

**List of Exercises for Joint Use Between
Ross, Westerfield and Jordan, *Fundamentals of Corporate Finance*, 6th edition
&
Brooks, *FinGame Online***

The objective of this document is to provide exercises for students jointly using the *Fundamentals* text and *FinGame* (FG) simulation in a course. The exercises are provided by chapters in the *Fundamentals* text. Material from both the texts are required in answering many of the questions. Author's notes are included within frames to provide ancillary information.

Part One: Overview of Corporate Finance
Chapter 1: Introduction to Corporate Finance

1. Identify the long-term investment decisions that are available in FinGame. Why are they needed and what is the life of each of these possible long-term projects?

2. Where in FinGame will you be able to get long-term financing for your investments?

3. By looking at a FinGame company balance sheet (page 44) how can you identify its form of business organization?

4. What should be your goal in managing your FinGame company?

Part One: Overview of Corporate Finance
Chapter 2: Financial Statements, Taxes, and Cash Flow

1. What accounts on the FinGame balance sheet are classified as working capital?
2. What decisions do managers of a FinGame company make that determine the balances in each of the company's working capital accounts?
3. What is the book value of equity and the market value of equity on the set of financial statements for the FinGame company on pages 43-45?
4. What is the equivalent value in the FinGame balance sheet on page 44 to the "Net fixed assets" account used in the Fundamentals text?
5. What is the **operating cash flow** for the FinGame company at the end of quarter 1, shown on pages 43-45 of the FinGame manual.
6. Assume that 10,000 units of machinery and capital budgeting project B were to be purchased for quarter 2. Using the information on the quarter 1 Summary Data sheet (page 45) and information on machinery and project costs from FG Chapter 4, what would be the company's **capital spending** for quarter 2?

Part Two: Financial Statements and Long-Term Financial Planning
Chapter 3: Working with Financial Statements

A Quarterly Cash Flow Budget, or pro forma cash flow statement, can be estimated for the coming quarter for a FinGame company. The Appendix, starting on page 113 of the FG manual goes through the derivation of all items on the Cash Budget. A blank form used for this purpose is provided on page 141 of the FG manual. Use the Appendix information and a copy of the blank Cash Budget form to record the following decisions. Note: the numbers required below differ from the ones used to construct the Cash Budget in the Appendix.

1. Your examining the impact on your expected future cash position of declaring a quarter two dividend of \$0.17 per share. What would be the entries on the Cash Budget for quarter 2?
2. The plan is to produce 98,000 units for quarter 2. What would be the labor cost entry in the Cash Budget?
3. A short-term loan of \$500,000 is issued. No other debt is issued during the quarter.
4. Based on the income statement and balance sheet on FG pages 43 and 44, derive the following ratios:
5. What information would be used to perform Time-Trend Analysis for a FinGame company?
6. Why would you use Time-Trend Analysis in managing a FinGame company?
7. Spreadsheet Exercise: The objective of this exercise is to create a spreadsheet that allows Time-Trend Analysis of your FinGame company for the school term. This will require a spreadsheet that derives all of the ratios in the prior problem 4.

Place your name in cell location A1 and your company number and company name in A2. In the order they are needed in deriving the ratios in problem 4, list all of the accounting statement inputs titles, like Current Assets, in locations A5, A6, ... Axx, where cell Axx is the last needed account balance located in column A, row xx. In locations B4, C4, ... P4 enter the quarter numbers 1 through 15, respectively. Draw a line below your last input row xx going from column A through P. The above area will be used for input of information. Now enter the information from your quarter 1 FinGame statements to complete the set of inputs in column B for quarter 1.

Skip one row below your above ruler line and enter the titles of the ratios, in the order presented in problem 4 above, in column A. Use **only** cell formulas in columns B through P to calculate each ratio based on the inputs that are in the top section of your spreadsheet. With sound spreadsheet construction, you will only type cell formulas into column B using relative and absolute cell addresses. Once you have created the cell formulas in column B, you should "mark" the set of column B ratio formulas just created and drag this set of formulas over columns C through P to copy the formulas to quarter 2 through 15.

Why do you have a matrix of #DIV/0! showing in columns C through P? How can this problem be overcome?

You now have a Time-Trend Analysis spreadsheet to update with each new quarter of play. The input information from your final pro forma statement, which will have the set of decisions you will be making for your actual quarter's set of decisions, should be placed in its quarterly column. This data will be replaced with actual data at the end of the quarter. You should examine the trends and changes in each quarter, especially the pro forma statement quarter, to warn you of changes that may represent errors in analysis and deterioration of your company's position or performance. The analysis should initiate required corrective decisions by you starting with the pro forma information if the actual quarter has not yet occurred or with the next quarter's decisions if you have just completed an actual quarter.

8. What information would be used to perform Peer Group Analysis for a FinGame company?
9. Why would you use Peer Group Analysis in managing a FinGame company?

Part Two: Financial Statements and Long-Term Financial Planning
Chapter 4: Long-Term Financial Planning and Growth

1. What income statement accounts are inaccurately portrayed and biased if you were to use the percentage of sales approach in creating the pro forma income statement for the next quarter? Why would each of the accounts be subject to bias and would the bias lead to an under or overestimate of the account balance?
2. What is the quarter 1 dividend payout ratio for the FinGame company statements on pages 43-45?
3. What is the annualized internal growth rate for the FinGame company referenced in question 2?
4. What is the annualized sustainable growth rate for the FinGame company referenced in question 2?

Part Three: Valuation of Future Cash Flows

Chapter 5: Introduction to Valuation: The Time Value of Money

1. Assume that the FinGame company has a quarterly cost of capital of 2.75%. What is the present value of the after tax savings in overhead for quarter 9 from the capital budgeting project A on page 45 of FG? Note: the project is purchased at the start of quarter 2, at point 1 in time, and the saving occurs at the end of quarter 9 (point 9 in time).

2. You keep the \$200,000 invested in marketable securities from the end of quarter 1 to the end of quarter 12. A risk level of 3 for marketable securities is selected and you estimate that you will have capital gains of 2% per quarter that will be added to your marketable securities investment every quarter. Interest earned on the marketable securities is not reinvested. What would be the expected balance in the account at the end of quarter 12?

Part Three: Valuation of Future Cash Flows
Chapter 6: Discounted Cash Flow Valuation

1. Assume that the FinGame company has a quarterly cost of capital of 3.5%. What is the present value of the after tax savings in overhead for quarters 2 through 9 from the capital budgeting project A on page 45 of FG? Note: the project is purchased at the start of quarter 2, at point 1 in time, and the savings occur at the end of quarters 2 through 9.
2. You are to invest \$1,000,000 per quarter in a FinGame company starting one quarter from today and ending on the 11th payment. Assume that you can earn a quarterly rate of return on the investments of 5% per quarter. What would be the expected accumulation of wealth from the quarterly investments by the 11th payment date?
3. The quarterly cost of capital of a FinGame company is 2.95% per quarter. What is the investors' required annual cost of capital?
4. If the investors' effective annual yield required to invest in the FinGame firm is 15%, what would be your company's quarterly cost of capital rate?

Part Three: Valuation of Future Cash Flows
Chapter 7: Interest Rates and Bond Valuation

1. Using the quarter 1 statements in FinGame on pages 43-45, what will be the required quarterly yield on the issue of 3-year loans for quarter 2 decisions if the total external debt financed for the quarter is \$3,500,000?

2. Why would it be more difficult in FinGame to calculate the current market value of a previously issued outstanding debt than it is for a conventional corporate bond?

2. Does FinGame debt have a sinking fund requirement? Why or why not?

3. What are the protective covenants for debt holders in FinGame?

4. What are the determinants of investors' required yield on debt in FinGame?

Part Three: Valuation of Future Cash Flows
Chapter 8: Stock Valuation

1. The preferred stock at the end of quarter 1 on page 45 would sell for \$32.15 per share if there were some outstanding. The preferred stock (pages 68-71) has a quarterly dividend of \$1.00 per share. What is the current required quarterly and effective annual investor required return on this preferred stock?
2. The new issue of preferred stock could be a public or private issue in FinGame where the price is negotiated with the investment bankers or private investors. The required base yield before issuance costs is given in the "Rates on funding next quarter" subsection of the summary data sheet. Assume that this quarterly yield is 2.62%. There is a \$50,000 fixed issuance cost (page 69). An additional 10% discounted is expected to account for the two other discount factors (page 70). What will be the company's expected total net proceeds and proceeds per share if 50,000 shares are issued? What is the effective quarterly and annual yield?
3. After 6 quarters of play a company believes that it has established an optimal dividend payout rate of 40%. The managers use the annualized sustainable growth rate and find that it has an equivalent quarterly sustainable growth rate of 2.25%. The coming quarter's expected quarterly dividend is \$0.40. The current stock price is \$42.45. What is the investors' quarterly and annual effective required return rates?
4. A company in FinGame has a current quarterly sustainable growth rate of 1.15% and an expected dividend next quarter of \$0.40. Investors require a 3.19% quarterly required rate of return on common stock. What would be the expected price per share of this stock?

Part Four: Capital Budgeting

Chapter 9: Net Present Value and Other Investment Criteria &

Chapter 10: Making Capital Investment Decisions

1. This problem requires the derivation of cash flows from Fundamentals chapter 10 and the net present value procedure from Fundamentals chapter 9. Project A on the next to last line of a Summary Data for purchase on the quarter "X" decision inputs has the following relevant information:

Life	Cost	Unit Capacity	Overhead Saving	Unit Labor Sav. Qtr. "X"	Change/Qtr. Labor Sav.
2-yr	\$500,000	100,000	\$16,000	\$1.00	\$0.0

The company anticipates producing more than 100,000 units per period over the eight-quarter life of the project. Use information on FG manual pages 57-59 for an explanation of the above variables if you are not yet familiar with them. The company's quarterly cost of capital is 2.85%. What is the net present value of this project? Should the project be accepted or rejected, and why?

2. Spreadsheet Exercise: This exercise is more easily performed if the just prior problem 1 was completed and the correct solution confirmed. The objective of this exercise is to create spreadsheet templates to evaluate capital budgeting projects for the remaining periods of play in FinGame. You are to create two templates, one for a project A and one for a project B. Once you reuse the templates a few times you will recognize the time savings and usefulness of building generic solution spreadsheets, rather than having to redo a full spreadsheet by hand for every future project, you will only need to enter the data for a given project to get the NPV and final decision.

Place your name in A1. Enter your company number and company name in A2. Place the title, Capital Budgeting Spreadsheet for Project A (or B for the second template covered later) in A3. In cell A4 enter, "Inputs for current project A." Go to cell B4 and enter the project input data lines as shown in the three rows of prior problem 1 in columns B through G and rows 4-6. The six columns and three rows should now contain:

Life	Cost	Unit Capacity	Overhead Saving	Unit Labor Sav. Qtr. "X"	Change/Qtr. Labor Sav.
2-yr	\$500,000	100,000	\$16,000	\$1.00	\$0.0

A7 will contain the title, "Tax rate," while A8 will hold, "Discount rate." B7 and B8 will hold the tax rate and discount rate inputs, respectively. Enter the 40% and 2.85% as these inputs. In A9 enter, "Relative quarter number." Quarter numbers 0-8 should be centered in B9-J9. "Expected unit production"

should be in A10. C10-J10 will hold your inputs for the expected production levels in each of the next 8 quarters. For now, enter 100,000 units as these inputs. Next, draw a line below row 10 from column A through J. All inputs are above this line. To retain spreadsheet integrity only cell addresses and formulas will be entered below the line, except for column A, which will contain your capital budgeting spreadsheet account titles and solution details.

A10 should contain the title, "NPV Spreadsheet Solution." Start your spreadsheet on row 12. A12 contains, "Relative quarter number." Columns B12 contains the centered relative quarter number 0 (zero). Use a cell formula in C12 to derive the next quarter number, 1. When this cell formula is correct, copying it to cell D12 will result in the number 2 appearing.

Using proper spreadsheet construction for this problem, you will not be entering any cell formulas by hand in any columns beyond column C.

A13 should contain, "Initial project cost," while A14 holds, "Determination of future period net cash flows:" You may need to widen column A at this point. It is your responsibility to enter the remaining cell entries for columns A through C on the spreadsheet. After determining each quarterly net cash flow, as in problem 1 above, create a cell formula for the present value of the cash flow in column C, that when copied to columns D-J will provide the appropriate present value factors for relative quarters 1-8 using the cost of capital input cell rate. Multiplying the PV factor times the net cash flow for each period 1-8 will give you the PV of each period's net cash flow. Summing these PVs provides the PV of future flows. When added to the cost (a negative number) this will give you the project's NPV.

To have a generic spreadsheet, the most difficult parts will be to calculate the labor cost savings per period when your labor savings/quarter changes and to incorporate the possibility that production will be less than the project's unit capacity. Note: your spreadsheet answer could be the same as in the correct solution to the just prior problem 1 and be incorrect when labor savings per unit differ over the project life or production levels are below the project's capacity in future periods.

When your spreadsheet is finished and you confirm the answer from the just prior problem 1 you will be ready to copy the entire spreadsheet to a different workbook sheet and make the few modifications needed to derive the project B spreadsheet that must contain data from quarter 0-12.

3. How many quarters of future cash flow should be used in evaluating the net present value of a project B available for quarter 9 when the manager will only be running the company through quarter 12?

Part Four: Capital Budgeting
Chapter 11: Project Analysis and Evaluation

1. Spreadsheet Exercise continued: Sensitivity Analysis can be easily incorporated into your project A and B spreadsheets if they were completed in exercise 2 of chapters 9 and 10. You can generate supplemental spreadsheet solutions using sensitivity analysis on an A or B project on tax rate changes, cost of capital changes, and changes in the number of expected units that will be produced in each period over the project life.
 - ❑ The government wants to stimulate the economy by reducing corporate taxes from 40% to 34%. What is the revised NPV of project A and how much wealth will be gained on the project if the tax change is forthcoming?

 - ❑ The cost of capital estimates have a range of 2.5% to 3.2%. In the prior exercise, the average of this range, 2.85%, was used. Make sure you are using the original 40% tax rate. What are the range estimates on project A's NPV? Would this change your original decision? Why or why not?

 - ❑ What is the NPV of project A if the future production level and demand for units is only 85,000 units.

 - ❑ What is the NPV of project A if the future production level and demand for units is expected to be 110,000 units?

2. Project A generally has a decrease in other overhead cost over the life of the project while project B generally has an increase in overhead cost over its life. Not considering any other impacts, which of these two types of projects would induce the greater level of operating leverage?

3. Will acceptance of capital budgeting projects A or B increase or reduce operating leverage of a FinGame company? Explain why.

4. Does a FinGame company have either soft or hard rationing?

Part Five: Risk and Return

Chapter 12: Some Lessons From Capital Market History

1. Derive the quarterly holding period returns for your FinGame company for each quarter of play from quarter 2 through your current period of play. Next, calculate the average quarterly rate of return from quarter 2 through the current quarter using the just derived single period quarterly holding period returns.

2. Spreadsheet Exercise continued: If you were required to do the Spreadsheet Exercise in the Fundamentals chapter 3 section of this set of exercises you can now expand this spreadsheet. Add the share price per period and dividend per share per period as inputs. In the spreadsheet solution section, add one row with the per quarter holding period returns cell formulas entered from quarter 2 through quarter 15. In the next row calculate the average quarterly rate of return from quarter 2 through the current quarter. Derive the annualized effective return for the current quarterly holding period return derived two rows above. In the final row derive the effective annual return for the average quarterly return from quarter 2 through the current quarter.

Part Five: Risk and Return

Chapter 13: Return, Risk, and the Security Market Line

1. What factors contribute to the value of common stock in FinGame. Are each of these factors consistent with common stocks' required rate of return determined by the Security Market Line (SML) from the Capital Asset Pricing Model (CAPM)? The factors are listed in the FG manual on pages 71 and 72.

Part Five: Risk and Return
Chapter 14: Options and Corporate Finance

1. Would a FinGame company's common stock be a call option if the company only had accounts payable and no other debt financing?
2. If a FinGame company were in serious financial difficulty with heavy financial leverage would they possibly be motivated to take on a negative NPV project with capital budgeting projects and/or plant and machine capacity additions?

Part Six: Cost of Capital and Long-Term Financial Policy
Chapter 15: Cost of Capital

Also see exercises 3 and 4 under the Chapter 8 heading that are related to the use of the Dividend Growth Model in FinGame.

1. FinGame company 8 has a level of operating leverage and financial leverage equal to the average of all FinGame companies. The only companies in this hypothetical universe are FinGame companies in your instructor's group. Its stock performance is also average. What would be the expected beta and required rate of return on this stock in a CAPM environment?

2. The risk free rate is the marketable securities yield when the risk factor on marketable securities is 0 (risk-free), which we will assume is 1.5%. The average long-term holding period return of all FinGame companies' common stocks in the universe that only contains FinGame companies is 3.15% quarterly. The beta of your company is 1.2. What is the investors' required rate of return on your common stock?

3. The weighted average cost of debt for a FinGame company based on the rates on funding next quarter is 2.43%. Your common stock cost is 3.48%, and you have no preferred stock outstanding. The corporate tax rate is 40%. The value of all debt outstanding excluding accounts payable is \$14,000,000. The common stock price is \$30.00 and there are 1,000,000 shares outstanding.
 - Why would the "Rates on funding in quarter X," where X is the coming quarter, be used in deriving a weighted average cost of capital rather than the "Outstanding debt yields," which are also shown on the Summary Data sheet?

 - What is the weighted average cost of capital for the company?

Part Six: Cost of Capital and Long-Term Financial Policy
Chapter 16: Raising Capital

1. Would an issue of common stock by a FinGame company be an IPO or seasoned equity offering?
2. The common stock issuing costs in FinGame are on page 72 of the FG manual. How are they, or are they not, related to the costs of selling stock provided on pages 542 and 543 of the Fundamentals text?
3. What are the issuance costs for bonds in FinGame?

Part Six: Cost of Capital and Long-Term Financial Policy
Chapter 17: Financial Leverage and Capital Structure Policy

Capital structure has a direct and material impact on the value of a FinGame company. Because of the possible manager-debt holder agency problem covered in the exercise 2 in the chapter 14 section, debt costs increase with operating and financial leverage increases and with operating cash flow and earnings decreases. The cost of common equity in FinGame is related to variance of earnings and cash flows, which increase as financial leverage increases. Tax benefits from financial leverage increases are also received since interest on debt is tax deductible. The result is that the static trade off model, an optimal capital structure, and a capital structure that maximizes company value exists in FinGame (see Fundamentals text Figure 17.8, page 589).

The management of the capital structure decision is best managed in FinGame by monitoring the company's weighted average cost of capital (see prior exercises related to chapter 16 of the Fundamentals text). The quarter 1 starting FinGame company at the beginning of the game is under-financially levered. Early external financing should then be done with various forms of debt financing and no equity financing. As long as the WACC continues to decrease, or stays the same, managers should continue getting external needed capital from debt. When the WACC starts to increase, or preemptively when it is flat and the stock price seems very high, common stock equity financing should be used.

The equity financing will usually have an initial negative impact on the common stock price, which should then improve over the next few quarters. This phenomenon is consistent with an equity financing representing bad news. The bad news is that the firm has become overly financially leveraged and managers believe that they must reduce the risk of their company by decreasing financial leverage with the issuance of equity. This is asymmetric information known by the manager, but not known to investors prior to the announcement of a common equity offering. Investors adjust up their expectations of the company risk and adjust down the company's expected future cash flows upon getting this negative news from the managers. Both conditions lead to the share price reduction generally found at announcement of an equity issue. If FinGame this is reflected in the next quarters stock price.

Part Six: Cost of Capital and Long-Term Financial Policy
Chapter 18: Dividends and Dividend Policy

1. Is the discussion of optimal dividend payout rate on page 27 of the FinGame manual consistent, or not, with the residual dividend approach covered on pages 618-620 of the Fundamentals text? Why or why not?
2. How can real companies and FinGame companies simultaneously maintain dividend stability and an optimal dividend payout rate?

Part Seven: Short-Term Financial Planning and Management
Chapter 19: Short-Term Finance and Planning

1. What can be done to change the inventory operating cycle in FinGame?

2. What is the operating cycle, in days, for the FinGame company in exercise 4 in the prior chapter 3 exercises?

3. What specific types of costs in FinGame determine the carrying costs of receivables? Inventory?

4. What specific types of costs in FinGame determine the shortage costs of inventory?

Part Seven: Short-Term Financial Planning and Management
Chapter 20: Cash and Liquidity Management

1. What carrying and shortage costs exist in a FinGame company's holding of cash balances?
2. What are examples of other possible carrying costs for cash for actual companies?
3. What are examples of other possible shortage costs for cash for actual companies?
5. Are there any ways in FinGame to manage float?
6. What can be done with excess short-term idle cash in FinGame?

Part Seven: Short-Term Financial Planning and Management
Chapter 21: Credit and Inventory Management

1. With no receivables discount offered, what are the implied credit terms in FinGame?
2. What impact can be expected from a change in discount terms in an actual company that is not found in a FinGame company?
3. What accounts receivables specific carrying costs and shortage costs can be found in an actual company that are not found in a FinGame company?
4. Relative to an actual operating company, would the credit policy incorporated into the FinGame companies be too liberal or conservative? Why?

Part Eight: Topics in Corporate Finance
Chapter 22: International Corporate Finance

1. What types of risk are being avoided by FinGame companies since they do not have foreign operations or sales?
2. What opportunities are being lost because FinGame companies do not have foreign production operations?
3. What would be likely impacts on the company's growth rate of earnings and cash flows if they were to sell in foreign markets?
4. What would be likely impact on company value if they were to participate in foreign production and sales?