

## MBA 643: Managerial Finance Problem Set #2

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Due on Monday, May 3<sup>rd</sup>, 7:20pm

*Please turn in a soft copy of your answers via Blackboard by 7:20pm on Monday, May 3<sup>rd</sup>. Please name your submission file 'groupX\_ps2' and submit one per group. Late submissions will NOT be accepted! Please make sure that you show all your work when solving the problems.*

- 1) Consider the following expectations for the market and two stocks in two possible equally likely states:

State	Market Return	Stock A	Stock B
Boom	25%	38%	12%
Recession	5%	-2%	6%

- a. What is the expected return on each stock?
  - b. Given that the risk-free rate is 6%, draw the Security Market Line (SML) for this economy, and plot the two securities on the graph given that you have computed Stock A has a  $\beta$  of 2 and Stock B has a  $\beta$  of 0.3.
  - c. Assuming that the CAPM holds, state for each of the two stocks if the stock is overvalued, correctly priced, or undervalued according to CAPM?
- 2) Assume CAPM holds and you have the following information regarding three investment opportunities:

Project 1 has a project beta of 2.0 and you have estimated that the project's NPV using a cost of capital of 20% equals zero. Project 2 has a project beta of 1.5 and its NPV using a cost of capital of 10% equals zero. Lastly, project 3 has a project beta of 1.0 and its NPV equals zero using a cost of capital of 6%. None of these projects are 'scale-enhancing' for the firm, i.e. they are different than the regular operations the firm currently maintains. As the head of the capital budgeting department you are trying to decide which projects should be accepted. The company has a levered equity beta of 0.8 and a debt-to-equity ratio of 0.5, which the company is planning to maintain for the foreseeable future. The company currently faces a 40% tax rate. Given that the expected return on the market portfolio is 8% and the risk-free rate is 3%, which projects would you accept and why? (Assume there is no capital rationing and the projects are going to be financed with 100% equity.)

- 3) Caribbean, Inc. is considering a new investment opportunity. The project requires an initial outlay of \$525,000 and is expected to bring in a \$75,000 cash inflow at the end of the first year. After the first year, annual cash flows from the project are forecasted to grow at a constant rate of 5% until the end of the fifth year and to remain constant forever thereafter.

The company currently has a target debt-to-equity ratio of .40, but the industry that the company operates in has a debt-to-equity ratio of .25. The industry average beta is 1.2, the market risk premium is 7%, and the risk-free rate is 5%. Assume that all the companies in the industry can issue debt at the risk-free rate and the corporate tax rate is 40%.

Assuming that the project will be financed at Caribbean’s target debt-to-equity ratio, should the company invest in the project?

- 4) StarDucks, Inc (SDUX) is an American coffee company with more than 10,000 coffeehouses operating in the United States. Unlike many of its major competitors, it remained focused only on the production and sale of coffee drinks so far, rather than diversifying into other similar food and beverage lines. Recently, to respond to increasing demands from its customer regarding new products, and to boost the company’s growth, the executive staff has been seriously thinking about entering into a different business line “SDUX Gelato” to realize new growth opportunities.

An initial forecasting effort has been done to project the initial investment and subsequent cash flows for the next 5 years:

Year	0	1	2	3	4	5
Cash Flow (\$000s)	-1,750,000	-150,000	420,000	550,000	200,000	125,000

After the initial 5 years, SDUX believes the market will continue in *perpetuity*; however, given that the segment will reach maturity, it would very likely be a *zero growth* business. The company uses NPV for capital budgeting decisions on new products and investments.

As of today, SDUX currently has \$8 billion in bonds (debt) outstanding. Their stock closed at \$40/share and there are 300 million shares outstanding. The beta of SDUX stock (equity) is approximately 0.8. SDUX is an “A-rated” company credit-wise, and continues to borrow at the current rate of 3.1% like most companies in that rating category. They face a marginal tax rate of 35%. Recent market data shows that 10-year US treasuries yield 1.8% and the expected market risk premium going forward is 6%.

Additionally, in considering the new investment, SDUX is likely going to raise new capital which it will finance through an equity offering. Based on the recommendation by their investment bank, SDUX considers establishing a new capital structure that will be 75% equity if they decide to go forward with the new business.

SDUX has also identified a pure play company, G-Latte-O Corp, that only produces and sells high end coffee-flavored gelato products. G-Latte-O has a capital structure that is 15% debt – 85% equity and has an equity beta of 1.4. They have the same marginal tax rate as SDUX.

- a) Calculate the *current WACC* for SDUX Corporation and determine whether the company should proceed with the investment *at that discount rate*.
- b) Calculate the appropriate risk-adjusted discount rate that SDUX should use to evaluate the new investment, and then determine whether the company should proceed with the investment using this risk-adjusted rate.