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WACC Analysis and Applications

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Abstract

This report will explain the methodology used by a listed company to compute the Weighted Average Cost of Capital along with some of its applications. The first part will contain a summary of the process followed by the Moroccan company Marsa Maroc in order to compute its WACC, after being listed in the stock exchange. In fact, it provides the framework followed by any listed company in order to evaluate the variable aforementioned. In addition, this report will include a sensitivity analysis and a regression study to show the importance of the WACC. Moreover, the report will have a section dedicated to the evaluation of the company using the WACC and DCF method.

Keywords
WACC, listed company, sensitivity analysis,regression analysis

1.WACC computation for a listed company
1.1.Definition and importance of the WACC

The Weighted average cost of capital commonly known as WACC, is a computation of the cost of capital of a firm in which all the components of the capital are proportionally weighted. Those components are: long-term debt, preferred stock, bonds in addition to common stock. The WACC of firm is proportionally related to the return on equity and the beta. Therefore, if these two components increase or decrease, the WACC follows the same behavior. We have also to mention that a higher WACC denotes a higher risk and a lower valuation (R, 2015).

To understand more the meaning and usage of the WACC, one should understand the capital structure of a company. In other words, this latter also known as capital funding of a firm is usually made up of two main parts: equity and debt. In each company, we may have equity holders and lenders, and both of them needs a return on their contribution. The lenders expect a return on debt and shareholders expect a return on equity. We can say that the weighted average cost of capital is the opportunity cost of investing in a company. The WACC can also be considered as the weighted average of the sources of money in a firm. One may argue that debts and equity are not the only source of money, any company generates revenues from operations and services, however, they do not consider the fact that part of these revenues is used to pay out debts and the other part is given back to equity holders as dividends. Therefore, the source of money for any firm is restricted to debt and equity only.

Let us take an example, I f we have a company X that has 6% as return on equity and 8% as return on debt, its weighted average cost of capital is 7% (Coursera).

1.2.WACC computation CAPM method

There are different ways to assess the weighted average cost of capital of a firm. On one hand, public companies and governmental ones, which are not listed in the stock market, they follow the benchmark financial method known in French as the "method des comparables boursiers" that is going to be explored in the following parts of the report. On the other hand, private listed companies usually opt for the CAPM[1] method. So what does CAPM stand for?

Before explaining the CAPM, we need first to go through the steps followed to find the WACC, because the CAPM is not the whole process. It is, in fact, one-step of a long procedure but very essential though.
To compute the WACC we have to compute separately some financial returns or rates. One of them is the return on equity (ROE) also known as cost of equity. The computation of this latter is where we need the CAPM method.

Step 1: the general formula of the WACC

The general formula of the WACC is composed of different factors that are computed separately. One of this variables require the CAPM model, the other ones are estimated differently.
The weighted average cost of capital is computed using the following formula:

$$WACC = ROE \times \frac{V_E}{V_E + V_D} + ROD \times (1 - Tax) \times \frac{V_D}{V_E + V_D}$$

Where ROE is the return on equity, ROD[2] is the return on debt, VE is the market value of equity, and VD is the market value of debt.

Step 2: Return on equity/ CAPM

To estimate the ROE, CAPM method is used. Capital Asset Pricing Model commonly known as CAPM, is a business model used to estimate the cost of equity, which is a fundamental factor of the WACC formula. Indeed, the cost of equity is the minimum rate of return expected by the owners or the contributors on the capital, from the profit of the company. In other words, this rate is what the stockholder is waiting as return from their investment. CAPM method is based on two rates: the risk free rate and risk premium, both rates depend on the risk of the asset represented by the change in share price, and the total risk of the market illustrated by the change in the market price. These two rates are related by the CAPM formula as follow:

$$R_i = R_F + \beta_i (R_M - R_F)$$

Where Ri is the return on security, Rf is the risk free, Rm is the return of the market, and βi is the equity beta. The difference Rm-Rf is known as the market risk premium.
The equity beta also known as levered beta is computed by using the ratio of the covariance between the daily (weekly, monthly, annually) share price return and the market index return, over the variance of the market return.

$$\beta_i = \frac{Cov(R_i, R_M)}{Var(R_M)}$$

The equity beta is then used to compute the WACC as shown in the first equation. The computation of the equity beta may sometimes be very hard, especially for private companies in emergent market. In fact, the observation of the equity beta may be hindered by a shortage of historical data. In this case, the equity beta is estimated using the benchmark method, which is based on the average of betas of different listed

[1] CAPM: Capital Asset Pricing Model
[2] ROD: Return on Debt

firms. The benchmark method requires a consideration of the capital structure of the company, for the list of firms used may have different capital structures. So to correct this alteration another formula is used:

$$\beta_{unlevered} = \frac{\beta_{equity}}{1 + (1 - T) \times \frac{V_D}{V_E}}$$

This unlevered beta is computed for every company used in the benchmark computation, and then the average of the unlevered beta is used as the equity beta.

Step 3: Return on debt

The return on debt is "the minimum rate at which the company could raise new funds on the debt market"(Jenter, 2003).The ROD can be computed in several methods; the easiest one is by taking the ratio of the total interest expenses over the total financial debts of the firm at the beginning of any period. The method afore mentioned is easy; however it is not the most accurate, because this estimation is based on the historical data. It does not take into account the forthcoming debts. Therefore, companies prefer to use the benchmark method for companies with similar credit rates and then take the average cost of debts to get a more accurate estimation. Another simple method of estimation is to use the yield of debt securities if the company has publicly traded ones. If it is not the case, the firm may choose between the two previous methods.

Step 4: Capital structure

Capital structure also known as the market gearing is the two sources of money that the company uses to finance its operating activities: mainly debt and equity. The capital structure is computed by taking the ratio market value of debt to market value of equity. The capital structure usually causes mistakes in the WACC computation, as the ratio is used in the estimation of the equity beta. The error that can be committed is the use of accounting values of debt and equity instead of the market values. In other words, to estimate the market gearing one should use the market values not the ones expressed in the balance sheet. For the debt value, it should be exempted from any cash or cash equivalents (Mabrouk).
After computing all those variables previously mentioned, we gather them in one formula to get the weighted average cost of capital, which is then used in evaluating the company's performance and other financial analysis.

1.3.WACC estimation for CTM

To apply the procedure explained previously, the case of CTM is chosen, which is one of the leading Moroccan companies in the field of logistics. The reason behind this choice is the fact that Marsa Maroc is a newly listed company, so the necessary data needed to compute the WACC is not enough. Moreover, CTM was chosen because it works in the same field as Marsa Maroc and it is part of the same market (Moroccan market). To conduct WACC estimation, the steps aforementioned were followed with some slight modifications.

- First, the Historical Data is imported from the financial website "investing.com"(CTM). The data uploaded is the price share of CTM and MADEX[3] of Morocco between the year 2011 and 2015. The data used is on a monthly basis as shown in the following snapshot:
- The following step is to compute the change in both the share price known as the capital gain and the change in the MADEX values using the formula $= \frac{final\ value - initial\ value}{initial\ value}$ to get the following results. This step displays how the two variables change through the months of the study.

Date	Share Price	Madex

[3] MADEX: Moroccan Most Active Shares Index

1-Dec-15	419	7255.21	1.002392	1.022872
1-Nov-15	418	7421.15	1	0.997031
1-Oct-15	418	7399.12	1.01827	1.006295
1-Sep-15	410.5	7445.7	0.92455	1.026418
1-Aug-15	444	7642.4	0.997753	1.04458
1-Jul-15	445	7983.1	1.015982	0.981741
1-Jun-15	438	7837.34	1.108861	1.014042
1-May-15	395	7947.39	1.043593	1.024923
1-Apr-15	378.5	8145.46	0.94625	1.034738
1-Mar-15	400	8428.42	1.162791	1.017644
1-Feb-15	344	8577.13	1.011765	0.976913
1-Jan-15	340	8379.11	1.046154	0.93599
1-Dec-14	325	7842.76	1.015625	1.040275
1-Nov-14	320	8158.63	0.969697	1.040032

Figure1. Share Price and Madex monthly data

- After that, these two rows are used to annualize the life cycle. This method is used to make all the data coherent and equivalent in time, because we cannot use the data separately for every year, all the numbers should be discounted to one single rate. We get the following results by using this Excel formula =PRODUCT (D2:D60) ^ (12/COUNT (D2:D60))

1-Mar-11	318	9946.89	1.096552	1.052579
1-Feb-11	290	10469.89	1.013986	0.983092
1-Jan-11	286	10292.87		
			1.080766	1.073723
			8.08%	7.37%

Figure 2. Return on the market share price and the return on the market index

- Then, from the same financial website the interest expenses values were imported along with the long term debt of CTM in order to compute the cost of debt/ROD using the equation: $cost\ of\ debt = \frac{Interest\ Expense}{Total\ Debt}$

	2012	**2013**	**2014**	**2015**
Interest Expense	8900000	8100000	8210000	9790000
Long Term Debt	145620000	191470000	169820000	165680000
Short term Debt	-	-	-	-
Cost of Debt	6.11%	4.23%	4.83%	5.91%

Figure 3. Cost of Debt computation

- Afterward, the equity beta is computed using the equation shown in the previous part and the market value of both share price return and the market index return. The value of beta is then

used to estimate the cost of equity. Separately, the after tax cost of debt that is equal to before-tax cost of debt*(1-tax rate) is computed. The results are the following:

beta	0.030892608
Rf	0.086
cost of equity	0.085620725
Tax rate	0.3118
ATCOD	0.040665608

Figure 4. WACC parameters

- The final step is to estimate the weighted average cost of capital by gathering all the rates and variables already computed.

Total debt	165 680 000,00
Total equity	247 240 000,00
Debt+Equity	412 920 000,00
We	59.88%
Wd	40.12%
WACC	6.76%

Figure 5. The final value of the WACC

The value found is 6.76%. This number is then used to find the value of the company, which is an indicator of the company's performance: the higher the value of the firm the higher its profitability.

1.4.Comparison and discussion

For listed companies, one of the easiest method to use in order to compute the WACC is the CAPM combined with the equity beta along with the other steps explained in previous parts. To use this technique, the company should be first listed in the stock market. It should have a historical data of its price share for at least three fiscal years, the interest expense and total debt of the latest year.

For a public company or a newly listed private company, the previous method is not efficient because there is a lack of historical data. Therefore, and to remedy this shortage of information another method is used.

For the case of Marsa Maroc, it is in fact a newly listed company. It has all the necessary data to estimate the WACC. However, the problem it faces is the lack of historical data, which are needed to compute the equity beta and therefore the return on equity, knowing this latter, is a very essential component in the WACC formula.

To understand more the technique used by Marsa, let us track the following steps:

Step 1: the general formula of the WACC

For the WACC estimation, Marsa Maroc is using the same formula mentioned in previous parts.

$$WACC = ROE \times \frac{V_E}{V_E + V_D} + ROD \times (1 - Tax) \times \frac{V_D}{V_E + V_D}$$

The only difference between Marsa and the other private companies resides in the computation of the parameters of the equation.

Step 2: Computation of the different parameters

- Risk free: the value used for this parameter is based on the return of the Moroccan 10-years maturity treasury bonds, which is 2,99% (Synthesis, 2016).
- Risk premium: the value used corresponds to the risk of the Moroccan market, which is computed using the surveys method that was conducted Attijari Intermediation. The value used is 7.5%.
- The equity beta: the equity beta used by Marsa is impossible to compute using the CAPM method. Therefore, the company uses the benchmark technique. Indeed, the firm choses 5 international companies that work in the harbor sector, which have their beta already estimated using the CAPM. Then, the average of these values is taken as the equity beta for Marsa Maroc. The companies used in the benchmark are DP World from UAE, HHLA from Germany, Luka Koper from Slovenia, ICTSI from Philippines and Cosco Pacific from Hong Kong (2016). The following table shows the values of the equity beta:

Societe	**Pays**	**Beta endette 5 ans**	**Beta desendette 5 ans**
DP World	Emirates Arabes Unis	1.07	1
HLLA	Allemagne	0.79	0.63
Luka Koper	Slovenie	1.14	0.85
ICSTSI	Philippines	1.04	0.81
Cosco Pacific	Hong Kong	1.49	1.15
Beta desendette moyenne			**0.89**

Figure 6. Equity beta for Marsa Maroc

Final step: compute the WACC:

	Marsa Maroc	**TC3PC**	**MINTT**
Taux sans risques	2.99%	2.99%	2.99%
Beta desendette	0.89	0.89	0.89
Gearing Cible	-	16.90%	-
Beta endette	0.89	1.01	0.89
Prime de risqué	7.50%	7.50%	7.50%
Prime de risque Societe	-	-	1%
Cout des fonds Propres	**9.65%**	**10.60%**	**9.65%**
Cout de la dette fiscalise	-	3.29%	-
Cout moyen pondere du capital	**9.65%**	**9.36%**	**10.65%**

Figure 7. Current WACC of Marsa Maroc

1.5.Sensitivity analysis using Excel

After computing the Weighted Average Cost of Capital, the value of this cost is used in conducting many financial analyses. One of them is sensitivity analysis using Excel to see the impact of the change of the WACC and the growth rate on the terminal value.

The terminal value is a very important financial variable. It is a decisive factor in valuating any company, as it is part of the formula to compute the value of the firm using the following equation:

$$\textit{The value of the company} = = \sum_{t=1}^{t=N} \frac{FCFF_t}{(1+WACC)^t} + \frac{Terminal\ Value}{(1+WACC)^N}$$

This equation gives the present value of the firm based on the free cash flows, terminal value and the weighted average cost of capital. The terminal value and the free cash flows are discounted to today using the WACC.

Having the free cash flows for the years 2017, 2018 and 2019 on hand, the terminal value is computed using the Gordon Growth Perpetuity Model that can be summarized in the two following equation:

$$Terminal\ Value = \frac{FCFF_6}{(WACC - Growth\ Rate)}$$

In my analysis, I have chosen the comparison between the results of three years, with four different variations of the WACC and growth rate.

The following snapshots show the results of the sensitivity Analysis:

Step 1: Importing data and computing the terminal value

To conduct this sensitivity analysis, I used the free cash flows provided by Marsa Maroc to the Moroccan Stock Market during its IPO of 2016. Then, I computed the terminal value using the Gordon Growth Perpetuity Model. The result is the following:

Free cash flow		278
WACC		9.65%
Growth rate		6.41%
Terminal Value		8580.247

Figure 8. The terminal value

Step 2: Conducting the sensitivity analysis

Using the wizard what- if Analysis in the data part in Excel, the results were generated automatically, showing the different values that the terminal value can take if we change the values of both the WACC and the Growth Rate. The following snapshot shows the results:

8580.247	9.00%	8.00%	7.00%	6.50%
6%	9266.667	13900	27800	55600
5%	6950	9266.667	13900	18533.33
4%	5560	6950	9266.667	11120
3%	4633.333	5560	6950	7942.857

Figure 9. Sensitivity Analysis

Step 3: Conclusion

After applying the sensitivity analysis to the three years of study, the results show that the terminal value is more affected by the values of free cash flow than it is affected by the WACC and the Growth Rate.
For the year 2017 sensitivity analysis, the free cash flow was 278 MMAD with a WACC of 9.65% and a growth rate of 6.41%, and we got 8580.247MMAD as terminal value. If we change the values of the WACC and the Growth Rate, we get a range of values for the terminal value between 55600 MMAD and 4633 MMAD.

For the year 2018 sensitivity analysis, the free cash flow was 371 MMAD, and we got -371000 as terminal value, with a WACC of 6.31% and a growth rate of 6.41%. If we change the values of the WACC and the Growth rate, we get a range of values for the terminal value between 75200 and 6183.33 MMAD.

For the year 2019 sensitivity analysis, the free cash flow was 341 MMAD, and we got 7429.19 as terminal value, with a WACC of 11% and a growth rate of 6.41%. If we change the values of the WACC and the Growth rate, we get a range of values for the terminal value between 68200 and 5683.33 MMAD. From these results, we can conclude that the free cash flows affect more the terminal value. The greater value of the free cash flows the higher is the range of values of the terminal value. Still, the sensitivity of the terminal value to the WACC and the growth rate cannot be neglected. The higher the difference between the WACC and the rate, the lower is the terminal value. This result is logical, as the terminal value is inversely proportional to the difference between the rates.

2.2.Regression using Excel

From the previous equation of the WACC, we can notice that the WACC is mainly affected by two internal factors, which are equity and debt. The impact of the latters is explained by the CAPM method. However, there are other external features, not related to the firm, influencing the WACC, such as the GDP[4] and the CPI.

To understand further the relationship between the WACC and the aforementioned external factors, a regression analysis is done to forecast the data of the WACC for the upcoming 27 years. The analysis is based on several assumptions since there was a shortage of historical data.

The first assumption is related to the WACC. In fact, I assumed that the value of the WACC used by Marsa Maroc between the years 1986 and 2015 is constant, and is equal to 9.65%, but it decreases in 2016 to reach a value of 6.76%, which I have computed previously. The second assumption is related to the forecasted values of GDP and CPI[5]. Indeed, I computed the average difference between two value of CPI and GDP from year 1986 and 2015, and I used it to increment the values of these two factors for the upcoming 27 years.

Results:

After applying all these assumptions to the data, the regression analysis was conducted using EXCEL. An equation relating the WACC and the two factors is then found. It shows how the WACC behaves when the values of the CPI and GDP change. The equation is the following:

$$WACC=0.09621+0.000109242*CPI-0.00016353*GDP$$

This equation will generate the predicted values of the WAAC for the coming years.

2.3.Evaluating Marsa Maroc using the estimated WACC

In any business institution, the main goal is to make profit, gain money, and establish an organization with good reputation and a high value. Therefore, besides all the activities and tasks that any company does, the latter gives a major importance to the computation of the company's value being one of the best factors that show the success or the failure of a business entity.

1.Method of Enterprise Multiple

The method of Enterprise Multiple is a technique used by many financers to estimate the value of the company. It is in fact a ratio that takes into consideration the debt; therefore, "it looks at the firm as a

[4] GDP: Gross Domestic Profit
[5] CPI: Consumer Price Index

potential acquirer would." The Enterprise Multiple also known as EBITDA[6] multiple is computed following this formula:

$$\text{Enterprise Multiple} = \frac{\text{Enterprise Value}}{\text{EBITDA}}$$

This method is based on the operating performance of the firm, and does not take into consideration financing and investing activities. It focuses in all what is liquid but neglect all the cash equivalent transactions. For Marsa Maroc, it uses the method of benchmark to estimate the Enterprise Multiple. Using this average and the value of the EBITDA shown in the following table, Marsa Maroc has a value comprised between 4959 and 5469 Million MAD.

1.Method of Discounted Cash Flows

The DCF method is a valuation technique based on the free cash flows and the WACC of a company. The DCF gives a dynamic vision of the activities of the firm as it takes into consideration future projections of all the financial structure, including the evolution of the productivity, factors affecting the company and the riskiness of the market (2008). To compute the value of the company using this method, we use the following formula:

$$VOC = \sum_{i=1}^{n} \frac{FCFi}{(1+WACC)^i} + \frac{TV}{(1+WACC)^n}$$ Such that TV is null.

To get the forecasted values of the FCF, Marsa Maroc relied on two financial advisors the cabinet Roland Berger and AFC to do all its future planning. The following table show the values of the upcoming FCF used in the computation of the value of the company. The value that we get using these numbers and a WACC of 9.65% is 3159 Million MAD. This method is the one adopted by Marsa Maroc to compute its value.

2.Discussion

Using the two methods to estimate the value of the company, we get two different numbers for the same company. This difference is because in the method of Entreprise Multiple, the computations are based on the EBITDA, which excludes many costs (Taxes, depreciation, and amortization). Therefore, we get a higher value of the company, compared to the one based on the FCF. After discussing the difference between the two methods. Let us see the impact of the privatization on the value of the company. To do so, I have decided to keep the same values for the FCF, but I will use the WACC of CTM being an old listed company. This choice will give an idea about the new potential value of Marsa Maroc after joining the stock market. The following snapshot explains the steps followed to estimate the new VOC. The first step is to discount the free cash flows using as a rate the WACC of CTM

	Available FCF	n values	Discounted FCF
2016	-48	0	-48
2017	278	1	260.3971525
2018	371	2	325.5043369
2019	341	3	280.2390704
2020	273	4	210.1495124
2021	292	5	210.5426214
2022	292	6	197.2111478
2023	292	7	184.7238177

Figure 10. Discounting Model

[6] EBITDA: Earnings Before Interest, Taxes, Depreciation, and Amortization

The second step is to sum the discounted FCF to get the value of the firm.

Value Of Company	5214.948

We can see that the value we get using the new WACC is greater than the actual one, which is 3159 Million MAD. This result is profitable of the company and it shows that Marsa Maroc has done the right choice by joining the stock market and going private.

Conclusion

The main subject of this paper is the WACC computation for a listed company using the CAPM method. The rate found is used to evaluate Marsa Maroc. A sensitivity analysis is also conducted to see the impact of the two factors, the growth rate, and the WACC, on the terminal value of Marsa Maroc. This analysis came out with a result stating that the free cash flows have a higher influence on the terminal value than the two rates have. In addition, the regression analysis showed that the WACC is also influenced by two external factors, which are the GDP and CPI.

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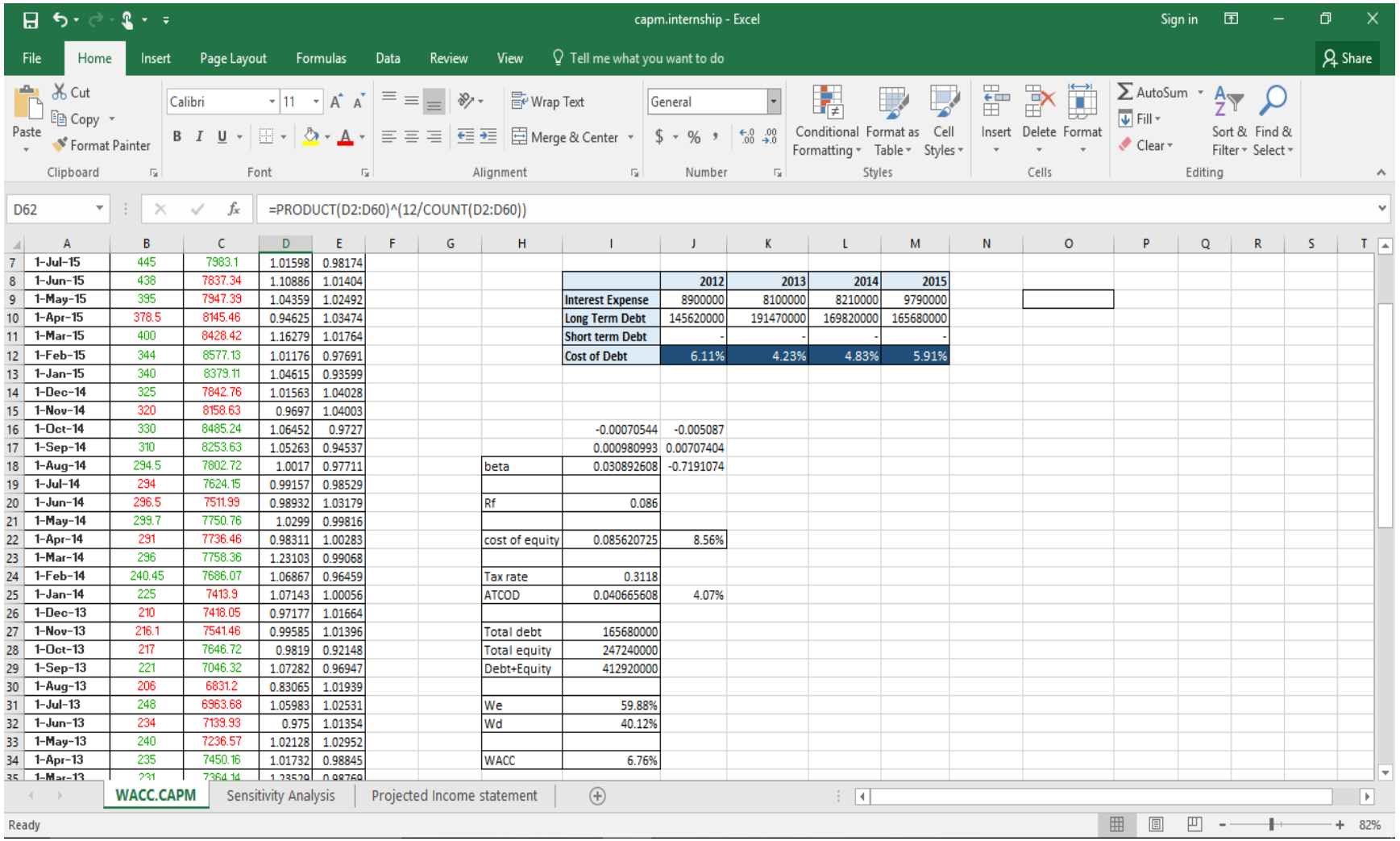
Appendix

-WACC estimation for CTM



	A	B	C	D	E	H	I	J	K	L	M
7	1-Jul-15	445	7983.1	1.01598	0.98174						
8	1-Jun-15	438	7837.34	1.10886	1.01404			2012	2013	2014	2015
9	1-May-15	395	7947.39	1.04359	1.02492		Interest Expense	8900000	8100000	8210000	9790000
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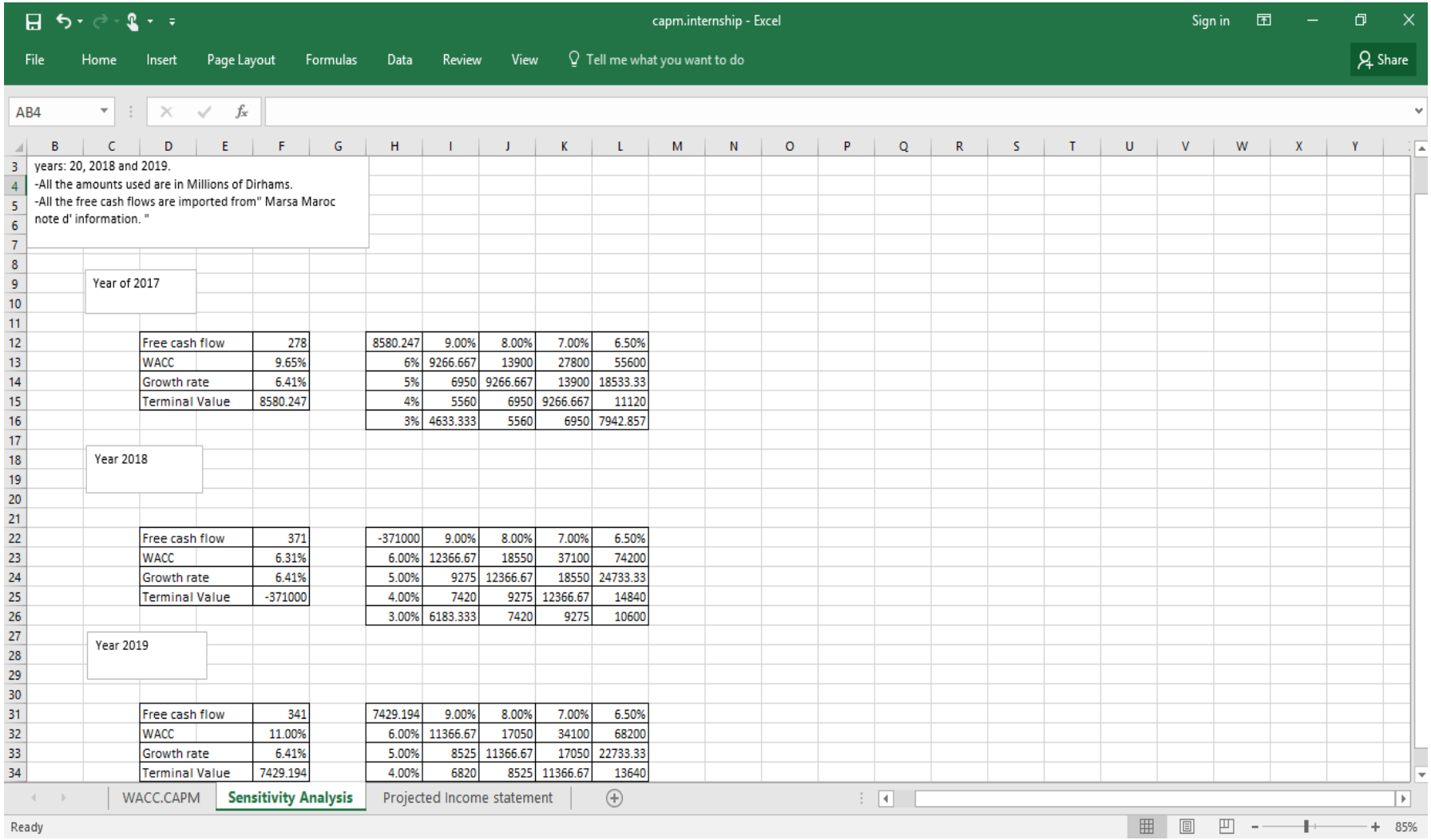
17	1-Sep-14	310	8253.63	1.05263	0.94537		0.000980993	0.00707404			
18	1-Aug-14	294.5	7802.72	1.0017	0.97711	beta	0.030892608	-0.7191074			
19	1-Jul-14	294	7624.15	0.99157	0.98529						
20	1-Jun-14	296.5	7511.99	0.98932	1.03179	Rf	0.086				
21	1-May-14	293.7	7750.76	1.0299	0.99816						
22	1-Apr-14	291	7736.46	0.98311	1.00283	cost of equity	0.085620725	8.56%			
23	1-Mar-14	296	7758.36	1.23103	0.99068						
24	1-Feb-14	240.45	7686.07	1.06867	0.96459	Tax rate	0.3118				
25	1-Jan-14	225	7413.9	1.07143	1.00056	ATCOD	0.040665608	4.07%			
26	1-Dec-13	210	7418.05	0.97177	1.01664						
27	1-Nov-13	216.1	7541.46	0.99585	1.01396	Total debt	165680000				
28	1-Oct-13	217	7646.72	0.9819	0.92148	Total equity	247240000				
29	1-Sep-13	221	7046.32	1.07282	0.96947	Debt+Equity	412920000				
30	1-Aug-13	206	6831.2	0.83065	1.01939						
31	1-Jul-13	248	6963.68	1.05983	1.02531	We	59.88%				
32	1-Jun-13	234	7139.93	0.975	1.01354	Wd	40.12%				
33	1-May-13	240	7236.57	1.02128	1.02952						
34	1-Apr-13	235	7450.16	1.01732	0.98845	WACC	6.76%				
35	1-Mar-13	231	7364.14	1.23529	0.98769						

- Sensitivity analysis using Excel



capm.internship - Excel

years: 20, 2018 and 2019.
-All the amounts used are in Millions of Dirhams.
-All the free cash flows are imported from" Marsa Maroc note d' information. "

Year of 2017

Free cash flow	278	8580.247	9.00%	8.00%	7.00%	6.50%
WACC	9.65%	6%	9266.667	13900	27800	55600
Growth rate	6.41%	5%	6950	9266.667	13900	18533.33
Terminal Value	8580.247	4%	5560	6950	9266.667	11120
		3%	4633.333	5560	6950	7942.857

Year 2018

Free cash flow	371	-371000	9.00%	8.00%	7.00%	6.50%
WACC	6.31%	6.00%	12366.67	18550	37100	74200
Growth rate	6.41%	5.00%	9275	12366.67	18550	24733.33
Terminal Value	-371000	4.00%	7420	9275	12366.67	14840
		3.00%	6183.333	7420	9275	10600

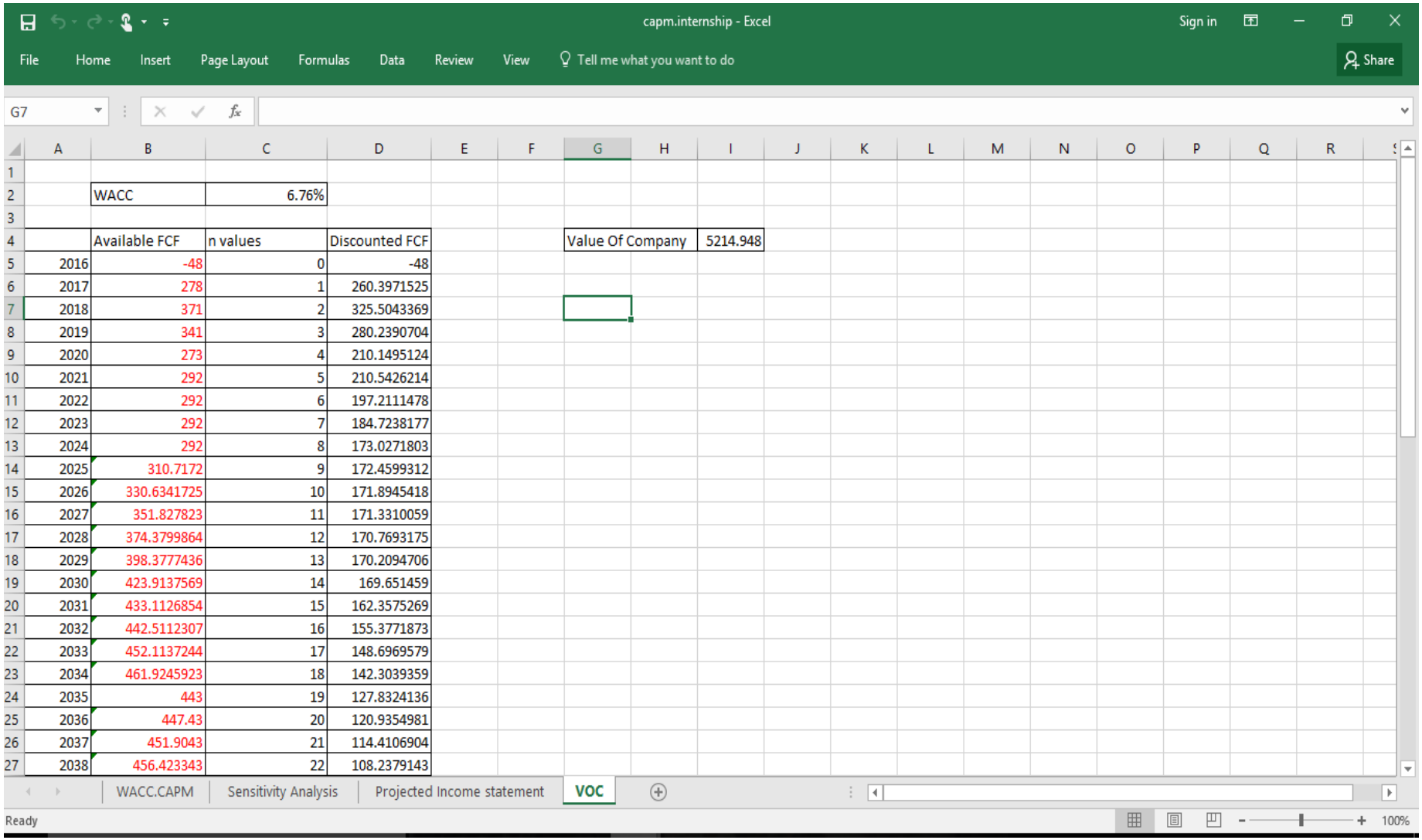
Year 2019

Free cash flow	341	7429.194	9.00%	8.00%	7.00%	6.50%
WACC	11.00%	6.00%	11366.67	17050	34100	68200
Growth rate	6.41%	5.00%	8525	11366.67	17050	22733.33
Terminal Value	7429.194	4.00%	6820	8525	11366.67	13640

WACC.CAPM | Sensitivity Analysis | Projected Income statement

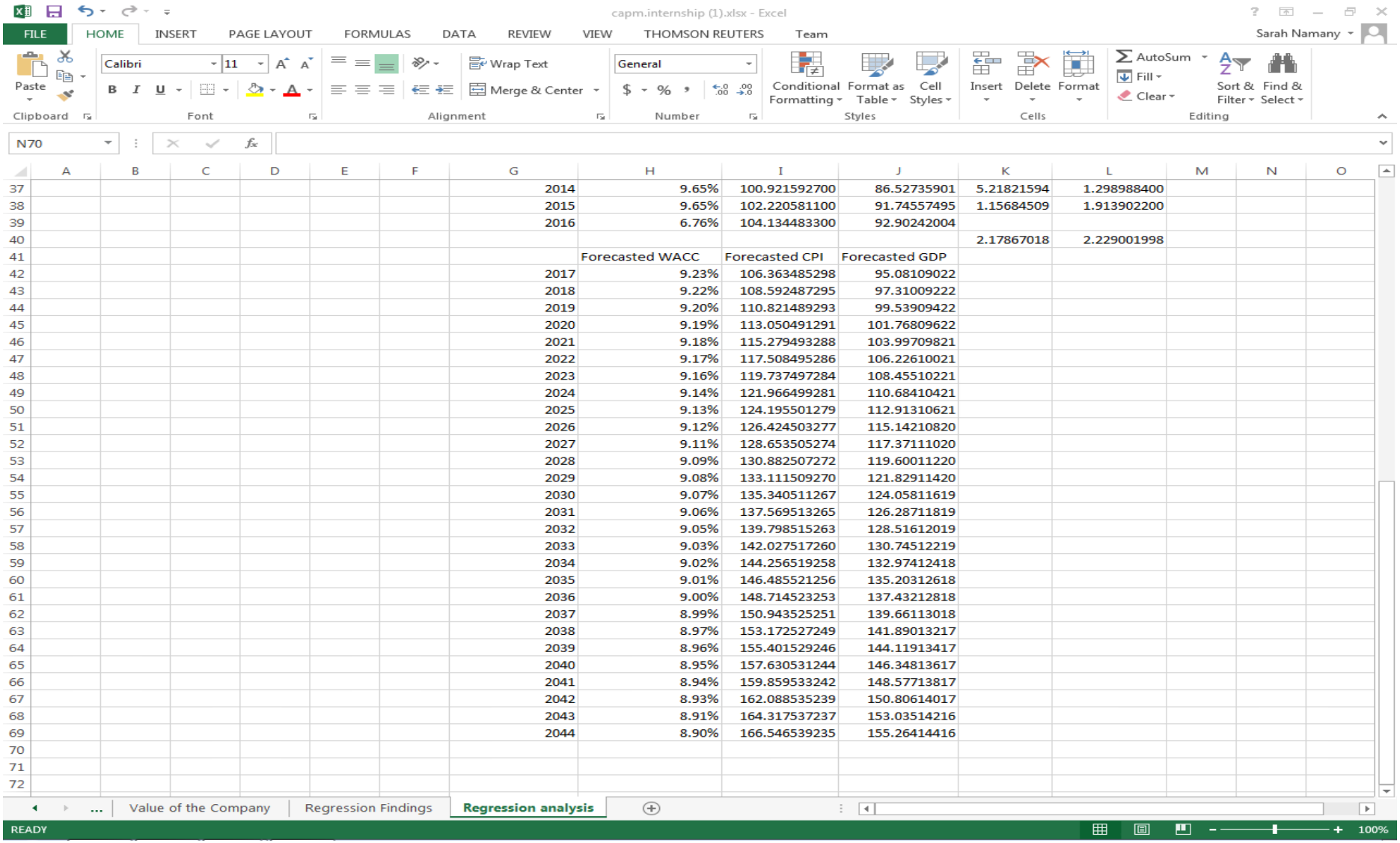
Ready 85%

-Value of the company



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2		WACC	6.76%															
3																		
4		Available FCF	n values	Discounted FCF			Value Of Company		5214.948									
5	2016	-48	0	-48														
6	2017	278	1	260.3971525														
7	2018	371	2	325.5043369														
8	2019	341	3	280.2390704														
9	2020	273	4	210.1495124														
10	2021	292	5	210.5426214														
11	2022	292	6	197.2111478														
12	2023	292	7	184.7238177														
13	2024	292	8	173.0271803														
14	2025	310.7172	9	172.4599312														
15	2026	330.6341725	10	171.8945418														
16	2027	351.827823	11	171.3310059														
17	2028	374.3799864	12	170.7693175														
18	2029	398.3777436	13	170.2094706														
19	2030	423.9137569	14	169.651459														
20	2031	433.1126854	15	162.3575269														
21	2032	442.5112307	16	155.3771873														
22	2033	452.1137244	17	148.6969579														
23	2034	461.9245923	18	142.3039359														
24	2035	443	19	127.8324136														
25	2036	447.43	20	120.9354981														
26	2037	451.9043	21	114.4106904														
27	2038	456.423343	22	108.2379143														

-Regression Analysis:



capm.internship (1).xlsx - Excel

	G	H	I	J	K	L
37	2014	9.65%	100.921592700	86.52735901	5.21821594	1.298988400
38	2015	9.65%	102.220581100	91.74557495	1.15684509	1.913902200
39	2016	6.76%	104.134483300	92.90242004		
40					2.17867018	2.229001998
41		Forecasted WACC	Forecasted CPI	Forecasted GDP		
42	2017	9.23%	106.363485298	95.08109022		
43	2018	9.22%	108.592487295	97.31009222		
44	2019	9.20%	110.821489293	99.53909422		
45	2020	9.19%	113.050491291	101.76809622		
46	2021	9.18%	115.279493288	103.99709821		
47	2022	9.17%	117.508495286	106.22610021		
48	2023	9.16%	119.737497284	108.45510221		
49	2024	9.14%	121.966499281	110.68410421		
50	2025	9.13%	124.195501279	112.91310621		
51	2026	9.12%	126.424503277	115.14210820		
52	2027	9.11%	128.653505274	117.37111020		
53	2028	9.09%	130.882507272	119.60011220		
54	2029	9.08%	133.111509270	121.82911420		
55	2030	9.07%	135.340511267	124.05811619		
56	2031	9.06%	137.569513265	126.28711819		
57	2032	9.05%	139.798515263	128.51612019		
58	2033	9.03%	142.027517260	130.74512219		
59	2034	9.02%	144.256519258	132.97412418		
60	2035	9.01%	146.485521256	135.20312618		
61	2036	9.00%	148.714523253	137.43212818		
62	2037	8.99%	150.943525251	139.66113018		
63	2038	8.97%	153.172527249	141.89013217		
64	2039	8.96%	155.401529246	144.11913417		
65	2040	8.95%	157.630531244	146.34813617		
66	2041	8.94%	159.859533242	148.57713817		
67	2042	8.93%	162.088535239	150.80614017		
68	2043	8.91%	164.317537237	153.03514216		
69	2044	8.90%	166.546539235	155.26414416		

Value of the Company | Regression Findings | Regression analysis

READY