FINANCESIM

A Business Simulation for Corporate Finance Courses

Fernando Arellano

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What is FINANCESIM?

- Business simulation in which decisions are mostly related to topics covered in a corporate finance or financial management course.

What topics can be covered with FINANCESIM?

- Time Value of Money
- Financial statement analysis
- Pro-forma analysis
- Working capital management
- Financial leverage
- Capital budgeting

What are the firm's characteristics?

- Firms manufacture three products.
- Each product has its own costs and demand characteristics.
- Firms can fund their operations through loans, bonds, and stock.
- Excess cash can be invested in short term CDs.
- Dividends can be distributed.
- There are transaction costs on financial operations.

What are the firm's characteristics?

- Plant capacity can be increased or reduced (per product).

What are the firm's characteristics?

- The following variables can be controlled in setting up the initial firm and economic environment:
  - Financial leverage, including level of different debt and investment instruments
  - Cost structure of each product
  - Profit margin per product
  - Sales and inventory volumes and prices
  - Overall firm profitability
  - Behavior of GDP, CPI, and interest rates

What are the firm’s characteristics?

- Transaction costs on loans, CDs, bonds, and stock operations.
- Price and promotional elasticities

What are other characteristics?

- Each simulated period represents one quarter.
- Up to twelve quarters can be simulated.
- Students work in teams.
- Up to twenty teams can participate.
- In addition to financial statements and supporting information, teams receive historical information on sales volumes, prices, GDP, CPI, and interest rates.

What decisions can be made?

- In the finance area:
  - Request 90-day, 1-year and 5-year term loans.
  - Invest in 90-day, 180-day, and 270-day certificates of deposit.
  - Issue and recall 10-year bonds.
  - Issue and repurchase stock.
  - Distribute dividends.
- In addition, participants can be required to forecast cash balances (budgeting) and after-tax earnings (pro forma income statement).

What decisions are made?

- In the production area:
  - Order production
  - Select between two suppliers of raw material that offer different terms of payment
  - Increase or decrease plant capacity

What decisions are made?

- In the marketing area:
  - Offer price discounts for prompt payment
  - Set price and promotional expenditures
- In addition, participants may be asked to submit forecasted sales volumes.
- At the beginning of the simulation participants will be provided with forecasted sales volumes and prices in order to focus on financial decisions.

How is firm performance evaluated?

- Firm performance is evaluated on the basis of firm profitability, product contribution margin, and forecasting errors.
- Forecasting errors that are measured and reported to participants include:
  - Cash balance
  - After-tax earnings
  - Sales volumes (if participants were required to make sales forecasts)

What do students learn?

- They apply Time Value of Money concepts and techniques when they make decisions on whether to:
  - Purchase raw material using cash or taking credit from the bank or from the supplier.
  - Offer discounts to clients who pay cash rather than take the 90-day credit.
  - Calculate the effective interest rate of different loan terms considering interest rates and fixed and variable transaction costs.
  - Request loans and schedule their reimbursements.

What do students learn?

- They apply Working Capital Budgeting techniques when they:
  - Do pro forma cash flows to determine their funding needs (or their excess cash).

What do students learn?

- They understand the importance of accurate Working Capital Budgeting when they:
  - Underestimate their funding needs and receive emergency funding with interest rate penalty.
    - Insufficient funding was requested
    - Too much was invested in CDs
  - Overestimate their funding needs and sacrifice the opportunity cost of cash surplus
    - Too much funding was requested
    - Insufficient amount was invested in CDs

What do students learn?

- They understand the importance of timely planning when they:
  - Decide to expand production and invest in additional equipment before reaching full capacity utilization.
  - Plan ahead and issue bonds or stock to fund the purchase of new equipment. Otherwise, they may have to fund the acquisition with short-term funding.

What do students learn?

- They understand the importance of inventory management when their forecasts:
  - Overestimate sales and are left with inventory.
  - Underestimate sales and lose sales.
- The administrator can set different storage costs per product so as to make the carry-on of inventory profitable or unprofitable.

What do students learn?

- They understand the importance of Capital Budgeting when they:
  - Reach full capacity utilization and have to decide on acquisition of new equipment.
    - They have to forecast sales
    - Different capacities can be purchased
    - Investment cost per unit varies with equipment size

What do students learn?

- They understand the importance of ratio analysis when they:
  - Use different ratios to measure liquidity, solvency, profitability, and asset utilization.
  - Track the evolution of their financial ratios.
  - Compare their ratios with other participants in the simulation.

What do students learn?

- They observe the impact of financial leverage on liquidity and profits:
  - After they request loans, issue or repurchase stock, issue or recall bonds, or distribute dividends.
  - When they observe the impact of increased sales.

What do students learn?

- They understand the importance of operating leverage when they:
  - Observe different impacts in profits when sales increase or decrease.
    - The three products have different cost structures
  - Decide on plant expansion
    - Different equipment sizes result in different fixed costs

What do students learn?

- They understand the importance of capital structure when they:
  - Decide on how to fund operations or capacity expansion.
    - Issue common stock.
    - Issue 10-year bonds.
    - Request 1-year and 5-year loans.
    - Use retained earnings instead of distributing dividends.

How are decisions scheduled?

- To accomplish the objectives presented before, decisions are scheduled in a way that allows for concentration on specific topics and precludes complexity at the beginning of the simulation.
- The number of decisions allowed are sequentially increased quarter by quarter.

How are decisions scheduled?

- First decision: Participants are asked to submit their short-term funding needs.
  - Sales forecasts, prices, and costs are furnished to the participants.
  - Raw materials are paid in cash.
  - Sales proceeds are collected in 90 days.
  - Accurate budgeting depends on the understanding of how a cash budget is developed.

How are decisions scheduled?

- In addition to the three financial statements, their report for the quarter will show a forecast error in their projection of cash funding at the end of the quarter.

How are decisions scheduled?

- Second decision: in addition to forecasting their cash needs, participants are asked to do pro forma income statement and report their after-tax earnings forecast.
  - In addition to their budget forecast error their report will show their forecast error in after-tax earnings.

How are decisions scheduled?

- Third decision: participants are asked to select between two suppliers. One sells for cash, the other collects in 90 days.
  - Each supplier charges different prices.
  - Participants can choose to:
    - pay cash from available funds.
    - obtain credit from supplier.
    - obtain a 90-day bank loan.
  - After decisions are processed, in addition to their financial statements, participants are informed which supplier was financially more convenient.

How are decisions scheduled?

- Fourth decision: participants have the option of offering price discounts to clients that make prompt payments.
  - They have three preset options: i.e. 1%, 2%, and 3%.
  - Each option has a corresponding percentage of sales (in units) that will be paid in cash.
  - Demand is not affected by the discounts.
- Prior decision conditions still apply.

How are decisions scheduled?

- Fifth decision: sales forecasts are no longer accurate. They have a +/- 3% error. Participants are asked to schedule production.
  - In previous quarters production orders were the same as sales.
  - Now they have to order production having in mind the storage cost if they overproduce and the contribution margin they forego if they don’t produce enough.
  - Prices are still provided.

How are decisions scheduled?

- Sixth decision: participants are offered the possibility of replacing equipment in any o the the three lines of production.
  - The equipments have higher prices but lower operating costs.
  - Any type of funding available can be selected.
  - Students need to do capital budgeting.

How are decisions scheduled?

- Seventh decision: sixth decision conditions are repeated. In addition, they can prepay loans or sell CDs before maturing. They can recall bonds and repurchase stock.
  - This allows participants to correct errors made in prior quarters.

How are decisions scheduled?

- Eight decision: Prices are no longer fixed. Participants are allowed to change prices and promotional expenditures.
- They are also allowed to invest in expansion or reduction of plant capacity.
- In the following quarters (up to four more quarters) they will make the same type of decisions.

Conclusion

- Through participation in FINANCESIM students do budgeting, apply TVM techniques in selecting suppliers and offering cash discounts
- They also do capital budgeting when deciding to replace or expand capacity.
- In summary, students learn skills in decision making and financial statement analysis.
- The proposed decision schedule can be changed to accomodate different learning objectives.