

FINANCIAL MANAGEMENT Assignment, Version-2

INDIVIDUAL ASSIGNMENT (50%)

General Direction

- *Page size, writing format & Style: 10-20 pages, 12 font size, font style: Times New Roman, 1.5 spacing*
- *Assignment submission format: Assignment must be submitted in both hard copy and in soft copy. The soft copy should be emailed to **universityleadstar@gmail.com**.*
- *The assignment questions are extracted from the case indicated in the next page. The justifications and answers for each case-question should consist of introduction and conclusion.*
- *You are expected to use standard referencing styles (both in-text citations and bibliography).*
- *Assignment due date: Final exam date*

General instruction:

This case intends to check your mastery of the most important issues in the course “*Financial Management*”. In working out the case, you have to observe the following instructions.

1. You do this assignment individually.
2. You analyze the case sufficiently – answer all the 4 questions at the end of the case accurately.
3. All your answers must be hand written, legible and to the point. Printed answers are not acceptable for this case.
4. Your answer must run a minimum of 4 (four) pages and a maximum of 7 (seven) pages excluding cover page.
5. Submit your report on/before August 31, 2015.
6. The case covers 40% of your grade for the course.
7. Any submission of similar papers by individuals would be considered as plagiarism and might result in 0 (zero) grade for all the similar papers.
8. Because you assume the position of a consultant, you need to have an introductory remark, detailed analysis of the case and a conclusion for the entire case.
9. You also have to include in your report what lessons you learned as a result of working out the case.

Case Description

This case is adapted from a similar case study developed by Meric, Dunne, Li and Meric (2010). Interested students can read and workout the entire case referenced below:

Meric, I., Dunne, K., Li, S. F., & Meric, G. (2010). Variety Enterprises Corporation: Capital Budgeting Decision. *Review of Business & Finance Case Studies*, 1(1), 15-25.

The capital budgeting decision is one of the most important financial decisions in business firms. In this case, Dashen Bank Share Company (DBSC) is considering whether to invest in a system to modernize its local money transfer services. To determine if the project is profitable, DBSC must first determine the weighted average cost of capital to finance the project. The simple payback period, discounted payback period, net present value (NPV), internal rate of return (IRR), and modified internal rate of return (MIRR) techniques are used to study the profitability of the project. MIRR is a relatively new capital budgeting technique, which assumes that the reinvestment rate of the project's intermediary cash flows is the bank's cost of capital. The stand-alone risk of the project is evaluated with the sensitivity analysis and scenario analysis techniques assuming that the new system would not affect the current market risk of the bank. The case gives students an opportunity to use the theoretical profitability and risk analyses techniques explained in their financial management module and related tutorial classes in a real-world setting. The case is best suited for MBA and Master of Accounting students and is expected to take approximately three to four hours to complete.

Keywords: Capital budgeting, weighted average cost of capital, cash flow, payback period, net present value, internal rate of return, modified internal rate of return, sensitivity analysis, scenario analysis

Case Information

DBSC is planning to invest in a special system to deliver local money transfer services to its customers. The invoice price of the system is Br.280,000 subject to 15% non-refundable VAT. It would require Br.18,000 in shipping expenses and Br.25,000 in installation costs. The system will be depreciated using straight line method with 25% annual rate on original cost of the system. DBSC plans to use the system for four years and it is expected to have a salvage value of Br.80,000 after four years of use. The bank expects the system will increase the number of local money transfer customers by 100,000. The company estimates that it will charge on the average Br.5 fee per customer for the transfer service in the first year with a cost of Br.3 per customer, excluding depreciation. Management forecasts that both the service fee and cost per customer will increase by 10% per year due to inflation. DBSC's net operating working capital would have to increase by 18% of fees earned to deliver the transfer service. The bank is subject to 30% income tax.

DBSC's WACC

Guta, a recent MBA graduate of Addis Ababa University, is conducting the capital budgeting analysis for the project. The bank hired him only a few weeks ago as the head of the newly formed Capital Budgeting Analysis Department. In order to evaluate feasibility of the investment in the new system, Guta's first task is to estimate DBSC's WACC. He plans to use the financial data in Exhibit 1 to estimate the WACC. When DBSC started evaluating the project, the following conversation took place between Guta and Ato Ali. Ato Ali, the CEO of the bank, is a London School of Business graduate with a major in financial economics and long years of administrative experience.

Guta: It may be difficult to estimate cost of borrowing in the current recessionary environment.

Ali: We can determine the yield to maturity (YTM) on our outstanding bonds by using their current market prices. We can assume that we will be able to issue additional bonds with this YTM as the cost of borrowing. We should be able to place the new bonds without any flotation costs. Therefore, we can assume no flotation costs in our calculations. We can re-examine feasibility of the project later before raising funds by using sensitivity analysis to assess the impact of possible changes in interest rates on NPV of the project.

Guta: Do you think the bank's current market value capital structure is optimal? Can we use the current percentages of the capital components as weights in calculating the bank's WACC?

Ali: Yes, I believe that the bank's current market value capital structure of 30% debt, 10% preferred stock and 60% equity is optimal. We have about Br.95,000 in retained earnings this year, which is also available in cash. We should be able to use this year's retained earnings to finance part of the equity financing required for the project. However, we will have to issue some new common shares for the remainder of the necessary equity financing. We can assume a flotation cost of about 10% for the new common shares.

Guta: There are three basic methods of calculating a firm's cost of equity when retained earnings are used as equity capital: **1)** the capital asset pricing method (CAPM); **2)** the discounted cash flow (DCF) approach; and, **3)** the bond-yield-plus-risk-premium method. Which of these methods should we use in the calculation of our cost of retained earnings?

Ali: Although each of these methods has its merits, I believe that the most appropriate approach for our bank would be to find an average cost with the three methods. Besides, we can consider the yield on the Ethiopian Government TB as risk free return on investment in the computation of cost of common equity.

Ato Ali gave only one week to Guta for his estimation of DBSC's WACC. With the instructions he received from Ato Ali and with the help of the financial data in Exhibit 1, Guta began the task of estimating the bank's WACC immediately.

Ato Ali knew that estimating the bank's cost of capital was the first critical step in the capital budgeting process. Without this analysis, it would not be possible to determine if the new system would be a profitable investment for DBSC. That is why he had asked Guta to estimate the bank's WACC as the first task. Ato Ali was very pleased when he received Guta's calculation results and the WACC estimate. He thought that he had made a good decision in hiring Guta as the head of the company's newly established Capital Budgeting Analysis Department.

Exhibit 1: Financial data Guta plans to use in estimating DBSC's WACC		
<i>DBSC's current market value optimal capital structure:</i>		
	<i>Amount</i>	<i>Weight</i>
Bonds	Br.30,000,000.00	30%
Preferred stock	10,000,000.00	10%
Common equity	60,000,000.00	60%
<i>Data to be used in the calculation of the cost of borrowing with bonds:</i>		
Par value	Br.1,000 (non-collable)	
Market value	Br.1,058.59	
Coupon interest	9% (semiannual payment)	
Remaining maturity	15 years	
Floation costs	0	
<i>Data to be used in the calculation of the cost of preferred stock:</i>		
Par value	Br.100	
Annual dividend	9% of par	
Market value	Br.102	
Floation costs	7%	
<i>Data to be used in the calculation of the cost of common equity:</i>		
CAPM data:	DBSC's beta	1.2
	Yield on Ethiopian Government Treasury Bills	2%
	Market return	6%
DCF data:	Stock price	Br.19.08
	Last year's dividend (Do)	Br.1.00
	Expected dividend growth rate	5%
Bond-yield-plus-risk-premium:	Risk premium	3.5%
Amount of retained earnings available		Br.95,000.00
Amount of new common stock to be issued:	$[(Br.365,000 * 60\%) - Br.95,000 = Br.124,000]$	Br.124,000.00
This exhibit shows the data needed to estimate the bank's WACC. Specifically, it first presents DBSC's current market value optimal capital structure used to determine in the WACC calculation. It then provides the data required to calculate the cost of debt, the cost of preferred stock and the cost of common stock. The figures are computed based on analyses of investment in the Ethiopian banking industry. The amount of new common stock to be issued is provided at the end of the exhibit.		

Analysis of the profitability of the project

Ato Ali and Guta had the following conversation regarding how they should evaluate the potential profitability of the project.

Guta: With the fees and cost estimates I have obtained from the marketing and accounting departments in Exhibit 2, we should be able to estimate the project's cash flows for the four-year horizon.

Ali: Excellent! How are we going to evaluate the project's profitability to determine if it is feasible?

Guta: The Net Present Value (NPV) and Internal Rate of Return (IRR) methods are generally used in the evaluation of projects. However, these two methods have different assumptions regarding the reinvestment rate of the intermediary cash flows. The NPV method assumes that the intermediary cash flows can be reinvested at the firm's cost of capital. However, the IRR method assumes that the reinvestment rate is the project's IRR. Academicians argue that the reinvestment rate assumption of the NPV method is more realistic. Therefore, they recommend the NPV method. The financial goal of a firm is to maximize market value. The NPV of a project shows its contribution to the market value of the firm.

Ali: Correct! However, the NPV is expressed in Birr. It is difficult to explain the profitability of a project in terms of Birr to the stockholders of the bank. It is easier to compare the project's IRR with the bank's WACC to convince the stockholders that we can earn a higher percentage return on the investment than what it would cost to finance it. I have heard that there is a new improved capital budgeting technique that measures the profitability of a project as a percentage similar to the IRR method and it assumes that the project's intermediary cash flows can be reinvested at the firm's cost of capital as in the NPV method. I believe the technique is called the Modified Internal Rate of Return (MIRR) method.

Guta: No problem. We should be able to calculate the project's MIRR.

Ali: Great! I would also like to see the NPV, IRR, simple payback period, and discounted payback period results for the project.

Guta: Consider it done!

With the instructions he received from Ato Ali, Guta immediately started to work on the cash flow calculations using the data in Exhibit 2 to analyze the profitability of the project with the NPV, IRR, MIRR, simple payback period, and discounted payback period methods.

Exhibit 2: Data Guta plans to use in calculating the cash flows of the project and evaluating its profitability					
<i>Cost of the new system:</i>	<i>Year-0</i>	<i>Year-1</i>	<i>Year-2</i>	<i>Year-3</i>	<i>Year-4</i>
Invoice price of the new system	280,000.00				
VAT (15%)	42,000.00				
Shipping	18,000.00				
Installation	25,000.00				
Total cost of the new system (depreciable basis)	365,000.00				
Annual depreciation rate	25%				
Salvage value	80,000.00				
Operating fees and costs:					
Number of customers	-	100,000	100,000	100,000	100,000
Fees per customer	-	5			
Cost per customer	-	3			
Fees earned	-	500,000			
Costs	-	300,000			
Net operating working capital requirements:					
Fees earned		500,000			
Net operating working capital requirements (18%)	90,000				
Cash flow due to net operating working capital requirements	(90,000)				
<p>This exhibit shows the data needed to calculate the cash flows for this project. The new money transfer system has a useful life of 4 years, a salvage value of Br.80,000. Annual fees earned and cost estimates are presented in the middle of the exhibit. The system is expected to increase the number of customers for local money transfer services by 100,000, with average fee per customer of Br.5 and cost of Br.3 per customer. DBSC's net operating working capital requirement, which is shown at the bottom of the exhibit, is 18% of total fees earned in a given year.</p>					

Risk Analysis

After Guta submitted the cash flow calculations and the project profitability analysis results to Ato Ali, they had the following conversation regarding the risk analysis for the project.

Ali: The NPV, IRR, MIRR, simple payback and discounted payback results all look promising. However, we should also conduct a risk analysis of the project before we go ahead with it. Since the project is about modernization of delivery of an existing service, I do not believe that the new project will change the bank's beta and its overall market risk. Therefore, it should be sufficient to evaluate the stand-alone risk of the project. What are the techniques that we can use to assess the stand-alone risk of the project?

Guta: Sensitivity analysis is a widely used technique to determine how much a project's NPV will change in response to a given change in an input variable. Input variables such as

number of customers or the cost of capital are often used while holding other things constant.

Ali: The number of customers is difficult to forecast with a high degree of accuracy. Therefore, we should conduct a sensitivity analysis with regard to possible changes in the forecasted number of customers. It should be sufficient to evaluate the impact of an increase or a decrease of 10% in number of customers from our base forecast. The new system will be initially employed at about 80% capacity with our base number of customers forecast. Therefore, the unutilized capacity of the system should enable us to accommodate a 10% increase in the number of customers. We estimate that costs, excluding depreciation, will be 60% of fees per customer. We can assume that this ratio will not change with the 10% increase or decrease in the number of customers.

Guta: No problem. We can conduct a sensitivity analyses for the project's NPV with regard to a 10% deviation from our base number of customers forecast.

Ali: Given the current volatile financial environment, the actual WACC figure is also likely to deviate from the expected base level. I would like to know how sensitive the project's NPV is to an increase or decrease of 1% in the WACC.

Guta: No problem. We should be able to conduct a sensitivity analysis for the project with regard to a possible 1% change in the WACC. Another analysis technique for project risk widely used in practice is scenario analysis. In this technique, the best and worst-case NPV scenarios are compared with the project's expected NPV. Do you want us to conduct a scenario analysis of the project as well?

Ali: Yes. It would be a good idea. As the best-case scenario, assume that the number of customers will be 10% higher and the WACC will be 1% lower (*i.e. initially computed WACC less 1%*) than our original estimates. For the worst-case scenario, assume that the number of customers will be 10% lower and the WACC will be 1% higher (*i.e. initially computed WACC plus 1%*). Please calculate the standard deviation and the coefficient of variation of the project's NPV probability distribution with these scenarios. You can assume a probability of 50% for the base NPV forecast, a probability of 20% for the best-case scenario, and a probability of 30% for the worst-case scenario.

Guta: No problem. I should be able to submit the risk analysis results to you within a week.

With the instructions he received from Ato Ali, Guta immediately started to conduct a stand-alone risk evaluation of the project with the sensitivity analysis and scenario analysis techniques.

Questions

Assuming that you are Guta, answer the following questions:

1. Calculate Dashen's WACC using the data in Exhibit 1.
2. Calculate the project's cash flows using the data in Exhibit 2. Why is it important to take into account the effect of inflation in forecasting the cash flows? Briefly comment.
3. Evaluate the profitability of the project with the NPV, IRR, MIRR, simple payback period, and discounted payback period methods. Is the project acceptable? Briefly explain. Why is the NPV method superior to the other methods of capital budgeting? Briefly explain.
4. Conduct the stand-alone risk analysis of the project with the sensitivity analysis and scenario analysis techniques. Explain why sensitivity analysis and scenario analysis can be useful tools in the capital budgeting decision-making process when economic and financial conditions are likely to change in the future.