt that they have. The average optimal debt ratio for companies in telecommunication sector listed in Indonesia Stock Exchange is 9%.

Cost of equity is affected by capital market condition which come from return of JKSE. The lower market return make this cost become lower. This factor can not be controlled by the companies. Factor that influence cost of debt is earning before

interest and tax (EBIT). The lower EBIT, the higher cost of debt the company spend. It is factor that company can manage.

5.2 Recommendation

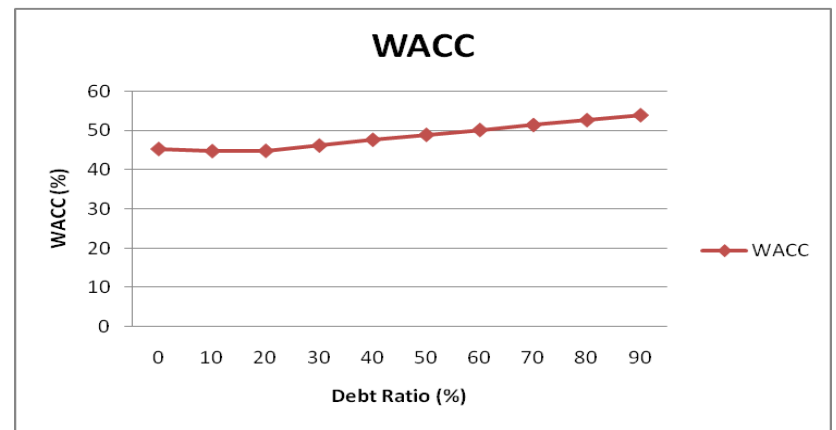
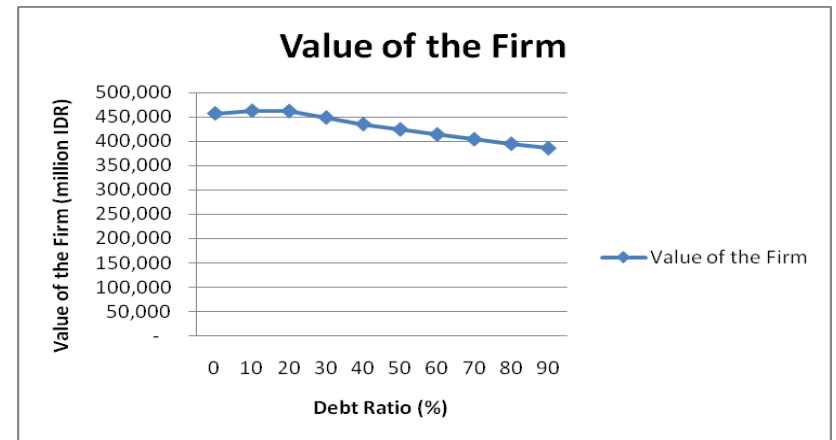
Company should have the right proportion of source of capital to maximize value of the firm. For telecommunication companies in Indonesia whose capital structure have not been optimal, the average optimal debt ratio from this sector which is 9% can be applied as the new proportion of debt. The companies also can use this debt ratio to choose the source of financing for their new projects.

As mentioned before, EBIT is factor that influence company's cost of debt and can be managed. Therefore, to have lower cost of debt, company have to it EBIT by increasing sales and decreasing operational cost. Also, because cost of equity is affected by market condition, companies should consider about this factor before determine the proportion of capital.

APPENDIX

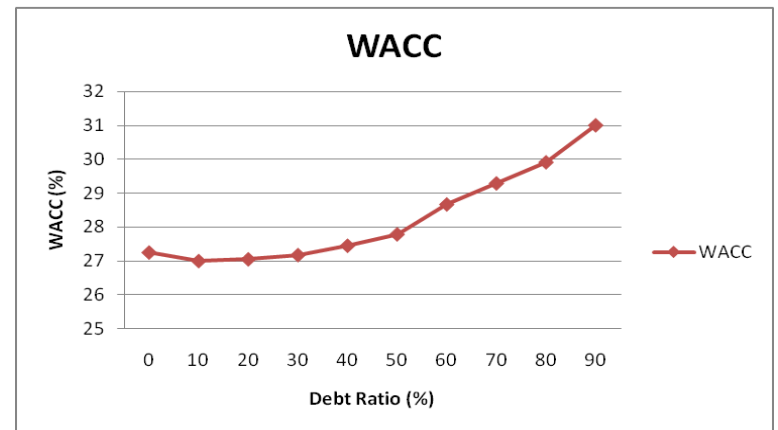
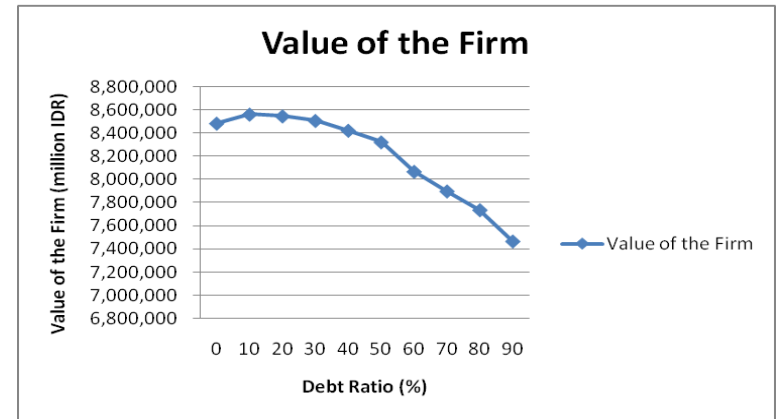
OPTIMAL CAPITAL STRUCTURE BTEL 2009

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
3	9.53	97	46.24	45.13	460,093
4	10.28	96	46.53	45.08	460,637
5	10.66	95	46.83	45.02	461,220
6	11.40	94	47.14	45.00	461,498
7	11.78	93	47.46	44.96	461,891
8	12.15	92	47.78	44.93	462,208
9	12.15	91	48.11	44.87	462,795
10	12.53	90	48.44	44.85	462,997
11	12.53	89	48.79	44.80	463,548
12	12.53	88	49.14	44.74	464,099
13	12.90	87	49.50	44.74	464,147
14	12.90	86	49.87	44.69	464,662
15	13.28	85	50.24	44.70	464,593
16	13.28	84	50.63	44.65	465,069
17	13.28	83	51.02	44.61	465,547
18	13.50	82	51.53	44.69	464,714
19	13.76	81	52.08	44.80	463,543



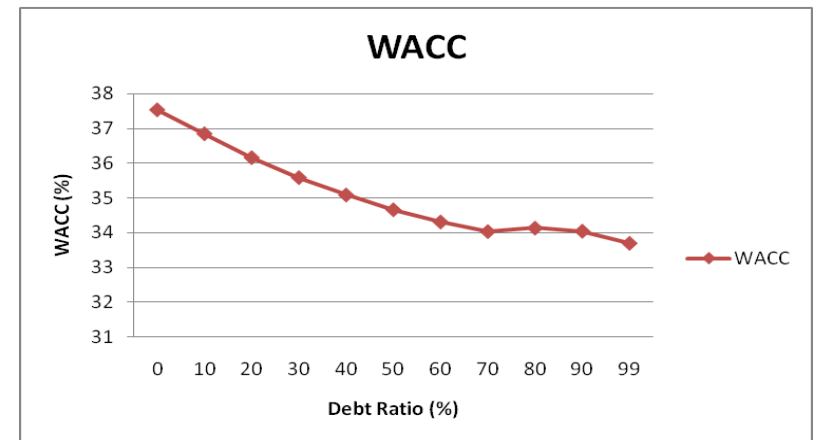
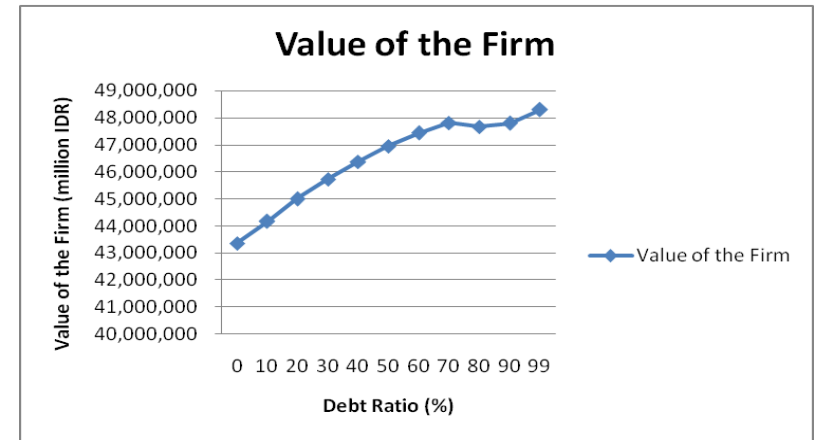
OPTIMAL CAPITAL STRUCTURE ISAT 2009

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
2	8.78	98	27.55	27.18	8,512,181
3	8.78	97	27.70	27.14	8,524,715
4	8.78	96	27.86	27.10	8,537,286
5	8.78	95	28.02	27.06	8,549,894
6	9.16	94	28.18	27.04	8,555,427
7	9.53	93	28.35	27.03	8,558,594
8	9.53	92	28.52	27.00	8,568,888
9	9.91	91	28.69	27.00	8,568,500
10	10.28	90	28.87	27.01	8,565,736
11	10.28	89	29.05	26.98	8,573,667
12	10.28	88	29.23	26.96	8,581,613
13	10.66	87	29.42	26.98	8,574,079
14	11.03	86	29.61	27.01	8,564,183
15	11.03	85	29.81	26.99	8,569,734
16	11.40	84	30.01	27.04	8,556,292
17	11.40	83	30.22	27.02	8,560,646
18	11.78	82	30.44	27.08	8,543,687
19	11.78	81	30.65	27.07	8,546,846



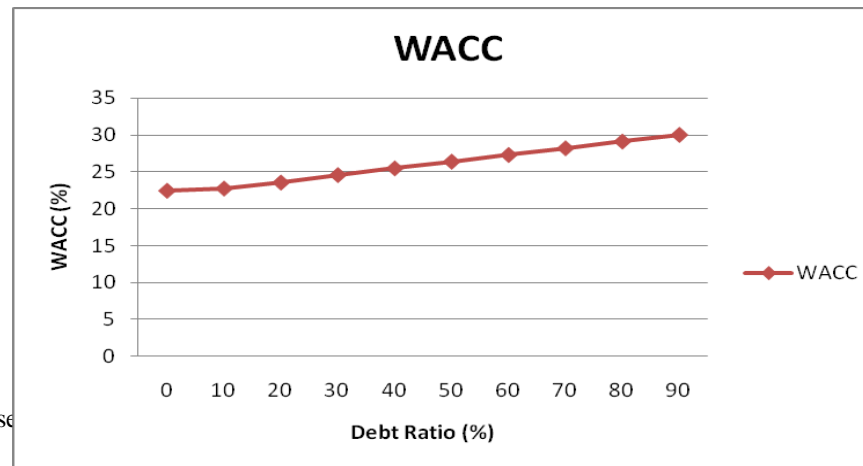
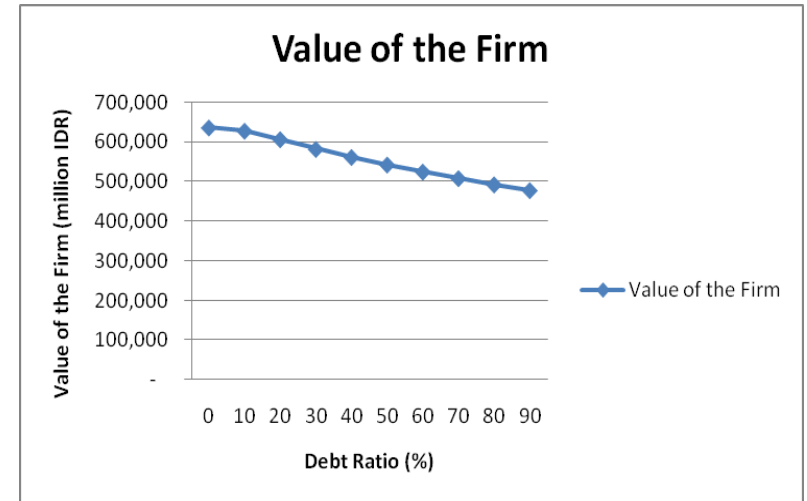
OPTIMAL CAPITAL STRUCTURE TLKM 2009

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
70	10.66	30	88.59	34.04	47,815,322
75	11.03	25	103.17	34.07	47,772,265
80	11.40	20	125.05	34.13	47,676,933
85	11.40	15	161.52	33.92	47,975,859
86	11.40	14	171.94	33.88	48,036,095
87	11.40	13	183.96	33.84	48,096,482
88	11.40	12	197.98	33.79	48,157,021
89	11.40	11	214.56	33.75	48,217,712
90	11.78	10	234.45	34.05	47,800,735
91	11.78	9	258.76	34.01	47,855,263
92	11.78	8	289.14	33.97	47,909,914
93	11.78	7	328.21	33.93	47,964,691
94	11.78	6	380.31	33.89	48,019,593
95	11.78	5	453.24	33.85	48,074,621
96	11.78	4	562.63	33.81	48,129,775
97	11.78	3	744.96	33.77	48,185,056
98	11.78	2	1109.60	33.74	48,240,464
99	11.78	1	2203.55	33.70	48,296,000



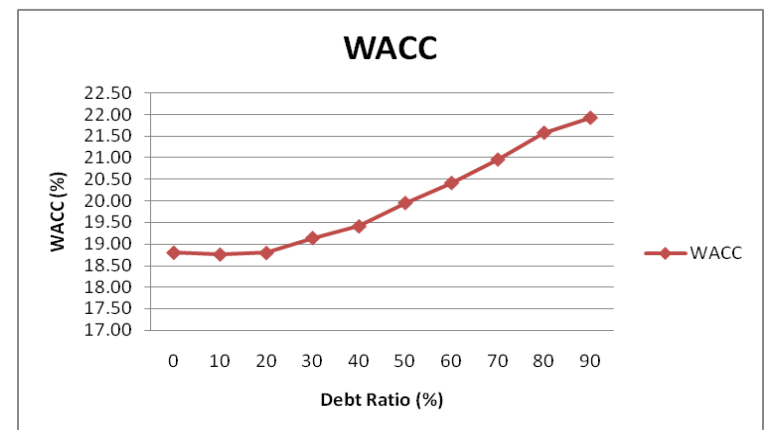
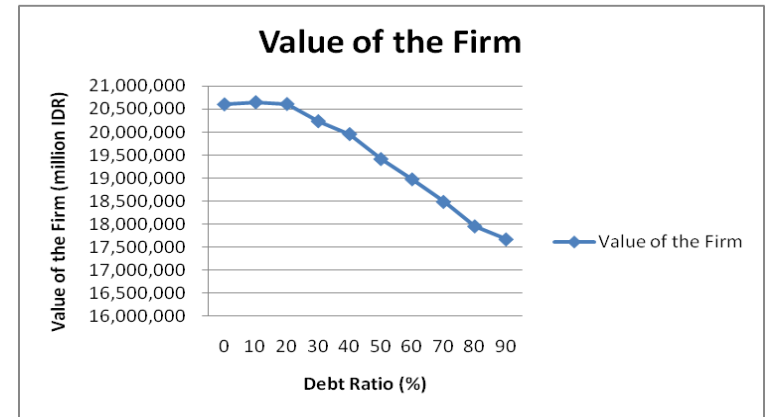
OPTIMAL CAPITAL STRUCTURE BTEL 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	22.50%	22.50%	636,078
1%	9.15%	99%	22.62%	22.48%	636,460
2%	9.93%	98%	22.74%	22.49%	636,401
3%	10.71%	97%	22.87%	22.50%	635,900
4%	11.10%	96%	23.00%	22.52%	635,400
5%	12.27%	95%	23.13%	22.59%	633,585
6%	12.66%	94%	23.26%	22.63%	632,434
7%	12.66%	93%	23.40%	22.65%	631,831
8%	13.05%	92%	23.54%	22.70%	630,361
9%	13.05%	91%	23.68%	22.73%	629,654



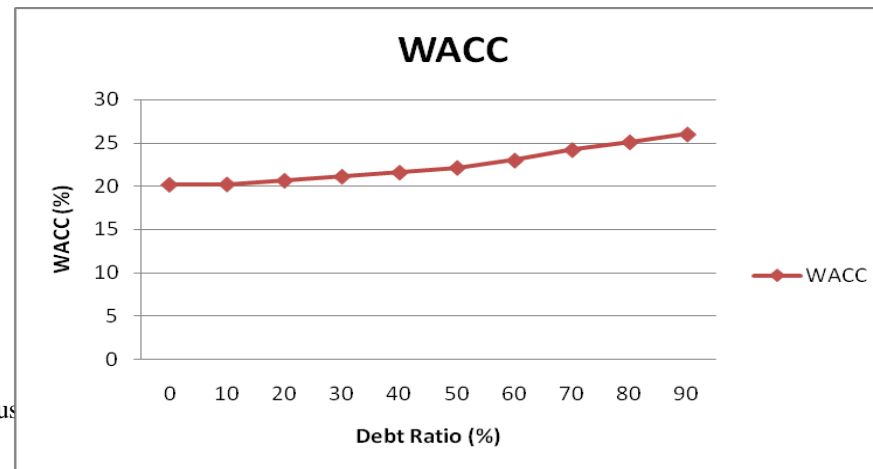
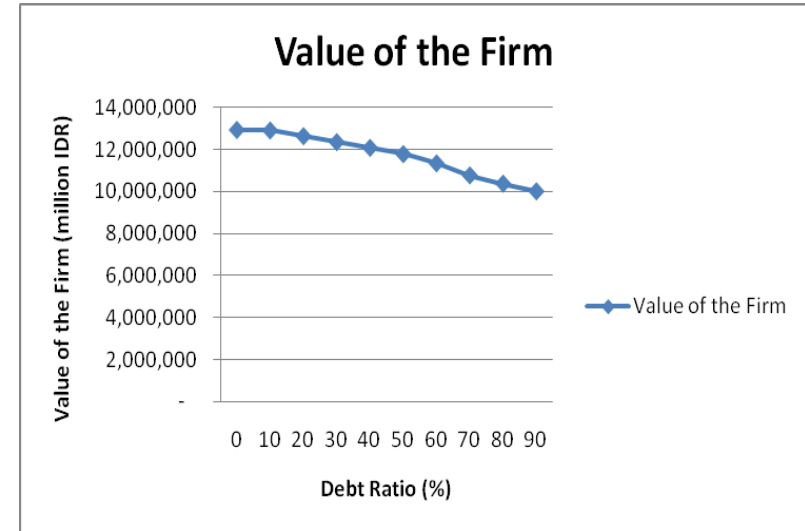
OPTIMAL CAPITAL STRUCTURE EXCL 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
2	9.15	98	18.99	18.79	20,610,979
3	9.15	97	19.09	18.79	20,615,644
4	9.15	96	19.19	18.78	20,620,312
5	9.15	95	19.29	18.78	20,624,982
6	9.15	94	19.39	18.78	20,629,654
7	9.15	93	19.50	18.77	20,634,328
8	9.15	92	19.60	18.77	20,639,004
9	9.15	91	19.71	18.76	20,643,683
10	9.15	90	19.83	18.76	20,648,363
11	9.15	89	19.94	18.75	20,653,046
12	9.15	88	20.06	18.75	20,657,731
13	9.15	87	20.18	18.75	20,662,417
14	9.15	86	20.30	18.74	20,667,106
15	9.15	85	20.43	18.74	20,671,797
16	9.15	84	20.56	18.73	20,676,491
17	9.54	83	20.69	18.80	20,608,233
18	9.54	82	20.83	18.79	20,608,620
19	9.54	81	20.97	18.79	20,609,008



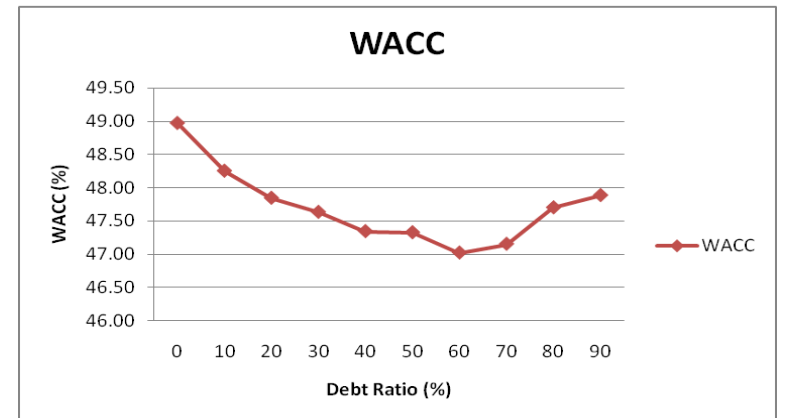
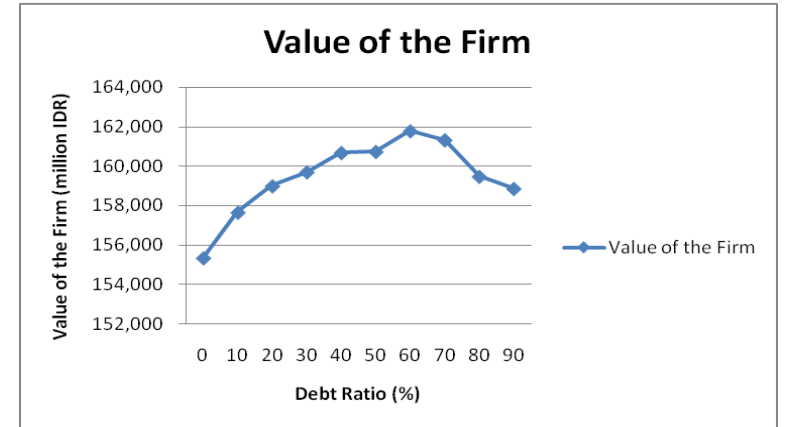
OPTIMAL CAPITAL STRUCTURE FOR ISAT 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	20.18%	20.18%	12,910,669
1%	9.15%	99%	20.28%	20.17%	12,915,598
2%	9.15%	98%	20.39%	20.17%	12,920,531
3%	9.15%	97%	20.50%	20.16%	12,925,468
4%	9.15%	96%	20.61%	20.15%	12,930,408
5%	9.15%	95%	20.72%	20.14%	12,935,352
6%	9.15%	94%	20.84%	20.13%	12,940,300
7%	9.54%	93%	20.95%	20.15%	12,927,717
8%	9.93%	92%	21.07%	20.18%	12,910,166
9%	9.93%	91%	21.20%	20.18%	12,910,103



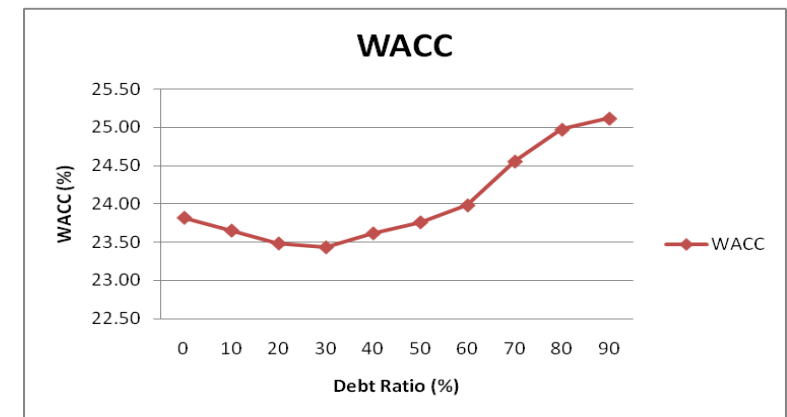
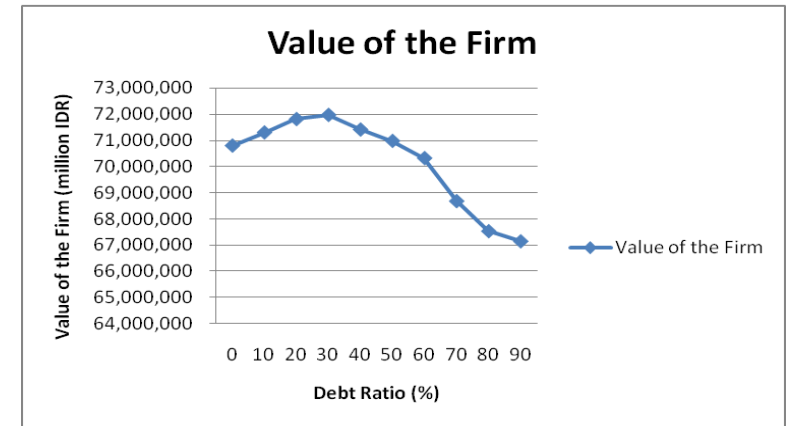
OPTIMAL CAPITAL STRUCTURE FOR INVS 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
52	13.83	48	83.48	47.26	160,956
53	13.83	47	84.89	47.23	161,068
54	13.83	46	86.36	47.20	161,180
55	13.83	45	87.90	47.16	161,292
56	13.83	44	89.51	47.13	161,405
57	13.83	43	91.20	47.10	161,518
58	13.83	42	92.96	47.06	161,630
59	13.83	41	94.81	47.03	161,743
60	13.87	40	96.75	47.02	161,777
61	13.94	39	98.79	47.03	161,732
62	14.02	38	100.94	47.05	161,686
63	14.09	37	103.21	47.06	161,641
64	14.15	36	105.60	47.07	161,596
65	14.22	35	108.13	47.09	161,550
66	14.28	34	110.80	47.10	161,505
67	14.35	33	113.64	47.11	161,460
68	14.41	32	116.66	47.13	161,414
69	14.46	31	119.87	47.14	161,369



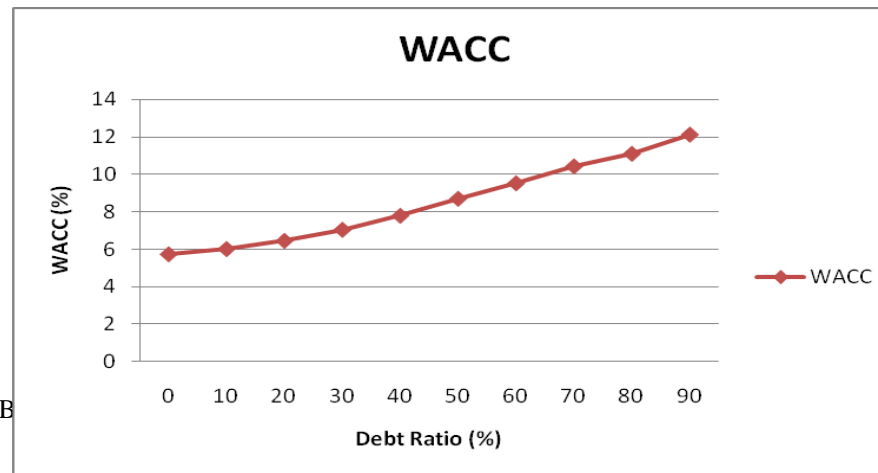
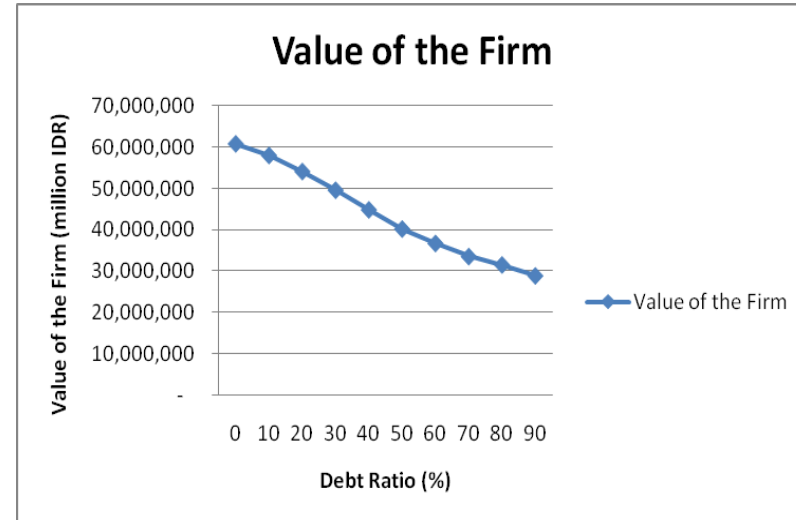
OPTIMAL CAPITAL STRUCTURE TLKM 2010

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
22	9.15	78	27.49	23.45	71,918,043
23	9.15	77	27.71	23.44	71,969,630
24	9.15	76	27.93	23.42	72,021,290
25	9.54	75	28.16	23.50	71,774,024
26	9.54	74	28.39	23.49	71,813,479
27	9.54	73	28.63	23.48	71,852,976
28	9.54	72	28.88	23.46	71,892,518
29	9.54	71	29.13	23.45	71,932,102
30	9.54	70	29.39	23.44	71,971,731
31	9.93	69	29.66	23.55	71,641,642
32	9.93	68	29.94	23.54	71,669,074
33	9.93	67	30.22	23.53	71,696,526
34	9.93	66	30.52	23.52	71,724,000
35	9.93	65	30.82	23.51	71,751,494
36	9.93	64	31.13	23.50	71,779,010
37	9.93	63	31.46	23.49	71,806,546
38	10.32	62	31.79	23.63	71,383,594
39	10.32	61	32.13	23.63	71,399,039



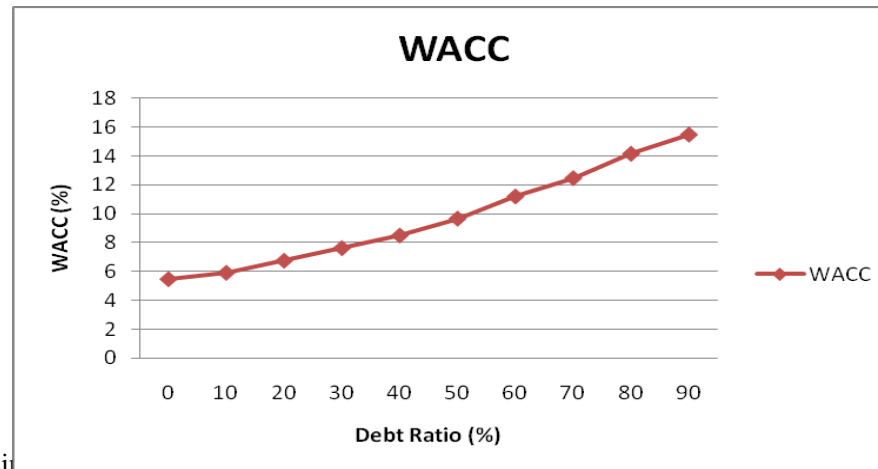
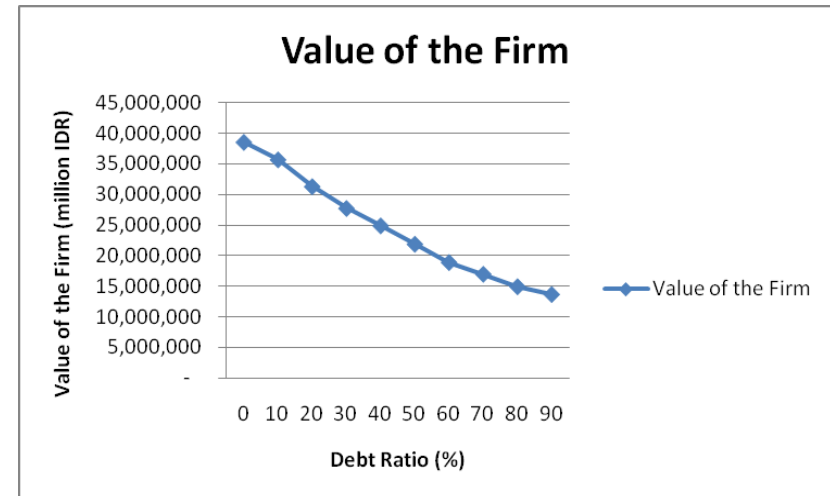
OPTIMAL CAPITAL STRUCTURE FOR EXCL 2011

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	5.76%	5.76%	60,792,444
1%	9.15%	99%	5.75%	5.78%	60,500,603
2%	9.15%	98%	5.74%	5.81%	60,211,551
3%	9.15%	97%	5.74%	5.84%	59,925,248
4%	9.15%	96%	5.73%	5.87%	59,641,655
5%	9.15%	95%	5.72%	5.89%	59,360,733
6%	9.15%	94%	5.72%	5.92%	59,082,446
7%	9.15%	93%	5.71%	5.95%	58,806,755
8%	9.15%	92%	5.70%	5.98%	58,533,625
9%	9.15%	91%	5.69%	6.01%	58,263,021



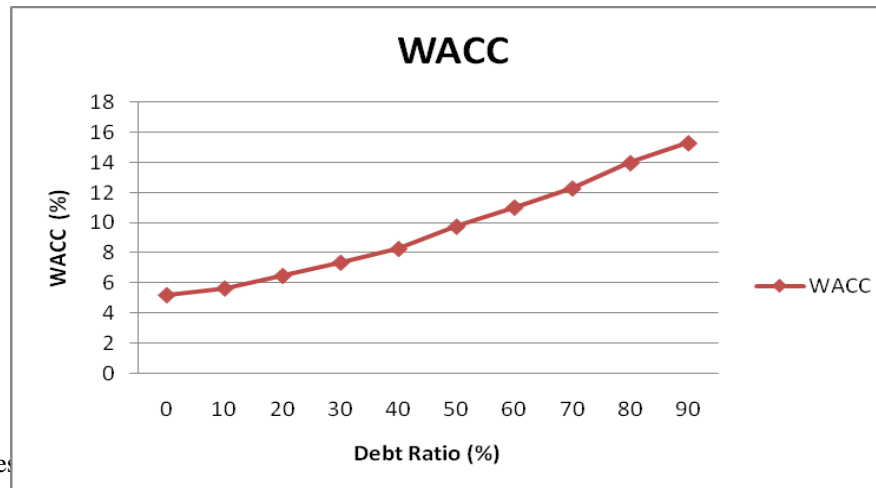
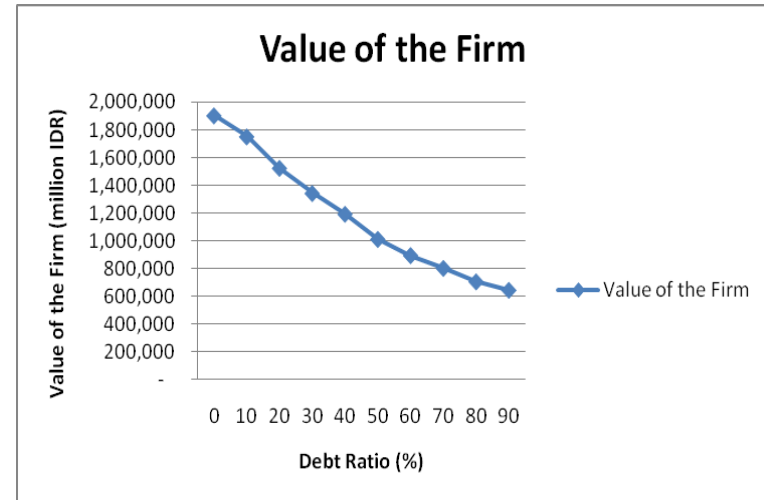
OPTIMAL CAPITAL STRUCTURE ISAT 2011

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	5.50%	5.50%	38,578,266
1%	9.15%	99%	5.49%	5.53%	38,380,191
2%	9.15%	98%	5.49%	5.56%	38,184,140
3%	9.15%	97%	5.48%	5.59%	37,990,082
4%	9.15%	96%	5.47%	5.62%	37,797,986
5%	9.54%	95%	5.46%	5.66%	37,478,335
6%	9.54%	94%	5.45%	5.70%	37,265,832
7%	9.93%	93%	5.44%	5.76%	36,879,956
8%	10.32%	92%	5.43%	5.82%	36,453,092
9%	10.32%	91%	5.42%	5.86%	36,203,796



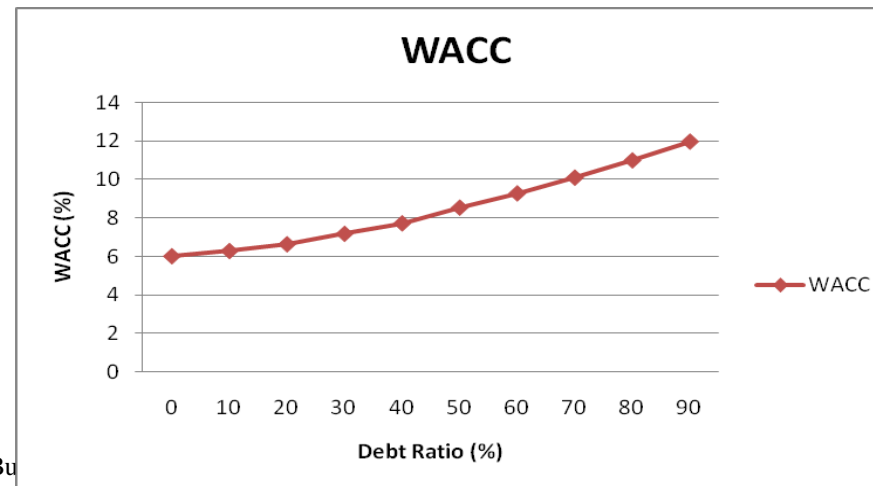
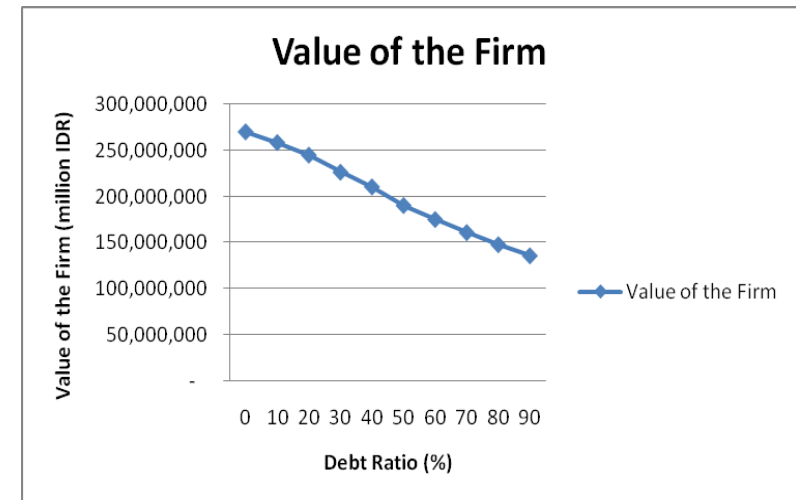
OPTIMAL CAPITAL STRUCTURE INVS 2011

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	5.18%	5.18%	1,903,828
1%	9.15%	99%	5.17%	5.21%	1,893,148
2%	9.15%	98%	5.16%	5.24%	1,882,587
3%	9.15%	97%	5.14%	5.26%	1,872,143
4%	9.15%	96%	5.13%	5.29%	1,861,815
5%	9.54%	95%	5.12%	5.34%	1,844,841
6%	9.93%	94%	5.11%	5.40%	1,825,534
7%	9.93%	93%	5.10%	5.44%	1,813,107
8%	10.32%	92%	5.09%	5.50%	1,790,640
9%	10.71%	91%	5.07%	5.58%	1,766,251



OPTIMAL CAPITAL STRUCTURE TLKM 2011

Debt Ratio (%)	Cost of Debt (%)	Equity Ratio(%)	Cost of Equity (%)	WACC (%)	Value of the Firm (million IDR)
0%	0.00%	100%	6.03%	6.03%	269,813,652
1%	9.15%	99%	6.03%	6.06%	268,607,762
2%	9.15%	98%	6.02%	6.08%	267,412,602
3%	9.15%	97%	6.02%	6.11%	266,228,031
4%	9.15%	96%	6.01%	6.14%	265,053,908
5%	9.15%	95%	6.01%	6.17%	263,890,097
6%	9.15%	94%	6.00%	6.19%	262,736,460
7%	9.15%	93%	6.00%	6.22%	261,592,867
8%	9.15%	92%	5.99%	6.25%	260,459,185
9%	9.15%	91%	5.99%	6.27%	259,335,288



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