The IEM Assignment for 6F:100

Assignment Due: Last TA Discussion Meeting

Introduction

The Iowa Electronic Market (IEM for short) is a computerized market on which financial contracts can be traded (bought or sold). For the Basic Financial Management class, we have designed two series of contracts based on three popular companies: Apple Computers (AAPL), IBM (IBM) and Microsoft (MSFT). Shares of these firms, representing partial ownership, trade over the counter (NASDAQ) and on the New York Stock Exchange (NYSE). These contracts are listed on the IEM under markets labeled "***Computer Industry Returns Markets***" "***MSFT (Microsoft) Price Level Markets***". These contracts are described briefly later in this note and in more depth in the IEM Trader's Manual. News as well as demand and supply of shares affect share prices. For example, strong industry-wide sales can indicate better prospects for any or all companies which may mean that their stock prices increase on the NYSE or NASDAQ. This, in turn, can affect prices of the contracts being traded on the IEM.

The basic objectives of the IEM assignment are to:

- familiarize students with a trading environment (in this case, the IEM) where financial contracts can be bought or sold.
- familiarize students with a financial news and information sources.
- reinforce concepts from class including: market efficiency, return calculations, stock valuation and the CAPM.

Opening an IEM Account

All students need to open an account in the Iowa Electronic Market. This involves a minimum deposit of ten dollars. The deposit is refundable in full at the end of the semester if you do not trade on the IEM but merely observe prices of the contracts being traded. Following and analyzing market prices is sufficient for the course and no transactions or risks are necessary for participation. However, you may find that you wish to trade on your expectations.

To open up an account, fill out the application that your TA will give you and turn it in to the market administrator with any additional cash you wish to deposit in you account. You may also want to buy a Trader's Manual from the copy center. Application forms are also available in the manual and you can bring them to the IEM administrator in W283 PBAB. You will then be registered for trading on the IEM and have an account and password.

Address: IEM Administrator
W283 PBAB
University of Iowa
Iowa City, IA 52242

Phone: (319) 335-0881
Email: IEM@SCOUT-PO.BIZ.UIOWA.EDU

Accessing the IEM

You can access the IEM through one of the networks in PBAB or any of the eleven ITC computer labs on the University of Iowa campus (locations are in appendix C of the trader's manual). To attach to the market, get the network menu on your screen and select "IEM or Iowa Electronic Markets." From the PBAB lab, you can select the IEM icon in windows. At any main level menu, you can type "m" to select a market. Select the "Computer Industry Returns" and "MSFT (Microsoft) Price Level" markets to locate the contracts used for this assignment.

You can also access IEM from telnet. If your communications program or TCP/IP telnet software has communication parameters, set them to: Data bits-8, Parity-none; Stop bits-1. Enter one of the following commands:

telnet iem.biz.uiowa.edu or telnet 128.255.44.2.

Finally, you can connect via modem by dialing (319) 335-6200 and when you see the prompt "portal:" on your screen, respond by entering: telnet iem.biz.

Computer Industry Contracts

The Computer Industry Contracts consist of two series of contracts. Every month, existing contracts in each series are liquidated and payments are made as described below. Then, new contracts are created for each series as described below. These events occur on the day that the exchanged traded options for the underlying stocks expire: the Saturday after the third Friday of each month.

Computer Industry Returns Market: The liquidation values for the contracts in this market are determined solely by the rates of return of Apple Computers Common Stock (AAPL), IBM Common Stock (IBM), Microsoft Common Stock (MSFT) and the S&P500 index (SP500). Whichever of these has the highest rate of return as specified below will payoff $1.00 per share. The remaining contracts will payoff zero. Contracts will be designated by a ticker symbol and a letter denoting the month of contract liquidation. Thus, the contracts traded in this market for liquidation in month "m" are:

Code	Contract Description	Liquidation Value
AAPLm	Apple Computers	$1.00 if AAPL NASDAQ Return Highest
IBMm	IBM	$1.00 if IBM NYSE Return Highest
MSFTm	Microsoft	$1.00 if MSFT NASDAQ Return Highest
SP500m	S&P 500 Market Index	$1.00 if SP500 NYSE Return Highest

In these contract codes, "m" refers to the month of expiration as given by the following table:

Month	Designation	Month	Designation	Month	Designation
January	a	May	e	September	i
February	b	June	f	October	j
March	c	July	g	November	k
April	d	August	h	December	l

Computing Returns: For AAPLm, IBMm and MSFTm, we will compute the *dividend adjusted rate of return* based on closing stock prices of the underlying listed firm between the third Friday in the liquidation

month and the third Friday in the previous month. For these purposes, we will use closing prices as reported in the Midwest edition of the Wall Street Journal. In particular, we will calculate this return as follows: First, we compute the raw return on the underlying stock (the closing price on the third Friday of the liquidation month, minus the closing price from the third Friday of the previous month, plus any dividends on ex-dividend dates). Then, we divide the raw return by the closing stock price from the previous month to arrive at the dividend adjusted rate of return.

For the SP500 contract, we will compute the capital gains rate of return by subtracting the closing index value on the third Friday of the previous month from the closing index value on the third Friday of the liquidation month and then divide by the previous month's closing index value.

MSFT (Microsoft) Price Level Market: The liquidation values for the contracts in this market are determined solely by closing prices Microsoft Common Stock (MSFT). Each month, an initial pair of contracts consists of " MSxxxmH" and " MSxxxmL" where "m" corresponds to the month as given above and "xxx" corresponds to a price of $ xxx. The payoff for the "H" contract will equal $1.00 if the Wall Street Journal closing price for Microsoft Common Stock on the third Friday of month "m" exceeds $xxx. It will equal $0.00 otherwise. The payoff for the "L" contract will equal $1.00 if the Wall Street Journal closing price for Microsoft Common Stock on the third Friday of month "m" is less than or equal to $xxx. It will equal $0.00 otherwise.

If the trading price of a particular contract becomes unusually high, the Directors of the IEM may authorize a contract split. When such a split occurs, the original contract will be split into two contracts. The prospectus posted on the IEM discusses stock splits.

NOTE: For this assignment, you are required to follow contracts in ***both*** markets.

Trading on the IEM

If you wish to trade, you can do so in several different ways. First, you can buy or sell by what is called *market order*. On the "Computer Industry" screen, you will see that some individuals have posted an order to buy or to sell a contract (e.g., MSFTi, the contract for September liquidation) at a specific price. If you believe that a posted order represents a good deal, you can buy or to sell at the posted price.

Second, you can buy or sell *unit portfolios*. A unit portfolio is a set of contracts such as AAPLi, IBMi, MSFTi and SP500i. Such portfolios can always be bought or sold for $1.00 each. So when you start to trade and do not own any contracts, you can buy a unit portfolio and then start to trade.

Third, you can buy or sell by *limit order*. To do so, you state the price at which you are willing to buy or sell a contract and then post the limit order on the screen, thereby waiting for someone to come and be willing to buy or sell at your stated price. In this manner, when your order executes, it will execute at your stated price, not at somebody else's. The negative is that the order may never execute because nobody likes your price (because it is too high or low).

Grading

Your participation in the IEM will comprise 10% of your course grade and consists of several parts.

Part 1: Price and News Log

For this part of the assignment, you are required to build a price and news log for the companies trading in the Computer Industry Returns and MSFT (Microsoft) Price Level Markets.

Part 1.a: Construct a Price Log

Choose an eight consecutive week period during the semester and record the following information once a week on the same day each week:

1. Wall Street Journal closing prices for each underlying security.
   IBM stock prices can be found in the NYSE Composite Index each day; Microsoft and Apple stock prices can be found in the NASDAQ Index each day and the S&P500 Index is listed in the upper left corner of page C1 each day.
2. IEM last trade prices for each IEM contract traded in the Computer Industry Market.
   These prices can be found under "Contract Daily Prices" in the "Market Information" screen on the IEM.
3. IEM last trade prices for each IEM security traded in the MSFT (Microsoft) Price Level Market.
   These prices can be found under "Contract Daily Prices" in the "Market Information" screen on the IEM.

Part 1.b: Construct a News Log

Find one news article from any source on each company (Apple, Microsoft and IBM) that you believe should affect stock prices for that company. (Articles can apply to more than one company, by you are required to find a minimum on three articles total and at least one that applies to each company.)

For each article, you should explain how you believe the information will effect prices for the company's stock and prices for the company's securities on the IEM. Then, you should compare your predictions to the actual price changes recorded in your price log.

Part 2: Expected Returns and Valuations

Part 2.a: Finding "Betas"

Find and record "betas" for each company's common stock. (As we will discuss in class, a company's "beta" is a standard measure of the company's risk and should determine the returns expected for the company's stock.)

Beta's can be found from the following sources:

1. Value Line Investment Survey (ask for it at the Information Desk in the Business

Library)

2. Standard & Poor's Reports (in the Reference Collection of the Business Library)
   For IBM, use the NYSE report, call number: HG4905.S66.
   For AAPL and MSFT, use the OTC report, call number HG4905.S663
3. S&P Stock Market Encyclopedia (in the Business Library) Call number: HG4921.S23
4. Bloomberg (ask about at the Information Desk in the Business Library)
   Type in ticker symbol (e.g., AAPL) and press the green Quote 2 key.
   Beta is in upper right hand corner #1.
5. Value Screen (in the computer lab).
   Select the Value Screen group from windows.
   Select the Value Screen icon.
   Select "S" for screen database.
   Press "F-7" and enter the ticker symbol (e.g., AAPL).
   Finally "F-2" to show the company's report which includes beta.

Part 2.b: Calculating CAPM Expected Returns

Given the beta's you find, you should calculate the one-month CAPM expected return for each company according to the following assumptions:

1. The one-month T-Bill return is: 0.45%.
2. The one-month expected market return is: 1.00%

Given this information answer the following question:

> Which security in the IEM Computer Industry Returns Market should be priced the highest on the day that trading in this market opens? Explain why this should be the case.

Part 3: Discounted Dividend Model Valuations

Part 3a: Fixed Dividend Model. You should find the most recent quarterly dividend for one of the companies (AAPL, IBM or MSFT). The IEM news sections with contain recent dividend information for each contract. Given this, you should calculate prices according to the following assumptions:

1. The company pays fixed, quarterly dividends equal to the last dividend paid.
2. The next dividend will be paid in exactly one quarter.

Explain why the stock prices calculated here might differ from those found the Wall Street Journal.

Part 3b: A Simple Projected Growth Model. To get an alternative estimate of the company's stock price, look up the company's ROE and retention rate (using Bloomberg, ValueScreen or company annual reports). Determine the projected growth rate in

dividends from these numbers and find the price of the company's stock using the Gordon grown model, the CAPM required return and this projected growth rate.

Completing Your Assignment and Submitting It

As you can see, this is an extensive, multi-part assignment that draws together many concepts from the class. It would be wise to work on the various parts of the assignment as we go over the relevant topics in class. To prepare the assignment for submission, please use the following guidelines:

1. Clearly label your assignment with a cover page giving your name, student number, TA section number and your TA's name.
2. Complete each part in a separate section clearly labeling them "Part 1" and "Part 2."
3. Within each section, give the requested information, including sources of information gathered and equations for calculated results.
4. Turn in your completed assignment to your TA on or before the last TA session.