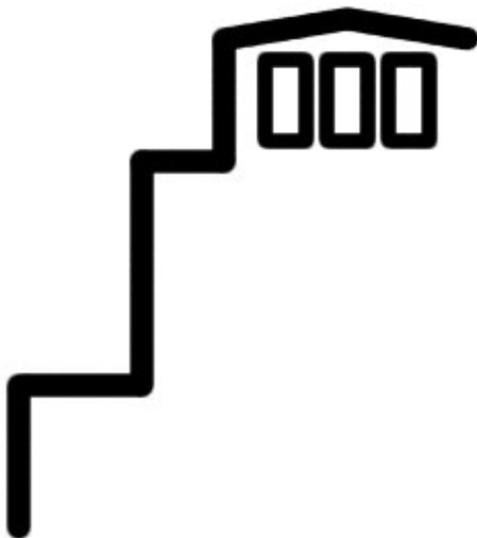


FORAD 2.0

Players Manual



Tower46 LLC

© Copyright 2013 Tower46 LLC

FORAD is the creation of Professor Lee Remmers, INSEAD.

2

Tower46 LLC is the exclusive distributor of FORAD 2.0 under licensing agreement with FORAD owner Lee Remmers. Those interested in licensing the original FORAD model should contact Professor Lee Remmers directly at lee.REMMERS@insead.edu.

September 2013.

FORAD 2.0

Players Manual Table of Contents

Chapter 1: What is FORAD About?	7
1.1 The FORAD Competition.....	7
1.1.1 What You Will Learn.....	7
1.1.1 What You Need To Succeed	7
1.2 The FORAD Companies.....	9
1.3 Organizing for FORAD	10
1.4 Strategy Development.....	10
1.5 Performance Measures	11
1.6 How to Use this Manual	11
 Chapter 2: How the Simulation Works	 13
2.1 Simulation Overview.....	13
2.2 Model Navigation	14
2.2.1 File	14
2.2.2 Decisions.....	15
2.2.3 Update.....	20
2.2.4 Results	20
2.2 Stress Testing.....	22
 Chapter 3: FORAD Decisions Making	 23
3.1 FORAD screens and Decisions Making.....	23
3.2 Predictions	23
3.2.1 Foreign Exchange Rates.....	24
3.2.2 Oil price	24
3.2.3 Japanese subsidiary sales prices and volumes.....	25
3.2.4 German subsidiary sales prices and volumes.....	25
3.3 Operations	25
3.3.1 Japanese Subsidiary Operations.....	25
3.3.2 German Subsidiary Operations	30
3.3.3 U.S. Holding Company.....	33
3.4 Investing	34
3.4.1 Share repurchases.....	34
3.4.2 Marketable securities.....	34

3.4.3 Dividends.....	35
3.5 Financing.....	36
3.5.1 Credit spreads	37
3.5.2 Short-term loans	38
3.5.3 Inter-company loans	39
3.5.4 Long-term loans	40
3.5.5 Historical long-term loans	41
3.5.6 Zero-coupon bond.....	42
3.5.7 Overdraft.....	43
3.5.8 Swaps.....	44
3.5.9 Financial statement details	45
3.5.10 Issuing equity.....	46
3.5.11 Cash Management	47
3.6 Hedging.....	49
3.6.1 Foreign exchange exposures.....	49
3.6.2 Forward contracts	51
3.6.3 Foreign currency options	51
3.6.4 Foreign exchange gains and losses.....	52
3.6.5 Benchmarking.....	53
3.6.6 Foreign exchange results help screens	54
3.6.7 Oil Hedging	54
3.6.8 Interest rate hedging.....	54
3.7 Tax Management.....	56
3.7.1 Germany.....	56
3.7.2 Japan	57
3.7.3 United States.....	57
3.7.4 Foreign-Source Income and Tax Gross-up	58
Chapter 4: Company Results and Performance.....	63
4.1 Earnings Per Share (EPS).....	63
4.2 The PE Ratio (P/E)	63
4.2.1 Creditworthiness score (30%)	63
4.2.2 Currency hedging score (20%).....	64
4.2.3 Planning skills score (10%)	64
4.2.4 Tax management score (20%).....	64
4.2.5 Dividend management score (10%)	64
4.2.6 Quality of earnings score (10%)	65

4.3 Accounting Considerations.....	66
4.3.1 Financial statements consolidation.....	66
4.3.2 Translation of financial statements.....	66
4.3.3 Accounting for Inter-company transactions	66
Appendix 1: FORAD Computer Files and Procedures	69
Appendix 2: FORAD 2.0 for Mac Users	73
Appendix 3: Frequently Asked Questions (FAQs)	75

Chapter 1: What is FORAD About?

1.1 The FORAD Competition

FORAD is a computer-based learning experience designed to help you understand what it takes to manage the financial challenges of a multinational corporation. You will be taking on the responsibilities of a Chief Financial Officer (CFO) and his or her team, developing the necessary competence and skills to deal with the risks and opportunities a multinational firm faces in a world of volatile and unpredictable financial markets. Although the focus is on corporate financial management, the FORAD experience may also be useful in any industry including banking, as it may help them better understand the specific needs, risks, and opportunities faced by their corporate clients. Consultants advising on both corporate strategic and financial matters should find FORAD worthwhile for much the same reason.

1.1.1 What You Will Learn

FORAD is designed to focus primarily on corporate financial decisions. Sales volume, prices, and costs in the product markets are basically the same for all FORAD companies. Operating characteristics and costs may vary between the companies in the FORAD industry (your competitors), but only as a result of specific choices you may make. Examples of such choices would include increasing production capacity (investment in new fixed assets), increasing inventories (investment in additional current assets), and offering cash discounts to customers on sales. These are all operating decisions and will obviously alter operating profits; they will also have a substantial impact on financing needs and financial management.

FORAD is about the multitude of financial decisions management must make. Most of your time and efforts will be spent on financing and hedging decisions - raising funds at lowest cost, refunding existing debt to obtain lower cost funds, seeking out and exploiting price distortions or tax advantages in the markets, hedging currency, interest rate or commodity price risks, or evaluating and perhaps acting on speculative opportunities.

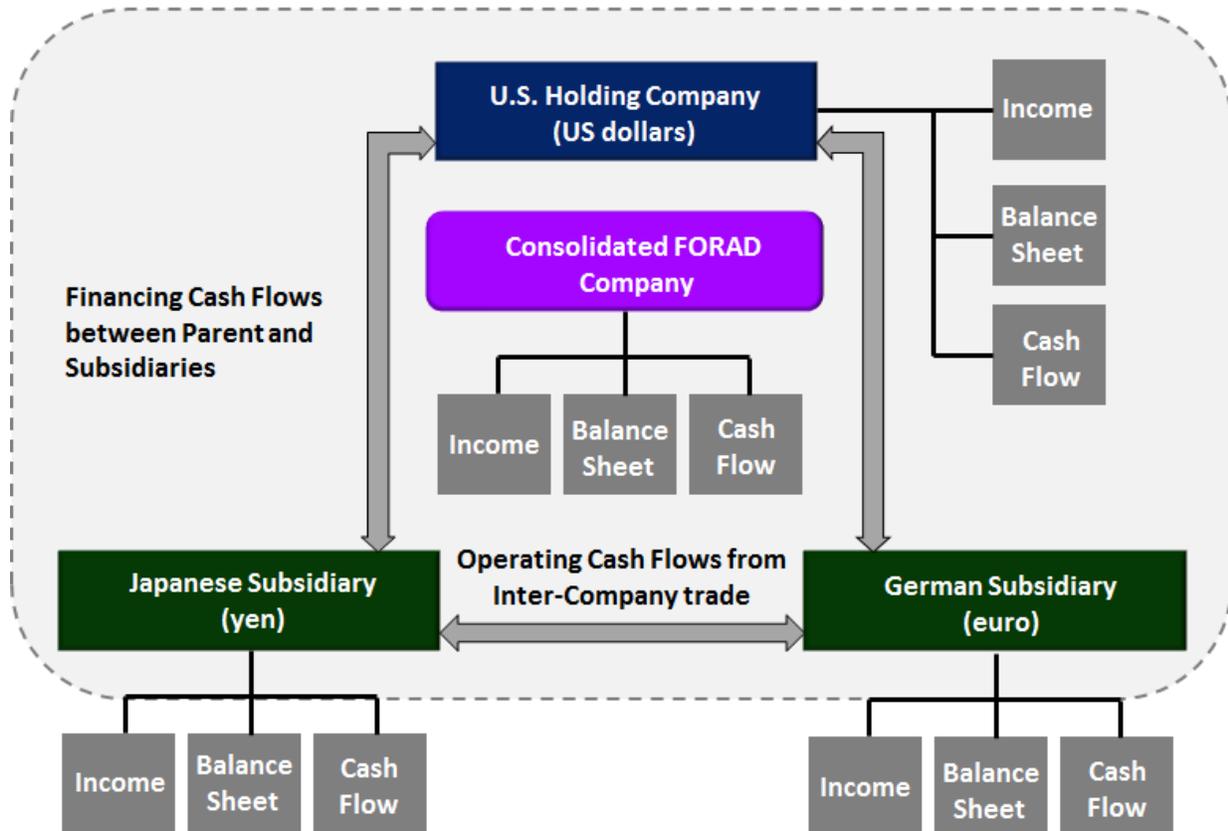
Ultimately, FORAD is about interdependency – how the multitude of individual financial management decisions required in business combine to create the firm's total financial results. And how those decisions must be made in a competitive environment. You will learn to manage financial trade-offs and understand how individual decisions affect multiple areas of the organization, and how these effects evolve over time. You will have the opportunity to test the lessons learned in various business classes (corporate finance, accounting, operations, risk management, taxation) in a game environment that replicates true business finance.

1.1.1 What You Need To Succeed

To be successful, you will have to develop the ability to understand and analyze your own operating and financial reports and performance, as well as those of your competitors. You will probably gain multiple managerial skills too – team management, strategic thinking, communication and presentation,

responsibility, accountability, time management. The quality of the overall learning experience is only limited by your own competitiveness and willingness to invest in yourself and your team. You will probably make mistakes – try to learn from them and not repeat them (either in the competition or in later-life).

FORAD Multinational Company



You are now taking over the financial management of a FORAD company. You will see from the financial statements and other information relating to earlier periods that the company is in a weak financial position, partly because of difficult operating conditions recently and partly because of poor management by the previous management team (which you are replacing). Your goal is to turn the company around: improve profitability, return the company to financial health, position the firm for future growth, and increase returns to shareholders.

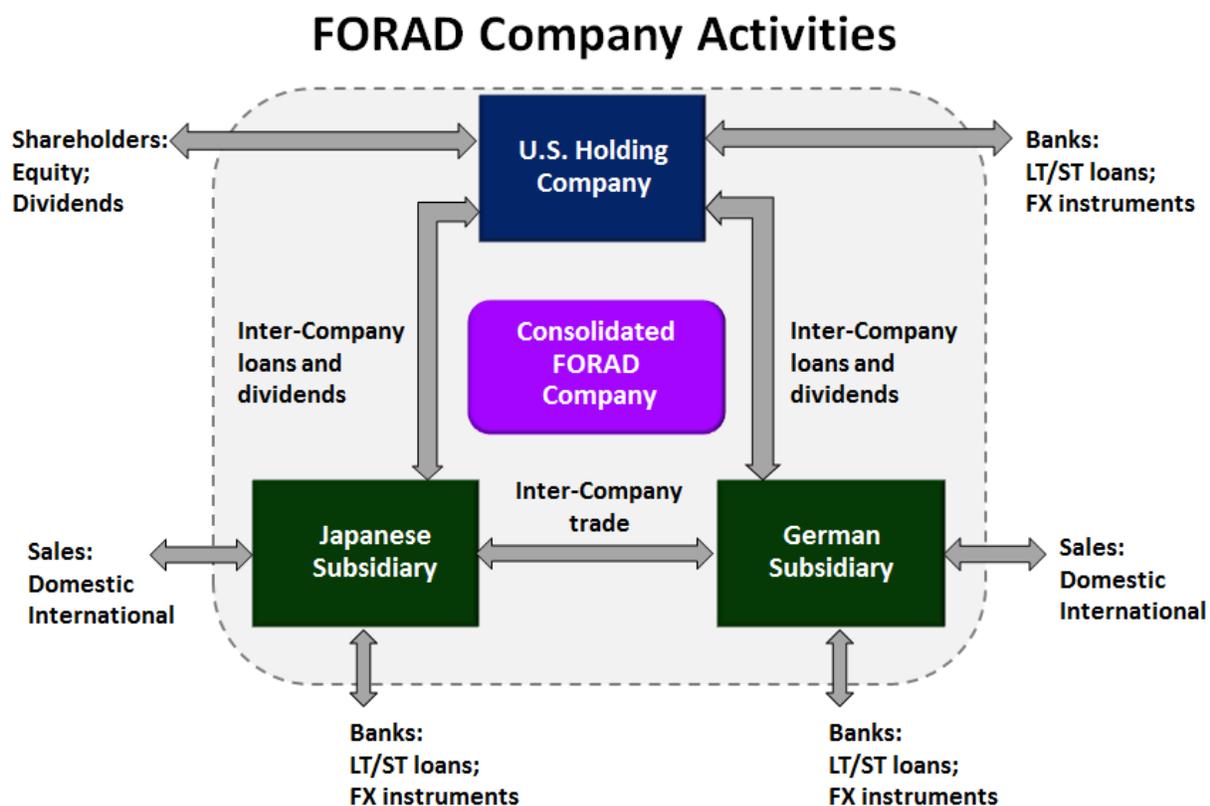
To attain this goal, you will have to strike a balance among several, often conflicting, sub-goals:

- Between the costs of production, holding inventories, and increasing manufacturing capacity;
- Between financing your company cheaply in the short term versus surely in the long term;
- Between eliminating currency risks and remaining open to currency change benefits;
- Between preserving cash balances for opportunistic investments versus reducing assets to eliminate funding needs;
- Between minimizing taxes paid and positioning capital for growth of the corporation.

1.2 The FORAD Companies

The FORAD companies belong to what can be envisaged as an industrial cartel. Each company consists of a U.S.-based parent (holding) company, and two wholly-owned subsidiaries – one Japanese, the other German. The two subsidiaries manufacture different products and serve different markets.

Sales by both subsidiaries are to buyers in both the domestic and export markets. All FORAD companies are allocated the same unit volume in these markets by the cartel. Base selling prices are also the same for each company and are set by the cartel. However, actual selling prices might end up lower for a subsidiary if it offers non-standard payment terms. The German subsidiary also can substantially increase earnings by bidding for additional export sales (*tender sales*) which are awarded on the basis of lowest price. The different FORAD companies compete with each other in this market as well as with Brazilian and Korean firms. Finally, there is an internal market in which the Japanese subsidiary sells components to the German subsidiary while the price and other terms are set by you for your own FORAD company.



The holding company does not manufacture or trade. Its income is derived from license fees, from dividends received from its foreign subsidiaries, interest received from its subsidiaries, and from a variety of financial transactions (for example interest on deposits or from positions in the options or futures markets).

The subsidiaries and the holding company can enter into a wide range of external financial transactions: borrow long term fixed-rate and floating-rate funds; borrow and lend short term [45/90 days] in both the domestic and Eurocurrency markets; buy and sell currencies spot and forward; buy or write currency options; enter into interest rate swaps. In addition, the holding company can buy and sell interest rate futures, raise equity capital, and repurchase outstanding shares.

FORAD companies operate in global markets. You are exposed to uncertain and volatile product, foreign exchange, and financial markets - an environment in which the outcomes are far from certain. Information is more plentiful than reliable. It is global business.

The stock market in which your FORAD company shares are traded tends to be risk averse. It responds favorably to competent (you appear to know what you are doing) and sensible (you do not take excessive or unnecessary risks) management. These attributes are reflected in several measures of performance that will affect the share price of your company.

1.3 Organizing for FORAD

The financial management of a multinational company is a bit complicated, as is FORAD. Our experience has shown that this complexity is best handled with a team of between three and five people. This allows a division of labor, but requires coordinated management. There are a variety of ways in which to divide the tasks or assign roles. One option would be a division by functional task (operations management, tax management, financing, hedging, etc.); another one would be based on unit management (a Japan country manager, a German country manager, etc.); or any combination of those two.

1.4 Strategy Development

Managing your FORAD company is the same as managing any business. Your organization needs direction to work together in a coherent and effective manner towards some commonly agreed upon set of goals.

Strategy development in FORAD should combine overall strategic goals with specific functional principles and practices. In practice, corporations have explicit and often very detailed corporate policy statements towards *financial risk*. Business itself requires taking *business risk*, the risks associated with primary business operations in their chosen line of business. Most businesses therefore prefer to incur their risks in their business line, and not in their financial operations. It is up to you to decide what risks are appropriate for your firm. Experience has shown, however, that few firms achieve sustainable results over time when taking on high levels of financial risk. In other words, "Never confuse luck with talent."

If you decide to adopt an extremely risk-adverse or rigidly conservative strategy, you will most

likely hedge all currency and interest rate exposures, not take part in the tender market, be extremely cautious in adding capacity, and never change corporate dividend payments. You would leave few future financial cash flow obligations to chance, adhering to the philosophy that you have little ability to predict the movement of financial prices (exchange rates, interest rates, commodity prices).

Alternatively, you may decide that an aggressive strategy of taking calculated risks is more to your team's taste. You may utilize a variety of financial derivatives for foreign exchange exposure management, raise debt financing with floating-rate prices, and be active in bidding for occasional tender market sales. These positions typically are based on you forming expectations on the direction and magnitude of movement in financial prices.

1.5 Performance Measures

To win in playing FORAD - to do better than the other teams you are competing against - means achieving the highest share price. This is your objective – to maximize shareholder value by generating the highest share price. To do this means that you must not only generate higher earnings per share (EPS), but also earn higher scores in several measures of performance which the market rewards (P/E ratio).

$$\text{Share Price} = (\text{Annualized Earnings per Share}) \times (\text{P/E ratio})$$

The EPS used by the simulation is a weighted moving average of current and past period earnings, divided by your company's current shares outstanding. The P/E ratio is composed of a series of market assessments of your company's performance:

- Sustained growth of consolidated earnings per share
- Operations - attaining a balance between sales and working capital requirements
- Credit rating of the company
- Currency risk management
- Tax management - minimizing the corporate tax rate
- Optimal corporate dividend policy
- Avoiding dilution - not issuing excessive amounts of new equity
- Quality of earnings - avoiding excessive speculative profits

1.6 How to Use this Manual

Chapter 2 provides a detailed tour of the contents and screens in FORAD.

Chapter 3 describes in detail how to make decisions in FORAD through the five-step procedure of Predictions, Operations, Investing, Financing, and Hedging. Included are the choices, options, instruments, structures, and strategies that you will be exploring in your company management. This

includes how to enter decisions and interpret results that appear on the various screens, and suggests basic decision guidelines.

Chapter 4 outlines the performance measures that are used in FORAD to calculate team earnings per share, team P/E ratios, and team share price.

Appendix 1 details the computer files needed by all teams and how to manage them through the competition.

Chapter 2: How the Simulation Works

2.1 Simulation Overview

The FORAD simulation is mechanically conducted in four basic stages.

Start. You are appointed as the FORAD company management team at the end of period 0 and inherit a company with challenges in multiple areas - operations, capital structure, foreign exchange management, tax management and so on. You are not alone – all competing companies are identical in period 0.

Decision. Your team makes a multitude of operational and financial decisions for the period. At any time during your decisions deliberations you can refresh the model (update) to see all expected impacts. The current period results, as would be the case for any company forecasting quarterly results, are an educated forecast because they are based on predictions of business market and financial market results. Once you have completed your decision for the period, you submit the file **DecisionsT#P#.txt** (e.g., DecisionsT1P1.txt for Team 1 for Period 1) to the FORAD Administrator.

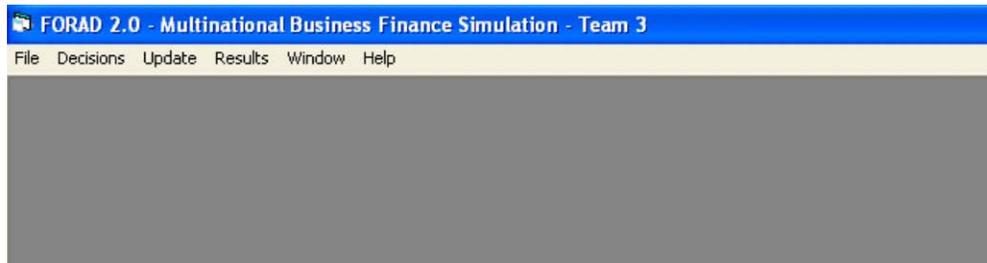
Simulation. After all teams have submitted their decision for the period, the FORAD Administrator runs the simulation for the period. During the simulation, your forecast for market inputs (exchange rates, interest rates, prices, volumes, etc.) are replaced with the period actual inputs and each team's results and performance are recalculated. The model also generates a **Cartel Summary** comparison report which includes each team's consolidated balance sheet and income statement, details about each team's EPS and PE scores, with some comparative operational data. The purpose of the **Cartel Summary** is to provide information about competitor performance similar to public filings like that of the U.S. Securities and Exchange Commission (SEC).

Outcome. After the simulation, you receive from the FORAD Administrator your updated decisions file and the new period assumptions file. Once you save the files in the FORAD folder and reopen the model, you can see the actual results for the previous period. The previous period's results are "closed", as it is now completed. The new period is now open for input and decision-making. The FORAD Administrator will also provide market commentary for the next period's expected sales prices and sales volumes, foreign exchange rates, interest rates, and other information.

The installation procedures for the model are described in Appendix 1.

2.2 Model Navigation

The FORAD model is organized like any other Windows program, with a main menu at the top and sub-menus as part of each main menu item. Getting to know the model by going through all the menus (File, Decisions, Update, Results, Window, Help) and sub-menus now will save you time, and confusion, later. This section will highlight the contents of each menu and its sub-menus.

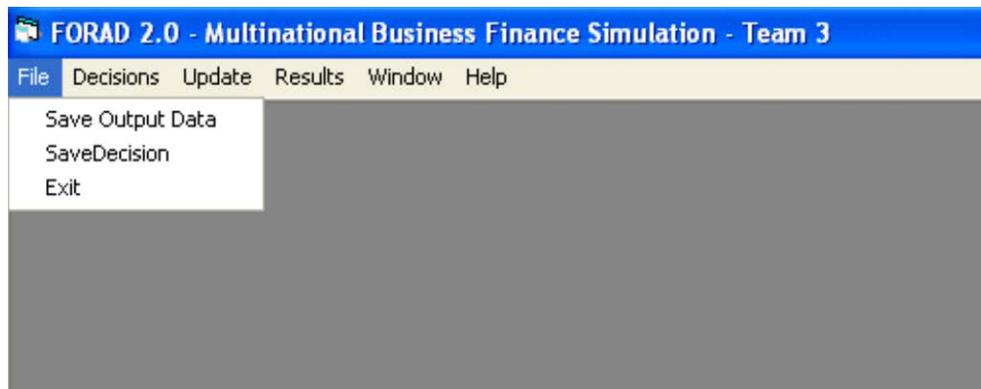


2.2.1 File

The main menu **File** has the following sub-menus.

Save Output Data. The file **Decision and Results Output.csv** file in the folder MyDocs\Tower46\Foradv1 is updated - this file contains details about the prior period final results and the current period results based on your projections. You can save the file in excel format and analyze it any way you would like.

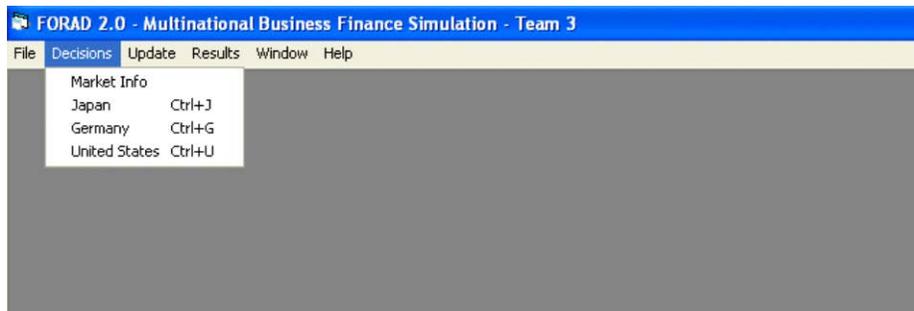
Save Decision. Whenever you wish to save your work, select File/Save Decision, which will save all current inputs and refresh your results for the current period. It is a good idea to save your decision from time to time.



Exit. To exit the model, simply select File/Exit.

2.2.2 Decisions

This is the menu you use to enter your predictions and decisions and review market data. It includes **Market Info** and **Menu by subsidiary** (for decisions inputs).



Market Info. This section contains interest rate data for the prior and current periods. (Note that as is the case with financial markets, you know the interest rate for the current period for obligations undertaken today.) These are base or market rates, and do not include company specific credit spreads.

Japan, Germany, United States. This sub-menu will open master screens to input your decisions for each of the foreign subsidiaries and the U.S. Holding Company. This is the core of your FORAD decision-making, requiring you to make a series of decisions in each unit for Operations, Investing, Financing, and Hedging.

	Period 2 Actual	Period 3 Decision
USD		
3-month Interbank Bid Rate	3.1250%	3.3750%
3-month Interbank Offer Rate	3.2500%	3.5000%
6-month Interbank Offer Rate	3.3500%	3.5500%
Domestic Deposit Rate	3.0000%	3.2500%
Long-Term Fixed Rate	5.5000%	5.5000%
Long-Term Floating Rate	3.2500%	3.5000%
JPY		
3-month Interbank Bid Rate	1.8750%	2.6250%
3-month Interbank Offer Rate	2.0000%	2.7500%
6-month Interbank Offer Rate	2.1250%	3.0000%
Domestic Deposit Rate	1.7500%	2.5000%
Long-Term Fixed Rate	3.5000%	4.0000%
Long-Term Floating Rate	2.0000%	2.7500%
EUR		
3-month Interbank Bid Rate	2.3750%	2.6250%
3-month Interbank Offer Rate	2.5000%	2.7500%
6-month Interbank Offer Rate	2.5200%	2.8200%
Domestic Deposit Rate	2.2500%	2.5000%

You enter all inputs in the white cells. All other cells are information cells (gray) which will be updated

whenever you refresh (update) the model. Most screens include historical data for the prior period.

Operations (only for Japan and Germany) - to input operational decisions:

- Capacity and production decided
- Forecast for sales volumes by type and sale prices (for both domestic and export sales)
- Currency of invoice for export sales
- Inter-company trade – sales price and currency of invoice (Germany only)
- Credit terms
- Dividend to the Holding Company
- Forecast for the end of period oil price (Japan only)
- Oil exposure hedging (Japan only)
- Tender market (Germany only) - if the tender market is available during the period you will see the total size in this screen. If you would like to participate, enter your official bid for price and volume and forecast for the expected results for volume and clearing price (more details in the section Operations)

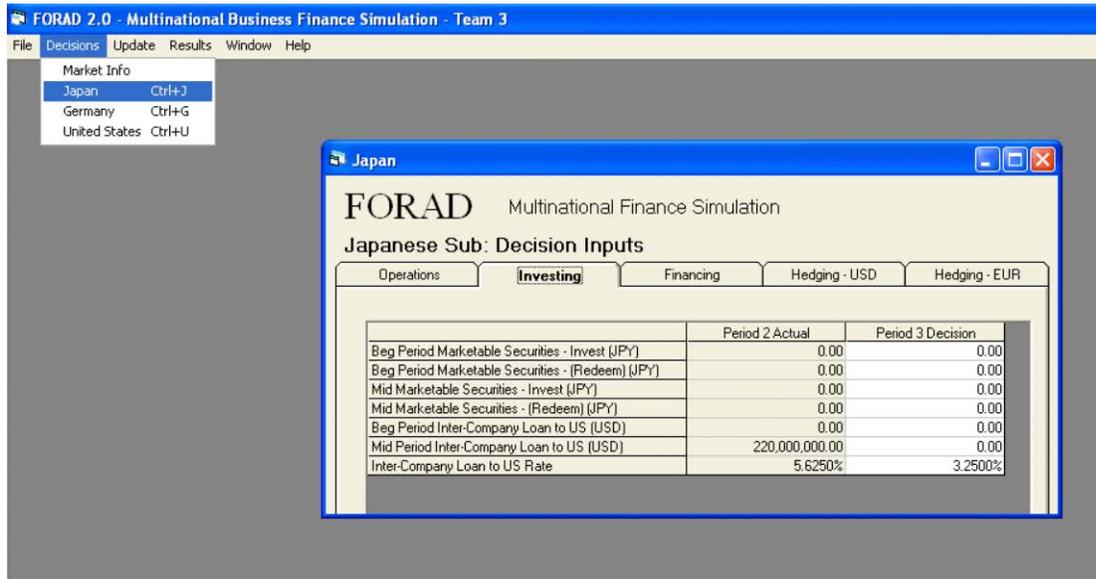
The screenshot shows the FORAD 2.0 software interface. The main window is titled 'FORAD Multinational Finance Simulation' and is currently displaying the 'Japanese Sub: Decision Inputs' window. The window has a menu bar with 'File', 'Decisions', 'Update', 'Results', 'Window', and 'Help'. A 'Market Info' dropdown menu is open, showing options for 'Japan' (Ctrl+J), 'Germany' (Ctrl+G), and 'United States' (Ctrl+U). The 'Operations' tab is selected, and the table below shows the following data:

	Period 2 Actual	Period 3 Decision
Capacity	520,000.00	550,000.00
Beginning Inventory	256,340.00	256,640.00
Production Decided	520,000.00	550,000.00
Sales Volume	519,700.00	529,700.00
Ending Inventory	256,640.00	276,940.00
Sales from Current Production	263,360.00	273,060.00
Domestic Sales Units	112,800.00	112,800.00
Export Sales Units	216,900.00	216,900.00
Price Forecast (JPY)	47,600.00	48,000.00
Inter-Company Sales Units	190,000.00	200,000.00
Export Currency	USD	USD
Inter-Company Currency	JPY	JPY
Inter-Company Sales Price (USD)	550.00	570.00
Domestic Collections Days	90.00	90.00
Export Collections Days	90.00	90.00
Inter-Company Collection Days	0.00	0.00
Domestic Payables Days	0.00	0.00
Import Payable Days	0.00	0.00
Dividend to Holding Company (JPY)	1,740,000,000.00	2,000,000,000.00
Ending Oil Price Per Barrel (USD)	48.20	45.00
Oil Futures Price Per Barrel (USD)	30.85	48.59
Oil Exposure long/(short) (Barrels)	-2,080,000.00	-2,200,000.00
Oil Futures 1 contract=1,000 barrels Buy/(Sell)	2,080.00	0.00

Investing (all three subsidiaries) - to input investing decisions.

- Marketable debt securities invest/redeem at the beginning or middle of the period
- Inter-company loans from Japan or Germany to the Holding Company and the interest rate on these loans

- Share repurchases (Holding Company only)
- Dividend per share to stockholders (Holding Company only)



Financing (all three subsidiaries) - to input financing decisions. Note that at the bottom of the screen you can see your projected cash positions in local currency on key days of the period - day 0, 30, 45, 60 and 90. The cash positions will be updated for any new inputs after refreshing the model. Use these to help you decide how much to borrow/invest.

- Short-term loans, in all three currencies, beginning and middle of the period
- Inter-company loans from the Holding Company to the German and Japanese subsidiaries, beginning and middle of the period; principal amounts and interest rates
- Borrowings and repayments of long-term fixed-rate and floating-rate debt
- Whether to call the zero-coupon convertible bond (Holding Company only)
- New shares issuance (Holding Company only)
- Swaps - the data for swap positions is accessed from the buttons on the top right corner of the financing screen. The inputs needed are notional amount for new swap and/or notional amount for swap to be unwounded. The swap rate is not negotiable and is such as the value of the swap position at initiation is zero. After refreshing the model, you will see the effects from your swaps' decisions.

The screenshot shows the FORAD 2.0 software interface. The main window is titled "FORAD Multinational Finance Simulation" and displays "Japanese Sub: Decision Inputs" under the "Financing" tab. A table shows financial data for Period 2 Actual and Period 3 Decision. A "Market Info" dropdown menu is open, showing options for Japan, Germany, and United States.

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Mid Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (JPY)	0.00	0.00
Long-Term Fixed-Rate Repayment (JPY)	0.00	0.00
Long-Term Floating-Rate Issuance (JPY)	20,000,000,000.00	0.00
Long-Term Floating-Rate Repayment (JPY)	0.00	0.00
Beg Period Inter-Company Borrow from US (USD)	0.00	0.00
Mid Period Inter-Company Borrow from US (USD)	0.00	0.00
Inter-Company Borrow Rate	2.6250%	3.2500%
INTRA-PERIOD CASH BALANCES		
Day 0	837,285,991.74	-144,078,199.36
Day 30	2,112,173,731.99	57,539,887.49
Day 45	1,442,236,352.11	-54,534,369.86
Day 60	2,079,680,222.24	46,274,673.57
Day 90	1,363,673,292.97	-2,648,841.62

Hedging (Currency 1 and Currency 2) - to review your foreign exchange exposures by type and currency and decide if and how to hedge. Look at the bottom of the screen to check your expected foreign exchange results; note that these are expected results based on the end of period rate you forecast - gain/loss from the underlying exposures, gain/loss from the hedges, and gain/loss if all exposures are covered with forwards (benchmark).

- Foreign exchange rates - you can see the actuals for prior period Foreign exchange rates and the current period beginning and forward rates; the end of period rate is your forecast - it is entered from the Holding Company hedging screens and appears as informational cell in the screens for Japan and Germany
- Forward contracts notional principals
- Foreign exchange options notional principals and strike prices - the premium for the option selected is updated after the model is refreshed for the strike price input
- Foreign exchange graphs button - to view the expected Foreign exchange results in graphical form - includes Foreign exchange results of the unhedged position, 100% forward hedge and your specific hedging decision; note that if you do not have exposure, the graphs are not available

- Interest rate hedging (Holding Company only) - notional principal for the interest rate futures contracts by currency; note that the interest rates futures rate are non-negotiable

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

Japan

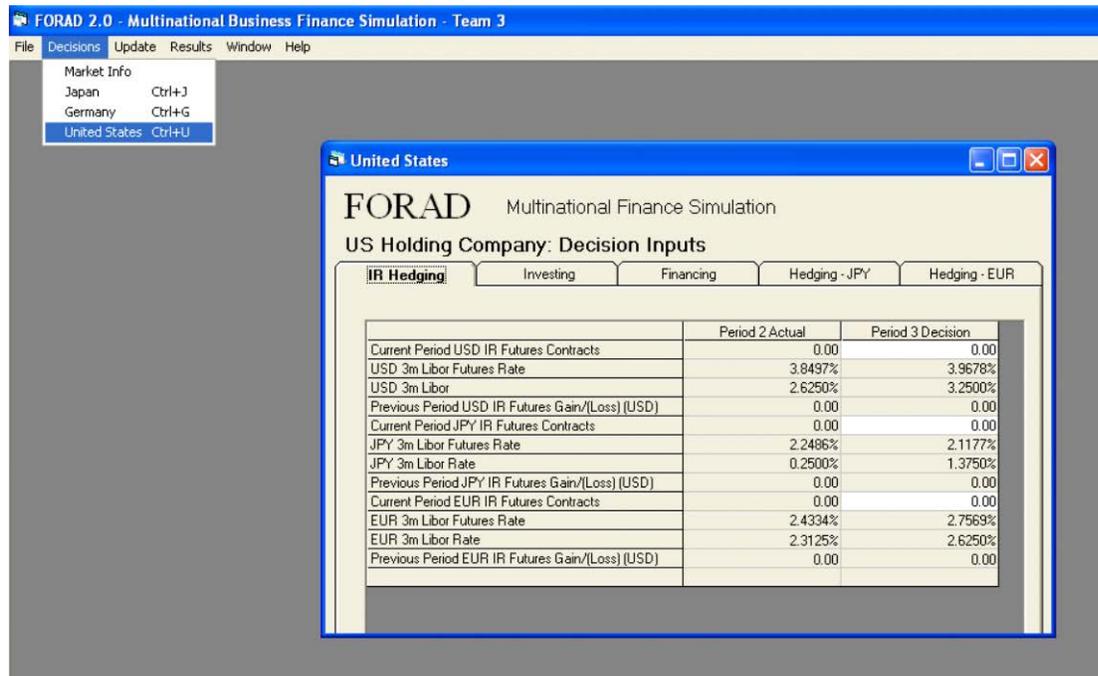
FORAD Multinational Finance Simulation

Show FX Hedging Graph

Japanese Sub: Decision Inputs

Operations Investing Financing Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period FX Rate (JPY/USD)	102.0000	94.6000
End Period FX Rate (JPY/USD)	94.6000	98.0000
Average Period FX Rate (JPY/USD)	98.3000	96.3000
Forward FX Rate (JPY/USD)	101.3981	94.1600
FX Volatility	10.0000%	12.0000%
Export Sales Exposure (USD)	109,137,843.55	106,236,734.69
Inter-Company Sales/Expense Exposure (USD)	0.00	0.00
Imported Materials Exposure (USD)	0.00	0.00
Dividend Exposure (USD)	0.00	0.00
Tender Sales Exposure (USD)	0.00	0.00
Financial Loans Exposure (USD)	0.00	0.00
Financial Investments Exposure (USD)	221,546,875.00	0.00
Total Exposure (USD)	330,684,718.55	106,236,734.69
Forward Contract (USD)	-317,000,000.00	0.00
Net Contractual Exposure (USD)	13,684,718.55	106,236,734.69
Call Option Notional (USD)	0.00	0.00
Call Option Strike Price (JPY/USD)	109.3509	109.3509
Call Option Price (JPY/USD)	0.1515	0.0125
Put Option Notional (USD)	0.00	100,000,000.00
Put Option Strike Price (JPY/USD)	109.3509	98.0000
Put Option Price (JPY/USD)	8.1536	4.7354
Gain/(Loss) on Export Sales (JPY)	-807,620,042.28	361,204,897.96
Gain/(Loss) on Inter-Company (JPY)	0.00	0.00



2.2.3 Update

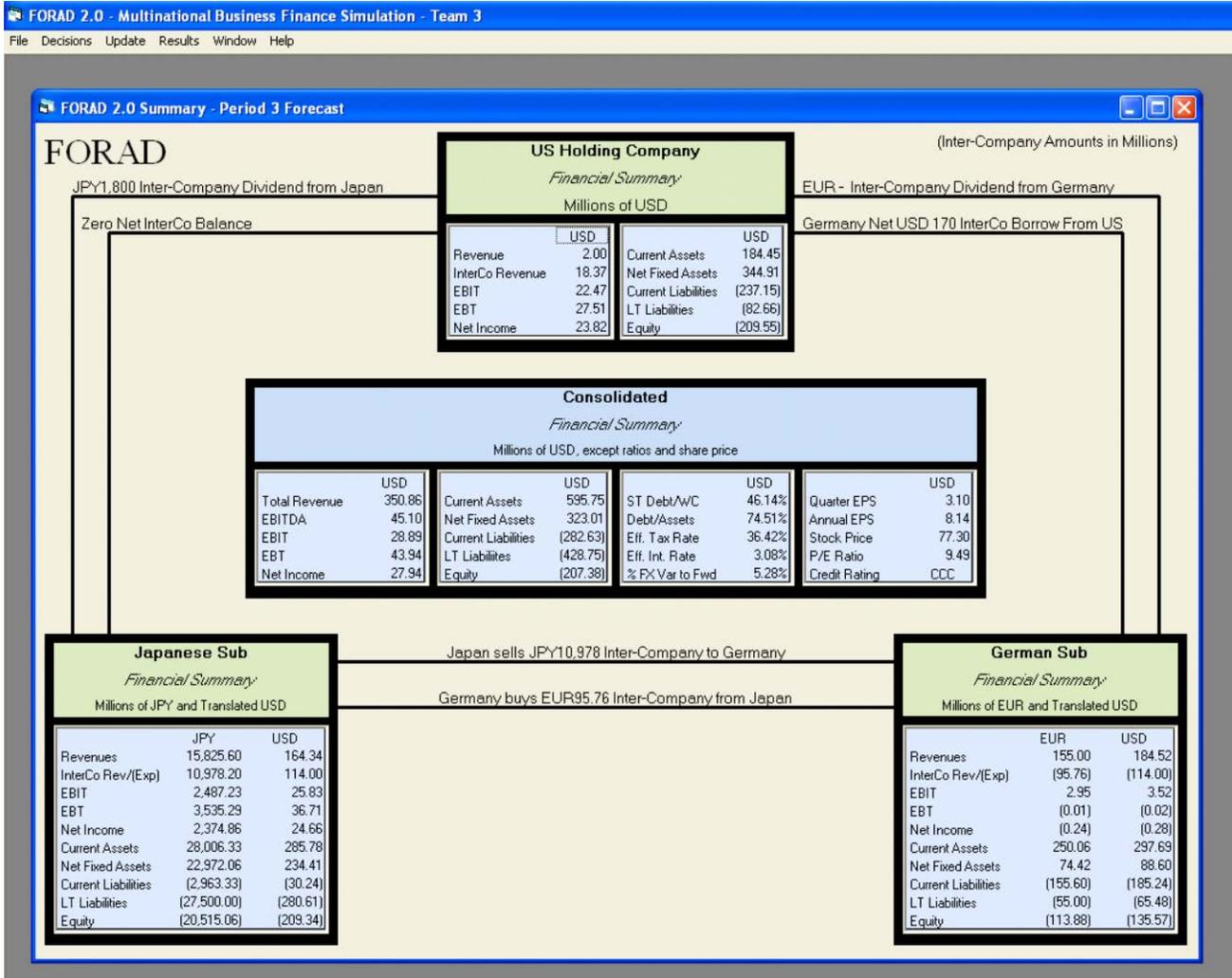
You can refresh (update) all FORAD model calculations at any time by clicking on Update. As a shortcut you can use the key stroke combination *ctrl+r*.

2.2.4 Results

The model produces multiple real-time reports. Most reports show the current period and a few historical periods. Scroll left-right to view all periods, and sup-down to view all details. The reports appear in separate screens, but multiple screens can be open at the same time. The screens can also remain open while you change inputs in the decision screens - update and monitor the results on a real time basis. Select Results from the main menu to access the available reports:

- Consolidated financial statements
- Details about the Inter-company elimination to produce the consolidated statements
- PE scoring - results for the different elements of the PE score, EPS and share price
- Summary - highlights for the results by subsidiary in a graphical form
- Reports by subsidiary
- Taxes – summary and details

Summary Screen. The opening screen in FORAD presents a summary of all three subsidiaries as well as consolidated results, all on one screen.



This is a summary of the projected results for the current period – the period for which you are now making decisions. The summary is based on all of the inputs you have supplied, or if not supplied, the default values (which are the end of period values from the previous period). Use this screen to review sensitivity and scenario results as you work through your current period decision.

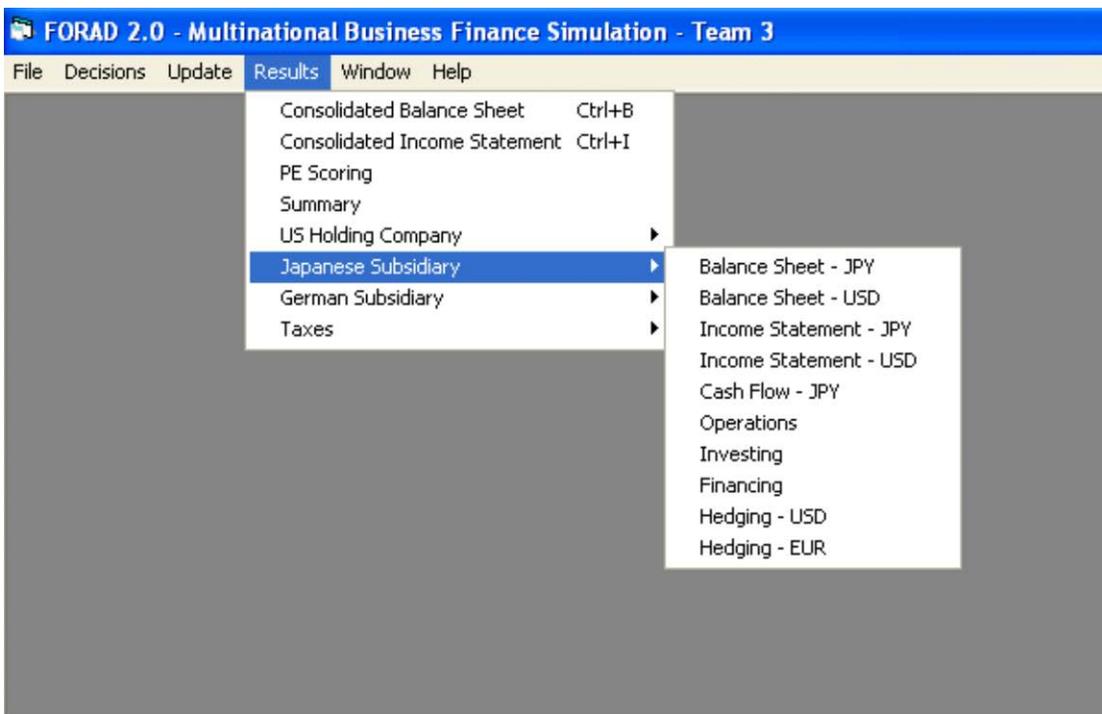
Detailed reports by subsidiary

- Balance sheet and income statement in both local currency and in USD
- Cash flow statement in local currency
- Operational details
- Investing details
- Financing details
- Hedging by currency

Taxes

- Tax summary - taxes and tax rates by subsidiary and for the consolidated company, foreign credit and debit balances and carry-forward – the current period only
- Japan and Germany Inter-company dividend tax gross-up calculations

- Japan and Germany Inter-company interest payment tax gross-up calculations



2.2 Stress Testing

When you are in a process of taking decisions for the current period, the forecasted results are based on your predictions for market data. The actual results after the simulation could be quite different if your forecasts are materially different from the actual rates. You are encouraged to stress test your decisions - enter extreme values for your predictions and examine the results.

- Are you comfortable with the result?
- Does your hedging structure work the way you planned?
- Is there something you can adjust to improve?

FORAD Tips 2.1 Model Command Shortcuts

Copy and paste from the FORAD screens to Excel by highlighting cells and using the familiar key strokes ctrl+c to copy and then in excel, ctrl+v or the menus to paste.

- Refresh the results for recent entries - ctrl+r
- Enter amount in million - amount+m. For example, 2.5m becomes 2,500,000
- Enter amount in billion - amount+b. For example, 4b becomes 4,000,000,000
- To access the decisions screen for Japan - ctrl+j
- To access the decisions screen for Germany - ctrl+g
- To access the decisions screen for the Holding Company - ctrl+u

Chapter 3: FORAD Decisions Making

3.1 FORAD screens and Decisions Making

When you take over the management of your FORAD company, you start with Period 1 - you are actively making decisions and managing your company for Period 1. Included on your various screens – income statements, balance sheets, cash flow statements – are the financial and operating results for Period 0 (the recent past). All periods represent a 90 day period, one quarter.

- Remember that period 0 results reflect the decisions of the management group you are replacing; and that they are the same for all FORAD companies.
- Your company is identified by a number from 1 to 20 (Team 1, Team 2, etc.) which appears at the top of your screen. Always verify that the company number you see is correct.
- When you have finished entering and testing your decisions, you must quit FORAD by saving your decision. When you return to continue making decisions, simply click on FORAD on your computer's start menu under programs. You can exit and reopen FORAD as often as you need, but remember to save your work.
- You manage your FORAD company for a series of 3-month periods. For each of these, you receive some information on expected conditions in the financial and product markets: sales volumes and prices, interest rates, and exchange rates.
- Product market forecasts (sales volumes, prices and costs) are much more reliable than those for the financial markets (interest rates, exchange rates). Based on this information, you must first estimate sales volumes and prices.
- You need to also forecast foreign exchange rates, oil prices, and other key prices and volumes.
- You can test various operating, financing, and hedging decisions by simulating the results for the period. This process normally should be repeated until you obtain acceptable results - or until you run out of time, patience, or both.

Making a decision in FORAD requires five steps: *Predictions, Operations, Investing, Financing, and Hedging*. You must make operating decisions for both of the foreign subsidiaries, Japan and Germany. While the simulation allows decisions to be made in any category of any entity in any order, you need to both develop and follow a disciplined decision process to avoid making costly errors.

3.2 Predictions

The first step in making a FORAD Decision is *Prediction*. At the beginning of each period, all FORAD companies are given information regarding the state of the industry they operate in, as well as economic commentary about the current market environment and expectations for the interest and currency rates trends. Your team is responsible for making predictions for a few select financial and operational inputs outside of your company's control. The accuracy of your predictions affects your decision making effectiveness, EPS, and your planning skills score, part of the total PE score. And as in business, you will not know the accuracy of your forecasts until business – or the simulation in this case – has occurred.

Your predictions of specific values – exchange rates, oil price, your product market prices and volumes – are critical to your management decisions. Note that all default values for all predictions are the previous period's actual results. The forecast and commentary you are given provide some insights into these various values, but as is the case with markets every day, no publication – *The Wall Street Journal*, *Financial Times*, or *Far Eastern Economic Review* – is capable of predicting the future.

3.2.1 Foreign Exchange Rates

Go to Decisions/US Holding Company/ Hedging JPY and Hedging EUR and enter your expectations for the end of period exchange rate between the Japanese yen and the U.S. dollar (JPY/USD) and the U.S. dollar and the euro (USD/EUR).

The screenshot shows the 'FORAD 2.0 - Multinational Business Finance Simulation - Team 3' interface. A 'Market Info' menu is open, showing 'Japan Ctrl+J', 'Germany Ctrl+G', and 'United States Ctrl+U'. The main window is titled 'United States' and 'FORAD Multinational Finance Simulation'. The 'US Holding Company: Decision Inputs' window is active, showing a table with columns for 'Period 2 Actual' and 'Period 3 Decision'. A red arrow points to the 'Period 3 Decision' column for the 'End Period FX Rate (JPY/USD)' row.

	Period 2 Actual	Period 3 Decision
Beg Period FX Rate (JPY/USD)	102.0000	94.6000
End Period FX Rate (JPY/USD)	94.6000	98.0000
Average Period FX Rate (JPY/USD)	98.3000	96.3000
Forward FX Rate (JPY/USD)	101.3981	94.1600
FX Volatility	10.0000%	12.0000%
Export Sales Exposure (JPY)	0.00	0.00
Inter-Company Sales/Expense Exposure (JPY)	0.00	0.00
Imported Materials Exposure (JPY)	0.00	0.00
Dividend Exposure (JPY)	1,566,000,000.00	1,800,000,000.00
Tender Sales Exposure (JPY)	0.00	0.00
Financial Loans Exposure (JPY)	0.00	-23,064,687,500.00
Financial Investments Exposure (JPY)	0.00	0.00
Total Exposure (JPY)	1,566,000,000.00	-21,264,687,500.00
Forward Contract (JPY)	0.00	0.00
Net Contractual Exposure (JPY)	1,566,000,000.00	-21,264,687,500.00
Call Option Notional (JPY)	0.00	0.00
Call Option Strike Price (JPY/USD)	130.0000	130.0000
Call Option Price (USD/JPY)	0.0022	0.0029
Put Option Notional (JPY)	0.00	0.00
Put Option Strike Price (JPY/USD)	130.0000	130.0000
Put Option Price (USD/JPY)	0.0000	0.0000
Gain/(Loss) on Export Sales (USD)	0.00	0.00
Gain/(Loss) on Inter-Company (USD)	0.00	0.00

3.2.2 Oil price

Go to Decisions/Japan/Operations. You need to enter your forecast for the spot oil price for the current quarter in the cell Ending Oil Price Per Barrel (USD). Check the commentary provided for any insights into possible future values.

FORAD Tip 3.1 The Power of Predictions

- Keep in mind that the predictions you enter determine your forecast results for the period and could be misleading. No one knows the future.
- The accuracy of your predictions will affect your planning skills segment of your total PE score.
- Use the commentary to help you form financial and operational forecasts.
- It is a good idea to use your predictions to stress test your decisions. For example, what would your results be if the USD/EUR rate is 20% different from what you think it would be?

3.2.3 Japanese subsidiary sales prices and volumes

Go to Decisions/Japan/Operations. You need to enter values in the white cells for three key areas: Domestic Sales Units, Export Sales Units, and Price Forecast (JPY). The commentary for the period will provide you with a forecast of these values for the period. Although they are only a forecast and may prove to not be precisely correct, they will typically vary by less than $\pm 3\%$ from the actual ending values.

3.2.4 German subsidiary sales prices and volumes

Go to Decisions/Germany/Operations. You need to enter values in the white cells for three key areas: Domestic Sales Units, Export Sales Units, and Price Forecast (EUR) - these are in the same place they are for the Japanese subsidiary. Again, the commentary for the period will provide you with a forecast of these values for the period. Although they are only a forecast and may prove to not be precisely correct, they will typically vary by less than $\pm 3\%$ from the actual ending values.

3.3 Operations

The second step in making a decision is *Operations*. Your FORAD company has two operational subsidiaries, one in Japan and one in Germany. The U.S. Holding Company is the legal owner of the two foreign subsidiaries, and all production and operations occurs in the foreign subsidiaries. Your company's operational decisions, the core of the business, drive the rest of your decisions for the period - investing, financing, and hedging. You should start with operating decisions.

3.3.1 Japanese Subsidiary Operations

FORAD companies operate within what might be considered a cartel. Each company receives the same volume sales at the same market price. Your company must meet its sales volumes for the quarter. The FORAD model will first draw sales volumes from your existing inventories, and then fill any remaining volume needs from current period production.

Capacity. You cannot produce more than your available capacity. You may therefore need to invest in additional capacity to meet market demand. Sales fulfilled from current production (i.e., not from existing inventory) incur excess production costs. You will therefore need to balance the cost of

investing in new capacity to maintain sufficient inventory against the excess production costs incurred from selling out of current period production.

Capacity expansion is an investment in local currency. The cost of a unit of capacity is JPY100,000 in Japan and EUR2,000 in Germany. Capacity additions are in increments of 50,000 units in Japan and 10,000 units in Germany. These investments constitute a cash outflow on day 0 of the period; added capacity is immediately available. Capacity investment is depreciated over a 20 year period, with depreciation beginning in the current period. You cannot sell or eliminate existing capacity. You enter your capacity decisions in the sections labeled Decisions/Japan/Operations and Decisions/Germany/Operations.

Capacity investment – like all investments in fixed assets – is an investment based on your outlook for the medium to long-term market and sales prospects for your FORAD company beyond the current period.

Sales volume. Japan has three markets – domestic, international and Inter-company. The volume for domestic and international sales is determined by the market and it is the same for all teams. Inter-company sales volume is determined by the current period production in Germany; each finished unit in Germany requires 2 units of input from Japan.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

Japan

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Operations Investing Financing Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Capacity	520,000.00	550,000.00
Beginning Inventory	256,340.00	256,640.00
Production Decided	520,000.00	550,000.00
Sales Volume	519,700.00	529,700.00
Ending Inventory	256,640.00	276,940.00
Sales from Current Production	263,360.00	273,060.00
Domestic Sales Units	112,800.00	112,800.00
Export Sales Units	216,900.00	216,900.00
Price Forecast (JPY)	47,600.00	48,000.00
Inter-Company Sales Units	190,000.00	200,000.00
Export Currency	USD	USD
Inter-Company Currency	JPY	JPY
Inter-Company Sales Price (USD)	550.00	570.00
Domestic Collections Days	90.00	90.00
Export Collections Days	90.00	90.00
Inter-Company Collection Days	0.00	0.00
Domestic Payables Days	0.00	0.00
Import Payable Days	0.00	0.00
Dividend to Holding Company (JPY)	1,740,000,000.00	2,000,000,000.00
Ending Oil Price Per Barrel (USD)	48.20	45.00
Oil Futures Price Per Barrel (USD)	30.85	48.59
Oil Exposure long/(short) (Barrels)	-2,080,000.00	-2,200,000.00
Oil Futures 1 contract=1,000 barrels Buy/(Sell)	2,080.00	0.00

Sales prices, collection terms, and currency of invoice. The base domestic sales price is determined by the market, and assumes standard collection terms of 90 days. You can, however, change collection terms each period, but non-standard terms results in the following adjustments to the base price:

Collection at Day	<u>0</u>	<u>30</u>	<u>60</u>	<u>90</u>
Base price adjustment	-3%	-2%	-1%	---

You can select 0, 30, 60, or 90 day terms. Terms for export sales and domestic sales are set independently. The same price adjustments apply to both domestic and export sales.

Export sales are made in a preferred currency of denomination which is determined by the market. The preferred currency is typically USD, but could vary by period. You have the option to change the currency of invoice for export sales to other than the period's preferred currency, but doing so results in a 1% discount from the base price.

FORAD Tip 3.2 Capacity Decisions

- Discuss with your team and agree on a long term strategy for your capacity decisions - do you want to be lean and invest gradually or you want to invest aggressively?
- If you prefer to invest early - have you considered the cost? What are the dangers if you invest gradually?
- If you want to invest aggressively - when do you want to do it? Why?
- How are you financing the capacity investment?
- FORAD companies operate in a very competitive market - what is your competitors' strategy?

The sales price and currency of invoice for Inter-company trade is determined by you. There is no price adjustment as a result of changes in Inter-company currency of invoice or credit terms. Note that the Inter-company sales price, a *transfer price*, is limited to +/- 5% of the prior period sales price in Japan.

The volume for Inter-company sales is determined automatically, and is twice the volume of production in Germany. You enter the Inter-company price, pay terms, and currency of invoice from the tab Decisions/Germany/Operations.

FORAD Tip 3.3 Inter-Company Trade

- The Inter-company transfer price has material implications for the profitability of your subsidiaries - think about the implications for your consolidated results.
- Inter-company trades represent significant part of the subsidiaries' business - how can you manage your cash flows and Foreign exchange exposures with changing the pay terms and currency of invoice?
- What is best for the consolidated company?

Production, pay terms, and currencies. To produce one unit of output, Japan uses domestic and imported materials, and imported oil. Enter your production decisions and payment terms from the Decisions/Japan/Operations screen.

Domestic materials are purchased in Japanese yen. The price is determined by the market and is relatively stable. The base domestic materials price is for a standard 90 day payment period. You may change the payment terms the same way you would for collection terms, with the same adjustments to base price. In other words, if you elect to pay earlier than 90 days, you will pay less. Imported materials are purchased in USD only. The price is again determined by the market, but you may alter payment terms in the same fashion you do for the domestic payments.

Oil is an important input to production in Japan and is purchased in USD. It may make up anywhere from 25% to 50% of all Japanese cost of goods sold. You cannot change the currency of

invoice or payment terms for oil purchases. Oil is purchased as needed; you cannot purchase more than you need for the current production and store it for future use. The price of oil can be quite volatile. If you are pursuing a cautious operating strategy you may want to hedge oil purchases. (Oil futures are detailed in the Hedging section.)

Labor costs in Japan are paid in Japanese yen. Production of one unit of output in Japan requires 2 units of domestic materials, 2 units of imported materials, 4 barrels of oil, and 5 hours of labor and overhead expenses. The costs for domestic and imported materials and labor are relatively stable. Production cost per unit for the period is the sum of the cost for domestic and import materials, labor and overhead and oil.

If meeting current period sales volumes requires sale of units from current production, you will be charged with excess production costs for these units. The excess production cost charge is 7.5% over the current period production cost on a per unit basis. The number of units charged with excess production cost is the difference between the sales volume for the period and the beginning inventory.

Cost of goods sold (COGS) per unit for the period is the weighted average of the beginning inventory at the prior period COGS and the current production at the current period total production costs. Total COGS for the period is the COGS per unit times the sales volume for the period. Selling, general, and administrative costs (SG&A) are 7% of total revenues for the period.

FORAD Tip 3.4 Production and Credit Terms

- Once you enter your production decision and refresh, the model will recalculate the ending inventory based on your predictions for sales volume. Monitor your ending inventory. Low inventory results in sales from current production which incurs excess production costs.
- Your production cannot result in negative inventory. If after the simulation actual sales happen to be significantly higher than your prediction and you did not plan to produce enough, then the model will "force" your company to produce enough to fulfill market demand. This will probably be very costly in terms of how the production is financed, as well as the possibility of unexpected foreign exchange exposures.
- Production in Germany affects sales in Japan. It is recommended you start your decisions from Germany.
- Your current period production cannot result in ending inventory lower than a certain level. Once again - keep in mind that this limit is based on your sales forecast.
- Think about the tradeoff between collecting from customers early and the cost for financing. Same for pay terms to your suppliers.
- Collections and payments in foreign currencies create foreign exchange exposures. Think about how your credit terms and currency of invoice decisions effect your hedging decisions.

3.3.2 German Subsidiary Operations

The German subsidiary sells into two different markets, domestic and international, in addition to the optional - the *tender market*. Sales volumes for both the domestic and international markets are set by the cartel, and are therefore the same for all teams. *Tender sales* are not available each period, and even when available, many teams choose not to participate. Even when choosing to participate, many tender bids are unsuccessful.

Tender Sales. You have the option to bid for *tender sales*, additional sales awarded on the basis of the successful completion of a winning bid. Tender sales may not always be offered, and when they do, constitute one-time only current period sales. A successful bid results in additional sales volume and revenue for the period. You choose whether or not to participate in tender sales auctions.

Tender sales are conducted as a Dutch auction. At the beginning of the period the FORAD Administrator will announce the projected tender sales volume for the period. This will typically be a range of volumes, for example, 8,000-10,000 units.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
Japan Ctrl+J
Germany Ctrl+G
United States Ctrl+U

Germany

FORAD Multinational Finance Simulation

German Sub: Decision Inputs

Tender Market

Operations Investing Financing Hedging - USD Hedging - JPY

	Period 2 Actual	Period 3 Decision
Capacity	95,000.00	100,000.00
Beginning Inventory	69,780.00	68,136.00
Production Decided	95,000.00	100,000.00
Sales Volume	96,644.00	100,000.00
Ending Inventory	68,136.00	68,136.00
Sales from Current Production	26,864.00	31,864.00
Domestic Sales Units	19,469.00	22,000.00
Export Sales Units	77,175.00	78,000.00
Price Forecast (EUR)	1,518.00	1,550.00
Export Currency	USD	USD
Inter-Company Currency	JPY	JPY
Inter-Company Sales Price (USD)	550.00	570.00
Domestic Collections Days	90.00	90.00
Export Collections Days	90.00	90.00
Inter-Company Collection Days	0.00	0.00
Domestic Payables Days	90.00	90.00
Import Payable Days	90.00	90.00
Dividend to Holding Company (EUR)	0.00	0.00

The screenshot displays two windows from the FORAD 2.0 simulation. The primary window, 'German Sub: Decision Inputs', shows a table with columns for 'Period 2 Actual' and 'Period 3 Decision'. The secondary window, 'German Sub: Tender Sales', shows a table with columns for 'Period 2' and 'Period 3'.

	Period 2 Actual	Period 3 Decision
Capacity	95,000.00	100,000.00
Beginning Inventory	69,780.00	68,136.00
Production Decided	95,000.00	100,000.00
Sales Volume	96,644.00	100,000.00
Ending Inventory	68,136.00	68,136.00
Sales from Current Production	26,864.00	31,864.00
Domestic Sales Units	19,469.00	22,000.00
Export Sales Units	77,175.00	78,000.00
Price Forecast (EUR)	1,518.00	1,550.00
Export Currency	USD	USD
Inter-Company Currency	JPY	JPY
Inter-Company Sales Price (USD)	550.00	570.00
Domestic Collections Days	90.00	90.00
Export Collections Days	90.00	90.00
Inter-Company Collection Days	0.00	0.00
Domestic Payables Days	90.00	90.00
Import Payable Days	90.00	90.00
Dividend to Holding Company (EUR)	0.00	0.00

	Period 2	Period 3
Tender Market Size (Units)	10,000	10,000
Tender Market Sales		
Official Bid		
Tender Bid Price (USD)	1,208.00	1,800.00
Tender Bid Units	0	10,000
Actual/Expected Result		
Tender Actual Price (USD)	0.00	1,800.00
Tender Actual Units	0	10,000
Tender Revenues (USD)	0	18,000.00

Teams interested in trying to win tender sales for the period will submit a tender bid - how many units at what price. Tender bids are sales offers, and the tender market will therefore choose among competing bids on the basis of the lowest price first (the structure of a traditional Dutch auction). Sales volumes are accepted until all tenders offered for the period are purchased. All final tender sales occur at the market-clearing price, the price offered by the last team fulfilling the tender volume awards.

Tender price bids are limited - the highest bid price allowable is 130% of prior period sales price in Germany, and the lowest bid price allowable is 30% of that same prior period sales price in Germany. Keep in mind that a team entering a bid does not know if other companies are bidding, or what volumes or prices their bids will contain.

It is also possible to be awarded only a portion of the volume bid, and there is obviously a great deal of uncertainty over what the final bid price accepted will be. You may forecast your tender sales' volume and price (which could differ from your bid). A FORAD company's financial results for the period will reflect the actual tender price and volumes outcome as a result of the auction, not their pre-auction bid values.

FORAD Tip 3.5 The Tender Market

- There is no guarantee that you will be awarded tender sales - think how the different outcomes affect the rest of your decisions
- Tender sales result in higher revenue, but not necessarily higher profit - bidding lower increases the chance for success in the auction, but decreases the profit from the additional revenue
- The minimum possible bid price does not cover your costs – carefully think what the right bid is
- Sales at this market decrease your inventory level - have you thought about the implications?

Tender sales are paid in U.S. dollars at the end of the period. Winning bids create USD exposure in Germany. Keep in mind that this exposure will not materialize if you do not win tender sales. Enter your bid and forecast from Decisions/Germany/Operations/Tender market.

Sample Tender Sale

It is announced that the tender market will be looking to purchase between 8,000 and 10,000 units this period. Teams then decide whether or not to participate. Those wishing to participate include their bid in their period decision. Four teams submit the following bids:

Team 1: 5,000 units at a price of 1,000

Team 2: 10,000 units at a price of 1,100

Team 3: 3,000 units at a price of 990

Team 4: 5,000 units at a price of 1,150

The tender market (FORAD Administrator) decides to purchase 10,000 units. It therefore takes all 3,000 units offered by Team 3 (cheapest price of 990), all 5,000 units offered by Team 1 (second lowest price offer at 1,000), and 2,000 units from Team 2 (third lowest price offered). All 10,000 units will be purchased at the same market-clearing price, the price offered by the last team needed to fulfill the auction, Team 2's offer price of 1,100.

Sales prices, collection terms, and currency of invoice. Domestic and export sales prices are determined by the market. The basic sales prices are for 90 days collection terms. The rules for collection terms and currency of invoice are the same as the rules in Japan.

Production, pay terms, and currencies. To produce one unit of output, Germany uses domestic materials and imported units from the Japanese subsidiary. Domestic materials are purchased at prices determined by the market, and the base price, payable in euros, is for a standard 90 day payment period. You may change payment terms, subject to the same adjustments to base price as in Japan.

Labor costs in Germany are paid in EUR. The production of one unit of output in Germany requires 2 units of domestic materials, 2 units imported from Japan, 2 units of labor and overhead. The costs of domestic materials and labor are relatively stable. The cost of Inter-company purchases depends on your own transfer pricing decisions. On average, the cost of Inter-company purchases make up roughly 50% of costs of goods sold. All calculations of production costs are the same as they are for Japan.

Other things to consider:

- Inventory: Beginning inventory + Production decided - Sales for the period = Ending inventory.
- Accounts receivables and accounts payables: Sales are assumed to occur evenly over the period, and all receivables and payables are assumed to be settled in a similar even pattern. Accounts receivables and accounts payables transactions denominated in foreign currencies create foreign exchange exposures.
- Oil purchases are made in cash and do not result in foreign exchange exposures or changes in the

accounts payable balance.

Data validation for the operations input:

- There are multiple checks in the FORAD model to prevent you from entering improper decisions. For example current period production cannot be higher than current capacity; or, an ending inventory level which is insufficient. Violation of these rules results in an automatic input reset by the model, and you will receive a system message regarding the problem.
- Note that if the production decided is not sufficient to cover current period actual sales the model will force your company to produce the extra units needed. This unexpected production would result in excess production costs, unplanned currency exposures, and will be financed through overdrafts.

3.3.3 U.S. Holding Company

The U.S. Holding Company is not an operating unit and does not produce. It therefore has no operating activities, and requires no operating inputs or decisions. The Holding Company is the legal owner of both foreign subsidiaries, and therefore may receive foreign source income in the form of interest or dividend income from those subsidiaries if your FORAD team so chooses. The Holding Company does receive domestic income in the form of third party royalties, paid in U.S. dollars.

3.4 Investing

3.4.1 Share repurchases

In addition to investing in operations, you may also decide to invest funds in repurchasing your FORAD company outstanding shares. To do so you need to enter the number of shares to be repurchased. The repurchase price will be your company's share price at the end of the prior period. There is no premium for this transaction. The cash outflow associated with repurchases is on day 45 of the period. Share repurchases are not allowed prior to period 2, and are limited to 5% of prior period shares outstanding.

FORAD Tip 3.4 Share Repurchases

- Consider whether the "excess funds" are really excess. What are alternative uses for these funds?
- What are the implications for your company's EPS and PE ratio of a share repurchase?
- What is the right price to repurchase shares at?

To execute a share repurchase go to Decisions/Holding Company/Investing.

The screenshot shows the FORAD 2.0 software interface. The main window is titled "United States" and "FORAD Multinational Finance Simulation". Below the title bar, there are tabs for "IR Hedging", "Investing", "Financing", "Hedging - JPY", and "Hedging - EUR". The "Investing" tab is selected. A table displays financial data for "US Holding Company: Decision Inputs". The table has three columns: "Item", "Period 2 Actual", and "Period 3 Decision". The "Repurchase Shares (shares)" row shows a value of 500,000.00 in the "Period 3 Decision" column, highlighted by a red arrow.

	Period 2 Actual	Period 3 Decision
Beg Period Marketable Securities - Invest (USD)	0.00	0.00
Beg Period Marketable Securities - (Redeem) (USD)	0.00	0.00
Mid Marketable Securities - Invest (USD)	0.00	0.00
Mid Marketable Securities - (Redeem) (USD)	0.00	0.00
Repurchase Shares (shares)	500,000.00	0.00
Dividends Per Share	0.25	0.25

3.4.2 Marketable securities

Your company may also choose to invest cash in marketable securities and the investment option is available in all three subsidiaries. These investments are denominated in local currency and the interest earned is the current period domestic deposit rate. They are categorized as high credit quality investments and yield relatively low interest rate returns with no risk of loss of principal.

Outstanding investments are rolled over for the next period until you decide to redeem the funds.

Investments can be made twice per period, on day 0 and on day 45. Redemptions also can be made twice per period, on day 45 (labeled as *beginning*) and day 90 (labeled as *mid*). Interest is received on day 45 and day 90, and is based on the ending balance at days 45 and 90. The interest is received in cash and not reinvested; the balance sheet value of the investments is only affected by new investments or redemptions. Enter your decisions about marketable securities from Decisions/Subsidiary/Investing.

3.4.3 Dividends

There are two different types of dividends potentially paid in FORAD - dividends to your company shareholders and Inter-company dividends (dividends paid from the subsidiaries to the U.S. holding company).

Dividends to company shareholders. You inherit a company which paid a dividend of \$0.25 per share in period 0. You can elect to change it, but such change will affect your P/E score. Expect your shareholders to react negatively to dividend reductions, but they also do not reward dividend increases when earnings are not growing. The dividend is paid in USD from the Holding company on day 90. Enter the amount per share; the total dividend payment will be recalculated based on your shares outstanding on day 90. Enter your dividend decisions in Decisions/Holding Company/Investing.

The screenshot shows the FORAD 2.0 software interface. The main window is titled 'United States' and displays the 'FORAD Multinational Finance Simulation' interface. The 'US Holding Company: Decision Inputs' window is open, showing a table with columns for 'Period 2 Actual' and 'Period 3 Decision'. The 'Investing' tab is selected, and the 'Dividends Per Share' row shows a value of 0.25 for both periods. A red arrow points to the 'Dividends Per Share' cell in the 'Period 3 Decision' column.

	Period 2 Actual	Period 3 Decision
Beg Period Marketable Securities - Invest (USD)	0.00	0.00
Beg Period Marketable Securities - (Redeem) (USD)	0.00	0.00
Mid Marketable Securities - Invest (USD)	0.00	0.00
Mid Marketable Securities - (Redeem) (USD)	0.00	0.00
Repurchase Shares (shares)	500,000.00	0.00
Dividends Per Share	0.25	0.25

Inter-company dividends. The two operating subsidiaries could pay Inter-company dividend to the Holding company. Carefully consider this decision as it has implications for your cash flows management, tax management and foreign exchange management.

- **Cash flows.** The inter-company dividend is paid on day 90 and is a cash flow from the Japanese or German subsidiary to the U.S. Holding Company.
- **Tax management.** The income tax rates in Japan and Germany change depending on the Inter-company dividend payout rate (dividend as a percentage of earnings before taxes). There is an optimal dividend payout rate which results in the lowest tax rate. Inter-company dividends incur a

5% withholding tax locally. Inter-company dividends constitute foreign source income for the U.S. Holding Company, and possibly result in foreign tax credits or deficits for the Holding Company.

- **Foreign exchange management.** Inter-company dividends are paid in local currency and create foreign exchange exposure in the U.S. Holding Company.

Decisions about Inter-company dividends from Japan and Germany to the Holding Company are entered from Decisions/Subsidiary/Operations.

The screenshot shows the FORAD 2.0 software interface. The main window is titled "FORAD Multinational Finance Simulation" and displays "Japanese Sub: Decision Inputs". A sub-window titled "Japan" is open, showing a table with columns for "Period 2 Actual" and "Period 3 Decision". A red arrow points to the "Dividend to Holding Company (JPY)" row, which shows 1,740,000,000.00 for Period 2 and 2,000,000,000.00 for Period 3.

	Period 2 Actual	Period 3 Decision
Capacity	520,000.00	550,000.00
Beginning Inventory	256,340.00	256,640.00
Production Decided	520,000.00	550,000.00
Sales Volume	519,700.00	529,700.00
Ending Inventory	256,640.00	276,940.00
Sales from Current Production	263,360.00	273,060.00
Domestic Sales Units	112,800.00	112,800.00
Export Sales Units	216,900.00	216,900.00
Price Forecast (JPY)	47,600.00	48,000.00
Inter-Company Sales Units	190,000.00	200,000.00
Export Currency	USD	USD
Inter-Company Currency	JPY	JPY
Inter-Company Sales Price (USD)	550.00	570.00
Domestic Collections Days	90.00	90.00
Export Collections Days	90.00	90.00
Inter-Company Collection Days	0.00	0.00
Domestic Payables Days	0.00	0.00
Import Payable Days	0.00	0.00
Dividend to Holding Company (JPY)	1,740,000,000.00	2,000,000,000.00
Ending Oil Price Per Barrel (USD)	48.20	45.00
Oil Futures Price Per Barrel (USD)	30.85	48.59
Oil Exposure long/(short) (Barrels)	-2,080,000.00	-2,200,000.00
Oil Futures 1 contract=1,000 barrels Buy/Sell	2,080.00	-2,000.00

3.5 Financing

Your company has access to a number of different forms of external capital, both debt and equity. Debt is available in short and long-term maturities, fixed and floating-rates, in different currencies.

- **Equity capital.** The U.S. Holding Company can raise additional equity from the market. The proceeds are received in U.S. dollars in the U.S. Holding Company. The Holding Company in-turn has the ability to transfer funds to its subsidiaries.

- **Debt capital.** All three subsidiaries have access to both short-term and long-term loans. All have access to short-term loans (for 45 days) in all three currencies. All can acquire both fixed and floating-rate long-term loans in their local currencies. Individual subsidiaries can transfer funds internally through short-term Inter-company loans (again for 45 days).

Your Debt/Asset ratio cannot exceed 82% when making your decisions for the current period. Occasionally, after the simulation is run for the period, you may find that your Debt/Asset ratio did indeed result in a level slightly above 82% - for example if you incurred unexpected losses which were financed with overdrafts. You are required to adjust your financing strategy to address the problem to proceed with the next period's decision.

3.5.1 Credit spreads

Each subsidiary has access to debt independently, but the company credit spread applies to all loans. The credit spread is based on the company's credit rating. The rating depends on several key metrics: debt to assets ratio; short-term to working capital ratio and times interest earned.

Credit ratings may not rise (improve) more than one notch per period, but may fall (deteriorate) more than one notch per period. This means that the actual rating for the period could be different from what the fundamentals indicate. Your FORAD company might need to maintain high quality ratios for a series of periods in order to reach a rating goal.

The corporate credit spread for long-term borrowing varies from 0.25% for AAA-rated companies to 4.50% for C-rated companies. The credit spreads for short-term loans are half the spread for long-term loans. The spreads by credit rating are the same for all periods.

<u>Rating</u>	<u>Spread</u>	<u>Change</u>
AAA	0.25%	
AA	0.50%	0.25%
A	1.00%	0.50%
BBB	1.50%	0.50%
BB	2.50%	1.00%
B	3.00%	0.50%
CCC	3.50%	0.50%
CC	4.00%	0.50%
C	4.50%	0.50%

FORAD Tip 3.6 Credit Ratings

- Consider the tradeoff between savings from lower credit spread and the cost associated with achieving it.
- What do you give up while striving to improve your rating?
- What do you gain when you reach you goal? How long does it take?
- How does the credit rating affect your PE score and EPS?

3.5.2 Short-term loans

Short-term loans are available in all three currencies. The term is 45 days. You have the option to borrow short-term loan at the beginning of the period or at the middle of the period. The cash from beginning of the period loans is received on day 0 and repaid together with the interest due on day 45. Cash from mid-period loans is received on day 45, principal and interest repaid on day 90. You do not need to indicate repayment of the short-term loans, this happens automatically.

The cost for short-term loans is the 3-month LIBOR rate for the currency of the loan plus the company short-term credit spread. The short-term loans amounts by currency are limited - 200% of the subsidiary's prior period equity. The limit is for a loan in one of the three currencies - in other words, if you borrow the maximum in all three currencies then the total short-term loans limit is 600% of the prior period equity. To enter decisions for short-term loans, go to Decisions/Subsidiary/Financing.

The screenshot shows the FORAD 2.0 software interface. The main window is titled 'FORAD Multinational Finance Simulation' and is set to 'Japan'. The 'Japanese Sub: Decision Inputs' window is open, showing a table with columns for 'Period 2 Actual' and 'Period 3 Decision'. The table is divided into sections for 'Operations', 'Investing', 'Financing', 'Hedging - USD', and 'Hedging - EUR'. The 'Financing' section is currently selected and displays the following data:

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Mid Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (JPY)	0.00	0.00
Long-Term Fixed-Rate Repayment (JPY)	0.00	0.00
Long-Term Floating-Rate Issuance (JPY)	20,000,000,000.00	0.00
Long-Term Floating-Rate Repayment (JPY)	0.00	0.00
Beg Period Inter-Company Borrow from US (USD)	0.00	0.00
Mid Period Inter-Company Borrow from US (USD)	0.00	0.00
Inter-Company Borrow Rate	2.6250%	3.2500%
INTRA-PERIOD CASH BALANCES		
Day 0	837,285,991.74	-144,078,199.36
Day 30	2,112,173,731.99	57,539,887.49
Day 45	1,442,236,352.11	-54,534,369.86
Day 60	2,079,680,222.24	46,274,673.57
Day 90	1,363,673,292.97	-2,648,841.62

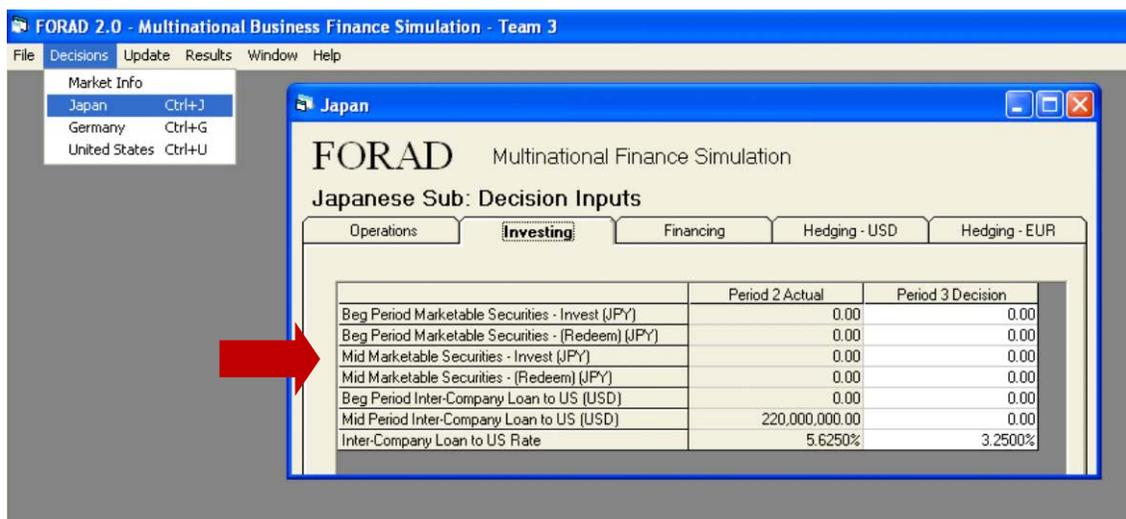
FORAD Tip 3.7 Using Short-Term Credit

- What is good about short-term loans? What are the dangers about short-term loans?
- Does your usage of short-term loans change when your credit rating changes?
- Which assets should you finance with short-term debt and which with long-term debt?
- It is a good idea to discuss with your team and decide on the portion of your funding needs to be met with short-term loans. Why did you pick this level?

3.5.3 Inter-company loans

These loans are also for 45 days and can be executed at the beginning or in the middle of the period. All Inter-company loans are denominated in USD. Japan and Germany cannot borrow directly from each other; all Inter-company cash flows go through the Holding Company. You will need to decide upon the rate of interest for all Inter-company loans and they may differ both between units (Japan to US versus Germany to US) as well as directionally (Japan lending to US versus US lending to Japan).

The interest rate chosen applies for the whole period - both beginning and mid-period Inter-Company loans. There are limitations on the interest rate and limits vary by period depending upon market rates. The minimum is 3-month USD LIBOR, the maximum 3-month USD LIBOR + 3%.



FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Operations Investing Financing Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period Marketable Securities - Invest (JPY)	0.00	0.00
Beg Period Marketable Securities - (Redeem) (JPY)	0.00	0.00
Mid Marketable Securities - Invest (JPY)	0.00	0.00
Mid Marketable Securities - (Redeem) (JPY)	0.00	0.00
Beg Period Inter-Company Loan to US (USD)	0.00	0.00
Mid Period Inter-Company Loan to US (USD)	220,000,000.00	0.00
Inter-Company Loan to US Rate	5.6250%	3.2500%

Inter-company loan amounts are also limited, but allow for much higher flexibility compared to external short-term loans (the limit is 1000% of the subsidiary's prior period equity). To enter Inter-company loans from the Holding Company to Japan or Germany go to Decisions/Subsidiary/Financing. Inter-company loans from Japan and Germany to the U.S. Holding Company are *investing activities* for the Japanese and German subsidiaries. For these input decisions go to Decisions/Subsidiary/Investing.

A final note. Inter-company loans redistribute capital within the multinational FORAD company. They do not raise additional funds for corporate use from outside the company itself.

FORAD Tip 3.8 Using Inter-Company Loans

- Other than meeting your subsidiary's cash needs, are there other reasons to use Inter-company loans?
- What is the effect on your tax management? What can you achieve with the rate on these loans?
- Which subsidiary would charge the highest/lowest rate and why?
- Which subsidiary would you prefer to be the lender and which one to be the borrower?
- Think about the foreign exchange management implications of your Inter-company cash transfers

3.5.4 Long-term loans

Long-term loans are available only in the subsidiary's local currency. They could be fixed-rate or floating-rate loans.

- **Fixed-rate loans.** The rate is the period base fixed-rate plus the corporate credit spread when you borrow and it remains fixed. The cash for fixed -rate loans is received on day 45. Repayments are also made on day 45. Interest and other costs are paid on day 45. Interest is paid quarterly.
- **Floating-rate loans.** The rate is the period 3-month LIBOR in the respective currency plus the corporate credit spread. The floating component (3-month LIBOR) changes each period, but the spread remains fixed at the level when you borrowed. Cash flows related to the loans (new issue, repayment and interest and other costs) occur on day 45.

The long-term average interest rate is the weighted average interest rate for all loans outstanding. The interest paid for the period is the average rate based on the average loan balance (because any new loans/repayments happen on day 45). If you decide to repay long-term debt, the repayment is at the average interest rate, you are not allowed to select which one you want to retire. The limit for new long-term borrowing is also 200% of the subsidiary prior period equity.

Issuing long-term loans requires an up-front payment to your banker. The cost is \$1 million plus 1% of the principal amount of the loan. Issuing costs are paid in-cash when the loan proceeds are received (day 45) and then amortized over 20 periods. The amortized issuing costs are part of your company's interest expense. Amortization starts the period after the loan is issued. Issuing costs, net of amortization expenses, are recorded as deferred charges on the company's balance sheet. All new long-term loans have a maturity of 5 years.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
Japan Ctrl+J
Germany Ctrl+G
United States Ctrl+U

Japan

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Swap: Pay Floating Swap: Pay Fixed

Operations Investing **Financing** Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Mid Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (JPY)	0.00	0.00
Long-Term Fixed-Rate Repayment (JPY)	0.00	0.00
Long-Term Floating-Rate Issuance (JPY)	20,000,000,000.00	0.00
Long-Term Floating-Rate Repayment (JPY)	0.00	0.00
Beg Period Inter-Company Borrow from US (USD)	0.00	0.00
Mid Period Inter-Company Borrow from US (USD)	0.00	0.00
Inter-Company Borrow Rate	2.6250%	3.2500%
INTRA-PERIOD CASH BALANCES		
Day 0	837,285,991.74	-144,078,199.36
Day 30	2,112,173,731.99	57,539,887.49
Day 45	1,442,236,352.11	-54,534,369.86
Day 60	2,079,680,222.24	46,274,673.57
Day 90	1,363,673,292.97	-2,648,841.62

3.5.5 Historical long-term loans

Your management team has inherited a number of long-term loans. Your historical long-term loans had maturities which varied between 5 and 7 years. The credit spread on this historical debt is based on the company's credit rating in Period 0. To borrow or repay long-term loans go to Decisions/Subsidiary/Financing.

FORAD Tip 3.9 Long-Term Loans

- Detailed information about your financing decisions can be found in the menu Results/Subsidiary/Financing.
- A good practice is to review loan balances and rates continuously in search of potential improvements
- What is your goal for the ratio between fixed-rate and floating-rate loans?
- What are the pros and cons of each type and why would you prefer one over another?
- Does your preference change depending on your view about interest rates trends?
- Issuing costs for long-term loans can be significant. Think about these when you refinance.

3.5.6 Zero-coupon bond

You inherit a company with a *zero-coupon convertible callable bond* outstanding, issued in the past by the prior management team. The bond does not require payment of a cash coupon, but it does carry an implicit cost of 6.50% annual accretion (each period the Holding Company's balance sheet value of the bond increases by the period's accretion). The accretion for the period is based on the bond's beginning of period value – it is recorded as part of interest expense for the Holding Company and impacts both taxes and the debt-service coverage ratio.

The bond has four years remaining until maturity. It is convertible into 1,200,000 new shares (more than a 10% dilution of beginning period outstanding shares) and the conversion price is \$83.33. The bond is *in-the-money* if the company's prior period ending share price is higher than the conversion price. The bond is *out-of-the-money* if the company's prior period ending share price is lower than the conversion price. Both the FORAD company management (you) and the bondholders (the FORAD Administrator) can take an action on the bond and the result from this action depends on whether the bond is in-the-money or out-of-the-money.

Options for the FORAD company management (you). You can take an action on the bond at any time:

- If the bond is *out-of-the-money*, you can call it (redeem the bond for cash). The bond is removed from the balance sheet with no impact on equity. Keep in mind that in general the bondholders would prefer to hold the bond outstanding and gain from potential conversion later, and as a result, you will be required to pay a premium of 3% for calling the bond early. The total cash outflow is 103% of the prior period balance sheet value of the bond and happens in day 45.
- If the bond is *in-the-money*, it is no longer callable (settled for cash). Attempting to call the bond at this point forces early conversion. The bond is removed from the balance sheet and 1,200,000 new shares are created. There is no cash effect.

Options for the Bondholders (the FORAD Administrator). The bondholders have the right to take an action on the bond only if it is *in-the-money*.

- This action results in 1,200,000 new shares created, the bond disappears from the balance sheet with no cash effect. The bondholders may decide to convert early for multiple reasons – for example if they fear your share price will be decreasing. However, there is no guarantee they will convert early and it is possible they prefer to keep the bonds and convert into equity closer to the bonds' maturity – approximately 16 periods after you took over as the company's management team.

The decision to take an action on your bond is entered from Decisions/United States/Financing. Select "call the bond" if you wish to take action.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

United States

FORAD Multinational Finance Simulation

US Holding Company: Decision Inputs

Swap: Pay Floating Swap: Pay Fixed

IR Hedging Investing **Financing** Hedging - JPY Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (JPY)	9,000,000,000.00	23,000,000,000.00
Mid Period Short-Term Debt - (JPY)	0.00	23,000,000,000.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (USD)	0.00	0.00
Long-Term Fixed-Rate Repayment (USD)	0.00	0.00
Long-Term Floating-Rate Issuance (USD)	0.00	0.00
Long-Term Floating-Rate Repayment (USD)	0.00	0.00
Call Convertible (1=yes, 0=no)	0.00	0.00
Equity Issuance (# shares)	0.00	0.00
INTRA-PERIOD CASH BALANCES		
Day 0	3,585,322.13	-2,528,316.50
Day 30	4,156,988.80	-1,956,649.83
Day 45	-6,276,183.11	-9,594,180.72
Day 60	-5,990,349.78	-9,308,347.38
Day 90	9,393,830.00	14,391,742.67



FORAD Tip 3.10 Zero-Coupon Convertible Bond

- What are the benefits of keeping the zero-coupon bond?
- If you decide to call the bond - what are your reasons to do so?
- Are there any intangible reasons you should consider?
- What are the implications for your company if the bondholders decide to convert? Can you prepare for such event?

3.5.7 Overdraft

If a subsidiary does not have sufficient cash to meet its obligations, the difference results in overdrafts. The interest rate for overdrafts is 3-month LIBOR in the applicable currency, plus the corporate credit spread for the period, plus overdraft spread of 5%. Overdraft expense affects the current period income statement, but is recorded as *other payables* on the Balance sheet for the current period and paid on day 0 of the next period. Overdraft interest for the period is based on the weighted average overdraft balance for the period – you can review your overdraft positions on key days within the period from the

subsidiaries' screens for financing decisions. The overdraft balance on day 90, if any, is the overdraft on the balance sheet.

3.5.8 Swaps

If your view about the future interest rates trends guides you to change from one type of long-term debt to another, instead of refinancing, you may enter into "plain vanilla" interest rate swaps – *pay fixed-receive floating* and *pay floating-receive fixed* – in all three subsidiaries.

- **Swap rate.** The fixed element of the swap is derived from the current period yield curve. The yield curve starts with the 3-month LIBOR and ends with the fixed-rate long-term loan rate (without credit spreads). The current period swap rate can be found at the top of the decision screen. If you have swaps outstanding, the swap rate for these positions was fixed at initiation and can be found in the same screen next to the swap notional amount.
- **Floating-rate.** The floating-rate is the 3-month LIBOR to match the quarterly payments of interest on long-term loans.
- **Notional principal.** You can enter into new swap positions up to the amount of corresponding long-term debt, net of outstanding swaps. *Pay floating-receive fixed* swaps are limited to the net fixed-rate long-term debt and *pay fixed-receive floating* swaps are limited to the net floating-rate long-term debt. If you repay the underlying debt, the swaps remain outstanding until you intentionally unwind them.

The screenshot displays the FORAD 2.0 interface. The main window shows the 'Japanese Sub: Decision Inputs' screen with tabs for Operations, Investing, Financing, Hedging - USD, and Hedging - EUR. The 'Financing' tab is active, showing a table of financial inputs and balances for Period 2 Actual and Period 3 Decision.

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Mid Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (JPY)	0.00	0.00
Long-Term Fixed-Rate Repayment (JPY)	0.00	0.00
Long-Term Floating-Rate Issuance (JPY)	20,000,000,000.00	0.00
Long-Term Floating-Rate Repayment (JPY)	0.00	0.00
Beg Period Inter-Company Borrow from US (USD)	0.00	0.00
Mid Period Inter-Company Borrow from US (USD)	0.00	0.00
Inter-Company Borrow Rate	2.6250%	3.2500%
INTRA-PERIOD CASH BALANCES		
Day 0	837,285,991.74	-144,078,199.36
Day 30	2,112,173,731.99	57,539,887.49
Day 45	1,442,236,352.11	-54,534,369.86
Day 60	2,079,680,222.24	46,274,673.57
Day 90	1,363,673,292.97	-2,648,941.62

The 'Japanese Sub: JPY Fixed to Floating Swaps Summary' window shows the 'Current Period Swap Position Summary' with the following data:

Instrument	Rate	Principal/Notional	Cash Flow In/(Out)	Current Market Value	Realized Gain/(Loss)
Fixed Rate Debt	3.750%	5,000,000,000	46,875,000	-	-
Swap Entered Period: 3					
Pay Floating	1.375%	5,000,000,000	17,187,500	(5,398)	-
Receive Fixed	2.607%	-	(32,585,449)	-	-
Totals			31,477,051	(5,398)	-
Fixed Debt / Effective Interest Rate		5,000,000,000	2.518%		

- **Interest expense effect.** The period payments or receipts related to swap positions are recorded as interest expense and affect the debt coverage ratio.

- **Maturity.** All swaps have an initial maturity of 5 years.
- **Market value of swaps.** The market value of a swap at initiation is zero and does not require cash exchange. In consecutive periods, as the swap rates change, so do the market values of your positions, but the gain or loss is unrealized unless you decide to unwind the swaps. This gain/loss results from the comparison of the NPV of the fixed coupon payments determined by the initial swap rate with the NPV of the floating coupon payments determined by the new market rates. For example, if the current swap rate is higher than the initial swap rate, then a *pay fixed-receive floating* swap is at unrealized gain. The gain depends on rates difference, swap notional principal and remaining maturity.
- **Unrealized swap values.** Swaps at unrealized gain/loss are recorded as other assets on the balance sheet with an offsetting increase/decrease in the other comprehensive income (OCI) equity account.
- **Unwinding swaps.** You can unwind swap positions at any time and at any amount. In such case, the full amount of the unrealized gain or loss is realized immediately and recorded in earnings. The swap is removed from the balance sheet.
- **Swap cash flows.** All swap-related cash flows occur on day 45, which includes quarterly cash payments, receipts, and cash settlements upon unwinding positions.
- **Swap rates.** Data about swaps can be viewed from the additional buttons at the top right corner of the Decisions/Financing screens. Enter your decisions from the screen which pops after you click on the swaps buttons.

FORAD Tip 3.11 Interest Rate Swaps

- Using swaps to change the structure of your long-term loans has no initial cost. But swaps are not always the better solution. Think about the direction of the interest rates and whether swaps or refinancing is the better one.
- Use the FORAD model to help you decide whether to enter into a swap or unwind a swap. If you do not like how your swaps are performing do not hesitate to reverse your decision.

3.5.9 Financial statement details

Interest expense for the period includes interest paid plus amortization of issuing costs plus effect from swaps positions plus accretion of the convertible bond and gains/losses from interest rate futures (U.S. Holding Company only).

Interest income from Inter-company loans is recorded on the Japanese and German income statements with other interest income, and is taxable income. In the U.S. Holding Company, Inter-company interest income is categorized as foreign source income and impacts operating profit. Inter-company interest expense is reported together with the rest of the interest expense in all subsidiaries and provides tax shield benefits. Inter-company interest expense in Japan and Germany is subject to a 5% withholding tax. On the consolidated income statement, Inter-company interest income and expense is eliminated.

FORAD Tip 3.12 Company Financing Strategy

- One of the first things your team should develop is a financial strategy.
- Should each unit raise its own funds, or should the company raise capital centrally?
- What are the pros and cons of using Inter-company loans?
- Should all units have the same or different capital structures?
- What form of debt: short-term debt, long-term debt, fixed-rate, floating-rate debt, currency composition?
- What are the currency implications of borrowing short-term in foreign currency?

3.5.10 Issuing equity

You can raise equity capital from your external shareholders. You only need to decide on the number of shares to be issued (via the U.S. Holding Company). Cash proceeds from equity issuances are received on day 45 in the U.S. Holding Company; the gross amount is the number of shares issued times the prior period ending share price. The equity issuance is limited to 5% of the prior period's shares outstanding.

There are substantial issuing costs associated with new equity. Basic investment banking costs incurred are USD 500,000 plus 3% of the face amount issued. Total issuing costs are paid on day 45 and are recorded as direct charge to *additional paid-in capital* on the balance sheet. Your FORAD company shares have a par value is \$1 (common stock on the Holding Company balance sheet). The proceeds net of issuing costs and excluding the shares par value increase the *additional paid-in capital*. To issue shares go to Decisions/United States/Financing.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

United States

FORAD Multinational Finance Simulation

US Holding Company: Decision Inputs

Swap: Pay Floating Swap: Pay Fixed

IR Hedging Investing **Financing** Hedging - JPY Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (JPY)	9,000,000,000.00	23,000,000,000.00
Mid Period Short-Term Debt - (JPY)	0.00	23,000,000,000.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (USD)	0.00	0.00
Long-Term Fixed-Rate Repayment (USD)	0.00	0.00
Long-Term Floating-Rate Issuance (USD)	0.00	0.00
Long-Term Floating-Rate Repayment (USD)	0.00	0.00
Call Convertible (1=yes, 0=no)	0.00	0.00
Equity Issuance (# shares)	0.00	0.00
INTRA-PERIOD CASH BALANCES		
Day 0	3,585,322.13	-2,528,316.50
Day 30	4,156,988.80	-1,956,649.83
Day 45	-6,276,183.11	-9,594,180.72
Day 60	-5,990,349.78	-9,308,347.38
Day 90	9,393,830.00	14,391,742.67

3.5.11 Cash Management

Optimizing your cash flows is an important element of managing your company. The model estimates your cash positions on key days of the period (day 0, 30, 45, 60 and 90) by subsidiary. Use this information to determine whether you need to borrow or invest – and when. All cash balances are estimated and displayed in the subsidiary's home currency. To understand your estimated cash positions, keep in mind the following assumptions:

- **Operational activities.** Your company sales happen throughout the period at a stable pace. Depending on your credit terms, you collect cash from your customers in the similar fashion - steadily throughout the period. Same logic applies for the payments to your suppliers. In other words - if you change the credit terms, you will not see the effect on your cash positions on key days right away, the sales need to materialize first.
- **Financial activities.** However, you will see the effect from any financing and investing activities right away - for example if you borrow short-term loan in the middle of the period, you will see positive cash flow for the amount of the loan on day 45 and then the same amount plus the interest will appear as negative cash flow on day 90 when you repay the loan.

You can see your cash positions at the bottom of the Financing screen: Decisions/Subsidiary/Financing.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Swap: Pay Floating Swap: Pay Fixed

Operations Investing **Financing** Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Beg Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Mid Period Short-Term Debt - (JPY)	20,000,000,000.00	2,000,000,000.00
Beg Period Short-Term Debt - (USD)	0.00	0.00
Mid Period Short-Term Debt - (USD)	0.00	0.00
Beg Period Short-Term Debt - (EUR)	0.00	0.00
Mid Period Short-Term Debt - (EUR)	0.00	0.00
Long-Term Fixed-Rate Issuance (JPY)	0.00	0.00
Long-Term Fixed-Rate Repayment (JPY)	0.00	0.00
Long-Term Floating-Rate Issuance (JPY)	20,000,000,000.00	0.00
Long-Term Floating-Rate Repayment (JPY)	0.00	0.00
Beg Period Inter-Company Borrow from US (USD)	0.00	0.00
Mid Period Inter-Company Borrow from US (USD)	0.00	0.00
Inter-Company Borrow Rate	2.6250%	3.2500%
INTRA-PERIOD CASH BALANCES		
Day 0	837,285,991.74	-144,078,199.36
Day 30	2,112,173,731.99	57,539,887.49
Day 45	1,442,236,352.11	-54,534,369.86
Day 60	2,079,680,222.24	46,274,673.57
Day 90	1,363,673,292.97	-2,648,841.62

Check your cash positions at key days of the period often. Review the list below to understand when the different cash flows happen. Note that the list does not include cash you receive or pay in the normal course of your business. Cash positions on day 30 and 60 reflect only changes in your cash resulting from operational activities. Cash in non-local currency is translated at the appropriate foreign exchange rate depending on the day.

Day 0:

- Marketable securities investments
- Inter-company and short-term loans repayments from the prior period end (principal); interest was paid on day 90 of the prior period
- Current period new Inter-company borrowings and/or investments to another sub
- Current period new short-term borrowings
- Investments in capacity
- Repayment of any overdraft at the prior period end plus overdraft interest owned
- Income taxes from the prior period
- Foreign currency option premiums paid or received

Day 45

- Marketable securities investments and redemptions
- Marketable securities interest income for the period day 0 - day 45
- Inter-company and short-term loans repayments from the beginning of the period plus interest
- Current period new inter-company borrowings and new inter-company investments to another sub
- Current period new short-term borrowings
- Long-term debt new borrowings - fixed and floating
- Long-term debt borrowings - issuing costs
- Long-term debt repayments - fixed and floating
- Long-term debt - interest for the whole quarter
- New equity from the shareholders plus issuing costs (Holding Company only)
- Share repurchases payments (Holding Company only)
- Zero-coupon bond principal if called - the cash outflow is the beginning of the period value of the bond plus 3% premium (Holding Company only)

Day 90

- Marketable securities investments and redemptions
- Marketable securities interest for the period day 45 to day 90
- Inter-company and short-term loans interest paid for the period day 45 to day 90
- Inter-company interest received from investments for the period day 45 to day 90
- Foreign exchange gains/losses excluding premiums
- Oil gains/losses (Japan only)
- Withholding taxes
- Additional taxes in US as a result of tax deficits/credits (Holding Company only)
- Inter-company dividends paid or received
- Dividend to the shareholders (Holding Company only)
- Interest rate hedging gain/loss (Holding Company only)

If the sum of the items above is positive, this is the ending cash balance on the balance sheet. If the sum is negative, the ending cash balance is zero and the sum is recorded as overdraft.

3.6 Hedging

You manage a complex company which operates in multiple markets with different currencies. It is your responsibility to monitor the environment, understand your exposures, how they affect the performance of your company and decide on how to address these challenges.

3.6.1 Foreign exchange exposures

The FORAD model allows you to see the expected foreign exchange exposures by currency by subsidiary,

separated between *financial* and *trade exposures*. Keep in mind that most currency exposures change when you change operational and financial decisions.

- Trade exposures for the operational subsidiaries come from export sales in non-local currency, payments for import materials and Inter-company relationship - these are the foreign exchange payables and receivables outstanding at the current period balance sheet date.
- Since Germany can generate sales from the tender market and these are in USD, payable on day 90 - the German subsidiary could have foreign exchange exposures from these sales too. Remember that this exposure is not certain.
- The Holding Company does not have sales and therefore - no trade exposure. It has foreign exchange exposure resulting from any Inter-company dividend declared to be paid at the end of the period.
- Financial exposure results from short-term and Inter-company loans and interest payable or receivable on day 90.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

Japan

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Show FX Hedging Graph

	Period 2 Actual	Period 3 Decision
Beg Period FX Rate (JPY/USD)	102.0000	94.6000
End Period FX Rate (JPY/USD)	94.6000	98.0000
Average Period FX Rate (JPY/USD)	98.3000	96.3000
Forward FX Rate (JPY/USD)	101.3981	94.1600
FX Volatility	10.0000%	12.0000%
Export Sales Exposure (USD)	109,137,843.55	106,236,734.69
Inter-Company Sales/Expense Exposure (USD)	0.00	114,000,000.00
Imported Materials Exposure (USD)	0.00	0.00
Dividend Exposure (USD)	0.00	0.00
Tender Sales Exposure (USD)	0.00	0.00
Financial Loans Exposure (USD)	0.00	-100,406,250.00
Financial Investments Exposure (USD)	221,546,875.00	0.00
Total Exposure (USD)	330,684,718.55	119,830,484.69
Forward Contract (USD)	-317,000,000.00	0.00
Net Contractual Exposure (USD)	13,684,718.55	119,830,484.69
Call Option Notional (USD)	0.00	0.00
Call Option Strike Price (JPY/USD)	109.3509	109.3509
Call Option Price (JPY/USD)	0.1515	0.0125
Put Option Notional (USD)	0.00	100,000,000.00
Put Option Strike Price (JPY/USD)	109.3509	98.0000
Put Option Price (JPY/USD)	8.1536	4.7354
Gain/(Loss) on Export Sales (JPY)	-807,620,042.28	361,204,897.96
Gain/(Loss) on Inter-Company (JPY)	0.00	387,600,000.00

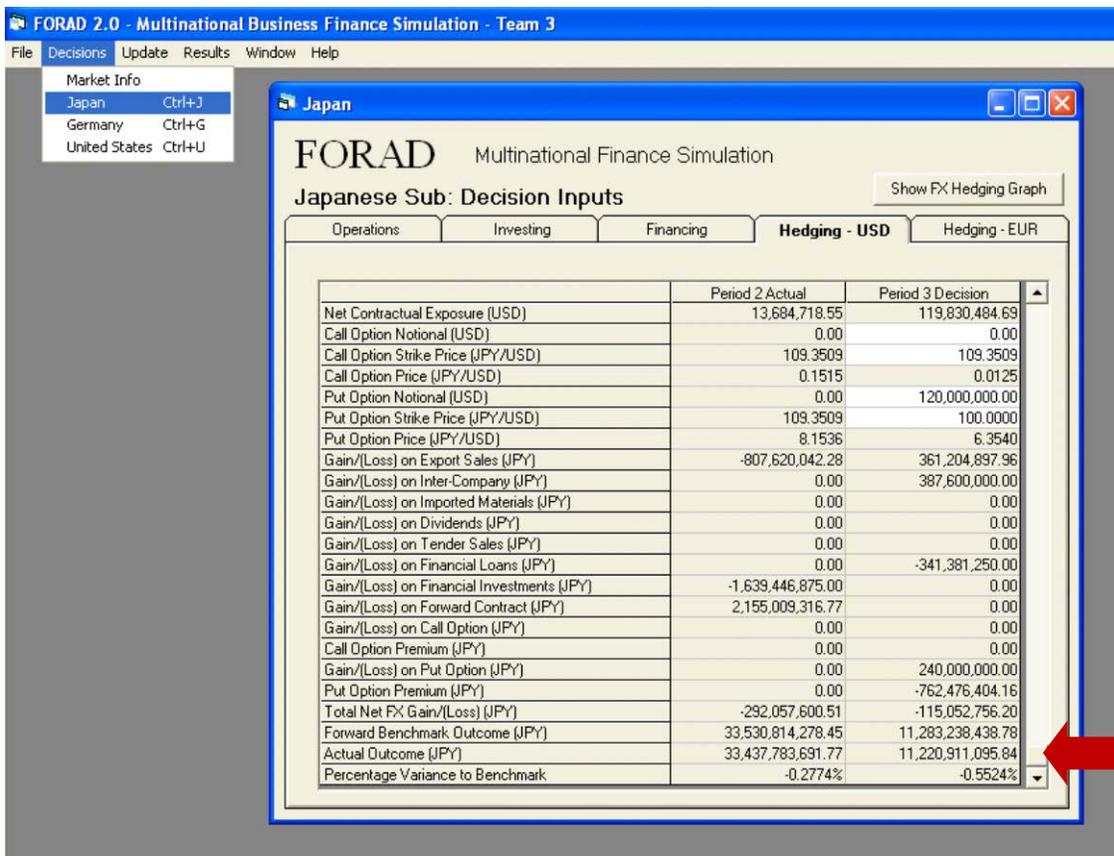
It is up to your team to decide whether to hedge these exposures and how. Note that you do not have to have an underlying exposure to enter into a derivative contract; your company can enter into financial investment positions. Your company has both foreign currency forward contracts (90-days long/short) and foreign currency options available for use in all subsidiaries.

3.6.2 Forward contracts

Forward contracts are limited to 200% of the subsidiary's prior period shareholders' equity; it is possible that you are not able to hedge the total exposures only with forward contracts. You only need to enter the notional principal of the forward contract and the direction (positive for buy and negative for sell); the rate is entered automatically.

3.6.3 Foreign currency options

You can buy and sell foreign exchange options; the notional principal for each option position is limited to 200% of the subsidiary's prior period shareholders' equity; the strike prices are also limited - 20% range around the current period forward rate.



FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

Japan

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs Show FX Hedging Graph

	Period 2 Actual	Period 3 Decision
Net Contractual Exposure (USD)	13,684,718.55	119,830,484.69
Call Option Notional (USD)	0.00	0.00
Call Option Strike Price (JPY/USD)	109.3509	109.3509
Call Option Price (JPY/USD)	0.1515	0.0125
Put Option Notional (USD)	0.00	120,000,000.00
Put Option Strike Price (JPY/USD)	109.3509	100.0000
Put Option Price (JPY/USD)	8.1536	6.3540
Gain/(Loss) on Export Sales (JPY)	-807,620,042.28	361,204,897.96
Gain/(Loss) on Inter-Company (JPY)	0.00	387,600,000.00
Gain/(Loss) on Imported Materials (JPY)	0.00	0.00
Gain/(Loss) on Dividends (JPY)	0.00	0.00
Gain/(Loss) on Tender Sales (JPY)	0.00	0.00
Gain/(Loss) on Financial Loans (JPY)	0.00	-341,381,250.00
Gain/(Loss) on Financial Investments (JPY)	-1,639,446,875.00	0.00
Gain/(Loss) on Forward Contract (JPY)	2,155,009,316.77	0.00
Gain/(Loss) on Call Option (JPY)	0.00	0.00
Call Option Premium (JPY)	0.00	0.00
Gain/(Loss) on Put Option (JPY)	0.00	240,000,000.00
Put Option Premium (JPY)	0.00	-762,476,404.16
Total Net FX Gain/(Loss) (JPY)	-292,057,600.51	-115,052,756.20
Forward Benchmark Outcome (JPY)	33,530,814,278.45	11,283,238,438.78
Actual Outcome (JPY)	33,437,783,691.77	11,220,911,095.84
Percentage Variance to Benchmark	-0.2774%	-0.5524%

To buy/sell foreign exchange option - enter the notional principal (positive for buy and negative for sell) and the strike price. The model calculates the option premium using the Black-Scholes option

pricing model with the following inputs: 1) the spot rate – the beginning rate for the period; 2) strike rate which you chose; 3) option maturity or term, 90 days; 4) Interest rate differential, the difference between the same maturity Libid rates by currency; and 5) the volatility of the daily spot exchange rate.

3.6.4 Foreign exchange gains and losses

Total foreign exchange gain/loss is the sum of the foreign exchange results for the underlying exposures and the foreign exchange results of any hedges put in place:

- On underlying positions. This is the exposure, and gain/loss is the amount of the currency exposure multiplied by the difference between the beginning-of-period and end-of-period exchange rates.
- On forward contracts. This is the hedge, and gain/loss is the amount of the forward notional principal multiplied by the difference between the forward rate and the end-of-period exchange rate.
- On in-the-money currency options. Depending on the position – whether your team bought or sold the option – the foreign exchange gain/loss is the notional principal multiplied by the difference between the option strike rate and the end-of-period exchange rate, plus/minus the option premium, paid or received.
- On out-of-the-money currency options. Depending on the position – whether your team bought or sold the option – the foreign exchange loss/gain is the option premium paid/received.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

Japan

FORAD Multinational Finance Simulation

Japanese Sub: Decision Inputs

Show FX Hedging Graph

Operations Investing Financing Hedging - USD Hedging - EUR

	Period 2 Actual	Period 3 Decision
Net Contractual Exposure (USD)	13,684,718.55	119,830,484.69
Call Option Notional (USD)	0.00	0.00
Call Option Strike Price (JPY/USD)	109.3509	109.3509
Call Option Price (JPY/USD)	0.1515	0.0125
Put Option Notional (USD)	0.00	120,000,000.00
Put Option Strike Price (JPY/USD)	109.3509	100.0000
Put Option Price (JPY/USD)	8.1536	6.3540
Gain/(Loss) on Export Sales (JPY)	-807,620,042.28	361,204,897.96
Gain/(Loss) on Inter-Company (JPY)	0.00	387,600,000.00
Gain/(Loss) on Imported Materials (JPY)	0.00	0.00
Gain/(Loss) on Dividends (JPY)	0.00	0.00
Gain/(Loss) on Tender Sales (JPY)	0.00	0.00
Gain/(Loss) on Financial Loans (JPY)	0.00	-341,381,250.00
Gain/(Loss) on Financial Investments (JPY)	-1,639,446,875.00	0.00
Gain/(Loss) on Forward Contract (JPY)	2,155,009,316.77	0.00
Gain/(Loss) on Call Option (JPY)	0.00	0.00
Call Option Premium (JPY)	0.00	0.00
Gain/(Loss) on Put Option (JPY)	0.00	240,000,000.00
Put Option Premium (JPY)	0.00	-762,476,404.16
Total Net FX Gain/(Loss) (JPY)	-292,057,600.51	-115,052,756.20
Forward Benchmark Outcome (JPY)	33,530,814,278.45	11,283,238,438.78
Actual Outcome (JPY)	33,437,783,691.77	11,220,911,095.84
Percentage Variance to Benchmark	-0.2774%	-0.5524%

FORAD Tip 3.13 Company Hedging Strategy

- Before you decide on your hedging, think how your other decisions impact your exposures and whether you might want to make adjustments. Are all of your exposures certain?
- What is the cost of your hedging and does it make business sense?
- Do you feel comfortable defending your decisions?
- Stress testing your decisions is always a very good idea

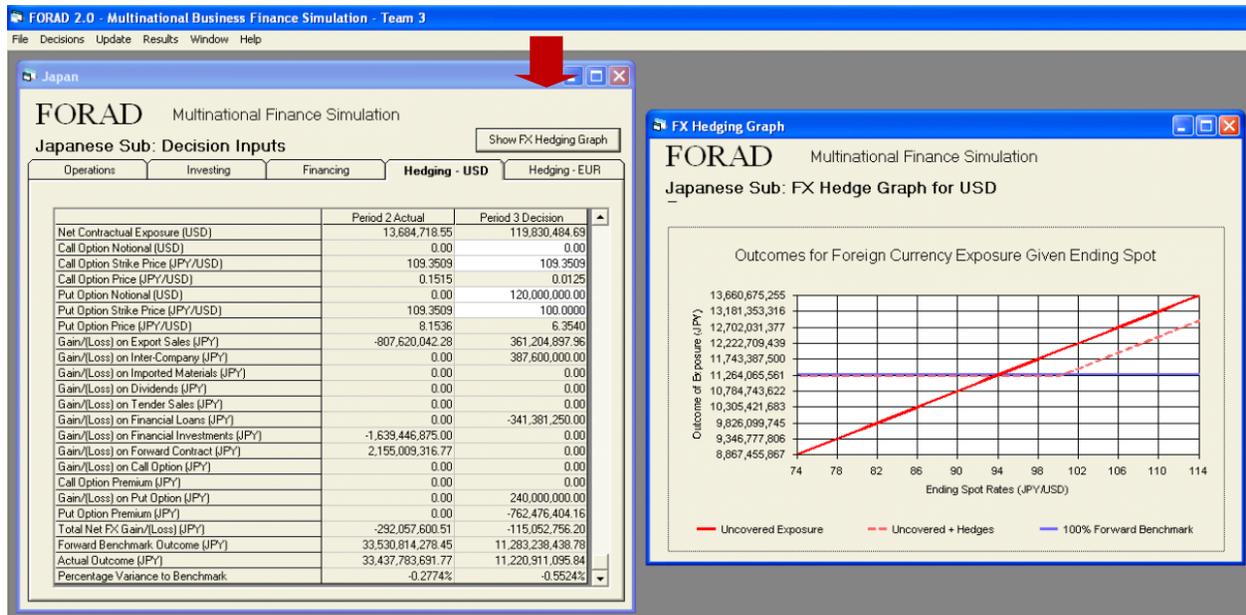
3.6.5 Benchmarking

Your FORAD company's hedging performance is evaluated by comparing your actual results with benchmark results – and your relative foreign exchange hedging results make up one of the key elements of your P/E score.

- Benchmark - total period exposures converted into local currency at the forward rate.
- Actual result - total foreign exchange gain/loss from hedge positions plus the total period underlying exposures converted into local currency at end-of-period foreign exchange rates.

3.6.6 Foreign exchange results help screens

You can visually examine your foreign currency exposures and hedging decisions using the help screens available in the foreign exchange hedging decisions screens. The graphs show expected outcomes from the current foreign exchange decisions (underlying exposure plus hedges) over a range of potential end-of-period exchange rates. The help screens are available for all subsidiaries and for all foreign currency exposures. Make sure you refresh the model before checking the graphs.



3.6.7 Oil Hedging

The performance of your Japanese subsidiary is very closely dependent to on the period end oil price and this price is volatile. You can hedge your exposures with oil futures from Decisions/Japan/Operations. Note that if your goal is to hedge your exposure, you need to purchase futures (take long position). Of course, you can have a strong view of the oil price direction and enter into speculative position. Oil futures contracts are for 1,000 barrels each contract so enter the hedge carefully.

3.6.8 Interest rate hedging

Your financing decisions may expose your company to *interest rate risk* - for example, if the interest rate at the market increases, then your floating-rate loans will require higher interest payments. There are a number of different ways to manage this exposure; one of which is by using *interest rate futures*.

One interest rate futures contract is for USD 1 million or EUR 1 million or JPY 100 million

underlying positions. All futures are with 90 day maturities. The interest rate futures price is the current period 3-month forward LIBOR rate. It is derived from the relationship between the 3-month and 6-month rates.

If your company has floating-rate loan based on 3-month LIBOR rate and you are concerned that the next period rate will be higher than the current period 3-month forward LIBOR rate, you could enter into a *short* interest rate futures position. If your concern materializes then the gain from the futures contract will offset the higher interest expense from the floating-rate loan.

The gain/loss on an interest rate futures contract is determined by the difference between the forward rate and the 3-month LIBOR rate as follows:

- **Long interest rate futures contract** (buy interest rate futures). If the next period 3-month LIBOR rate is higher than the current period 3-month forward LIBOR rate, the long position results in a loss. The amount of the loss is the difference between the two rates multiplied by the notional principal of the futures contract. The notional principal is for contracts of USD 1 million, EUR 1 million, and JPY 100 million, all divided by 4 for quarterly results.
- **Short interest rate future contract** (sell interest rate futures). If the next period 3-month LIBOR rate is higher than the current period 3-month forward LIBOR rate, the short position results in a gain. The amount of the gain is the difference between the two rates multiplied by the notional principal of the futures position. The notional principal is for contracts of USD 1 million, EUR 1 million, and JPY 100 million, all divided by 4 for quarterly results.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

Market Info
 Japan Ctrl+J
 Germany Ctrl+G
 United States Ctrl+U

United States
 FORAD Multinational Finance Simulation
 US Holding Company: Decision Inputs

IR Hedging Investing Financing Hedging - JPY Hedging - EUR

	Period 2 Actual	Period 3 Decision
Current Period USD IR Futures Contracts	0.00	0.00
USD 3m Libor Futures Rate	3.8497%	3.9678%
USD 3m Libor	2.6250%	3.2500%
Previous Period USD IR Futures Gain/(Loss) (USD)	0.00	0.00
Current Period JPY IR Futures Contracts	0.00	0.00
JPY 3m Libor Futures Rate	2.2486%	2.1177%
JPY 3m Libor Rate	0.2500%	1.3750%
Previous Period JPY IR Futures Gain/(Loss) (USD)	0.00	0.00
Current Period EUR IR Futures Contracts	0.00	0.00
EUR 3m Libor Futures Rate	2.4334%	2.7569%
EUR 3m Libor Rate	2.3125%	2.6250%
Previous Period EUR IR Futures Gain/(Loss) (USD)	0.00	0.00

Interest rate futures are only available in the U.S. Holding Company. The gain/loss from interest rate futures contracts is received/paid on day 90 and is recorded as either interest income (long positions) or interest expense (short positions) on the Holding Company income statement.

Note that interest rate futures contracts are only available in 90 day maturities, and therefore only manage current period interest rate exposures. Futures prices for the next period will reset at the next period forward rate. If your goal is long-term interest rate hedging, you should consider other options such as refinancing or the use of interest rate swaps.

3.7 Tax Management

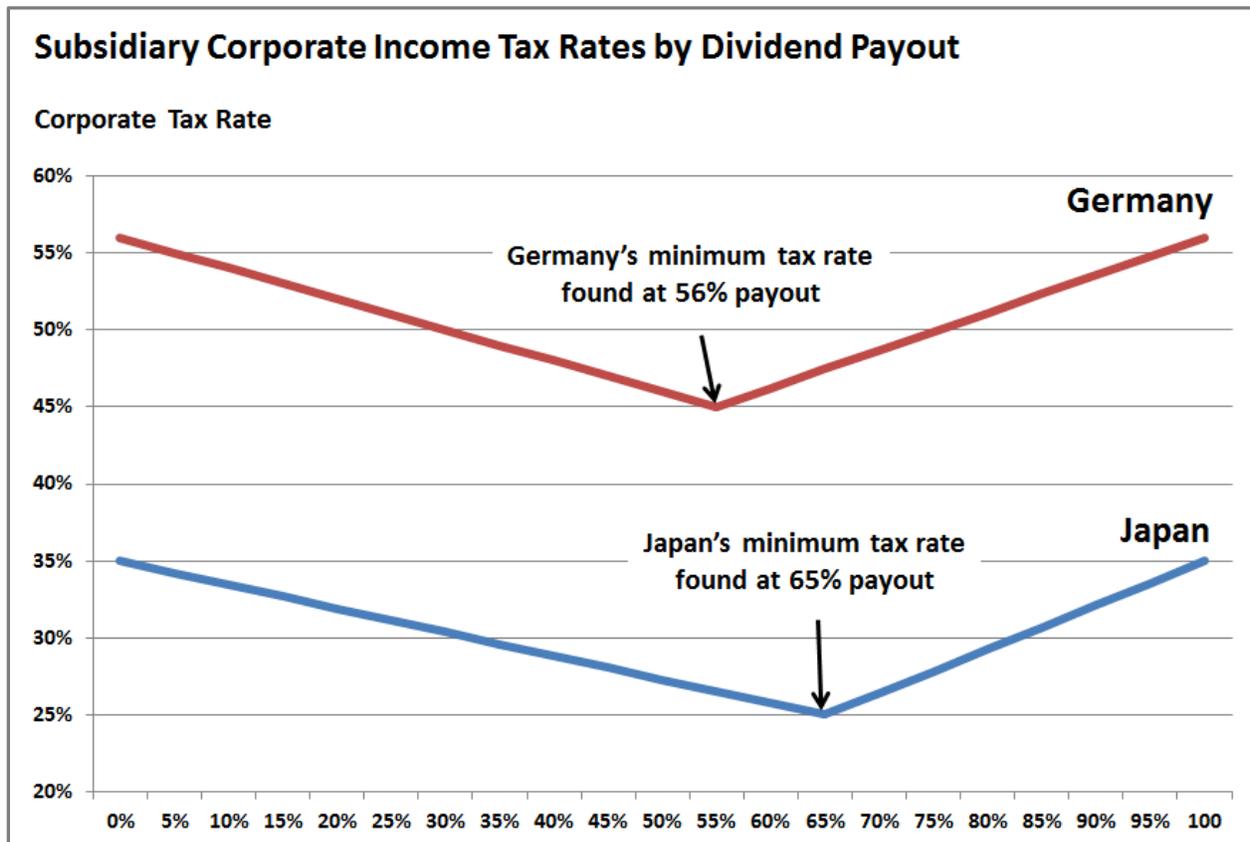
Tax management is an important part of the decision making for your FORAD company, as it affects your company's EPS and your PE score. On a consolidated basis, if your team can lower the total taxes paid worldwide (as measured on a consolidated U.S. dollar basis), you can increase your EPS. A lower worldwide effective tax rate will also improve your Tax Management score in the total PE score (discussed further in section 4 of this manual.)

FORAD companies pay taxes in all three different countries – Germany, Japan, and the United States. In Germany and Japan, the subsidiaries pay corporate income tax on current period earnings, and withholding taxes on any dividends or interest they remit to the U.S. Holding Company. The U.S. Holding Company pays corporate income taxes on two different categories of income, *domestic-source income* and *foreign-source income*. *Foreign-source income* is any income – dividends or interest – which it receives from the German and Japanese subsidiaries.

Income taxes for the period are recorded as *other payables* on the current period balance sheet, and are charged on the current period income statement. The cash payment for the income taxes occurs on day 0 of the next period. Withholding taxes and any taxes from foreign source income due are not recorded as a payable. These are paid on day 90 of the current period.

3.7.1 Germany

The German subsidiary pays corporate income taxes in Germany. The German corporate income tax rate changes depending on the percentage of earnings before tax (EBT) paid to the U.S. Holding Company as Inter-company dividend. As illustrated in the following exhibit, the German corporate income tax rate is 56% if no earnings are remitted (0% payout), or if all earnings are remitted (100% payout). The German corporate income tax rate reaches its minimum of 45% - at a 56% current period EBT payout rate.



3.7.2 Japan

The Japanese subsidiary pays corporate income taxes in Japan. The Japanese corporate income tax rate also changes depending on the percentage of earnings before tax (EBT) paid to the U.S. Holding Company. As illustrated in the exhibit, the Japanese corporate income tax rate is 35% if no earnings are remitted (0% payout), or if all earnings are remitted (100% payout). The Japanese corporate income tax rate reaches its minimum of 25% – at a 65% current period EBT payout rate.

For both subsidiaries, when they remit dividends or interest to the U.S. Holding Company, the local tax authorities will impose a withholding tax on those distributions. All withholding taxes are 5% in FORAD.

3.7.3 United States

The U.S. Holding Company pays corporate income taxes in the United States. The U.S. corporate income tax rate is a flat 35%. That 35% is applied to both *domestic-source income* and *foreign-source income*, but separately.

- **Domestic-source income.** This is profit which is generated from the conduct of business within the United States. Like any profits earned in the U.S., they are taxed at a 35% current rate. Domestic-source income taxes are calculated on the basis of both domestic sources of income and domestic

expenses incurred in the conduct of business.

- **Foreign-source income.** This is profit which is both earned outside the U.S. and remitted to the U.S. parent company during the current period. Income which is earned abroad, for example in Germany or Japan, but is retained in those subsidiaries, is *not* taxed in the current period by U.S. tax authorities. Foreign-source income is only taxed in the U.S. upon remittance to the United States.

3.7.4 Foreign-Source Income and Tax Gross-up

The U.S. tax authorities offer *tax deferral* on profits earned overseas if not remitted to the parent company. *Tax deferral* means that the U.S. tax authorities will not tax profits earned abroad until they are remitted to the U.S. Holding Company. (The host-country tax authorities in Japan and Germany will tax profits earned in their countries, regardless of whether it is retained or paid out. As detailed in the previous section, the corporate income tax rate actually paid in both Germany and Japan depends upon the dividend payout rate.)

When profits are remitted to the U.S. Holding Company, U.S. tax authorities will go through a process of assessing the taxes paid on that income remitted, called *gross-up*. The *gross-up* process converts the remitted income to U.S. dollars on a pre-tax basis, calculates the theoretical tax due on those earnings if they had been earned in the U.S. (at 35%), and estimates taxes *deemed paid* on that income in the foreign jurisdiction (Japan or Germany). The taxes *deemed paid* will include all corporate income taxes paid in the origin country on the dividend remitted, plus the additional withholding taxes imposed on remitted dividends.

At the end of this *gross-up* process the U.S. tax authorities calculate whether additional taxes are due, a *foreign tax deficit*, or more than sufficient taxes have been paid on the remitted income, a *foreign tax credit*.

- If the net cumulative foreign tax credits and deficits for the current period are net deficit, the U.S. holding company will pay the additional taxes due on the foreign-source income in the current period, net of any foreign tax credit carry-forward credits it may have.
- If the net cumulative foreign tax credits and deficits for the current period are net credit, the U.S. holding company owes no additional tax on the foreign-source income for the period. If there is an actual net credit, it will be carried forward in time to be available for use in future periods. Tax credits on foreign-source income are not applicable to domestic-source income.

The dividend gross up process for the Japanese subsidiary is shown in the following screen. As shown, after the gross up and recalculation of taxes due in the U.S., the net result is an excess foreign tax deficit of 680,272 in Period 3, meaning that the U.S. Holding Company will owe an additional \$680,272 in taxes on the dividend remitted from Japan this period. Note that this is before assessment of any possible foreign tax credit from Germany and any accumulated tax credit carry forward from prior periods.

FORAD 2.0 - Multinational Business Finance Simulation - Team 3

File Decisions Update Results Window Help

- Consolidated Balance Sheet Ctrl+B
- Consolidated Income Statement Ctrl+I
- PE Scoring
- Summary
- US Holding Company ▶
- Japanese Subsidiary ▶
- German Subsidiary ▶
- Taxes ▶
 - Tax Summary
 - Japanese Dividend Gross Up
 - Japanese Interest Gross Up
 - German Dividend Gross Up
 - German Interest Gross Up

Japanese Sub: Dividend Gross Up

FORAD Multinational Finance Simulation

Japanese Sub: Dividend Gross Up
[Amounts in JPY]

	Period 2	Period 3
Dividends Before Withholding (LC)	1,740,000,000	2,000,000,000
Less: Withholding Taxes (LC)	-174,000,000	-200,000,000
Net Remittance (LC)	1,566,000,000	1,800,000,000
Dividends Before Withholding (USD)	18,393,235	20,408,163
Add Back: Foreign Deemed-Paid Taxes (USD)	6,131,078	6,802,721
Grossed Up Dividend for US Taxation (USD)	24,524,313	27,210,884
Theoretical US Tax Due (USD)	8,583,510	9,523,810
Less: Foreign Tax Credits (USD)	7,970,402	8,843,537
Net Additional US Taxes Due (USD)	613,108	680,272
Excess Foreign Tax Credits/(Deficits) (USD)	-613,108	-680,272
Net Dividend After Tax (USD)	15,910,902	17,627,075

These same basic tax gross-up mechanics are then repeated for interest payments by the individual foreign subsidiaries to the U.S. Holding Company. The one distinction between dividends and interest gross-up is that the interest paid by a foreign subsidiary to the U.S. Holding Company is treated as an expense on the local level in Germany and Japan, hence there are no income taxes paid by the local unit on the interest. This means that the only taxes *deemed paid* on interest remittances are the withholding taxes paid.

In principle, U.S.-based multinational companies would prefer to manage their tax liabilities on foreign-source income each period in such a way that any excess foreign tax credits arising from remittances from one subsidiary would be exactly offset by excess foreign tax deficits arising from the other subsidiary. If exactly equal, remittances from the foreign subsidiaries to the U.S. Holding Company would result in no additional taxes needing to be paid in the United States. It is also important to realize that if your company has excess foreign tax credits in the U.S. arising from remittances from your foreign subsidiaries, although you owe no additional U.S. tax, you have effectively paid more taxes globally than needed if your tax planning and management had been more efficient.

The screenshot shows the FORAD 2.0 - Multinational Business Finance Simulation - Team 3 interface. The 'Results' menu is open, showing options like 'Consolidated Balance Sheet', 'Consolidated Income Statement', 'PE Scoring', 'Summary', and 'Taxes'. The 'Taxes' option is selected, and a sub-menu is open showing 'Tax Summary', 'Japanese Dividend Gross Up', 'Japanese Interest Gross Up', 'German Dividend Gross Up', and 'German Interest Gross Up'. Below this, the 'Summary' window is displayed, showing the 'Tax Summary' table.

FORAD Multinational Finance Simulation
Tax Summary
 (Amounts in USD)

	JS Holding Company	Japanese Sub	German Sub	Consolidated
Earnings Before Taxes	27,511,350	3,535,287,138	-12,656	43,938,409
Income Taxes	-2,363,682	-960,427,422	0	-12,336,968
Withholding Taxes	0	-200,000,000	-223,125	-3,665,511
Tax on Foreign-Source Income	-1,323,043			
Total Taxes	-3,686,725	-1,160,427,422	-223,125	-16,002,479
Effective Tax Rate	13.40%	32.82%	-1762.94%	36.42%
Beg. Excess FTC Carryforward	21,292			
Current Excess Foreign Tax Credits/(Deficits)	-1,344,335			
End. Excess FTC Carryforward	0			

Use the results screens to review your tax position and think about ways to improve your effective tax rates by going to Results/Taxes/Tax summary and the Results/Taxes menu. The *effective tax rate* for the period is the total consolidated taxes as a percentage of total consolidated earnings before taxes. This rate is not always easy to reconcile. The foreign subsidiaries in FORAD are taxed based on total earnings locally, which include Inter-company revenues and Inter-company expenses. These Inter-company transactions are eliminated during consolidation, but only when realized. (See Accounting for Inter-Company transactions for more details.)

There are multiple ways your FORAD team can manage its worldwide tax burden – its *effective tax rate*. This can sometimes be accomplished by shifting taxable profits from relatively high tax environment like Germany to relatively low tax environment like Japan. This shifting can be accomplished through both operational and financial structures and rates. Operational methods would include the transfer prices, currency of denomination, and payment terms associated with Inter-company trade. Financial methods would include Inter-company loans, both amounts and pricing. Inter-company transfer prices, whether for goods or capital, are subject to constant evaluation by tax authorities. As a result, you will find that the model will impose upper and lower limits on these various prices charged inter-company.

FORAD Tip 3.14 Tax Tips

- Your tax position depends on both operating and financing decisions in all units. What are the tradeoffs?
- If, for example, you choose to finance the company from Japan, is this good for your taxes?
- If you decide to charge Germany with the highest Inter-company transfer price possible, how does this impact tax management?
- If you were unable to balance the foreign tax credits in the Holding Company, why not? What else could you do in your operations or financing in each of the foreign subsidiaries to balance the foreign tax credits more effectively?

Chapter 4: Company Results and Performance

Your performance in the FORAD simulation is determined by your share price and how it compares with the prices of your competitors. Your share price at the end of the period is equal to the annualized earnings per share times the period end PE ratio.

$$\text{Share Price} = (\text{Annualized Earnings per Share}) \times (\text{P/E ratio})$$

4.1 Earnings Per Share (EPS)

The annualized earnings per share used in the calculation of your FORAD company's share price is a 4 period weighted moving average of the current and former period earnings:

$$\text{Annualized EPS} = 0.50 \times \text{EPS}_{(t)} + 0.25 \times \text{EPS}_{(t-1)} + 0.15 \times \text{EPS}_{(t-2)} + 0.10 \times \text{EPS}_{(t-3)}$$

Note that at the very beginning of the competition (until period 3), when there is no enough history, the current period EPS will have an even greater weight.

4.2 The PE Ratio (P/E)

Your FORAD company's share price is calculated using the current period end PE ratio. It is the prior period PE ratio plus the current period change. The current period change is based on a weighted average scoring (scores range between -4 and +4) on your company's performance on six key elements:

1. Credit worthiness score	30%
2. Currency hedging score	20%
3. Planning skills score	10%
4. Tax management score	20%
5. Dividend management score	10%
6. Quality of earnings score	10%

The P/E score conceptually reflects the market's opinion of your company, and therefore is not perfectly predictable. That said, the following detailed breakdown, the P/E ratio scoring matrix, is very, very, close.

4.2.1 Creditworthiness score (30%)

The creditworthiness score evaluates your company's debt management and credit quality. It depends on the total debt to total assets ratio (30%), times interest earned (TIE, 25%), short-term debt to

working capital (WC, 20%) ratio, and your previous period credit rating (25%). It is important to note that your credit rating for the period may be different from what the fundamentals indicate because the rating can only improve (rise) one notch per period but may deteriorate (fall) multiple notches per period. As a result you may need to maintain high quality fundamentals for several consecutive periods to reach your target credit rating.

4.2.2 Currency hedging score (20%)

The currency hedging scoring evaluates your company's results versus a fully hedged benchmark. It is calculated as the percentage difference between your consolidated foreign exchange gain/loss compared with a 100% forward-cover benchmark. The benchmark itself is calculated as your company's total currency exposure converted to USD at the forward rate. Your outcome is the total consolidated exposure converted to USD at the end-of-period exchange rate plus any gains/losses from hedges. If the percentage difference is greater than or equal to +15% you will receive the maximum score of +4. If the percentage difference is below -15% you will receive the minimum score of -4.

4.2.3 Planning skills score (10%)

The planning skills score evaluates your ability to predict the company's actual EPS for the period. This performance measure reflects the general corporate goal to achieve predictability – it helps the company's internal operational and financial planning process, but also builds investors' confidence. The score is based on the percentage variation between the actual EPS after the period simulation compared to the expected EPS in your submitted decision. For example, any foreign exchange gains or losses which were either unexpected or not hedged may cause a significant variation. The highest possible planning skills score of +4 is given for a difference which is less than or equal to 4%.

4.2.4 Tax management score (20%)

The tax management score evaluates your company's ability to minimize its consolidated effective tax rate for the period - the sum of all taxes paid (in USD), as a percentage of the consolidated earnings before taxes (in USD). If your consolidated effective tax rate is greater than 62%, or if you paid taxes while the consolidated earnings before taxes were negative, you will receive the lowest tax management score of -4. If your tax rate is below 35% you will receive the highest possible tax management score of +4.

4.2.5 Dividend management score (10%)

The dividend management score evaluates your company's ability to generate ever greater-dividends from ever-greater earnings, without foregoing reinvestment of some proportion of the earnings in the company. The score is negatively affected in case of any initial dividend decrease. It is also negatively affected if dividends are growing faster than earnings. The dividend management score is positively

affected when dividend volatility is low.

4.2.6 Quality of earnings score (10%)

The quality of earnings score element evaluates your company's ability to grow earnings from the core business. It is composed of three elements of equal weight: 1) earnings volatility – lower is better; 2) gains from non-core items like currency hedging, interest rate movements, and oil price changes as percentage of your company's consolidated earnings before tax - less is better; and 3) new equity shares issued which dilute existing shareholder interests and returns. The three items combined serve as a proxy for your ability to generate and grow core earnings and reward your shareholders consistently.

P/E Ratio Scoring		Score									
P/E Component	Weight	-4	-3	-2	-1	0	1	2	3	4	
Creditworthiness	30%	Less than or equal to									
Total debt/Total assets	30%	>79%	79%	76%	73%	70%	67%	64%	61%	58%	
Times interest earned	25%	< 1.9	2.6	3.3	4.0	4.7	5.4	6.1	6.8		
ST Debt/WC ratio	20%	> 55%	55%	50%	45%	40%	35%	30%	25%	20%	
Previous credit score	25%	C	CC	CCC	B	BB	BBB	A	AA	AAA	
	100%										
Currency hedging	20%	Greater than or equal to									
% difference from benchmark		< -15%	-15%	-10%	-5%	-1%	1%	5%	10%	15%	
Planning skills	10%	Less than or equal to									
% difference from expected EPS (absolute value)		> 72%	72%	60%	48%	36%	24%	16%	8%	4%	
Tax management	20%	Less than or equal to									
Effective global tax rate (positive)		> 62%	62%	58%	54%	50%	46%	42%	38%	35%	
Effective global tax rate (negative)		< 0%									
Dividend management (1)	10%	Less than or equal to									
Dividend payout (rule one)		> 90%	90%	80%	70%	60%	50%	40%	35%	30%	
Dividend payout (rule two)						0%	10%	20%	25%		
Dividend volatility		>70%	70%	60%	50%	40%	30%	20%	10%	5%	
Dividend increase/decrease (2)											
Earnings quality	10%	Less than or equal to									
Earnings volatility	33%	> 120%	120%	80%	60%	50%	40%	30%	20%	10%	
Gains from non-core items (3)	33%	> 50%	50%	25%	10%	2%					
Share dilution (3)	33%	> 50%	50%	25%	10%	2%					
	100%										
Total Score	100%										
1: The dividend management score is the sum of the dividend increase/decrease sub-scores and 1/2 of the dividend volatility and the dividend payout sub-scores; it is limited to scores of -4 or +4.											
2: This sub-score is 1 if EPS increases faster than dividends increase; it is minus 2 if the dividend decrease; all other cases - 0.											
3: The sub-score is 0 for zero non-core items and zero dilution.											

FORAD Tip 4.1 P/E Scoring

- Invest the time to understand all elements of the share price calculation.
- Set your priorities at the beginning - do you plan to focus on growing EPS or growing your P/E score?
- Be aware that in some cases improving your EPS might hurt your PE score or the other way around - understand the tradeoffs and try to manage those in the most efficient way
- Pay attention to the weights of the P/E score elements.
- Monitor the results of your competitors - where do you stand?

4.3 Accounting Considerations**4.3.1 Financial statements consolidation**

Your company's performance is evaluated based on your consolidated results. The FORAD model generates the consolidated financial statements for you, but understanding how they are prepared is essential for your ability to interpret the results and think about improvements.

4.3.2 Translation of financial statements

The FORAD company subsidiaries do business locally and their functional currency is the local currency. The local currency statements are translated to USD using the current rate method.

4.3.3 Accounting for Inter-company transactions

Inter-company transactions must be appropriately eliminated when compiling consolidated financial results.

- Income statement. Note that the consolidated income could be quite different from the sum of the subsidiaries' income. This happens as a result of the Inter-company eliminations and more specifically the timing of these eliminations.
- Inter-company trades. Your Japanese subsidiary sells units to your German subsidiary and realizes revenue from this trade. This revenue and all COGS associated with it (or the net Inter-company profit) are eliminated on the consolidated financials. This same Inter-company profit in Japan represents expense in Germany and also has to be eliminated to net zero effect. But keep in mind that the Inter-company profit and expense are eliminated only when realized. The sales in Japan are realized right away - the profit is eliminated in the current period. The expense in Germany is realized when the units produced in the current period are sold which is typically in future

periods. Remember this timing mismatch - your decisions about the Inter-company price affect your future performance. See the hypothetical example below.

- Inter-company interest income and interest expense. Inter-company interest payments are also eliminated, but since they happen in the current period, the net effect is zero - the expense in one subsidiary is income in the other one.
- Inter-company dividend. Dividends paid by the subsidiaries to the U.S. Holding Company are eliminated to prevent double-counting.
- Inter-company loans and investments, between the foreign subsidiaries and the U.S. holding company are eliminated. Same as with income and expense – the net effect on total assets is zero – an investment (asset) in one subsidiary is a loan (liability) in the other.

Example for Inter-company trade eliminations. Consider the following hypothetical example - in the current period Japan generates high profit on Inter-company trade, although in the prior period it made no profit on Inter-Company trade. During the current period consolidation, all of this high inter-company profit in Japan is eliminated while the Inter-company expense eliminated in Germany is much lower (because the majority of the sales in Germany are from units in inventory which include no Inter-company profit). As a result the total consolidated operating profit for the period will be lower than the sum of the operating profits of the two subsidiaries.

Now consider the next period. Assume that in the next period Japan again makes no profit from Inter-company trades. In this case, there will be no Inter-company profit eliminated in Japan while the Inter-company expense eliminated in Germany will be high (because the majority of the sales in Germany will probably again be from units in inventory which include high Inter-company profit). As a result the total consolidated operating profit for the period will be greater than the sum of the operating profits of the two subsidiaries.

FORAD Tip 4.2 Consolidation Accounting Considerations

- Keep in mind that the Inter-company eliminations do not affect local income tax obligations. Inter-company profit in Japan is taxed at the same rate as any other profit, but does not appear as profit on the consolidated income statement. Inter-company expenses incurred in Germany decrease its taxable earnings, but do not appear as expense on the consolidated income statement.
- Always consider the long-term effect from your decisions. For example, if you increase the Inter-company price now, this profit is eliminated but taxed in Japan right away with probably small effect on Germany in the current period. But how would this decision affect your next period profitability in the subs?
- What is the effect from the different foreign exchange rates used to translate your financials? Is there something else other than the obvious exposures you would consider hedging? Why and why not?
- Invest time in reviewing your financial statements each period and the changes over time. Are you able to explain the numbers?
- Monitor the financial statements of your competitors. Where do you stand?

Appendix 1: FORAD Computer Files and Procedures

Installing the Model

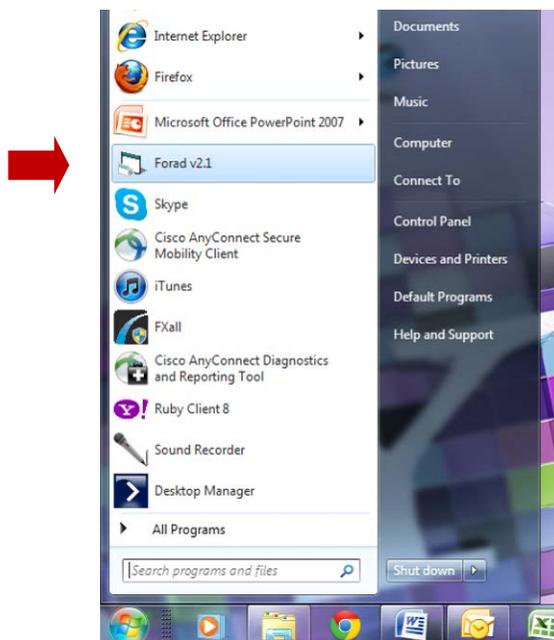
To install the FORAD model you need three files:

1. **Forad v1.CAB**
2. **Setup.exe**
3. **Setup.LST**

The three files need to be together in the same folder or subdirectory – either on your machine or on an external device (for example a USB drive). Once you have the files together, complete the following steps.

Step 1: Start the setup.exe file. You will be guided through a standard Windows installation program. When it is complete you will be able to access and open the FORAD model from the Start menu on your machine.

Step 2: Start the FORAD model from your Start menu, then close the model. When you open the model for the first time, the software creates a folder Tower46 located in your My Documents folder on the hard drive. This is the folder where all your files are going to be.



The FORAD model is now completely installed and you can test it. Note that you see a generic company (team 1) in period 1. You can try whatever you like, save the decisions and examine the results, but keep in mind that when you are setup for your own company, the model will be reset at a starting position.

Setup for the First Period

To setup the model for your first period decision with your FORAD company, you will need one additional setup file from the FORAD Administrator:

DecisionsT#P1.txt - "#" is your own team number. So if you were Team #3, this file would be DecisionsT3P1.txt.

Step 1: Go to the folder **My Documents/Tower46/Fordav1** and delete the files DecisionsT1P1.txt (the one for the generic company)

Step 2: Save your own Decisions setup file described above in the same folder

Step 3: Reopen the model. You should now be able to see period 0 closed and period 1 open for decisions. The team number at the top of the screen should be your own team number. You are now ready to proceed with your first decision.

The screenshot displays the FORAD 2.0 software interface. The main window shows the 'FORAD 2.0 Summary - Period 1 Forecast' for 'Team 3'. It features two primary financial summary tables: one for the 'US Holding Company' and one for the 'Consolidated' entity. The US Holding Company summary is in millions of USD and includes metrics like Revenue, EBIT, and Net Income. The Consolidated summary is in millions of USD, except for ratios and share price, and includes metrics like Total Revenue, EBITDA, and various financial ratios. The interface also shows inter-company dividends and net balances between the entities.

	USD	USD	
Revenue	2.00	Current Assets	48.80
InterCo Revenue	30.86	Net Fixed Assets	295.63
EBIT	32.57	Current Liabilities	(50.19)
EBT	30.26	LT Liabilities	(115.04)
Net Income	30.26	Equity	(179.19)

	USD	USD	USD	USD	
Total Revenue	298.72	Current Assets	511.07	ST Debt/W/C	20.00%
EBITDA	65.27	Net Fixed Assets	401.90	Debt/Assets	69.20%
EBIT	60.26	Current Liabilities	(171.39)	Eff. Tax Rate	49.07%
EBT	53.93	LT Liabilities	(561.77)	Eff. Int. Rate	4.10%
Net Income	27.47	Equity	(179.80)	% FX Var to Fwd	-0.27%
				Quarter EPS	2.75
				Annual EPS	6.45
				Stock Price	72.02
				P/E Ratio	11.16
				Credit Rating	B

Submitting Your Decision for the Period to the FORAD Administrator

After your team has completed its deliberations and finished your decision-making for the period, save your work and close the model. Submit your decisions file to the FORAD Administrator (via external device or via e-mail). The file is located in the folder **My Documents\Tower46\Fordav1** and it is entitled **DecisionsT#P#.txt** where P# indicates the period number and T# indicates your team number.

Some examples. If you are Team #3 and are submitting your decision for Period 1 the file name is DecisionsT3P1.txt. If you are Team #1 submitting your decision for Period 4 the file name is DecisionsT1P4.txt.

Setup for New Period Decision

After the FORAD model simulation has been run for the period, the FORAD Administrator will send you back 4 new files. The two files which you need for your next period's decision are:

1. **Assumptions.txt**
2. **DecisionsT#P#.txt** (the period # should be the number of new period you are now undertaking)

Save these two files in the folder **My Documents\Tower46\Foradv1**. When you reopen the model you will see your actual results for the period simulated and will be able to proceed with the next period decision.

The other two files from the Administrator are purely informational.

3. **Decisions and Results Output - Team#.csv** – Details for all your company's decisions and results (you could download the same file from the model at any time – see the next section for details)
4. **Cartel Results P#.xlsx** - Data about all companies in the cartel

To Download Your Detailed Results

At any point of time you can see your detailed decisions and results in an Excel-compatible format. The file is called **Decisions and Results Output - Team # Period #.csv** and it is located in the main folder My Documents/Tower46/Fordav1.

To refresh the file - in the FORAD model, go to the main menu File and select Save Output data.

The file **Decisions and Results Output - Team # Period #.csv** contains the majority of your historical decisions and results (these do not change) and the most recent period status (these will change when you update your decisions for the current period and refresh the file as explained above). The file can be saved in Excel format and analyzed as needed.

To Uninstall

The FORAD model can be uninstalled the same way any other program is: go to the Control Panel of your computer and select Programs - Uninstall. Highlight Foradv1 and click Uninstall.

Backup

In case you ever need a backup, the FORAD model creates this for you automatically.

Each time you click Run Decision from the menu Update (or "*Ctrl + r*"), the model saves the current decision to your My Documents\Tower46\Foradv1\Backup folder. In other words, if you are updating often to see the effects in the model, the backup decision file may be more current than the decision file in the folder My Documents\Tower46\Foradv1 (this one updates when you select Save Decision from the menu File or save your work when exiting the model).

In order to use the backup decision in your model, save it to your My Documents\Tower46\Foradv1 folder, replacing the existing file. Reopen the model and continue with your decision.

Appendix 2: FORAD 2.0 for Mac Users

The FORAD model only runs in Windows operating systems. If you own a Mac, there are several alternatives for using Windows. This appendix explains the alternatives and provides resources for learning more.

There are three well-documented ways to load Windows on a Mac. All three require that you purchase a full version of Microsoft Windows.

Boot Camp

Boot Camp is a software included with Apple's OS X Lion and Mountain Lion. It allows you to run compatible versions of Microsoft Windows on an Intel-based Mac. For more information on using Boot Camp to install Windows, see Apple's site <http://www.apple.com/support/bootcamp/>.

Advantages: Boot Camp is included with your Mac so there is no additional cost or installation. It also allows you to run Windows at native speed. That means that it runs as efficiently as possible on your Mac instead of potentially losing some performance in a virtual space.

Disadvantages: Your Mac must be shutdown and restarted in Boot Camp in order to run Windows. This allows Windows to run at native speed, but you cannot switch instantly back and forth between Mac applications and Windows when you use Boot Camp.

VMware Fusion

Fusion creates a virtual space on your Mac where you can install Windows and run any Windows programs alongside your Mac applications. Learn more about Fusion at: <http://www.vmware.com/products/fusion/overview.html>

Advantages: Fusion allows you to switch between Mac applications and Windows instantly, without rebooting the computer.

Disadvantages: Fusion is additional software that you have to purchase and must be installed on your Mac.

Parallels

Like Fusion, Parallels creates a virtual space on your Mac. Learn more about Parallels here: <http://www.parallels.com/>

Advantages: Parallels allows you to switch between Mac applications and Windows instantly, without rebooting the computer.

Disadvantages: Parallels is additional software you need to purchase and must be installed on your Mac.

Appendix 3: Frequently Asked Questions (FAQs)

FORAD Model Calculations and Analysis

Q1: The sum of the operational income of the individual subsidiaries is not equal to the consolidated operating income. Why?

The FORAD company subsidiaries engage in certain Inter-company trade that results in Inter-company sales, costs of goods sold, inventory and depending on the credit terms may result in Inter-company A/R and A/P. In the consolidation of the income statement and balance sheet, all Inter-company transactions, balances and profits must be eliminated. Overtime these eliminations offset, but the net effect on a period by period basis could be different from zero. See the Accounting Considerations section of the manual for more details.

Q2: I expected the consolidated effective tax rate to be close to the tax rates of the subsidiaries, maybe average. But it is actually quite different. How can I reconcile?

The income tax subsidiaries pay locally is based on their total revenues and expenses, including Inter-company trades. The effective tax rate is calculated as the total taxes paid (income tax and withholding tax) as percentage of the total consolidated pre-tax earnings and these exclude Inter-company trades.

Q3: I thought that the eliminations for Inter-company trades will cancel out each period (profit in Japan = expense in Germany), but looks like this is not the case. Why?

Inter-company sales generate revenue in Japan and the profit (if any) is eliminated right away in the current period. The profit from Inter-company sales is expense in Germany and should be eliminated too, but this happens when Germany sells the units produced which is typically in future periods. If the Inter-company profit defers from period to period, then the elimination of Inter-company profit in Japan and Inter-company expense in Germany will typically differ in a single period. See the Accounting Considerations section of the manual for more details.

Q4: Why sometimes logical decisions do not produce the results I expect?

Quite often a decision may affect several areas of your company and therefore produce unexpected results. For example, a decision to lower your effective tax rate may create FX exposures or financing challenges. Think about all areas a decision affects.

Q5: My total revenues are slightly different from the revenues of the competitors. I thought we all sell the same number of units at the same sale price.

Total revenues could move up and down depending on your collection and pay terms. See chapter 3 of the manual, Operations for details. Also - the German subsidiary may generate additional sales as a result of successful tender bid.

Q6: My results after the simulation are different from what I forecasted. Why?

When you take decisions for the current period, the results you see in the model are based on your predictions for the period-end FX rates, oil price, sales volumes and sales prices. During the simulation, your forecast for these market inputs is replaced with the actuals - unless you predict this market data precisely, your forecasted results will differ from the actual results.

Q7: I am encouraged to do stress-testing. What does this mean?

You can "predict" extreme values for the market input and examine the effect on your company results (see Q6 too). Stress testing may help you spot flaws in your decisions. Also - extreme values are unlikely, but possible. Do not expect the market to always be rational; it is a good idea to stay protected or at least be comfortable with your results in such scenarios.

Q8: I forgot to forecast FX rates/oil price/sales input. Now what?

If you do not forecast the market data, the model assumes that your forecast is equal to the prior period actuals. Your forecasted results are calculated based on these values (see Q6).

Q9: I decided to collect from my customers on day 30, but I still see AR balance on the balance sheet. Why?

Sales (and purchases) in FORAD happen at a stable pace during the period and get settled the same way. For example, if your collection terms are 30 days, on day 1 of the period your team sells 1/90 of the total period sales - this amount remains outstanding during days 1 and 30 and you receive cash for it on day 31. On day 90 of the period, your sales made between day 61 and 90 are still outstanding and this is the AR balance you see on the BS – it is approximately 1/3 of your revenues for the period.

Q10: I need cash on day 30 and changed the collection terms from 90 days to 30 days and expected to receive a significant increase of my day 30 cash balance. Not really. Why?

See the previous question. If your collection terms are 90 days, during the current period, you do not collect any cash from your sales. When your terms are 30 days, you start collecting cash on day 30, but since the sales happen gradually, on day 30 you only collect the sales made on day 1 (1/90 of the total amount for the period). In other words - if your terms are 30 days, there is no significant cash effect on day 30; however, by day 90 you will have 60% of your cash collected already compared to none if your terms are 90 days.

Q11: I changed the Inter-Company days payable from 90 days to 30 days. Why do I still have USD exposure related to Inter-Company trades on day 90?

Sales and purchases in FORAD are made in a stable pace throughout the period. Receivables and Payables are settled in the same fashion. In your specific example - sales and/or purchases made after

day 60 will still be outstanding on day 90 - in other words, if you elect to settle receivables/payables on day 30, approximately 30% of the flow will still be outstanding on day 90.

Q12: My annualized EPS are negative. Am I bankrupt?

No. When the annualized earnings are negative, the share price cannot be determined by the formula "PE score times the annualized earnings". In such case, the share price is equal to the book value of your company - total net assets divided by the shares outstanding.

Foreign Exchange Management

Q1: Why do the same FX gains/losses result in different FX variance in the PE scoring for the different teams?

The FX variance is based on the difference between your FX results and the FX result if you covered 100% of your exposures with forward contracts. Therefore, the base for the variance depends on the size of your exposures - large absolute FX gain or loss may not generate large variance if the initial FX exposures are large.

Q2: How do I settle the forward contract and the options?

No action from you is required. Forward contracts are settled automatically at the end of the period. In the money options are always exercised. Out of the money options expire worthless.

Q3: How do I see the FX graphs and what do they show me?

You can access the FX graphs from the main menu Decisions. Go to one of the subsidiaries, then Hedging currency 1 or 2, there is a button on the top right side. The FX graphs show the expected FX results for different period end rates. You can see the expected results for a few scenarios - your current hedging decision, 100% hedging with a forward contract and 100% un-hedged position. Keep in mind that if you do not have underlying exposures, the graphs are not available.

Q4: How are the current period FX gains/losses calculated?

The current period FX gains and losses are calculated based on your current hedging positions and assuming the period end rate is the rate you forecasted. After the simulation, the actual FX gains and losses are calculated the same way, but your period-end forecast rate is replaced with the period-end actual rate.

Financial Reporting

Q1: How do I get historical data for my decisions and results?

In the model you can see your historical data in the various screens by scrolling left. Outside of the

model, you can also see a copy of all your current and historical decisions and results in csv format - from the main menu File, click on Save output data. Copy of all decisions and results can be viewed in the file Decisions and Results Output - Team# Period#.csv, located in the folder My Documents/Tower46/Foradv1.

Q2: How do I get information for the competitors?

Data for the competitors is available from the file Cartel Summary distributed by the Administrator after each period simulation. You only get limited information for the competitors - details about the PE score elements, consolidated balance sheet and income statement and selected operational data.

Q3: The detailed decisions and results file is in format I do not recognize. How do I work with this document?

You can save the file Decisions and Results Output - Team# Period#.csv in Excel format with no loss of data.

Model Usage

Q1: I need a new version of the model. How do I do that?

If you already have old version of the model, the first thing you need to do is uninstall it - from the Control panel, go to Change/Uninstall programs, select Foradv1 and click Uninstall. To install the new version, you need the three installation files (setup.exe, setup.lst and forad v1.cab). Save all three files together in the same folder and run the file setup.exe - it will lead you through a simple Windows installation wizard. Once you reopen the model, you will be at the point when you uninstalled.

If you do not have old version of the model, you do not have to uninstall, just get the same three installation files and save them in the same folder, run the file setup.exe. To finish the initial installation, you need to open the model once (it is accessible from your Start menu). You will see the default starting position - team 1 in period 1. Close the model. If team 1 and period 1 is where you need to be - you are done. If not - then delete the files Assumptions.txt and DecisionsT1P1.txt from the folder My Documents/Tower46/Foradv1. Finally save in the same folder the Assumptions.txt file for the correct period and your teams DecisionsT#P#txt - also for the correct period. When you reopen the model you should see your team's decisions and the current period open for input.

Q2: I need to re-install the model. Am I going to lose my decisions input?

No, you will not lose your decisions prior to the reinstallation. See the first paragraph of the prior questions on how to reinstall.

Q3: I have two computers. Can I use the model on both and synchronize?

Yes. You have to install the model on the two (or more) computers. To synch them, you need to have

the most recent Assumptions.txt and DecisionsT#P#.txt in the folder My Documents/Tower46/Foradv1 on these computers. These two files contain the most recent data for your decisions and results and market data. If you have the same files in the folders My Documents/Tower46/Foradv1 - you will see the same when you open the model on the different computers.

Q4: A team member was absent for a few periods. Can they catch up with the rest of the team?

Yes, everybody can easily get to where the rest of the team is. They need to have the model installed (see Q1 if applicable). They also need to have the most recent Assumptions.txt and DecisionsT#P#.txt saved in the folder My Documents/Tower46/Foradv1 (see Q3 for details).

Q5: The model crashed in the middle of a decision and I did not save. Did I lose everything?

No. The model automatically creates a backup file for you. If this happens, go to the folder Backup in the folder My Documents/Tower46/Foradv1. Take the DecisionsT#P#.txt from there and move it to the folder My Documents/Tower46/Foradv1. You should be able to recover your input prior to the crash.

Q6: I lost a data window and I cannot bring it back from the main menu.

The window is probably minimized - check at the bottom of the Forad screen, minimized windows are on the left side.

Q7: I have the correct Assumptions.txt and DecisionsT#P#.txt saved in the folder My Documents/Tower46/Foradv1, but when I open the model, I see incorrect team number. Why?

Check whether you have another DecisionsT#P#.txt saved the folder My Documents/Tower46/Foradv1. If yes - delete the incorrect file. You should only have Decisions files with your team number.

FORAD Company Operations

Q1: Why I am not able to change the Inter-company price and currency in Japan?

Inter-Company input is entered from the Decisions screen for the German subsidiary.

Q2: I have too much capacity. Can I sell some?

No, you cannot sell capacity in FORAD.

Q3: How can I purchase more oil than I need and store it for next periods?

You cannot purchase more oil that you need in the current period - determined by the production level in Japan.

PE Scoring and Share Price Calculation

Q1: There is no volatility for dividend and earnings reported until period 3. Why?

Volatility is determined by looking back 4 periods. Since there is no enough history until period 4, the model uses no volatility as the default value.

Q2: What is EPS forecast vs EPS actual on the planning skills score?

EPS forecast are the EPS you had when you submitted your decision to the Administrator (based on your market data forecast). The actual EPS are the EPS after the simulation (based on the period market input actual).

Q3: How are the annualized earnings calculated?

Annualized EPS depend on your results from the last 4 periods with the most recent period with the highest weight. See Chapter 4 of the manual, earnings per share section.

Q4: How is the PE score change calculated?

The change is calculated as the current period individual elements scores weighted by the element importance. All details are in Chapter 4 of the manual, PE ratio section.

Q5: How can I check what the scores depend on?

All details are in Chapter 4 of the manual, PE ratio section.

FORAD Company Financing

Q1: How are the key day cash positions calculated?

See details in Chapter 3 of the manual, section Financing.

Q2: I borrowed in different currencies, but the cash positions are only shown in local currency. Are non-local currency cash flows included?

Estimated cash positions on key days include both local currency and non-local currency cash flows - borrowings and other non-local currency cash flows are translated at the appropriate FX rate.

Q3: How do I repay ST debt?

No action required. ST debt and the interest due are repaid automatically at the maturity date. Same

applies for Inter-company borrowings.

Q4: How often can I enter and unwind a swap?

We can enter into a new swap and unwind existing swap each period. But you can have one action per period per position (an example of a position is fixed rate debt in Japan; floating rate debt in Japan is a different position; fixed rate debt in Germany is a third one). In other words - if you enter into a swap, you cannot unwind it right away in the same period (if you change your mind about the swap, you can simply delete your entry before submitting the final decisions file to the Administrator).

Q5: What happens if I have a swap and later repay the debt?

Nothing. The swap remains outstanding until you decide to unwind it - but you are not required to.

FORAD Model Inputs

Q1: How do I enter my forecast for FX rates?

The forecast for FX rates is entered from the Decision screen for the US Holding Company. Go to the Hedging tabs for the two currencies and enter your forecast in the white cells.

Q2: How do I enter my forecast for oil price?

The forecast for the end of period oil price is entered from the Decision screen for the Japanese subsidiary, the tab Operations.

Q3: How do I enter Inter-company dividend amount?

The Inter-company dividends are entered from the Decisions screens for Japan and Germany, the tab Operations. Remember that the amount you enter is in the subsidiary local currency.