BLOOMBERG DERIVATIVE INFORMATION AND FUNCTIONS

E2 SPOT EQUITY OPTIONS

To access a listing of current options on a company, you first enter the company's ticker followed by the [EQUITY] key. As noted, this will bring up a menu of information and data sources than can be accessed on the selected stock, as well as analytical functions. The menu includes:

1. Today's Market's – Quotes and Recaps
2. Company Information
3. Historical Prices
4. News
5. Fundamentals and Earning Analysis
6. Option, Warrants, and Convertibles

To access options on the stock, you click the "Options, Warrants, & Convertibles' selection on the menu (or type in the number 6). This will bring up a menu of option data and analytics that you can access. From this menu, current market information on exchanged-listed options on the selected stock can be accessed by clicking OMON (number 2). For example, to access options on IBM, you would:

- Enter IBM [EQUITY]
- Click "Options, Warrants & Convertibles" on the resulting IBM Menu Screen
- On Options, Warrants & Convertibles Screen, click "OMON"

You also can access IBM options information directly by typing IBM [EQUITY] OMON. The OMON screen for IBM is shown in Exhibit E.2-1.

Exhibit E.2-1: OMON

IBM US $ sC 97.42 -.89 N --x-- sho Equity OMON
Cancel: Screen not saved
Template List | Edit | Contract Months | Security List | IBM US Equity | Go

Option Monitor: INTL BUSINESS MACHINES CORP
Center 97.42 Number of Strikes 5 -or- % from Center Exchange C (Composite)

Ticker	Strike	Bid	Ask	Last	Volume
IBM 20 JAN 07 (Contract Size: 100)					
1) IBM+AQ	85.00	12.60	12.80	12.70 y	180
2) IBM+AR	90.00	7.70	7.90	8.00 y	899
3) IBM+AS	95.00	3.50	3.60	3.60 y	1766
4) IBM+AT	100.00	.95	1.05	1.05 y	5436
5) IBM+AA	105.00	.15	.25	.25 y	1696
IBM 17 FEB 07 (Contract Size: 100)					
6) IBM+BQ	85.00	12.80	13.00	12.70 y	60
7) IBM+BR	90.00	8.10	8.30	8.20 y	8
8) IBM+BS	95.00	4.10	4.20	4.30 y	163
9) IBM+BT	100.00	1.50	1.60	1.60 y	3024
10) IBM+BA	105.00	.35	.45	.40 y	1624
IBM 21 APR 07 (Contract Size: 100)					
11) IBM+DQ	85.00	13.80	13.90	13.90 y	40
12) IBM+DR	90.00	9.40	9.60	9.50 y	564
13) IBM+DS	95.00	5.70	5.90	5.80 y	193
14) IBM+DT	100.00	3.00	3.10	3.00 y	330

Ticker	Strike	Bid	Ask	Last	Volume
IBM 20 JAN 07 (Contract Size: 100)					
16) IBM+MQ	85.00		.05	.03 y	500
17) IBM+MR	90.00	.15	.20	.15 y	540
18) IBM+MS	95.00	.85	.90	.85 y	4554
19) IBM+MT	100.00	3.30	3.40	3.20 y	496
20) IBM+MA	105.00	7.50	7.70	7.80 y	32
IBM 17 FEB 07 (Contract Size: 100)					
21) IBM+NQ	85.00	.05	.15	.15 y	512
22) IBM+NR	90.00	.35	.45	.40 y	590
23) IBM+NS	95.00	1.35	1.45	1.35 y	447
24) IBM+NT	100.00	3.80	3.90	3.90 y	336
25) IBM+NA	105.00	7.70	7.80	7.00 y	
IBM 21 APR 07 (Contract Size: 100)					
26) IBM+PQ	85.00	.40	.50	.45 y	52
27) IBM+PR	90.00	.95	1.05	1.00 y	38
28) IBM+PS	95.00	2.20	2.30	2.20 y	65
29) IBM+PT	100.00	4.50	4.70	4.60 y	80

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
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The Bloomberg OMON Screen for IBM options shows the call and put options traded on IBM stock at the time the option is accessed, along with price and volume information on the stock. The screen in Exhibit E.2-1 was accessed on January 6, 2007. It shows IBM trading at 97.42, along with price and volume information on IBM call and put options broken down into five exercise prices and three expiration months. For example, line 8 shows the IBM call with an exercise price of 95 and expiration of February 7, 2007 trading a 4.10 (bid) and 4.20 (ask), and line 23 shows the IBM January 95 put trading at 1.35 (bid) and 1.45 (ask). The OMON Screen, in turn, can be customized to show other descriptive information about the option. For example, more options can be accessed by changing the number of strikes and the contract months (top box in the middle). IBM options can also be selected based on exchange listings by using the exchange key (top right).

A number of functions can be applied to all of the listed stock options. To access a function, you type in the function's identifier on the OMON Screen (many of these functions are discussed in this appendix). For example, to analyze one or more of the IBM options in terms of profit tables and graphs, you type in OSA. This brings up the OSA Screen for IBM options where you can generate profit tables and graphs for selected portfolio positions formed with IBM stock and the options traded on it.

To obtain information on a specific option shown on the OMON Screen, you set your cursor on the option of interest and left click. This will bring up the following menu of information and analytics that you can access or apply to that option:

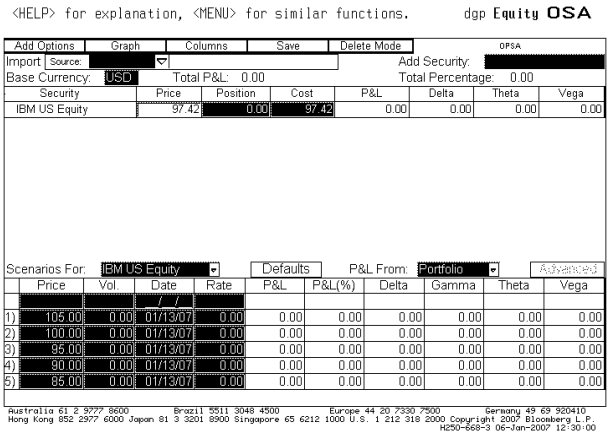
- **DES** gives a description of the option
- **QRM** gives a trade recap
- **TSM** gives a trade matrix
- **GIP** is an intraday price graph
- **GPO** gives a bar chart
- **OV** is the option valuation screen
- **OVX** is exotic option valuation screen

In evaluating options, two useful Bloomberg functions are the OSA function for evaluating option strategies and the OV function for valuing a specific option using an option pricing model.

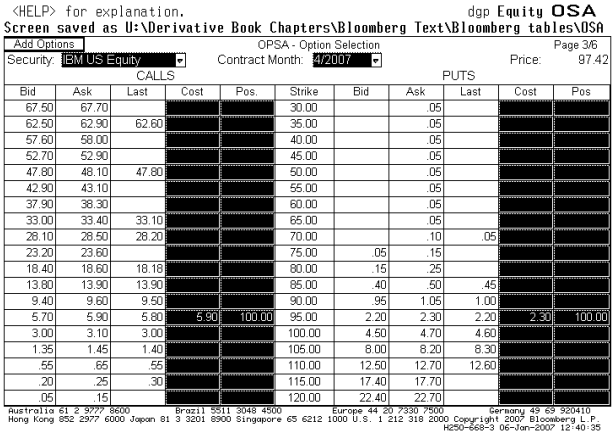
OSA – Generating Profit Tables

As noted, the OSA function allows you to evaluate an option portfolio formed with the options and it underlying stock. To access: enter Company's Ticker [EQUITY]; on the Company menu screen, click "Options, Warrants, & Convertible; on the Options, Warrants, & Convertible Screen, click OSA (23)). The OSA function for a stock can also be accessed directly by simply entering "Company's Ticker [EQUITY] OSA. For example, to access IBM's OSA Screen: Enter IBM [EQUITY] OSA. The OSA Screen for the IBM options (Exhibit E.2-1) is shown in Exhibit E.2-2.

Exhibit E.2-2: OSA Screen Exhibit



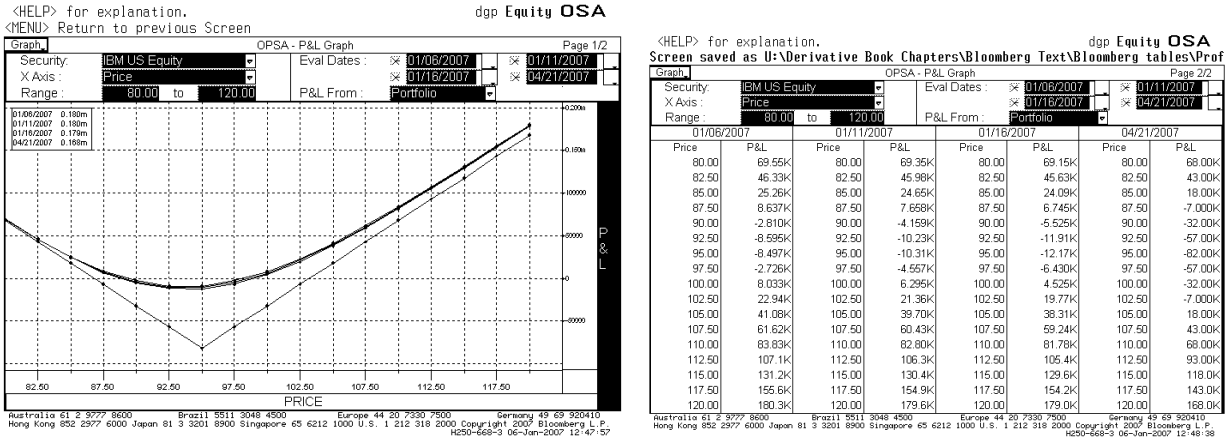
E.2-3: OSA Screen: Option Inputs



The OSA Screen in Exhibit E.2-2 shows IBM stock trading at 97.42. In constructing option portfolios on this screen, you can include the stock in your portfolio by inputting the number of shares in the position box (e.g., 100 shares (long) or -100 shares (short). To include options on the stock, you click the "Add Options" key (top left corner). This brings up the OSA Screen for inputting currently traded options (see Exhibit E.2-3). On the OSA Screen for inputting option positions, you first need to select the option selection months ("Contract Month"). This will bring up a screen with all options with those selected expirations and exercises prices. You can then input the number of puts options and call options in the position column ("Pos."). The cost of the option will default to the current option price. You can keep this price or input your own. In the OSA Screen shown in Exhibit E.2-3, 100 IBM calls with an exercise price of 95 and expiration of 4/2007 purchased as the ask price of 5.90 and 100 IBM puts with an exercise price of 95 purchased at the ask price of 2.30 were selected. Typing 1 and pressing <go> takes you back to the portfolio screen where you can now see the loaded portfolio position.

Given your selected option position, you next press the "Graph" button to see the option position's profit graph and table, as well as the market value and volatility information. On the profit table and graphs, profit and stock price relations are shown for the option position for different holding periods and expirations. The option prices prior to expiration are based on defaulted OPM values and dividend yield. To see the model and dividend assumptions or to change to another option model and dividend, click the "default" button on the OSA screen. On the graph screen, you also can change the range of stock prices and the evaluation dates. Exhibit E.2-4 shows the resulting OSA profit graph and table for the selected IBM straddle position shown in Exhibit E.2-3.

Exhibit E.2-4: OSA Option Profit Graph and Table

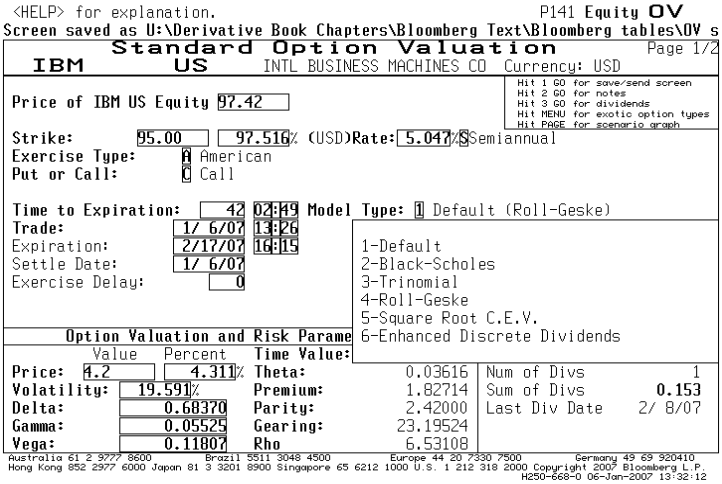


It should be noted that in using the OSA function to evaluate option positions (or any other Bloomberg function), you can always press the 'Help' key on the Bloomberg keypad to obtain more information, instructions, and other uses of the function. Also, it should be noted that once you have loaded an option or any security, you can apply the other functions by simply typing in the name of the function. For example, to obtain a description of the option, you can type DES at the top left side of the screen. Alternatively, to access other functions, you can hit the menu key to return to the menu function screen.

OV –Option Valuation Screen

The OV Function Screen displays price and volatility data on a selected option and calculates an OPM value for a loaded option. The OV Screen for the February 95 IBM call is obtained by moving the curser to line 3 on the OMON IBM Screen and clicking OV. Exhibit E.2-5 shows the option's OV screen accessed on January 6, 2007.

Exhibit E.2-5: OV Screen



The OV Screen in the exhibit shows the OPM value ("Price"), volatility, and Greeks (bottom left). In the case of the February 95 call option on IBM, the OPM value is 4.2 and the volatility is 19.591%. The OPM value is based on the Roll-Geske option pricing model with defaulted future dividend payments and projected ex-dividend dates (lower right box) incorporated into the valuation.

On this screen, you can determine options values and other features (such as the Greeks), given different selected inputs. The following are some of the key features and functions available on the OV Screen:

- **Choice of Option Model**:
  - **Black-Scholes Model**: For European options on stocks with continuously compounded dividends.
  - **Trinomial Model**: for European and American options; uses continuous dividend yield and discrete dividend payments. Bloomberg's Trinomial model is good estimate of the binomial model; Bloomberg's Trinomial provides a good estimate of Known Dividend-Payment Binomial Model.
  - **Roll-Geske Model**: For American and European options with discrete dividends; Roll-Geske is a good estimate of the Known Dividend-Payment Binomial Model.
  - **Square Root Constant Elasticity of Variance (CEV) Model**: For European options.
  - **Enhanced Discrete Dividends**: A trinomial model for discrete dividends.

  To select option model, you click the box to the right of "Model Type."

- **Choice of Dividend**: On the OV Screen there is a menu of dividend information and defaults from which you can choose or change. To view the dividend information and defaults, you type 3 and then hit <go>. This will bring up a dividend information and menu screen. On this screen, you can select (depending on the model) either dividend yield (B-S or Trinomial) or discrete dividends (Trinomial).

- **Choice of Volatility:** On the OV Screen, the user has the choice select the volatility and interest rate. The volatility on the OV Screen is the annualized standard deviation of the daily logarithmic price return expressed as a percentage. The default volatility is the historical volatility of stock's logarithmic return. On Bloomberg Screens, you can change any value shown with an amber background.

- **Choice of Graphs**: On page 2 of the OV Screen are customizable graphs showing the option's price plotted against the underlying price of the stock at different evaluation dates, and information on the underlying stock's volatility (e.g., volatility smiles). Different graphs and price relations can be generated by accessing the options appearing on page 2.

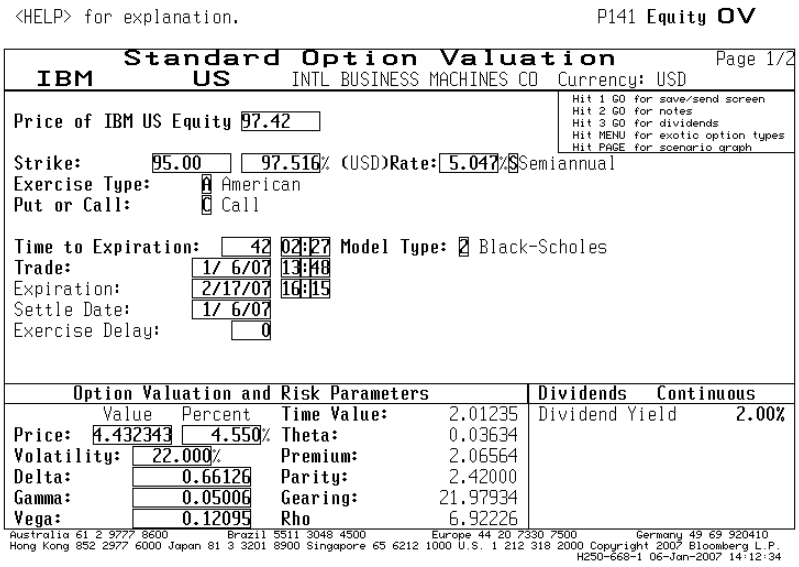
Example: Black-Scholes Model Using the OV Screen: To determine the B-S OPM value on the IBM call on the OV Screen (Exhibit E.2-5):

- Click "2" on the pull-down menu for "Model Type' and then hit <go>.

- Type the number 3 to access the dividend menu (top left corner of the screen). You have the choice to select a different dividend model projection on IBM or enter your own estimate. In this example, suppose you inputted an annual dividend yield of 2% in the amber dividend yield box.
- Press <Menu> to return to the OV Screen.
- On the OV screen, you can change the volatility or risk-free rate (amber boxes). In this example, suppose you had changed the volatility to 22%.

Exhibit E.2-6 shows the resulting Bloomberg screen for the B-S OPM value on the February 95 IBM call with a volatility of 22% and dividend yield of 2%. As shown, the B-S price is 4.43. The screen also shows the Greek values, and on page 2, the screen (not shown here) shows B-S OPM values for different evaluation dates.

Exhibit E.2-6: OV Screen Using B-S OPM



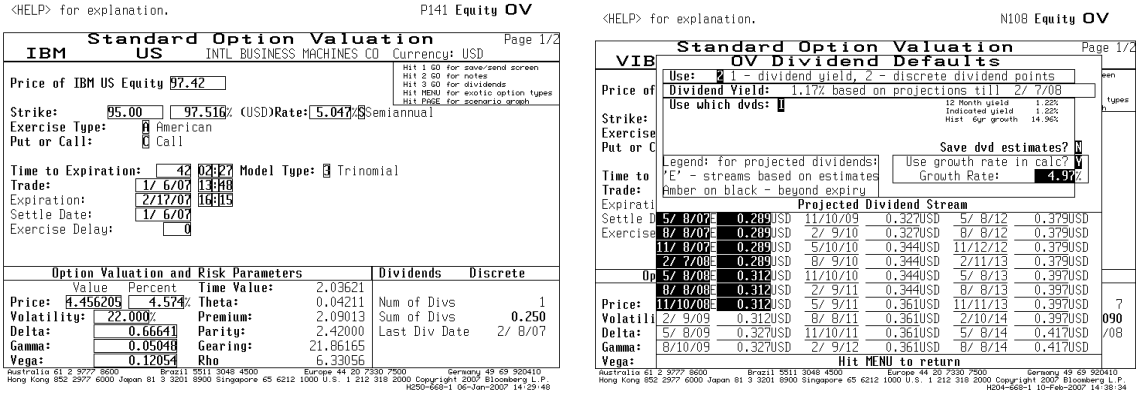
Example: Binomial (Trinomial) Model Using the OV Screen: To determine the binomial OPM value on the IBM call:

- Click "Trinomial" from the pull-down menu on "Model Type" and then hit <go>.
- Type the number 3 to access the dividend menu. Here you have the choice of using the dividend yield (Choice 1) or discrete dividends (Choice 2). To use the discrete dividend, you select 2 in the "use box". A projected dividend stream is displayed with the dividend shown for each ex-dividend date for IBM. The relevant ex-dividend dates for the option are shown in amber and can be changed. For the February IBM option (accessed on January 6, 2007), there was only one projected ex-dividend date (2/8/07). The projected dividend on that date was $0.153. You can change the dividend. For this example, suppose you had changed the dividend to $0.25.
- Press the menu key to return to the OV screen.

- On the new OV screen, you can change the volatility or risk-free rate (amber boxes). In this example, suppose you had changed the volatility to 22%.

As shown in Exhibit E.2-7, the Trinomial/binomial value of the February 95 IBM call (on January 5, 2007) is 4.456205. The screen also shows the Greek values and the information on the discrete dividends; the screen on the right, in turn, shows the projected dividend stream for IBM that was accessed for a longer-term IBM option.

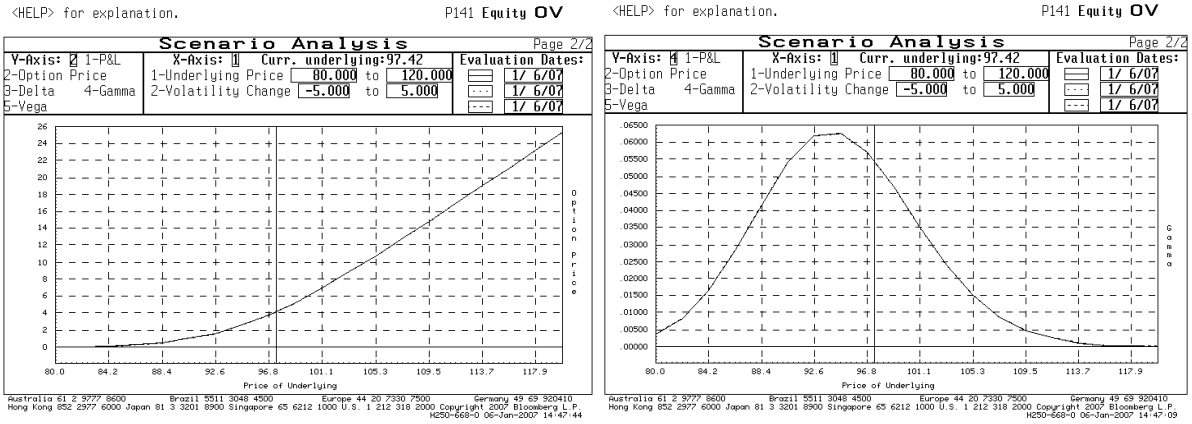
Exhibit E.2-7: OV Screen Using Binomial/Trinomial OPM

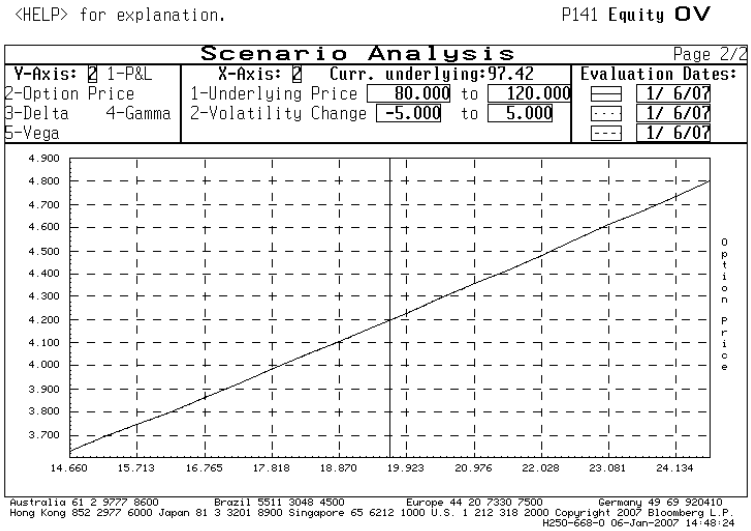


Other OV Functions

On the graph page (page 2 of the OV Screen), you can change the Y-axis to view different "Greek" values for either different underlying security prices or for different volatility changes. Exhibit E.2-8 shows a call price graph (IBM B-S call values for different IBM stock prices), a gamma graph (gamma values for different stock prices), and price and volatility graph (B-S call values for different volatilities). The Bloomberg values are obtained using the B-S program with the Bloomberg default values for volatility and dividend yield.

Exhibit E.2-8: OV Screen Graphs
B-S OPM Call Price, Gamma, and Price and Volatility Graphs





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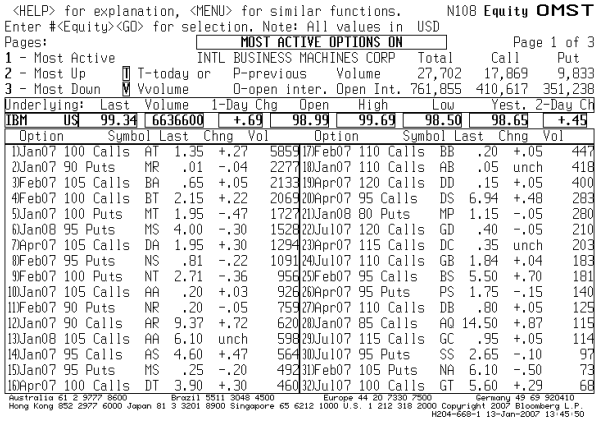
Other Equity Option Functions

In addition to the OSA and OV functions, a number of other derivative functions can be accessed either from the "Options, Warrants, and Convertible Screen" or if the stock or option is already loaded by typing in the function's name, and if it is not loaded, by entering: "Company Ticker [EQUITY] "Function Identifier" (e.g., IBM [EQUITY] OSA)). The lists below provide descriptions and the related screens for IBM options on January 11, 2007 on some of the popular Bloomberg stock option functions. It is worth noting again, that once you have accessed the function, you can always press the green "Help" key to obtain information on the function. Also note that many of the function screens allow you to access the defaulted values for viewing and changing.

1. **OMST: Most Active Options function** brings up the most active options on the selected stock. Enter [EQUITY] OMST:

Exhibit E.2-9: OMST Screen



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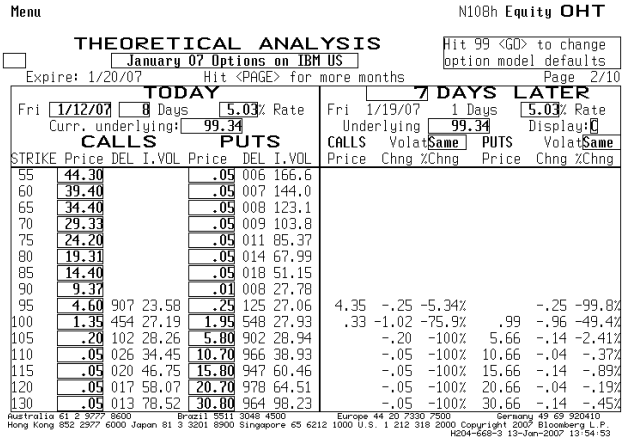
2. **OHT: Option Horizon Analysis** function allows the user to estimate the future prices of options for different period, security prices and volatilities. Enter IBM [EQUITY] OHT:

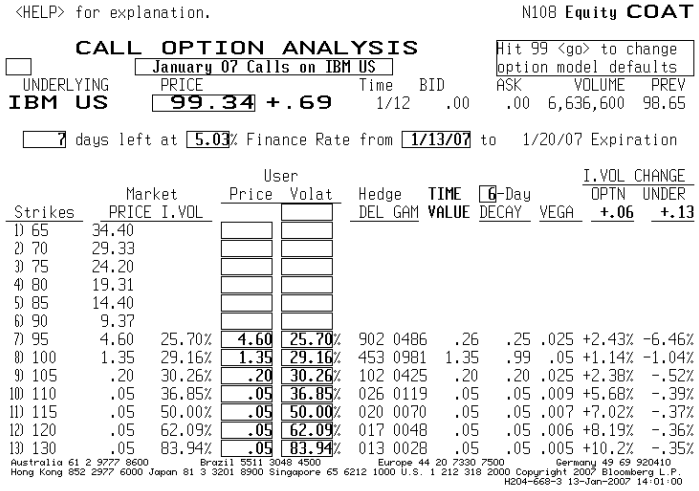
Exhibit E.2-10: OHT Screen



3. **OPSA: Option Portfolio Scenario Analysis** provides a tool for option analysis. This function screen provides the same screen and functions as OSA. To access, enter IBM [EQUITY] OPSA.

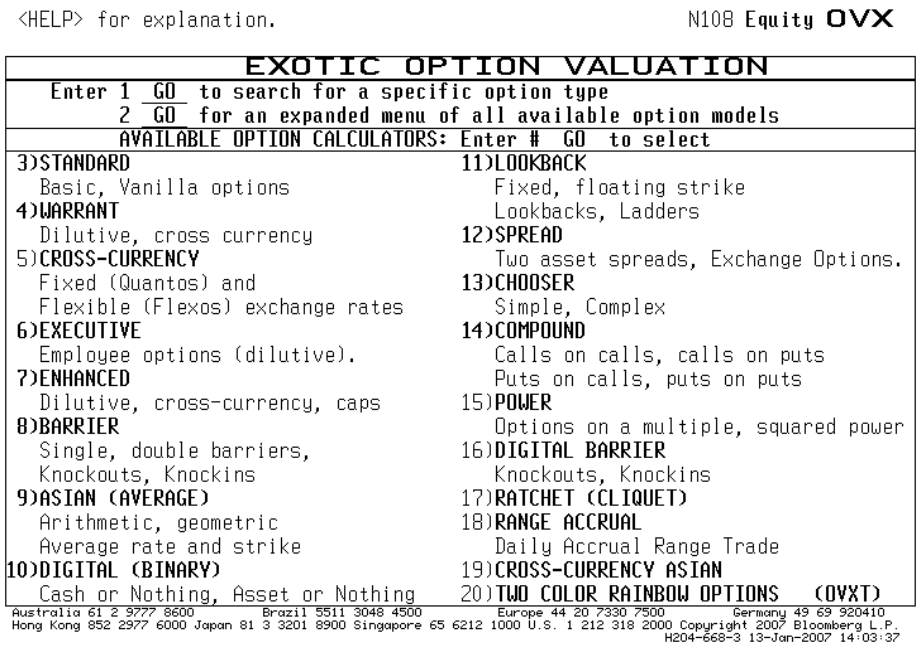
4. **COAT/POAT: Call Option Analysis Table** provides option value sensitivity analysis for up to 8 calls on an underlying security. POAT is identical to COAT except that it does the analysis on puts. Enter IBM [EQUITY] COAT or IBM [EQUITY] POAT:

E.2-11: COAT Screen



5. **OVX – Exotic Option Valuation**. This screen displays the different exotic option types in which Bloomberg has functions for valuation. Each function works similar to the OV screen. To get to the OVX screen, you must first load the underlying equity. Once the security is loaded. OVX defaults to the OV screen. The following exhibits show the OVX Screen and the Chooser Option Valuation Screen for IBM. Enter IBM [EQUITY] OVX:

Exhibit E.2-12: OVX Screen



<HELP> for explanation. N108 Equity OVX

EXOTIC OPTION VALUATION

Enter 1 GO to search for a specific option type
2 GO for an expanded menu of all available option models

AVAILABLE OPTION CALCULATORS: Enter # GO to select

3)STANDARD Basic, Vanilla options	11)LOOKBACK Fixed, floating strike Lookbacks, Ladders
4)WARRANT Dilutive, cross currency	12)SPREAD Two asset spreads, Exchange Options.
5)CROSS-CURRENCY Fixed (Quantos) and Flexible (Flexos) exchange rates	13)CHOOSER Simple, Complex
6)EXECUTIVE Employee options (dilutive).	14)COMPOUND Calls on calls, calls on puts Puts on calls, puts on puts
7)ENHANCED Dilutive, cross-currency, caps	15)POWER Options on a multiple, squared power
8)BARRIER Single, double barriers, Knockouts, Knockins	16)DIGITAL BARRIER Knockouts, Knockins
9)ASIAN (AVERAGE) Arithmetic, geometric Average rate and strike	17)RATCHET (CLIQUET) 18)RANGE ACCRUAL Daily Accrual Range Trade
10)DIGITAL (BINARY) Cash or Nothing, Asset or Nothing	19)CROSS-CURRENCY ASIAN 20)TWO COLOR RAINBOW OPTIONS (OVXT)

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
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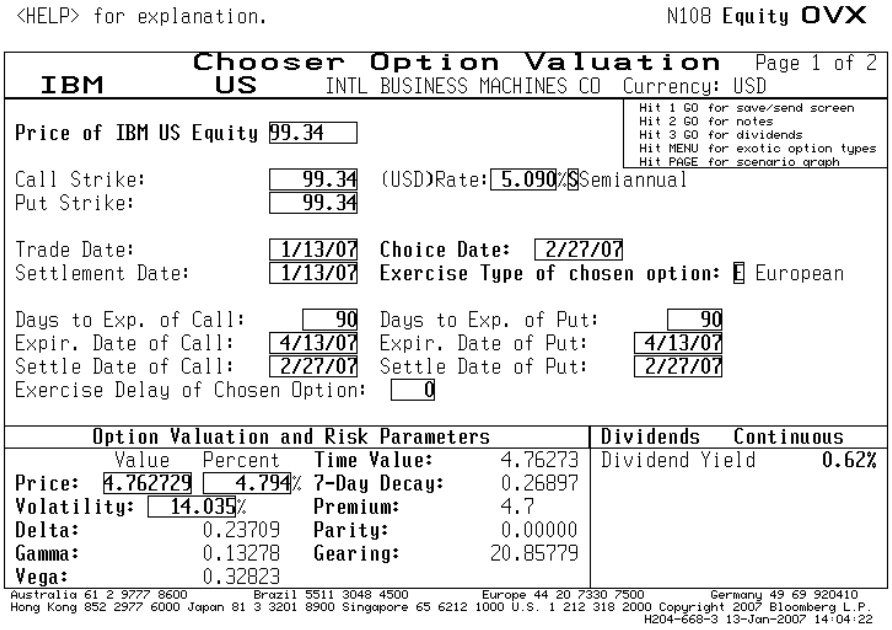


<HELP> for explanation. N108 Equity OVX

Chooser Option Valuation Page 1 of 2

IBM US INTL BUSINESS MACHINES CO Currency: USD

Hit 1 GO for save/send screen
Hit 2 GO for notes
Hit 3 GO for dividends
Hit MENU for exotic option types
Hit PAGE for scenario graph

Price of IBM US Equity 99.34

Call Strike: 99.34 (USD)Rate: 5.090 % S Semiannual
Put Strike: 99.34

Trade Date: 1/13/07 Choice Date: 2/27/07
Settlement Date: 1/13/07 Exercise Type of chosen option: E European

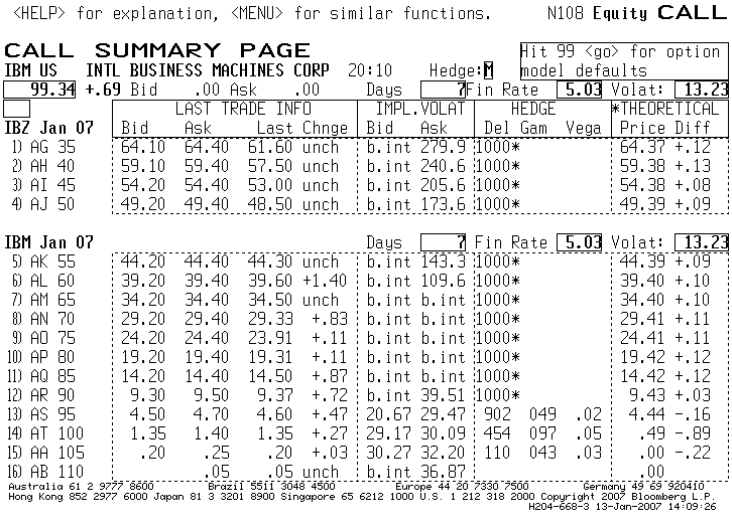
Days to Exp. of Call: 90 Days to Exp. of Put: 90
Expir. Date of Call: 4/13/07 Expir. Date of Put: 4/13/07
Settle Date of Call: 2/27/07 Settle Date of Put: 2/27/07
Exercise Delay of Chosen Option: 0

Option Valuation and Risk Parameters					Dividends Continuous	
	Value	Percent				
Price:	4.762729	4.794%	Time Value:	4.76273	Dividend Yield	0.62%
Volatility:	14.035%		7-Day Decay:	0.26897		
Delta:	0.23709		Premium:	4.7		
Gamma:	0.13278		Parity:	0.00000		
Vega:	0.32823		Gearing:	20.85779		

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-3 13-Jan-2007 14:04:22

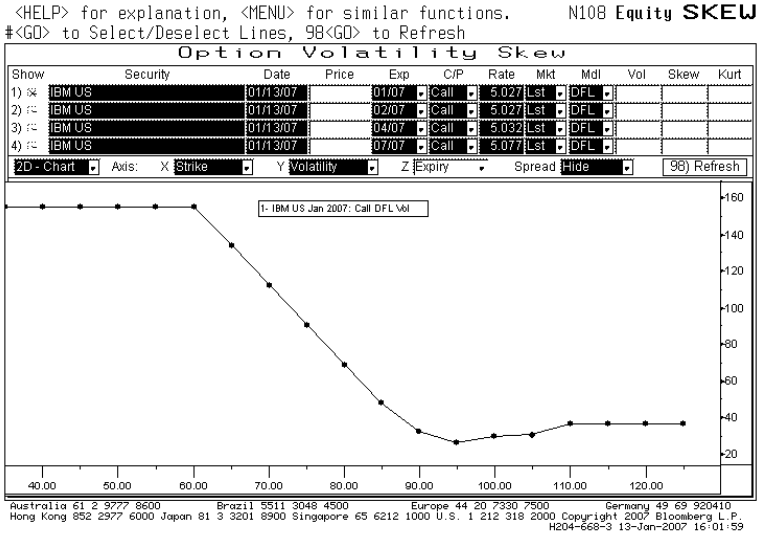
6. **CALL** and **PUT** show OPM call and put values, implied volatilities, and Greeks for a number of options on the selected security. It allows you to compare actual and model prices and to change volatility and interest rate assumptions. Enter IBM [EQUITY] CALL or Enter IBM [EQUITY] PUT:

Exhibit E.2-13: CALL Screen



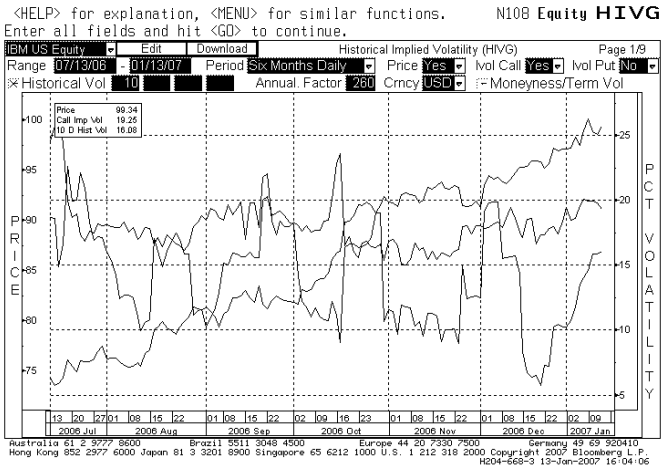
7. **SKEW** displays implied volatilities for different exercise prices, providing a volatility smile. Enter IBM [EQUITY] SKEW:

Exhibit E.2-14: SKEW Screen



8. **HIVG** displays historical implied volatilities. Enter IBM [EQUITY] HIVG:

Exhibit E.2-15: HIVG Screen



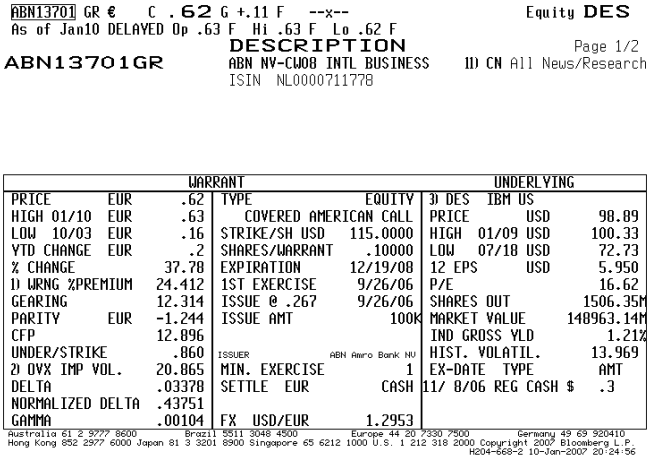
Stock Warrants

Information on warrants issued by companies can be accessed by:

- Entering "Company Ticker" [EQUITY]
- Clicking "Options, Warrants & Convertible"
- Clicking either Warrant Valuation (WRNT) or Warrant Custom Monitor (WCM).

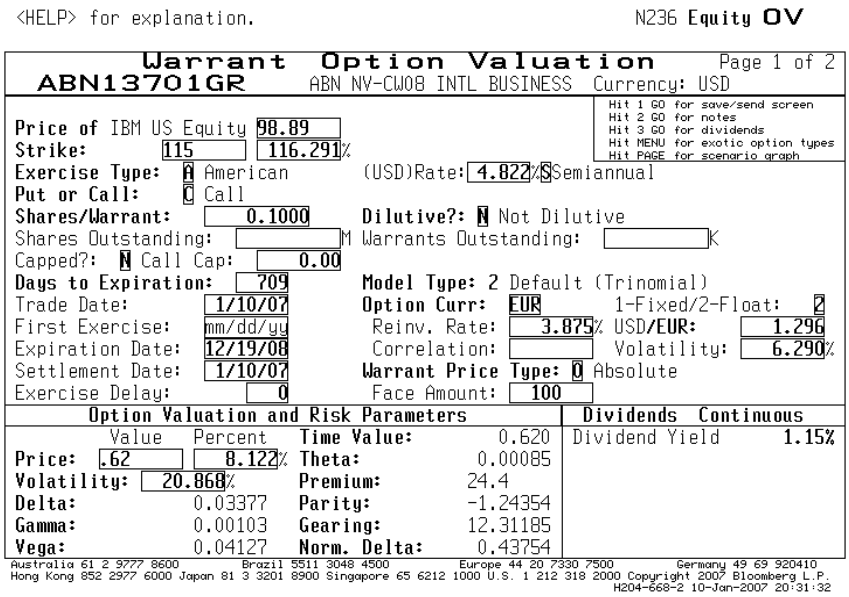
The WCM screen provides information on the outstanding warrants on the stock. Clicking one of the contracts will bring up a menu table; on that screen type DES to obtain a description of the warrant. Exhibit E.2-16 shows the Description Screen for an IBM warrant with a 115 strike and expiring on 12/19/08.

Exhibit E.2-16: Warrant Description Screen



Typing OV, bring up the 'Warrant Option Valuation Screen' on the selected warrant. Like the option valuation screen, you can use this screen to select the option pricing model, dividends, and volatility (or accept the defaulted values) to determine the price of the warrant. Exhibit E.2-17 shows the OV Screen for the 115 IBM warrant using the Trinomial model. As shown, the model's warrant value (on January 10, 2007) was $0.62 when IBM stock was trading at 98.09.

Exhibit E.2-17: Warrant OV Screen

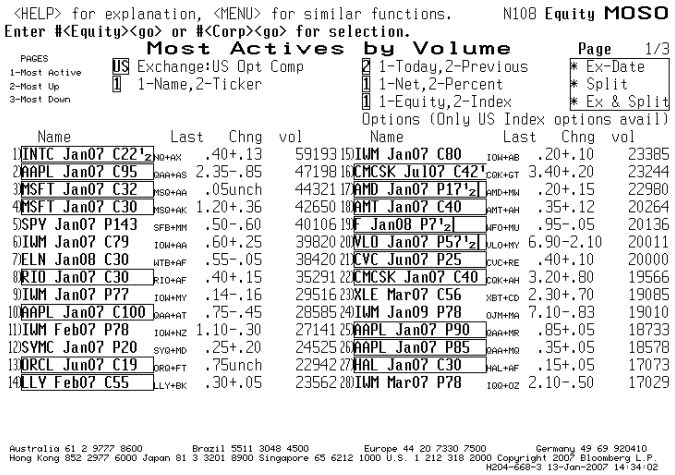


General Stock Option Market Information – ODT

In addition to accessing information and analytics on a given stock option, Bloomberg also provides information on the option market. To access such information, you type ODT. Bloomberg's ODT function brings up a menu and sub-menu of descriptive and analytical functions for markets: equity ([EQUITY]), indices (INDEX]), commodities ([CMDTY]), currency ([CRNCY]), corporate bonds ([CORP]), and government securities ([GOVT]).

To access the menu for equity options, you press the [EQUITY] key and then types ODT. On the resulting menu, you can click "Derivatives" to get a list of functions related to general market information on equity derivatives. For example, hitting MOSO brings up a screen (Exhibit E.2-18) showing the most active stock options trading at that time.

Exhibit E.2-18: MOST Screen



E.3 SPOT INDEX AND CURRENY OPTIONS

Index Options

To access a spot index:

- Enter [INDEX]
- On the menu screen that appears, click the desired index: Commodity, Corporate Bond Indices, Currency, or Equity (indices are in the 'Market" category).
- To access an equity index, click "Equity." This will bring up a screen of equity indices.

On the equity index screen, there is an extensive list of indices (many with derivative contracts). Of particular note is the Major Market Indices (15), IMEN. To find a derivative on an index in this category:

- Click Major Market Indices (15), IMEN.
- Page down on this menu to find the index of interest: DJA (DJII), NASDAQ 100 Stock Index (NDQ), New York Composite Index (NYA), Russell 2000 (RTY), S&P 100 (OEX) and S&P 500 (SPX).
- Click the index of interest; for most indices, this brings up a screen showing the securities making up the index (and their tickers).
- Press <Menu> to bring up a menu of functions on the selected index. This menu is similar to the stock menu screen. From the menu, the user can access information and analytical functions on the selected index.

Alternatively, if you know the index ticker you can access the function menu directly by entering the index's ticker and pressing [INDEX]. For example, to access the S&P 500, enter: SPX [INDEX].

Example: S&P Spot Options: To access the S&P 500 derivative:

- Enter SPX [INDEX]
- On the SPX Menu, click "Derivative" to bring up SPX's derivative screen.

SPX's derivative screen is similar to the Option, Futures, and Convertible Screen for a specified stock. It includes the most active option function (OMST), option monitors (OMON), option scenario analysis (OSA), call and put option analysis (CALL and PUT), and option valuation (OV).

As with stock options, three useful functions are OMON for viewing current options prices, OSA for evaluating option strategies, and OV for valuing call and put options.

1. **OMON:** To find a specific index option, click "OMON". As with stocks, you need to first specify the "Contract Month". Given the list of spot index options, you can then move your curser to the option of interest and left click to select a desired function (see Exhibit E.3-1).

Exhibit E.3-1 OMON for S&P 500 Index Options

SPH7 ↓1420.50s -2.00 Index OMON
At DELAYED Vol 36,194 Op 1423.00 Hi 1425.00 Lo 1414.00 OpInt 605,742y

Template List | Edit | Contract Months | Security List | SPH7 Index | Go

Option Monitor: S&P 500 FUTURE Mar07
Center 1420.50 Number of Strikes 5 -or- % from Center Exchange C (Composite)

Ticker	Strike	Bid	Ask	Last	Volume	Ticker	Strike	Bid	Ask	Last	Volume
SPH7 JAN 07 (Contract Size: 250)						SPH7 JAN 07 (Contract Size: 250)					
1) SPF7C	1410			16.70 s	30	16) SPF7P	1410	5.20		6.20 s	268
2) SPF7C	1415	13.30	13.80	13.40 s	86	17) SPF7P	1415	7.70		7.90 s	1230
3) SPF7C	1420	9.80	10.30	10.30 s	153	18) SPF7P	1420		10.80	9.80 s	310
4) SPF7C	1425		8.20	7.70 s	239	19) SPF7P	1425	11.80		12.20 s	232
5) SPF7C	1430	5.40	5.80	5.60 s	161	20) SPF7P	1430			15.10 s	60
SPH7 FEB 07 (Contract Size: 250)						SPH7 FEB 07 (Contract Size: 250)					
6) SPG7C	1410			26.40 s		21) SPG7P	1410	15.60	16.40	16.00 s	10
7) SPG7C	1415			23.20 s		22) SPG7P	1415	17.40	18.20	17.70 s	15
8) SPG7C	1420	19.00		20.10 s		23) SPG7P	1420	19.30	20.10	19.60 s	325
9) SPG7C	1425	17.20	18.00	17.20 s	60	24) SPG7P	1425	21.50	22.30	21.70 s	
10) SPG7C	1430			14.70 s	55	25) SPG7P	1430	23.90	24.70	24.10 s	30
SPH7 MAR 07 (Contract Size: 250)						SPH7 MAR 07 (Contract Size: 250)					
11) SPH7C	1410		35.00	34.10 s		26) SPH7P	1410	23.60	24.40	23.70 s	1
12) SPH7C	1415	30.90	31.70	31.00 s		27) SPH7P	1415	25.30	26.10	25.50 s	
13) SPH7C	1420		28.80	27.90 s		28) SPH7P	1420	27.30	28.10	27.40 s	1
14) SPH7C	1425		25.90	25.00 s	32	29) SPH7P	1425	29.40	30.20	29.50 s	80
15) SPH7C	1430		23.20	22.30 s	20	30) SPH7P	1430	31.60	32.40	31.70 s	

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2. **OV:** Exhibits E.3-2 and E.3-3 show the description (DES) and option valuation (OV) screen generated from Bloomberg on January 8, 2007 for the June 07 S&P 500 with a strike price of 1400.

Exhibit E.3-2
DES for an S&P 500 Index Option

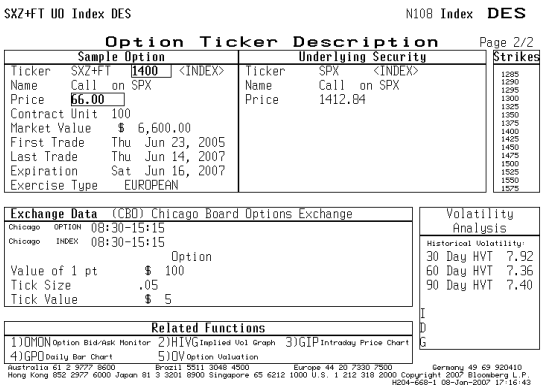
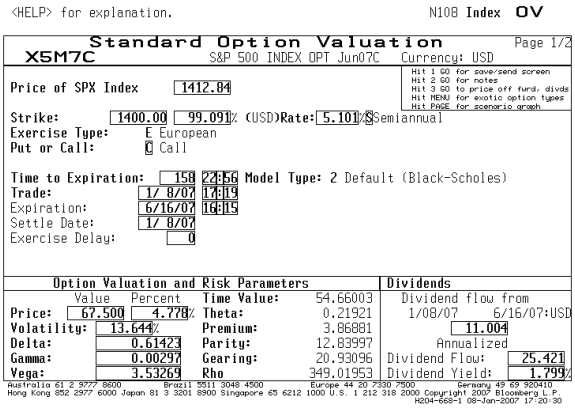


Exhibit E.3-3
OV for an S&P 500 Index Option



3. **OSA:** Exhibits E.3-4 and E.3-5 show the profit and loss graph and gamma graph generated using the OSA function to evaluate a short straddle formed with 100 June 1400 S&P 500 calls trading at 34.90 and 100 June 1400 S&P 500 puts trading at 69.50. The graphs were generated from Bloomberg on January 8, 2007.

Exhibit E.3-4
OSA Profit Graph for S&P Options

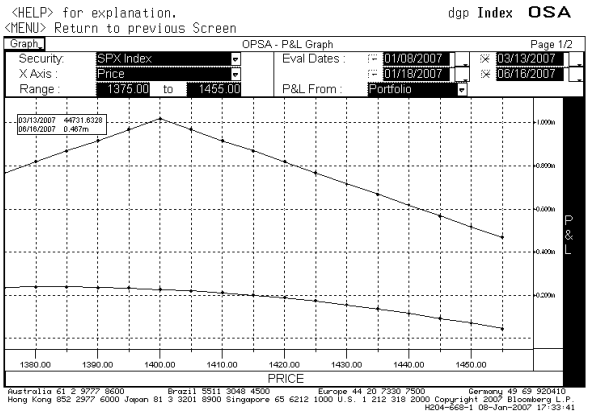
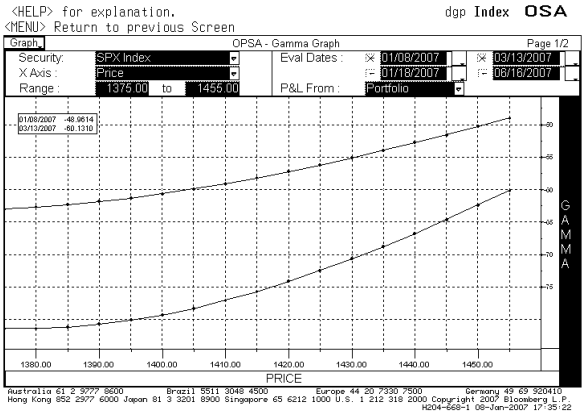


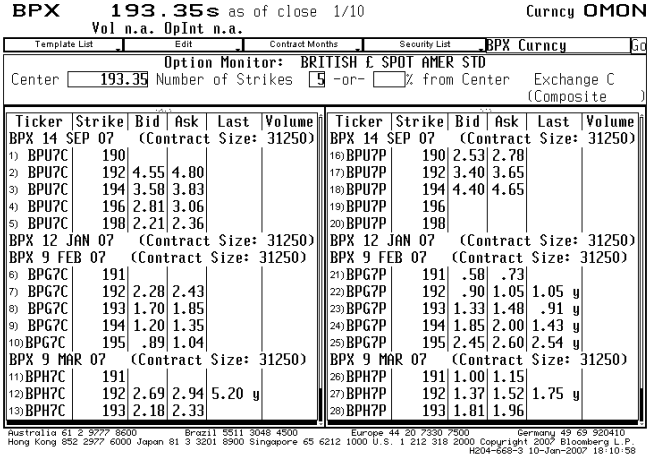
Exhibit E.3-5
OSA Gamma Graph for S&P Options



Spot Currency Options

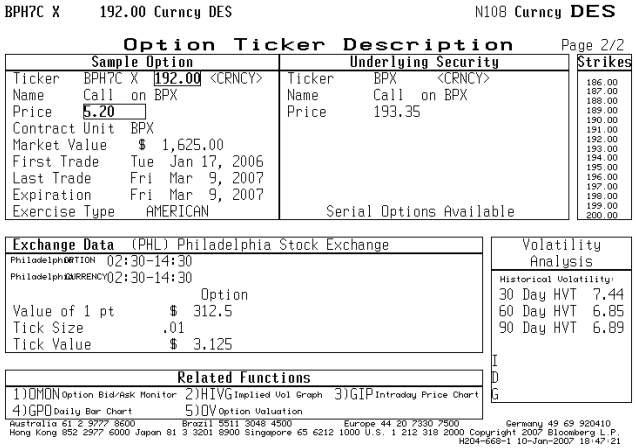
Spot currency options can be accessed by typing CTM to access Bloomberg's Contract Table Menu and then clicking 'Spot Currency Options' (number 19). This will bring up a screen showing spot currency options traded on different exchanges. To directly access information on spot currency options traded on the Philadelphia Exchange, type FCO <go>. This will bring up a menu screen showing just the PHLX currency options. From either screen, you can then select the desired currency to bring up the OMON Screen showing price and volume information on that currency's option contracts. Exhibit E.3-6 shows the OMON Screen for the options on the spot British Pound on January 10, 2007:

Exhibit E.3-6: OMON for British Pound Options



As with index and stock options, you can move your curser to the desired option and then click to select a function. Alternatively, you can type the Bloomberg function. Exhibit E.3-7 shows the description page for the March 192 BP call on January 10, 2007.

Exhibit E.3-7: DES for a British Pound Option



It should be noted that accessing the OV function to value a spot currency option brings up a screen called the "Multileg Option Valuation" Screen. This function screen is similar to the standard OV screen used for stock and stock indices.

In addition to information and analytical functions on specific currency options, Bloomberg also has a number of functions that provide market information and analytics on the overall currency market that can be used for currency option derivatives. To access general currency market functions and information:

- Pressing [CRNCY]
- Type ODT

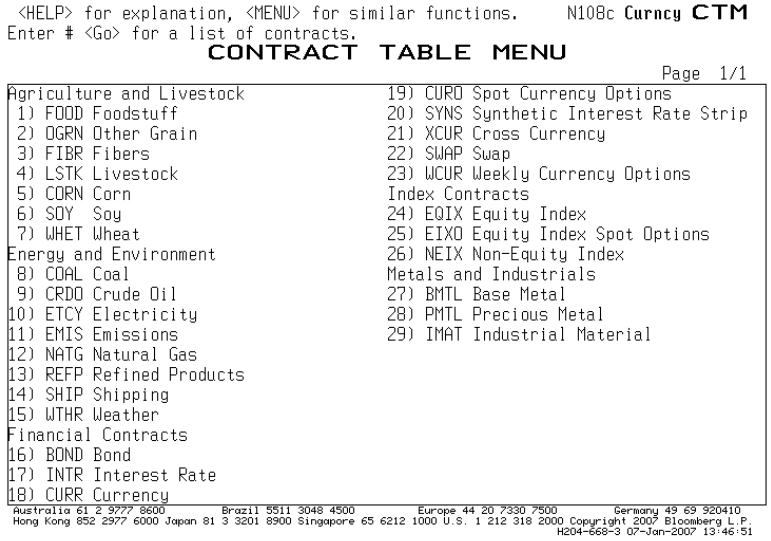
On the ODT menu, two functions of note are the "Currency Volatility Surface" (currency volatility smiles) and the "Volatility Comparison." Also note that currency options can be accessed from the ODT screen by clicking "Futures and Options"; doing this will bring up a menu listing the currency option markets (FCO and CMT).

E.4 FUTURES AND FUTURES OPTION CONTRACTS

Futures Contracts

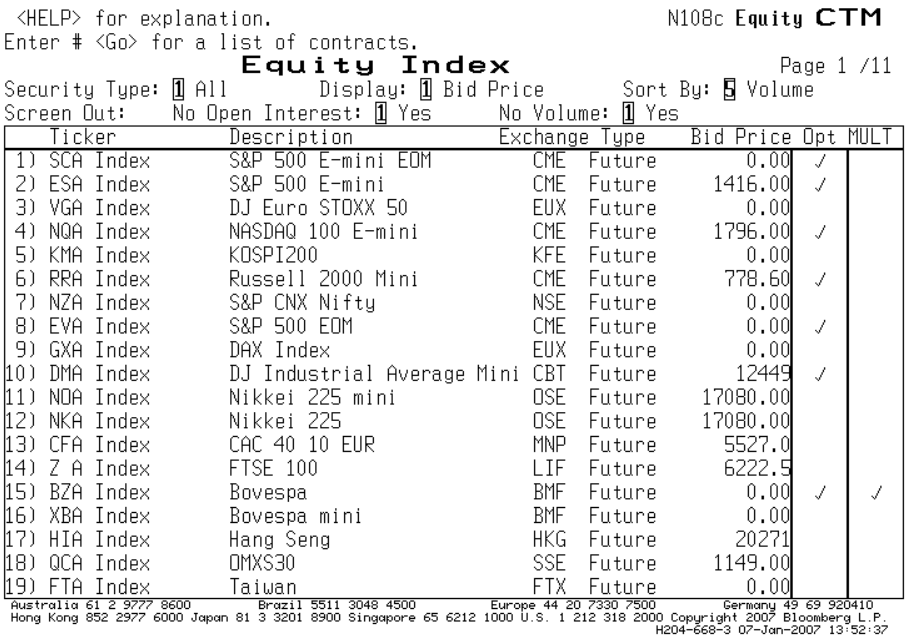
Many futures and futures option contracts can be found by accessing the "Contract Table Menu" (see Exhibit E.4-1). This menu lists exchange-traded futures contracts, divided into five categories: Agriculture and Livestock, Energy and Environment, Financial Contracts, Index Contracts, and Metals and Industries. To access: Type CTM and press <go>.

Exhibit E.4-1: CTM



From the Contract Table Menu, you can click on the desired category to open the display of contract sources. For example, to access equity index contracts, you type 24 (see Exhibit E.4-1) at the top left corner of the screen or move the cursor to 24 and click. This brings up a screen displaying the contracts on that commodity or index, their tickers, descriptions, exchanges, and types. Exhibit E.4-2 shows the CTM for equity indices.

Exhibit E.4-2: CTM for Equity Indices



<HELP> for explanation. N108c Equity CTM
Enter # <Go> for a list of contracts.

Equity Index Page 1 /11

Security Type: 1 All Display: 1 Bid Price Sort By: 5 Volume
Screen Out: No Open Interest: 1 Yes No Volume: 1 Yes

	Ticker	Description	Exchange	Type	Bid Price	Opt	MULT
1)	SCA Index	S&P 500 E-mini EOM	CME	Future	0.00	✓	
2)	ESA Index	S&P 500 E-mini	CME	Future	1416.00	✓	
3)	VGA Index	DJ Euro STOXX 50	EUX	Future	0.00		
4)	NQA Index	NASDAQ 100 E-mini	CME	Future	1796.00	✓	
5)	KMA Index	KOSPI200	KFE	Future	0.00		
6)	RRA Index	Russell 2000 Mini	CME	Future	778.60	✓	
7)	NZA Index	S&P CNX Nifty	NSE	Future	0.00		
8)	EVA Index	S&P 500 EOM	CME	Future	0.00	✓	
9)	GXA Index	DAX Index	EUX	Future	0.00		
10)	DMA Index	DJ Industrial Average Mini	CBT	Future	12449	✓	
11)	NOA Index	Nikkei 225 mini	OSE	Future	17080.00		
12)	NKA Index	Nikkei 225	OSE	Future	17080.00		
13)	CFA Index	CAC 40 10 EUR	MNP	Future	5527.0		
14)	Z A Index	FTSE 100	LIF	Future	6222.5		
15)	BZA Index	Bovespa	BMF	Future	0.00	✓	✓
16)	XBA Index	Bovespa mini	BMF	Future	0.00		
17)	HIA Index	Hang Seng	HKG	Future	20271		
18)	QCA Index	OMXS30	SSE	Future	1149.00		
19)	FTA Index	Taiwan	FTX	Future	0.00		

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On the Equity OTM Screen, there are several features to note:

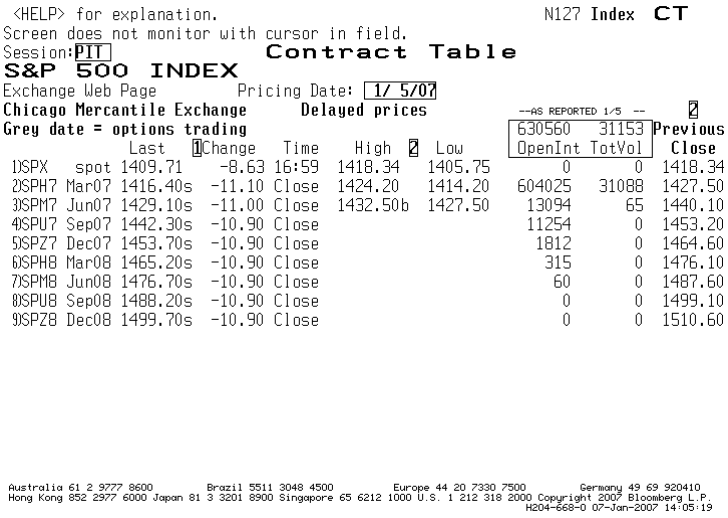
- The Opt Column has a check mark if options are traded on the futures contract.
- The MULT Column has a check mark if there are multiple electronic trading sessions.
- The "Sort By" box allows users to sort contracts by volume or open interest.

For information on one of the contracts shown on the CTM Screen for the selected commodity group (e.g., equity indices):

- Type the number of the contract of interest (or move the cursor to that number and click). This will bring up a screen that gives you the choice of selecting either the options on the contract (OMON) or the futures and futures option contracts (CT).
- Click the CT option to bring up a screen listing contracts on the selected underlying commodity, currency, or index.

Example: To access the contacts on the S&P 500 futures contract traded on the CME, you click 4 (page 2 of the CTM equity index screen) and then click CT. This brings up the Contract Table Screen for the S&P 500 futures and futures option contracts (Exhibit E.4-3):

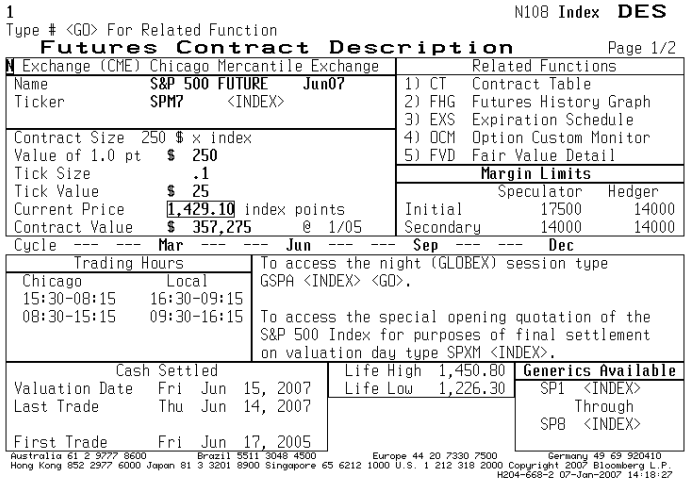
Exhibit E.4-3: CT for Futures on S&P 500 Index



Note: If there is an option traded on the futures contract it is highlighted in grey. If you had clicked OMON instead of CT, you would have brought up the screen listing the S&P 500 futures options.

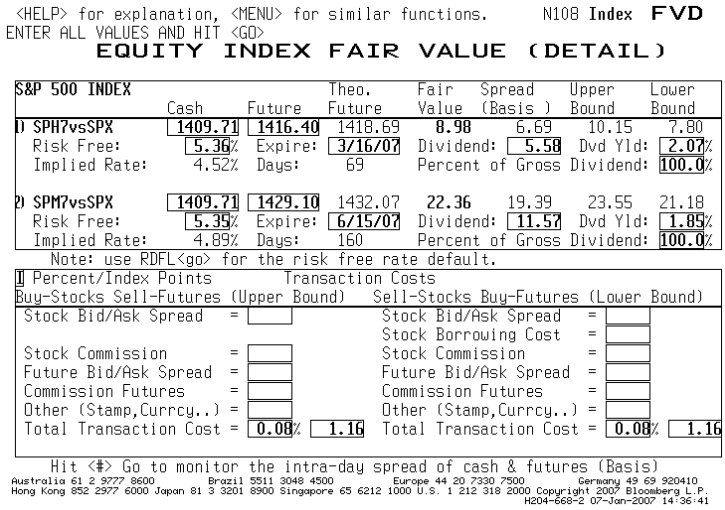
On the Contract Table Screen (CT), you can obtain information on a particular contract by setting your cursor on the contract of interest and left clicking to bring up a menu of information and analytics. For example, on January 5, 2007 clicking the June 07 S&P 500 futures shown in Exhibit E.4-2 and then hitting "Contract Information" and then "Description" on the resulting menu would have brought up the description information on the June S&P 500 contract shown in Exhibit E.4-4.

Exhibit E.4-4: DES on June S&P 500 Futures Contract



In the top right corner of the Description Screen are related functions you can then apply to the futures contracts. Of note is the "Fair Value Detail" function (FVD). This function calculates the fair value of the index futures based on two index futures contracts that are nearest to expiration. The function also includes the carrying cost value (Theo. Value). Exhibit E.4-5 shows the FVD screen for June S&P 500 futures – Equity Index Fair Value. On the FVD screen, users can change the risk-free rate and dividend yield to obtain different carrying cost values and fair values.

Exhibit E.4-5: FVD on June S&P 500 Futures Contract

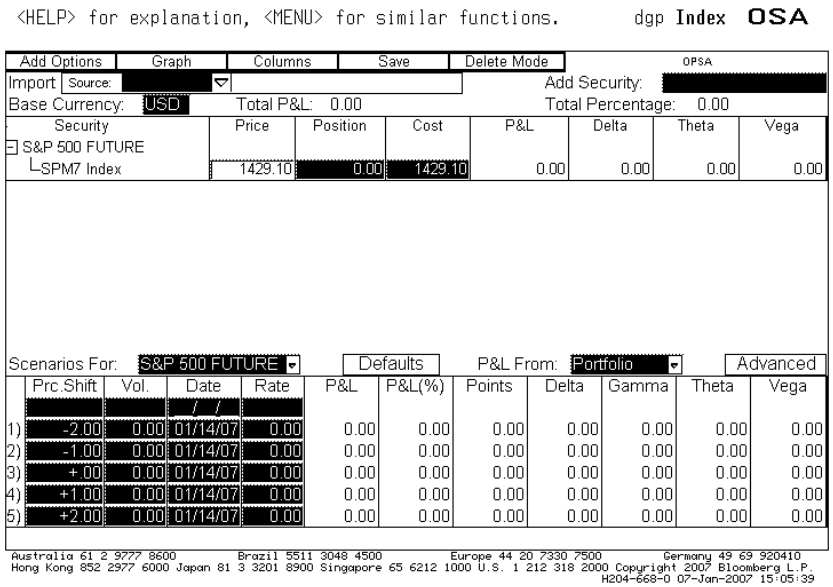


To apply other functions or to access other information on the loaded contract, you can go back to the menu of functions (<Menu>) or type the function's name. The following are some of the useful functions and information that Bloomberg provides for futures contracts:

- **HP** displays a table of historical prices, yields, and values
- **QRM** gives a trade recap
- **TSM** gives a trade matrix
- **GIP** is an intraday price graph
- **GPO** gives a bar chart
- **HVT** displays historical price volatility
- **OV** is the option valuation screen
- **OSA** analyzes a portfolio of options on the futures contract

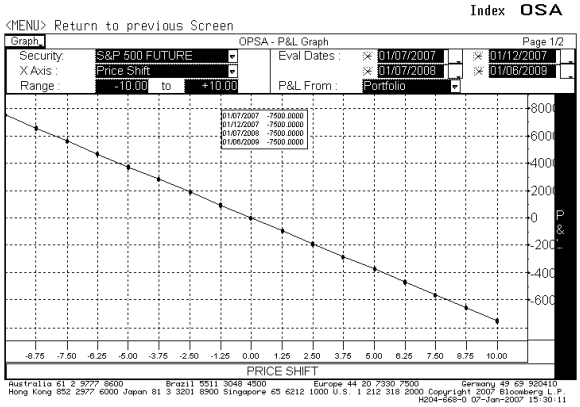
For example, to obtain a profit graph and table for the June S&P 500 futures traded on the CME, you would type OSA to obtain the screen shown in Exhibit E.4-6.

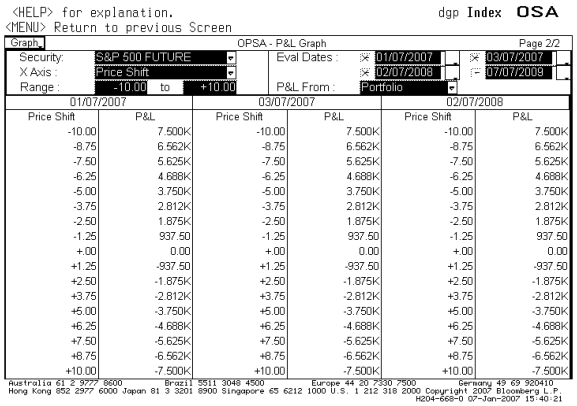
Exhibit E.4-6: OSA on June S&P 500 Futures Contract



If you wanted to evaluate a short position in three June S&P 500 futures contract, you would input -3 in the position box and hit return. On the new screen, you can then click the 'Graph' key to bring up the position's profit and loss graph (page 1) and table (page 2) shown in Exhibit E.4-7.

Exhibit E.4-7: OSA Profit Graph and Table





On the OSA profit screen, you can click the 'Graph' key (top left) to obtain other market values and other variables to plot. You also can change the evaluation dates and add futures options to your futures position by clicking "Add Options" on the OSA Index Screen.

Futures Options

In general, to access information and analytical function for a specific futures option, one uses the same steps defined above for futures contract:

- Type CTM to bring up a Contract Table Menu Screen
- Click the desired category to open the display of contract sources

For example, if you wanted to access wheat contracts from the contract table, you would type 7 in the top left corner of the CT Screen or move the cursor to 7 and click. This will bring up the screen displaying the wheat commodity contracts, their tickers, descriptions, exchanges, and types (see Exhibit E.4-8). You can then type the number of the contract of interest or move the cursor to that number and click and then select CT on the resulting screen to obtain a list of contracts. For example, to see the wheat contracts traded on the CBT, you would hit 3 (see Exhibit E.4-9) and then click CT to obtain the CBT's wheat contracts. CBT option contracts on the wheat futures contracts are indicated in gray on the CT screen.

Exhibit E.4-8: CTM

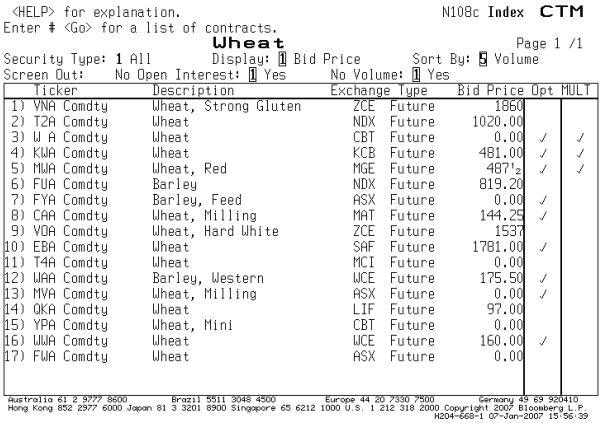
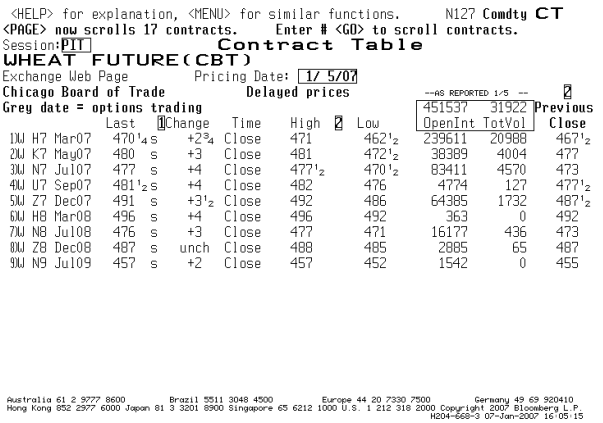


Exhibit E.4-9: CT Screen for Wheat Futures



To obtain information and functions to apply on a particular contract, you set your cursor on the contract of interest and left click. This will bring up a menu of information and analytics that you can access or apply to the contract. For example, clicking the March 07 wheat contract (Exhibit E.4-9) and then clicking "Contract Information" on the resulting menu screen brings up screen for accessing information on the futures contract and futures option contract. The "Description" screens displaying information on the March futures contract (Exhibit E.4-10) and the futures option on that contract ((Exhibit E.4-11) are shown below.

Exhibit E.4-10: DES Wheat Futures

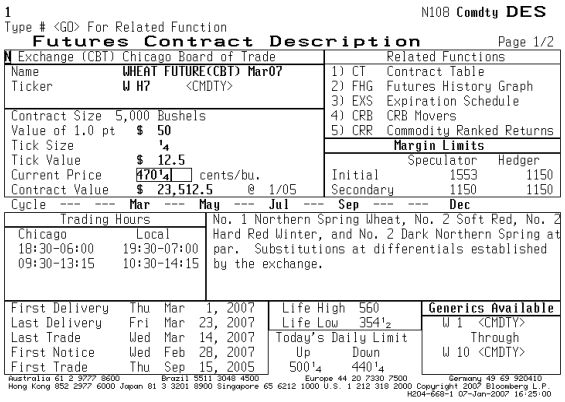
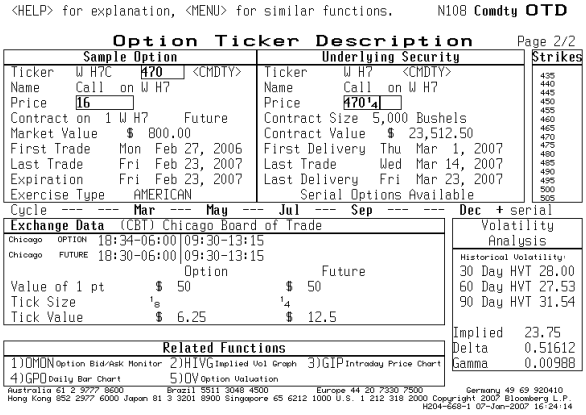


Exhibit E.4-11: DES Wheat Futures Options



Note, on the option description screen, there are related functions that you can access on the loaded futures option contract by clicking or typing the name of function's identifier. These include:

- **OMON** – option quotes on all options on the futures contract
- **GPO** – daily bar chart
- **HIVG** – implied volatility graph
- **OV** – Option valuation
- **GIP** - Intraday price chart

For example, clicking OMON for the option on the March wheat futures brings up the OMON Screen for the options on that contract (see Exhibit E.4-12). The user can then set the cursor on the option of interest and left clicks to obtain a menu of information and analytics to apply to the selected option. For example, to value the March put option on the March wheat contract with an exercise price of 475, you would move the curser to 18 (Exhibit E.4-12) and left click OV. The option valuation screen displays the OPM values of the call and put option contracts, as well as delta, gamma, vega, and rho values. On the OV Screen, you can then select model type (e.g., Black-Scholes (Black futures Model) or Trinomial (binomial)), risk-free rate, and volatility (Vol). The screen on January 7, 2007 for the March option contract on the March wheat futures is shown in Exhibit E.4-13. The Black-Scholes model is the Black futures option model and volatility is based on the futures contract historical volatility. For a description of the model, defaults, and input features, press the help key.

Exhibit E.4-12: OMON for Wheat Futures Option Contracts

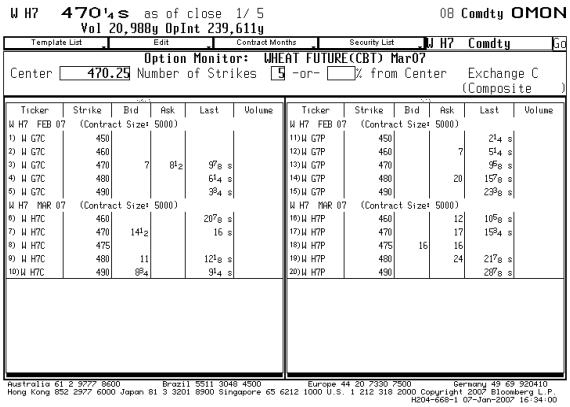
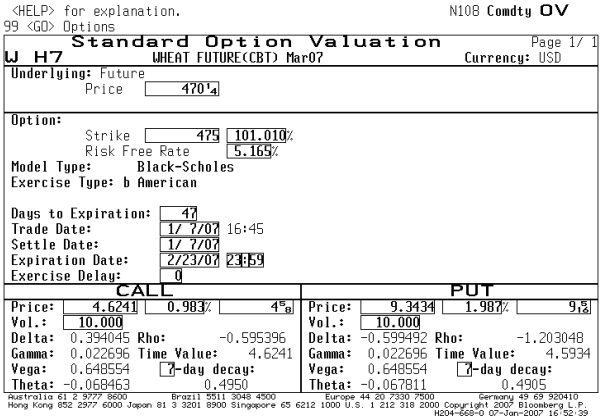
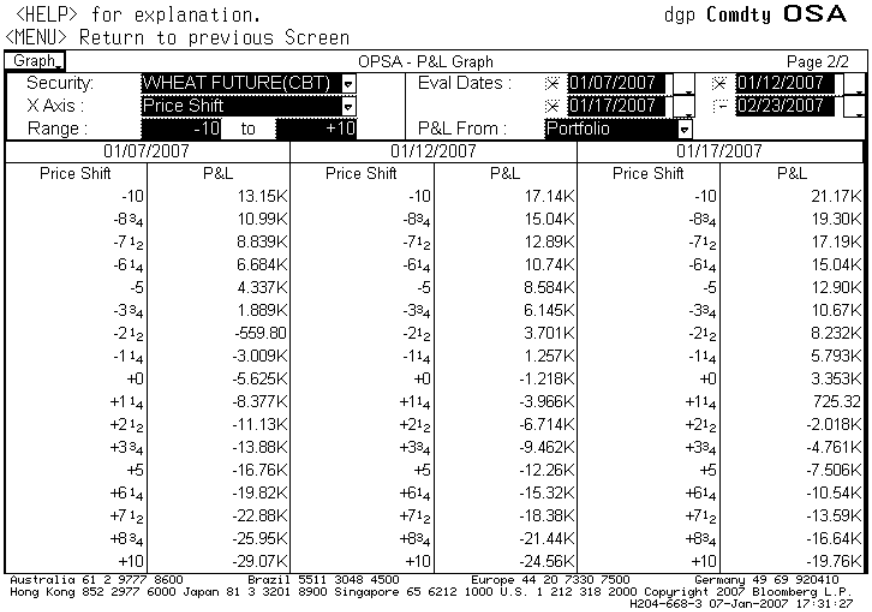


Exhibit E.4-13: OV for Wheat Futures Option Contracts



As with spot options, a useful function to apply to futures options and futures positions is the OSA function for creating profit tables and graphs for different positions. For example, after accessing the futures contract of interest (CBT March Contract: CTM <go>, number 7 for wheat, number 3 for the CBT contract, CT, and then 1 for the March contract), you can type OSA (or find the function in the Option Menu Screen). On the OSA screen, you can take positions in the contract and then click "Add Option" to add option positions. Exhibit E.4-14 shows the profit table generated by shorting 100 March 480 wheat futures call options on January 5, 2007.

Exhibit E.4-14: OSA Wheat Futures and Options



01/07/2007		01/12/2007		01/17/2007	
Price Shift	P&L	Price Shift	P&L	Price Shift	P&L
-10	13.15K	-10	17.14K	-10	21.17K
-8 3/4	10.99K	-8 3/4	15.04K	-8 3/4	19.30K
-7 1/2	8.839K	-7 1/2	12.89K	-7 1/2	17.19K
-6 1/4	6.684K	-6 1/4	10.74K	-6 1/4	15.04K
-5	4.337K	-5	8.584K	-5	12.90K
-3 3/4	1.889K	-3 3/4	6.145K	-3 3/4	10.67K
-2 1/2	-559.80	-2 1/2	3.701K	-2 1/2	8.232K
-1 1/4	-3.009K	-1 1/4	1.257K	-1 1/4	5.793K
+0	-5.625K	+0	-1.218K	+0	3.353K
+1 1/4	-8.377K	+1 1/4	-3.966K	+1 1/4	725.32
+2 1/2	-11.13K	+2 1/2	-6.714K	+2 1/2	-2.018K
+3 3/4	-13.88K	+3 3/4	-9.462K	+3 3/4	-4.761K
+5	-16.76K	+5	-12.26K	+5	-7.506K
+6 1/4	-19.82K	+6 1/4	-15.32K	+6 1/4	-10.54K
+7 1/2	-22.88K	+7 1/2	-18.38K	+7 1/2	-13.59K
+8 3/4	-25.95K	+8 3/4	-21.44K	+8 3/4	-16.64K
+10	-29.07K	+10	-24.56K	+10	-19.76K

Alternative Ways to Access Futures and Futures Options

Accessing Futures Exchange

With Bloomberg there are a number of different ways to access information. Instead of accessing contracts from the "Contract Table Menu" (CTM), futures and futures option information can alternatively be obtained by accessing the "Contract Exchange Menu" – CEM:

- Type CEM and then hit <go>

The CEM Screen provides a list of exchanges. From that screen, you can click the exchange of interest. This will bring up a screen listing the contracts on the selected exchange. For example, to access the Chicago Board of Exchange:

- Type CEM and hit <go> to bring up the 'Contract Exchange Menu Screen' (Exhibit E.4-15)
- Click CBT (or type the number) to bring up the contracts on the Chicago Board of Trade (Exhibit E.4-16)
- Click the desired commodity
- Click CT to pull up the 'Contract Table' on that commodity

Exhibit E.4-15: CEM

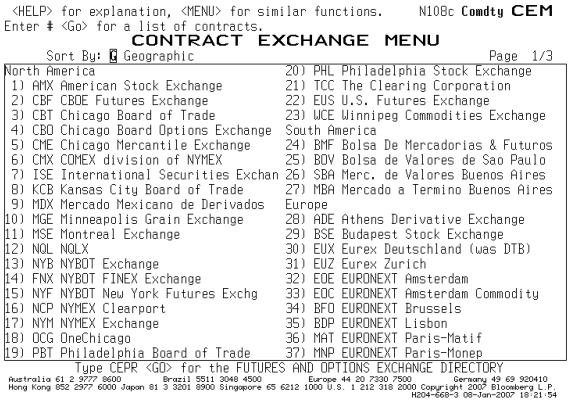
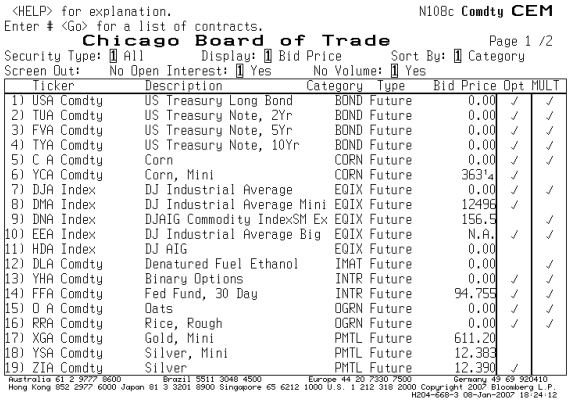


Exhibit E.4-16: CEM for CBT



Accessing by Ticker

In addition to accessing contracts from CEM and CTM menus, futures contracts can also be accessed by typing the ticker and then hitting the yellow [CMDTY] key if the contract is a commodity, the yellow [Index] key if the contract is an index, and the yellow [CRNCY] key if it is a currency. To access many of the futures contract, Bloomberg's ticker system follows a simple process of typing the root ticker, month, and year. For example, to access a Treasury-note futures expiring in September 2007, you would type TYU7:

- TY is the root ticker
- U is for September
- 7 is for 2007

Exhibit E.4-17 shows some of Bloomberg's common root tickers and month codes:

Exhibit E.4-17: Bloomberg Root tickers and Month Codes

Root Tickers	Bloomberg Key	Month Codes
TY – 10 year Treasury note	[CMDTY]	January F
FV – 5 year Treasury note	[CMDTY]	February G
US – Treasury long bond	[CMDTY]	March H
FF – 30 day Fed Fund	[CMDTY]	April J
CL – Crude Oil (NYMEX)	[CMDTY]	May K
NG – Natural Gas (NYMEX)	[CMDTY]	June M
HU – Gasoline	[CMDTY]	July N
ED – Eurodollar 3Mo	[CMDTY]	August Q
SP – S&P 500	[INDEX]	September U
DJ – DJIA	[INDEX]	October V
ND – NASDAQ 100	[INDEX]	November X
RL – Russell 2000	[INDEX]	December Z
EUR – Euro	[CRNCY]	
JPY – Yen	[CRNCY]	
GBP – British Pound	[CRNCY]	

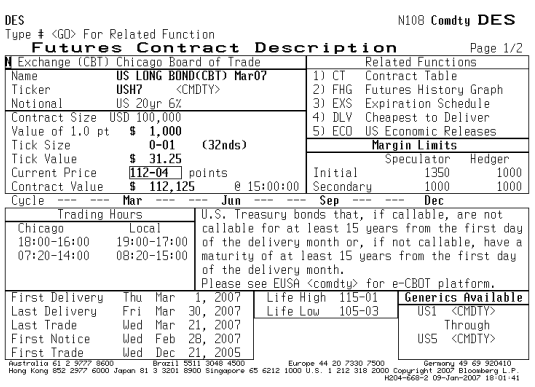
Note that instead of identifying a specific expiration, you can type an "a" after the root ticker to bring up the most actively traded contract. For example, typing SPA [INDEX] brings up the most actively traded S&P 500 futures contract. Bloomberg also allows one to generate generic contracts. This can be done by adding a number to the end of the root ticker (e.g., a generic future is made that is 7 months from expiration). This can be helpful when graphing prices over a long period of time. For example, CL1 [CMDTY] GP pulls up a price graph of a generic first month future for crude oil. Depending on the underlying security, a generic can be produced up to 70 months.

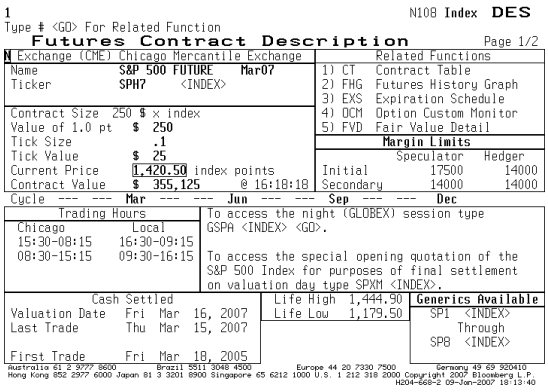
Summary and List of Bloomberg Functions for Futures and Futures Options

Once a futures or futures option contract is loaded, Bloomberg functions can be applied by simply typing the function in the top left corner. Some of the functions that we've already described and some new ones are listed below. Included with some of the functions are the function's related screens accessed for futures contracts on a U.S. T-Bond and the S&P 500 (on January 9, 2007).

1. **DES: Futures Contract Description** gives information such as contract size, delivery date, contract months available, available generics, related functions, and a brief written description of the underlying product:

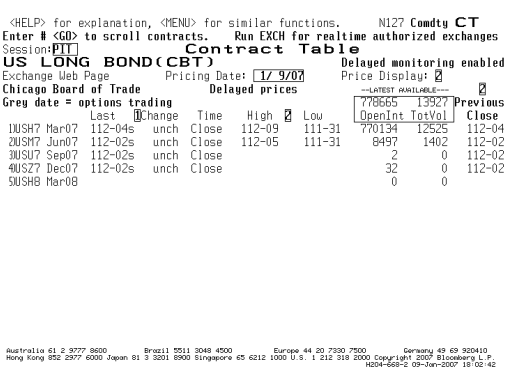
Exhibit E.4-18: DES for T-Bond and S&P 500 Futures

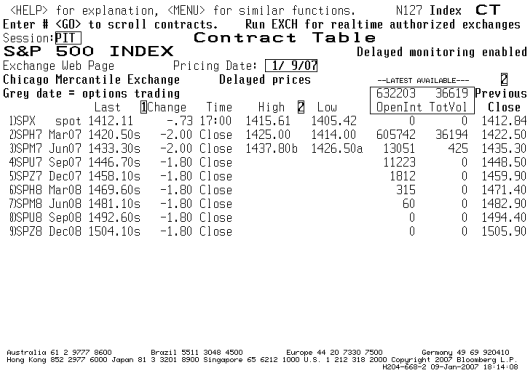

DES N108 Comdty DES
Type # <GD> For Related Function
Futures Contract Description Page 1/2
N Exchange (CBT) Chicago Board of Trade
Name US LONG BOND(CBT) Mar07
Ticker USH7 <CMDTY>
Notional US 20yr 6%
Contract Size USD 100,000
Value of 1.0 pt $ 1,000
Tick Size 0-01 (32nds)
Tick Value $ 31.25
Current Price 112-04 points
Contract Value $ 112,125 @ 15:00:00
Related Functions
1) CT Contract Table
2) FHG Futures History Graph
3) EXS Expiration Schedule
4) DLV Cheapest to Deliver
5) ECO US Economic Releases
Margin Limits
Speculator Hedger
Initial 1350 1000
Secondary 1000 1000
Cycle --- --- Mar --- --- Jun --- --- Sep --- --- Dec
Trading Hours
Chicago Local
18:00-16:00 19:00-17:00
07:20-14:00 08:20-15:00
U.S. Treasury bonds that, if callable, are not callable for at least 15 years from the first day of the delivery month or, if not callable, have a maturity of at least 15 years from the first day of the delivery month.
Please see EUSA <comdty> for e-CBOT platform.
First Delivery Thu Mar 1, 2007
Last Delivery Fri Mar 30, 2007
Last Trade Wed Mar 21, 2007
First Notice Wed Feb 28, 2007
First Trade Wed Dec 21, 2005
Life High 115-01
Life Low 105-03
Generics Available
US1 <CMDTY>
Through
US5 <CMDTY>
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:01:41


1 N108 Index DES
Type # <GD> For Related Function
Futures Contract Description Page 1/2
N Exchange (CME) Chicago Mercantile Exchange
Name S&P 500 FUTURE Mar07
Ticker SPH7 <INDEX>
Contract Size 250 $ x index
Value of 1.0 pt $ 250
Tick Size .1
Tick Value $ 25
Current Price 1,420.50 index points
Contract Value $ 355,125 @ 16:18:18
Related Functions
1) CT Contract Table
2) FHG Futures History Graph
3) EXS Expiration Schedule
4) OCM Option Custom Monitor
5) FVD Fair Value Detail
Margin Limits
Speculator Hedger
Initial 17500 14000
Secondary 14000 14000
Cycle --- --- Mar --- --- Jun --- --- Sep --- --- Dec
Trading Hours
Chicago Local
15:30-08:15 16:30-09:15
08:30-15:15 09:30-16:15
To access the night (GLOBEX) session type GSPA <INDEX> <GO>.
To access the special opening quotation of the S&P 500 Index for purposes of final settlement on valuation day type SPXM <INDEX>.
Cash Settled
Valuation Date Fri Mar 16, 2007
Last Trade Thu Mar 15, 2007
First Trade Fri Mar 18, 2005
Life High 1,444.90
Life Low 1,179.50
Generics Available
SP1 <INDEX>
Through
SP8 <INDEX>
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:13:40

2. **CT: Contract Table** displays the outstanding contracts:

Exhibit E.4-19: CT for T-Bond and S&P 500 Futures

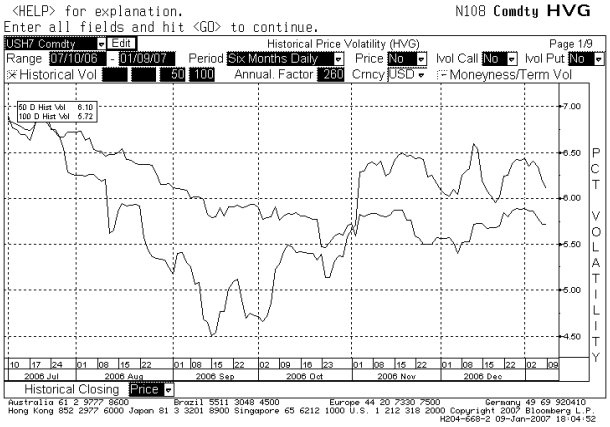

<HELP> for explanation, <MENU> for similar functions. N127 Comdty CT
Enter # <GD> to scroll contracts. Run EXCH for realtime authorized exchanges
Session:PIT
Contract Table
US LONG BOND(CBT) Delayed monitoring enabled
Exchange Web Page Pricing Date: 1/ 9/07 Price Display: 2
Chicago Board of Trade Delayed prices
Grey date = options trading
Last 1Change Time High 2 Low
OpenInt TotVol Previous Close
1USH7 Mar07 112-04s unch Close 112-09 111-31 770134 12525 112-04
2USM7 Jun07 112-02s unch Close 112-05 111-31 8497 1402 112-02
3USU7 Sep07 112-02s unch Close 2 0 112-02
4USZ7 Dec07 112-02s unch Close 32 0 112-02
5USH8 Mar08 0 0
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:02:42

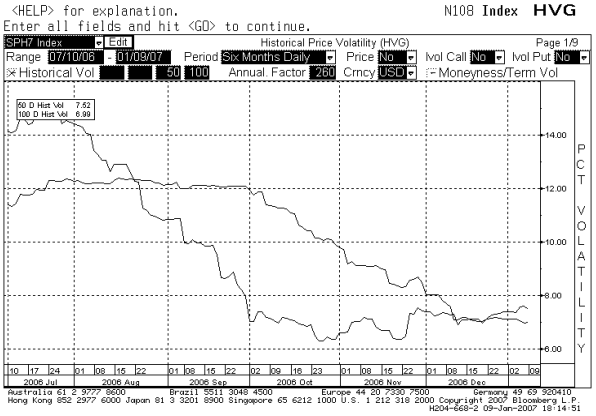

<HELP> for explanation, <MENU> for similar functions. N127 Index CT
Enter # <GD> to scroll contracts. Run EXCH for realtime authorized exchanges
Session:PIT
Contract Table
S&P 500 INDEX Delayed monitoring enabled
Exchange Web Page Pricing Date: 1/ 9/07
Chicago Mercantile Exchange Delayed prices
Grey date = options trading
Last 1Change Time High 2 Low
OpenInt TotVol Previous Close
1SPX spot 1412.11 -.73 17:00 1415.61 1405.42 0 0 1412.84
2SPH7 Mar07 1420.50s -2.00 Close 1425.00 1414.00 605742 36194 1422.50
3SPM7 Jun07 1433.30s -2.00 Close 1437.80b 1426.50a 13051 425 1435.30
4SPU7 Sep07 1446.70s -1.80 Close 11223 0 1448.50
5SPZ7 Dec07 1458.10s -1.80 Close 1812 0 1459.90
6SPH8 Mar08 1469.50s -1.80 Close 315 0 1471.40
7SPM8 Jun08 1481.10s -1.80 Close 60 0 1482.90
8SPU8 Sep08 1492.60s -1.80 Close 0 0 1494.40
9SPZ8 Dec08 1504.10s -1.80 Close 0 0 1505.90
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:14:08

3. **CTG: Contract Table Graph** displays in graph format the prices for the series of futures contracts.

4. **HVG**: Historical Volatility graph displays the historical volatility on the futures contract:

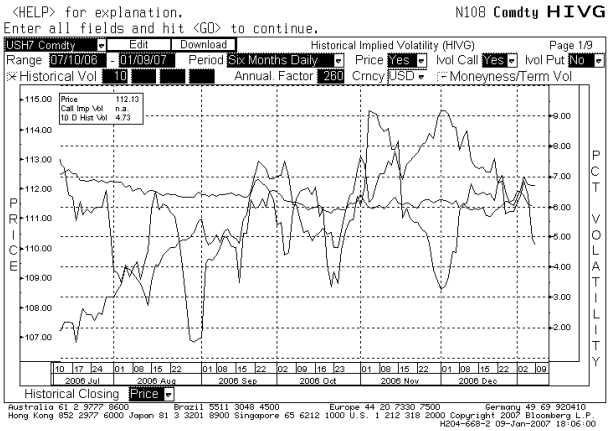
Exhibit E.4-20: HVG for T-Bond and S&P 500 Futures

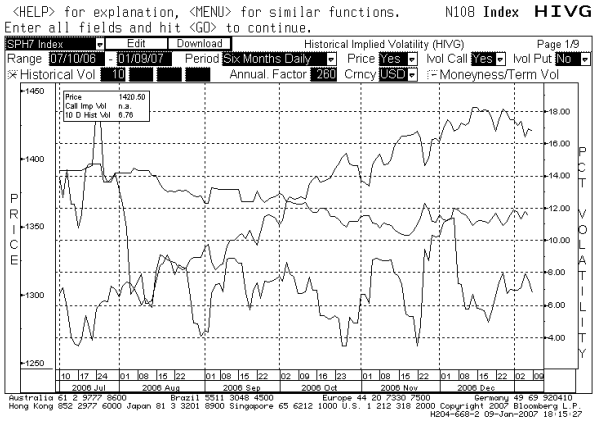




5. **HIVG:** Historical Implied Volatility graph displays historical implied volatilities on futures:

Exhibit E.4-21: HIVG for T-Bond and S&P 500 Futures



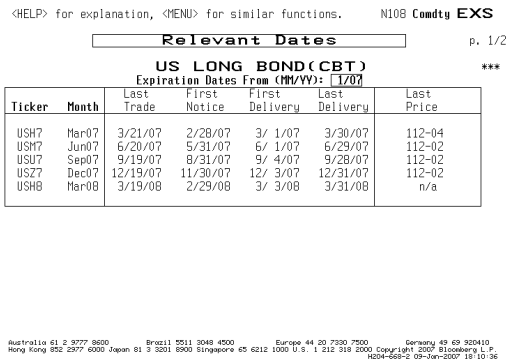


6. **OMON: Option Monitor** displays options on the given futures contract; function is the same as the monitor for options on a stock and is fully customizable.

7. **FHG: Futures History Graph displays** customizable graphs, volatility, price, and other descriptive information.

8. **EXS: Expiration Schedule** displays important dates such as last trade and contract delivery dates:

Exhibit E.4-22: EXS for T-Bond and S&P 500 Futures



<HELP> for explanation, <MENU> for similar functions. N108 Comdty EXS

Relevant Dates p. 1/2

US LONG BOND(CBT) ***

Expiration Dates From (MM/YY): 1/07

Ticker	Month	Last Trade	First Notice	First Delivery	Last Delivery	Last Price
USH7	Mar07	3/21/07	2/28/07	3/ 1/07	3/30/07	112-04
USM7	Jun07	6/20/07	5/31/07	6/ 1/07	6/29/07	112-02
USU7	Sep07	9/19/07	8/31/07	9/ 4/07	9/28/07	112-02
USZ7	Dec07	12/19/07	11/30/07	12/ 3/07	12/31/07	112-02
USH8	Mar08	3/19/08	2/29/08	3/ 3/08	3/31/08	n/a

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
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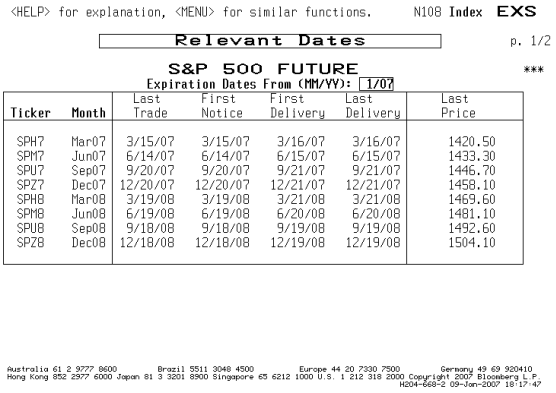


<HELP> for explanation, <MENU> for similar functions. N108 Index EXS

Relevant Dates p. 1/2

S&P 500 FUTURE ***

Expiration Dates From (MM/YY): 1/07

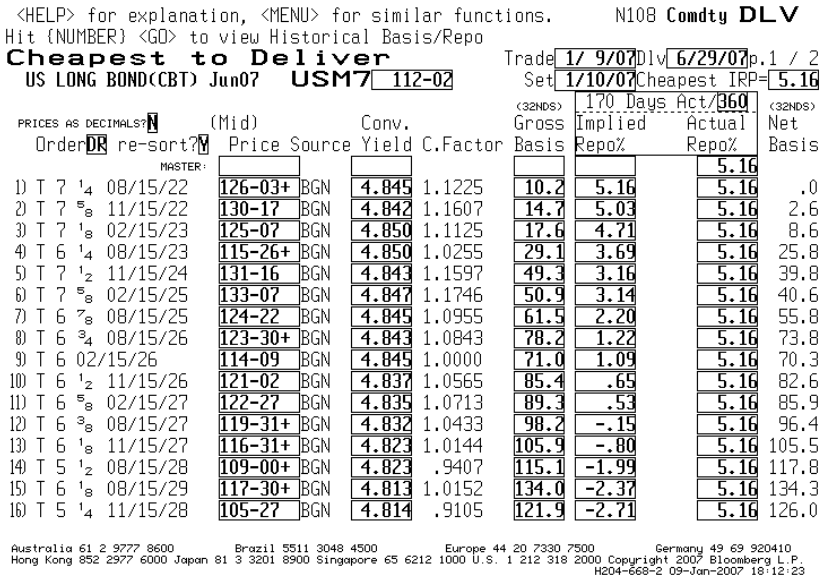
Ticker	Month	Last Trade	First Notice	First Delivery	Last Delivery	Last Price
SPH7	Mar07	3/15/07	3/15/07	3/16/07	3/16/07	1420.50
SPM7	Jun07	6/14/07	6/14/07	6/15/07	6/15/07	1433.30
SPU7	Sep07	9/20/07	9/20/07	9/21/07	9/21/07	1446.70
SPZ7	Dec07	12/20/07	12/20/07	12/21/07	12/21/07	1458.10
SPH8	Mar08	3/19/08	3/19/08	3/21/08	3/21/08	1469.60
SPM8	Jun08	6/19/08	6/19/08	6/20/08	6/20/08	1481.10
SPU8	Sep08	9/18/08	9/18/08	9/19/08	9/19/08	1492.60
SPZ8	Dec08	12/18/08	12/18/08	12/19/08	12/19/08	1504.10

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:17:47

9. **FVD: Fair Value Detail** calculates the fair value of the two contracts closest to expiration compared to the index (only available with index futures).

10. **DLV: Cheapest to Deliver.** Lists all T-bonds or T-notes that are able to be delivered to the selected futures contract and identifies the cheapest (only available with T-bond and T-note futures):

Exhibit E.4-23: DLV for T-Bond Futures



<HELP> for explanation, <MENU> for similar functions. N108 Comdty DLV
Hit {NUMBER} <GO> to view Historical Basis/Repo
Cheapest to Deliver Trade 1/ 9/07 Dlv 6/29/07 p.1 / 2
US LONG BOND(CBT) Jun07 USM7 112-02 Set 1/10/07 Cheapest IRP= 5.16

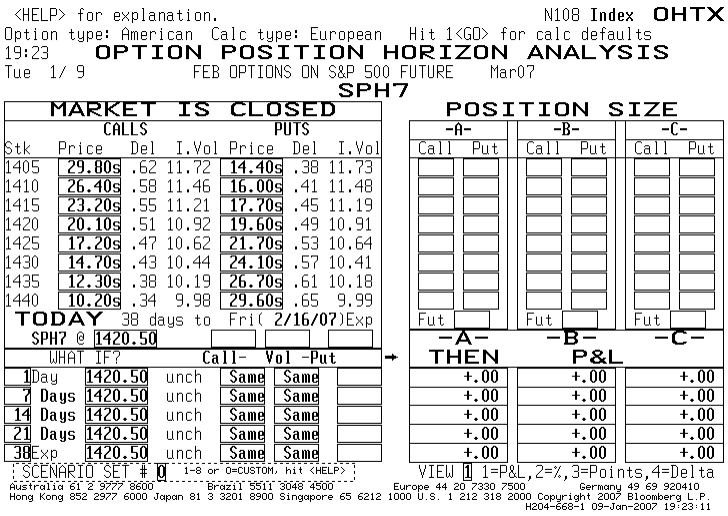
						(32NDS) Gross	170 Days Act/360 Implied		(32NDS) Net
PRICES AS DECIMALS? N Order DR re-sort? Y	(Mid) Price	Source	Conv. Yield	C.Factor	Basis	Repo%	Actual Repo%	
MASTER:							5.16	
1) T 7 1/4 08/15/22	126-03+	BGN	4.845	1.1225	10.2	5.16	5.16	.0
2) T 7 5/8 11/15/22	130-17	BGN	4.842	1.1607	14.7	5.03	5.16	2.6
3) T 7 1/8 02/15/23	125-07	BGN	4.850	1.1125	17.6	4.71	5.16	8.6
4) T 6 1/4 08/15/23	115-26+	BGN	4.850	1.0255	29.1	3.69	5.16	25.8
5) T 7 1/2 11/15/24	131-16	BGN	4.843	1.1597	49.3	3.16	5.16	39.8
6) T 7 5/8 02/15/25	133-07	BGN	4.847	1.1746	50.9	3.14	5.16	40.6
7) T 6 7/8 08/15/25	124-22	BGN	4.845	1.0955	61.5	2.20	5.16	55.8
8) T 6 3/4 08/15/26	123-30+	BGN	4.843	1.0843	78.2	1.22	5.16	73.8
9) T 6 02/15/26	114-09	BGN	4.845	1.0000	71.0	1.09	5.16	70.3
10) T 6 1/2 11/15/26	121-02	BGN	4.837	1.0565	85.4	.65	5.16	82.6
11) T 6 5/8 02/15/27	122-27	BGN	4.835	1.0713	89.3	.53	5.16	85.9
12) T 6 3/8 08/15/27	119-31+	BGN	4.832	1.0433	98.2	-.15	5.16	96.4
13) T 6 1/8 11/15/27	116-31+	BGN	4.823	1.0144	105.9	-.80	5.16	105.5
14) T 5 1/2 08/15/28	109-00+	BGN	4.823	.9407	115.1	-1.99	5.16	117.8
15) T 6 1/8 08/15/29	117-30+	BGN	4.813	1.0152	134.0	-2.37	5.16	134.3
16) T 5 1/4 11/15/28	105-27	BGN	4.814	.9105	121.9	-2.71	5.16	126.0

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2007 Bloomberg L.P.
H204-668-2 09-Jan-2007 18:12:23

11. **OSA** evaluates a position composed of futures and calls and puts on the futures contract.

12. **OHTX: Option Position Horizon Analysis** evaluates a position composed of calls and puts on the futures contract.

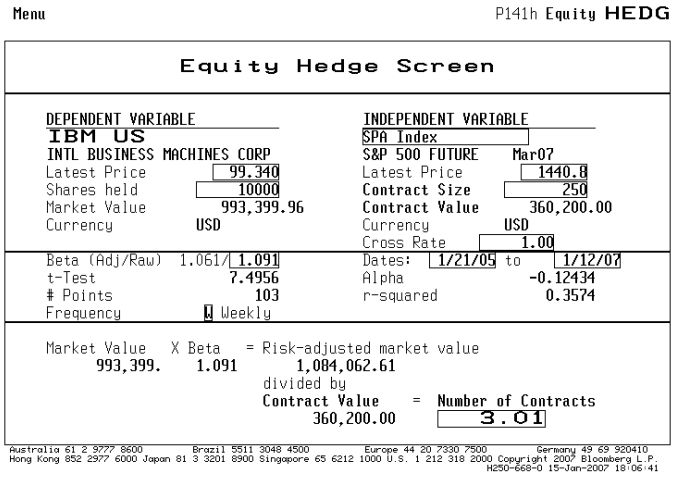
Exhibit E.4-24: OHTX for S&P 500 Futures



13. **SKEW** displays implied volatility for different exercise prices, providing a volatility smile.

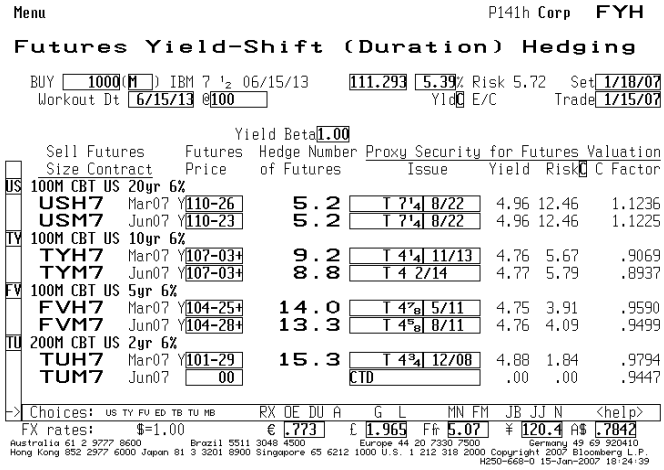
14. **HEDG: Hedging Stock Positions with Index Futures with HEDG**: HEDG calculates the number of futures contracts needed to hedge a selected equity security from a calculated beta. To apply: Enter company [EQUITY] HEDG; for example: IBM [EQUITY] HEDG

Exhibit E.4-25: HVG for IBM



15. **FYH: Hedging Bond Positions with Interest Rate Futures with FYH:** FYH calculates the number of futures contracts needed to hedge a fixed income security (corporate, government or mortgage). FYH displays four different futures contracts. To use, load a fixed income security and type FYH. For example: enter IBM [CORP]; select bond: IBM, 7.5%, maturing 6/15/13; type FYH:

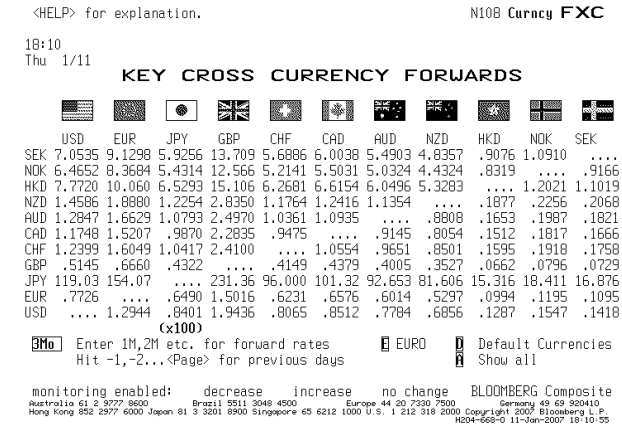
Exhibit E.4-26: FYH for IBM Bond



16. **Foreign Currency Spot and Forward Contract Functions:** Bloomberg provides a number of functions, analytics, and data on spot and forward exchange rates.

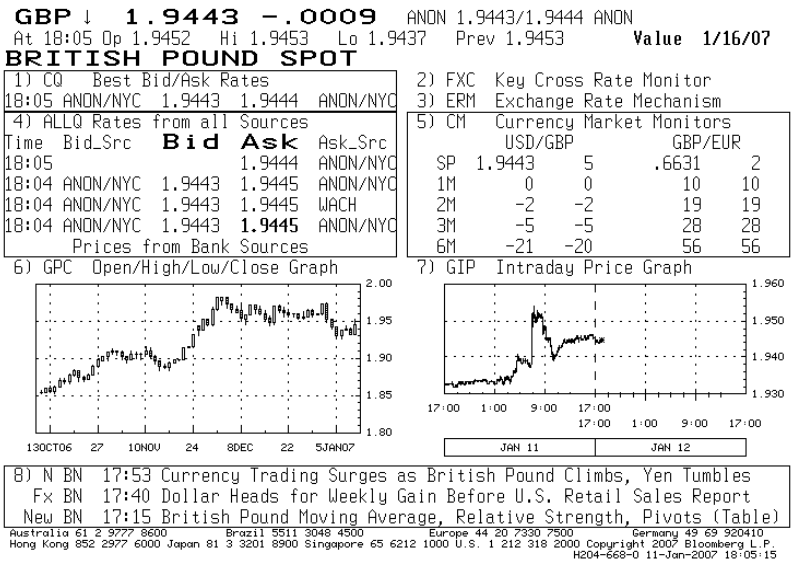
    1. **FXC** provides a matrix of spot and forward rates for 11 key currencies. To access, enter [CRNCY] FXC:

Exhibit E.4-27: FXC



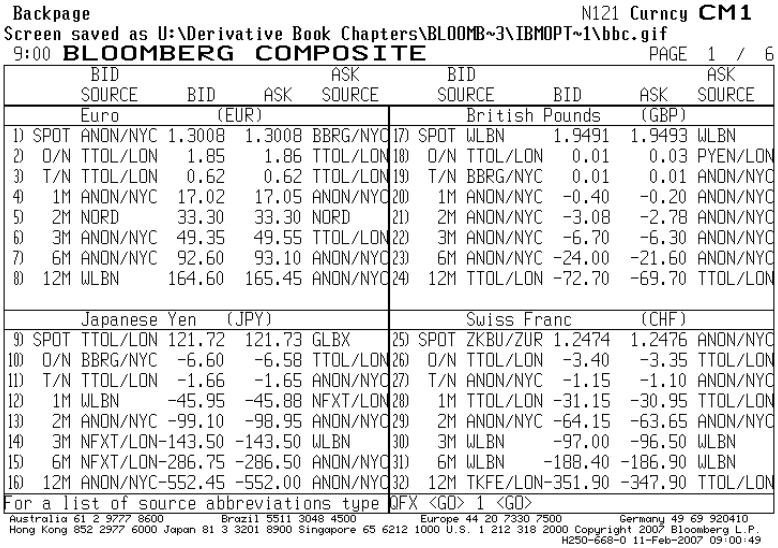
2. **BQ** displays currency exchange quotes and key functions related to select currencies. To access, enter currency identifier [CRNCY] BQ; for example, for the British pound, enter GBP [CRNCY] BQ:

Exhibit E.4-28: BQ for British Pound



3. **BBC** provides a menu of currency market monitor screens (e.g., spot and forward rates). Type BBC, then select monitor. Exhibit E.4-29 shows spot and forward rate spreads.

Exhibit E.4-29: BBC Spot and Forward Spreads



E.5 SETTING UP A PORTFOLIO

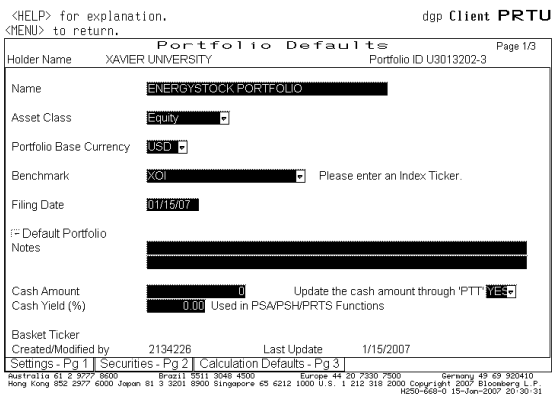
A user can set up a stock or fixed-income portfolio on Bloomberg. Once the portfolio is loaded, the user can obtain current market information and apply Bloomberg analytics to analyze the portfolio. For portfolio derivative analysis, a number of option functions can be applied, such as option scenario analysis (OSA).

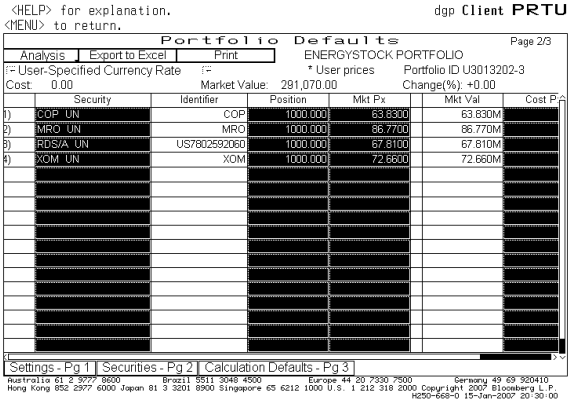
Steps for Creating Portfolios

1. **Step 1: PRTU**: PRTU displays a list of portfolios. To create a portfolio using PRTU:
   - Type PRTU
   - On PRTU Screen, click the "Create New" button. This will bring up a three-page screen for inputting information:
     - Page 1: Name of your portfolio, Asset Class (Equity, fixed income, balanced), and Benchmark (e.g., S&P 500)
     - Page 2: Screen for inputting securities by their identifiers (Note: A helpful way to load securities is to go to the index and find the securities of interest; then drop and drag the security)
     - Page 3 identifies the defaults
   - Once the portfolio is loaded, hit the menu key. The name you have given to the portfolio will then be displayed on the PRTU Screen.

Exhibit E.5-1 shows page 1 and 2 of the PRTU Screens from loading a four-security energy stock portfolio, named Energy Stock Portfolio: Conoco Phillips, Exxon Mobile, Marathon Oil, and Royal Dutch Shell. This portfolio is evaluated relative to the American Stock Exchange Oil Index XOI = identifier)).

Exhibit E.5-1: PRTU





2. **Step 2: PER**: Type PER to run the portfolio, then hit 1 <go>. The PER function accesses the stocks and their current values and sends the information to a report file.

3. **Step 3: RPT:**

- Type RPT for a listing of reports
- Click the one just completed (See Exhibit E.5-2)

4. **Step 4: PMEN**: With the portfolio loaded, type PMEN to access a menu of functions to apply to the portfolio: Display and Valuation, Equity Analytics, News and Research headlines. For example, clicking the "News and Research" function (NPH) for the Energy Stock Portfolio displays current news listings for each stock in the portfolio (see Exhibit E.5-3).

Exhibit E.5-2: RPT

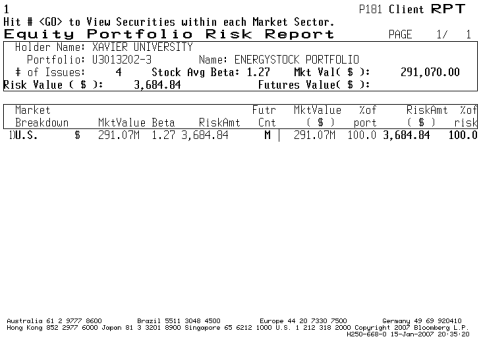
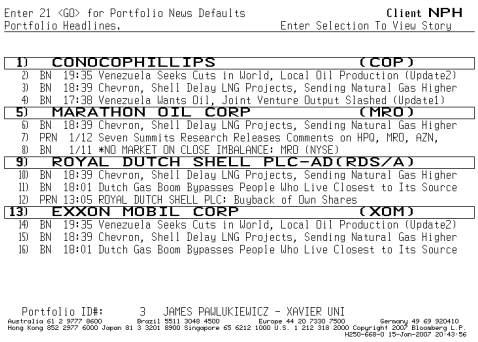


Exhibit E.5-3: NPH



Step 5 OPSA: Accessing options on the stocks in the portfolio: From the Equity Analytics Screen, you can access the option scenario screen (OPSA/OSA). On that screen, click the amber source key. This will bring a drop-down menu listing portfolios (e.g., indices and favorites). This list includes portfolios formed in PRTU (e.g., the Energy Stock Portfolio). Clicking the desired portfolio will bring up its stocks. Once the portfolio's stocks are loaded, the user can click the "Add Option" button to access options traded on each of stocks in the portfolio. Options can then be added to the each stock to generate an option and stock position. Exhibit E.5-4 shows the OPSA/OSA screen on January 15, 2007 for the energy stock portfolio in which each stock has added to its position 1000 near-the-money put options expiring in February 2008; Exhibit E.5-5 shows the OSA profit tables for one of the energy stocks (Exxon Mobile).

Exhibit E.5-4: OSA

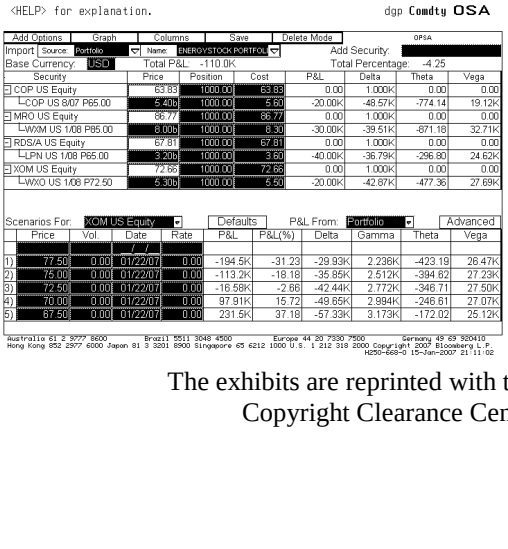
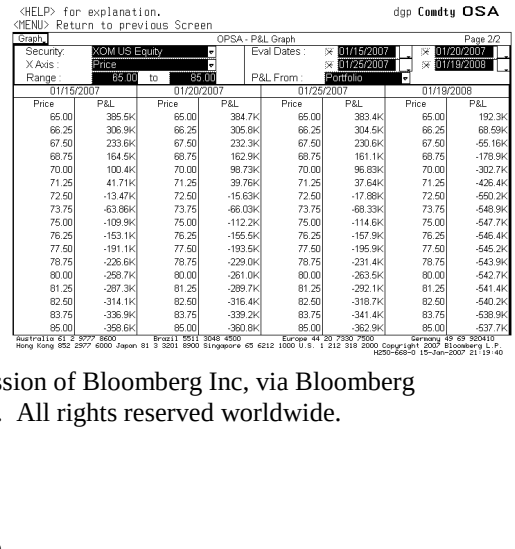


Exhibit E.5-5: OSA Profit Table



Note: Pressing the graph button on OSA's graph screen brings down a menu listing other variables that you can evaluate: market values and Greeks. Also, depending on the Bloomberg access agreement, the profit and loss data for each option can be downloaded to Excel file where the entire portfolio can be evaluated.

E.6 GETTING STARTED ON OTHER DERIVATIVES FUNCTIONS

In addition to spot options, warrants, futures, and futures options, there are also Bloomberg functions on swaps, interest rate derivative products, credit derivatives, convertible bonds, and asset-backed securities. As a guide to getting stated, this section defines some of the Bloomberg functions that can be used to access information on swaps, credit derivatives, convertibles, and asset-backed securities. In examining theses functions, remember there is usually an extensive help page included with most Bloomberg functions. More information on other derivatives also can be found by typing NI BUSEMR to access the a Bloomberg tutorial on the subject.

Interest Rate Swaps and Other Interest Rate Products

Interest Rate Swap Functions

SWPM Swap Manager creates and evaluates interest rate products: Interest rate swaps, caps and floors, swaptions, forward rate agreements, and cancelable swaps. To access the function type SWPM. This will bring up the SWPM Screen (Exhibit E.6-1) for creating and evaluating a generic interest rate swap. On this screen, you can fill in the amber areas with the details of the swap. In analyzing Swaps using SWPM Screen, you will find the market value of the swap displayed at the bottom. If you enter 0 for the spread, then the swap will be set up as a par value swap. By clicking on the bottom tabs, you can see the swap values, cash flows, interest rate risk, and a horizon analysis. The cash flows for the swap shown in Exhibit E.6-1 are displayed in Exhibit E.6-2.

Exhibit E.6-1: SWPM

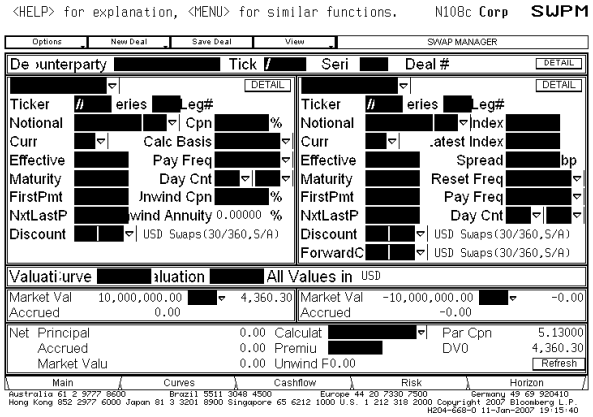
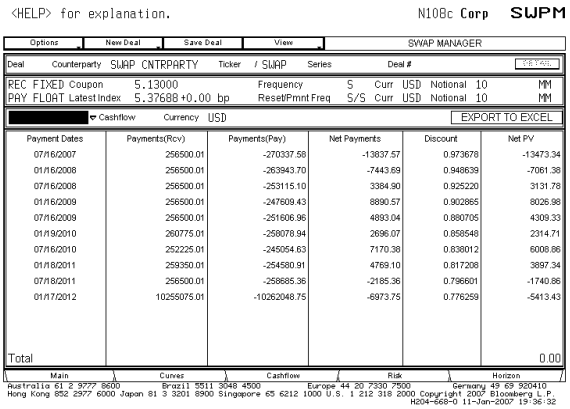
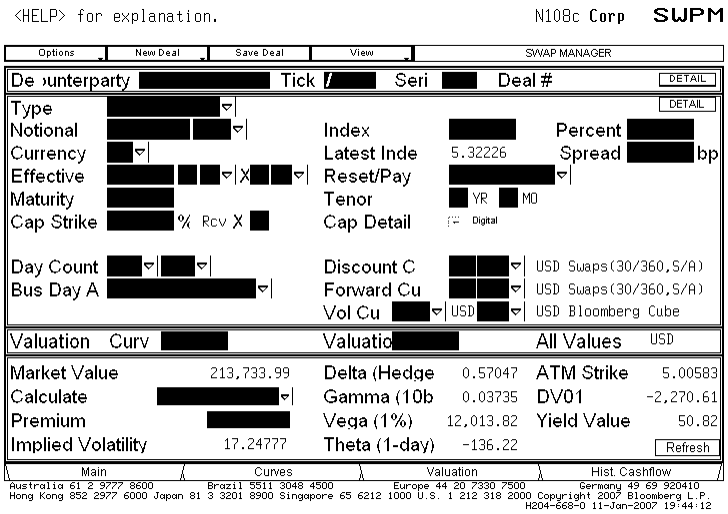


Exhibit E.6-2: SWPM Cash Flow



To access other interest rate products on SWPM, you click 'New Deal.' This will bring down a menu of other interest rate derivatives. From the drop-down menu, you can click one of the other interest products (e.g., caps, floors, or collars). For example, to evaluate a Cap you would click "Cap" (this screen can also be accessed by typing BCCF). This brings up the following screen (Exhibit E.6-3) for evaluating a CAP using LIBOR:

Exhibit E.6-3: SWPM for a CAP



Other Swap Functions

Some of the other Bloomberg swap functions to note are

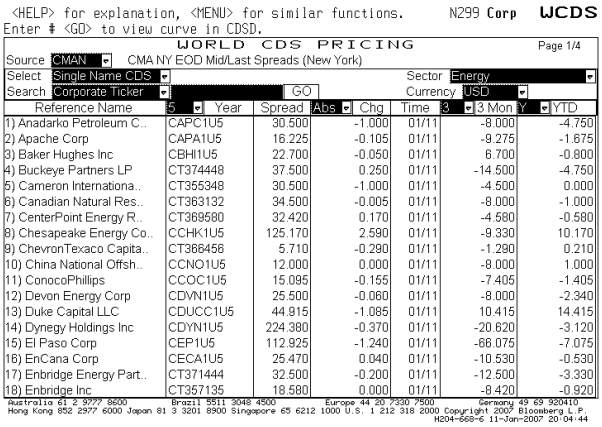
- **IRSM** displays a menu of functions for analyzing interest rate swaps.
- **USSW** provides data useful in analyzing and valuing swaps (e.g., LIBOR and futures markets information).
- **ASW** determines the relative value of a selected bond through the interest rate swap market.
- **FWCV** projects forward rates and interest rate swap curves
- **OVSW** values swaptions.
- **BCCF** creates and values interest rate caps, floors, and corridors.
- **SWPL** evaluates more complex swaps, such as callable and putable swaps.

Credit Derivatives

Bloomberg also provides a number of functions for accessing information and analytics on credit default swaps and other credit derivatives. The following functions are a good way to get started:

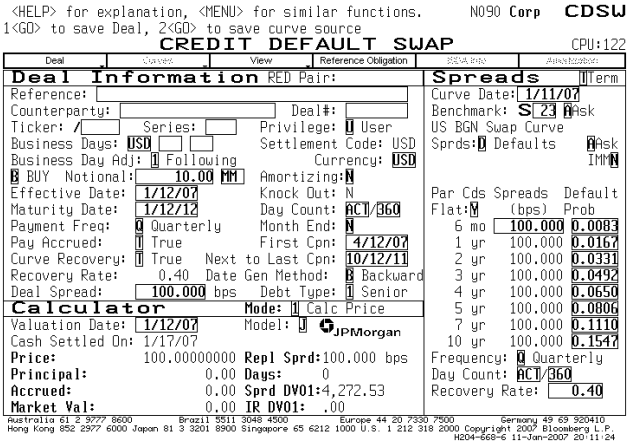
- **WCDS – Credit Default Swap Prices**: This function shows swap prices by company and industry.

Exhibit E.6-4: WCDS



- **CDSW – Credit Default Swap Calculator:** This function calculates swap values using two CDS valuation models: Hull-White Model and JP Morgan Model (See Exhibit E.6-5).

Exhibit E.6-5: CDSW



- **ASW** calculates the asset swap spread and z-spread on a bond to aid in determining the swaps value. Enter Corporation's Ticker [CORP] to find page of the corporation's bonds. Select bond, and type ASW.

- **CDSN** calculates a basket of default swaps

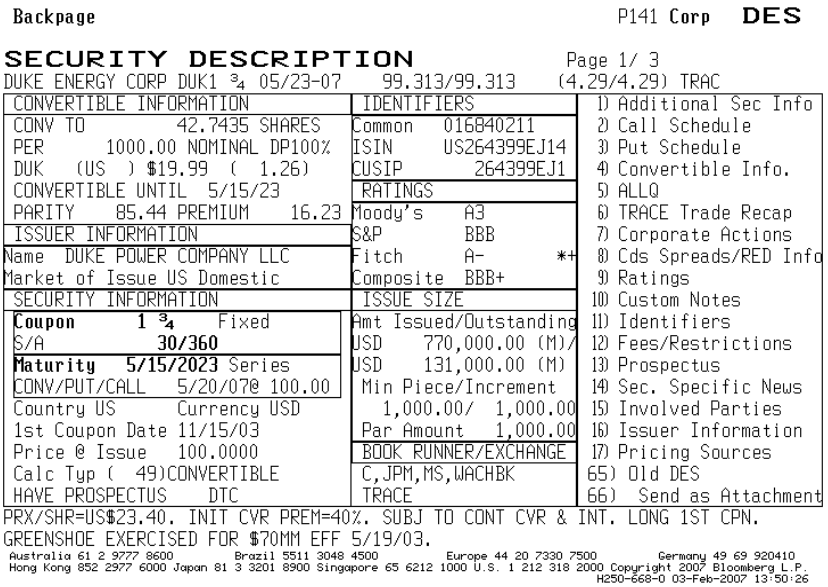
- **CDSD** displays credit default swap spread curves

Convertible Bonds

Convertible bonds and functions for analyzing them can be access from the company's equity menu. For example, to access Duke Energy's convertible bonds:

- Enter DUK [EQUITY] <go>
- On the Duke Menu, click "Option, Warrants, and Convertibles"
- On the Options, Warrants, & Convertible Screen, click "Convertible Information Table"
- On the resulting Convertible Security Screen, move cursor to convertible bond of interest and click to bring up menu.
- On the Menu Screen, type DES to bring up the Description Screen on the Convertible (see Exhibit E.6-6).

Exhibit E.6-6: Convertible Bond Description



Once a convertible bond is loaded, a number of functions can be used to evaluate the security:

- **CBMU**: This function brings up the Convertible Bond Main Menu. On this screen, you can access all of Bloomberg's convertible bond functions.
- **CNVG:** This function graphs the convertible's corporate bond price and stock price.
- **OVCV:** This function determines the fair value of the convertible.

Mortgage-Backed Securities:

The following functions can help you get started on mortgage-backed and asset-backed securities:

1. To look up specific agency MBS:
   - FHLMC (Freddie Mac Securities): Enter **FHR** [MTGE] <go>
   - GNMA: **GNR** [MTGE] <go>
   - FNMA: **FNR** [MTGE] <go>

2. For an agency MBS finder, enter [MTGE] **MAX**

3. Useful MBS functions:
   - [MTGE] **CLAS** – Glossary of CMO Class Types
   - **YT** – Yield table
   - **CFG** – Cash Flow Graph
   - **WALG** – Weighted Average Life Graph
   - **CLC** – Collateral Composition
   - **CPH** - Historical prepayments
   - **CLC** – Collateral information
   - **VALL** displays a table of dealer prepayment assumptions
   - **PVG** shows chart of prepayment model available on Bloomberg
   - **DV** displays prepayment model based on your select scenarios
   - **YT** values a mortgage or asset-backed security given different assumptions.

E.7 OTHER USEFUL BLOOMBERG FUNCTIONS

Information and analytical functions on all of the derivatives examined in this text can be accessed from the Bloomberg system. Below are a number of other Bloomberg functions that can be used for evaluating derivatives, the derivative's underlying asset, or a portfolio.

1. **YAS** estimates interest rate risk and hedge ratios need to hedge selected securities.

2. **PSA** creates a report forecasting the portfolio performance based interest rate and exchange rate scenarios.

3. **PTED** calculates the spread between a corporate and government security and the corresponding Eurodollar futures strip for a selected portfolio.

4. **OPSF** takes portfolio created in PRTU and allows you to load a program with options and evaluate the portfolio for selected scenarios.

5. **VOL** compares historical volatilities with implied volatilities.

6. **HRH** displays a historical return histogram for a selected security.

7. **HVT** shows historical price or yield volatility for a selected security.

8. **FRD** calculates forward exchange rates.

9. **FWCV** projects forward interest rates and forward swaps rates.

10. **BTMM** monitors major rates and economic information for selected countries.

11. **WEIF** displays World Equity Index Futures.

12. **WBF** displays World Bond Futures.

13. **WIR** displays World Interest Rate Futures.

14. **GLCO** displays Global Commodity Prices. (The Commodity screen does not show futures exclusively, so be sure to select the correct security.)

15. **PSFX** creates and evaluates currency swap positions.

16. **IYC** displays information on yield curves for different countries.

BLOOMBERG DERIVATIVE EXERCISES USING BLOOMBERG

CHAPTER 1: OPTION CONCEPTS AND FUNDAMENTAL STRATEGIES

1. Select a stock of interest and identify the exchange-traded options traded on it.

   Example: Options on IBM
   - Enter IBM [EQUITY]
   - On IBM Menu, click "Option, Warrants, and Convertibles"
   - Click OMON

   Alternative: Enter IBM [EQUITY] OMON

   For a display example of the OMON Screen, see Exhibit E.2-1.

2. Examine the contracts traded on the Chicago Board of Trade.
   - Type CEM to bring up "Contract Exchange Menu"
   - On Contract Exchange Menu, click CBT

   For display examples of the CEM and CBT Screens, see Exhibits E.4-15 and E.4-16.

3. Examine the contracts traded on the Chicago Board of Options Exchange
   - Type CEM to bring up "Contract Exchange Menu"
   - On Contract Exchange Menu, click CBO

4. Examine the contracts traded on the Chicago Mercantile Exchange
   - Type CEM to bring up "Contract Exchange Menu"
   - On Contract Exchange Menu, click CME

CHAPTER 2: THE OPTION MARKET

1. Determine the recent prices and option details on an exchange option on a particular stock.

   Example: Information on options on IBM
   - Enter IBM [EQUITY] OMON
   - Set cursor on option of interest and left quick (use contract month key to see option by expiration)
   - On resulting menu, access the following functions: DES, QRM, TSM, and GPO

   For a display example of the IBM Description Screen, see Exhibit E.2-1.

2. Determine the most actively traded options on a particular stock.

   Example: Enter IBM [EQUITY] OMST

For a display example of the OMST Screen for most actively traded options, see Exhibit E.2-9.

3. Determine the most actively traded stock options on a particular exchange.

   Example: Most active stock options
   - Press [EQUITY]
   - Press Derivative
   - Click MOSO function
   - Alternative: Enter [EQUITY] MOSO

   For a display example of the MOSO Screen, see Exhibit E.2-18.

4. Determine the recent prices and option details on an index.

   Example: Information on options on the SP 100
   - Enter: OEX [INDEX] OMON
   - Set cursor on option of interest and left quick
   - On resulting menu, access the following functions: DES, QRM, TSM, and GPO

5. Determine the most actively traded options on a particular index.

   Example: Enter OEX [INDEX] OMST

6. Determine the recent prices and option details for exchange-traded options on a spot currency.
   Example: British Pound
   - Type CTM
   - Click "Spot Currency Options"
   - Click British Pound and OMON

   For a display example of the OMON Screen for British Pound, see Exhibit E.3-5.

   Example: British pound options on Philadelphia Exchange
   - Type FCO and then select British Pound to bring up OMON screen on British Pound options traded on PHLX
   - Set cursor on option of interest and left quick
   - On resulting menu access the following functions: DES, QRM, TSM, and GPO

7. Determine the most actively traded PHLX options on a currency.

   Example: PHLX British pound options
   - Type FCO and then select British Pound to bring up OMON screen on British Pound options traded on PHLX
   - Type OMST

CHAPTER 3: OPTION STRATEGIES

1. Select an exchange call and put option on a company and evaluate the following option strategies with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

   Example: Construct a profit table and graph for options on IBM
   - Enter IBM [EQUITY] OSA; on the OSA screen enter stock position (if any) and then click "Add Options" to identify IBM options (remember the standard size on a stock option contract is 100 options)
   - Input positions; after loading, type 1 and press <go>
   - Click "Graph" to see position

   For a display example of the OSA Screens for IBM, see Exhibits E.2-2 and E.2-3. For an example of the profit graph and table for a straddle purchase formed with IBM options, see Exhibits E.2-4.

2. Find the latest news and financial information about the stock you selected in Question 1.

   Example: To access news and information on IBM:
   - Enter IBM [EQUITY]
   - From the menu, click the functions of interests

3. Select an exchange call and put option on an index and evaluate the following option strategies with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

   Example: Profit table and graph for options on S&P 500:
   - Enter SPX [INDEX] OSA
   - On the OSA screen enter index position (if any) and then click "Add Options" to identify S&P 500 options
   - Input positions; after loading, type 1 and press <go>
   - Click "Graph" to see position

4. Evaluate a portfolio insurance strategy using OSA. Assume your portfolio is correlated with the S&P 500 and select S&P 500 put option contracts expiring at or near the future date you want to evaluate your portfolio. In using OSA to construct a profit table, select positions on the index that best match the value for your portfolio (e.g., 1,000 for a portfolio worth 1,000 hypothetical shares of the index times the index value). In determining the number of put options on the S&P 500 needed to hedge your index portfolio, remember the S&P 500 spot options have a 100 multiplier.
   - Enter SPX [INDEX] OSA
   - On the OSA screen enter index position (e.g., 1000)
   - Click "Add Options" to input put positions (10 puts (given 100 multiplier) with expiration near portfolio liquidation date

- After loading, type 1 and press <go>
- Click "Graph" to see position.
- Click "Graph" on Graph Screen to bring up a menu; select "Market Value"

CHAPTER 4: FUNDAMENTAL OPTION PRICE RELATIONS

1. Select several exchange-traded call and put options on a stock, currency or index from Bloomberg's OMON. Given the option prices, determine if they satisfy some of the boundary conditions presented in Chapter 4. Note: The stock options that you select are likely to pay a dividend that needs to be incorporated in the boundary conditions. To avoid the complications of dividend payments, you may want to look for options that expire in the near term.

   Example: IBM, enter IBM [EQUITY] OMON

CHAPTER 5: THE BINOMIAL OPTION PRICING MODEL

1. Estimate the binomial (trinomial) price of call and put options on a selected stock using the Bloomberg OV function. Examine the model's call and put values and stock price curve generated from Bloomberg. In valuing your option, try to select an option on a stock that is not expected to go ex-dividend during the option's expiration period. You may want to select an option with a short expiration period. Use either Bloomberg defaulted values for the stock's volatility and risk-free rate or input your own.

   Example: Binomial OPM values on IBM call and put options. To access and value options on IBM:
   - Enter IBM [EQUITY] OMON
   - Set cursor on option of interest (select near-term option) and left quick OV.
   - On the OV screen, select Trinomial; on dividend screen, select discrete dividends and check to make sure the stock has no future dividend during the life of the option (if so select another one or set dividend to zero); on OV screen you can change the volatility or keep the defaulted one.
   - Press <help> for information on the OV program's defaults

   For an example of the OV Screen for an IBM option using the trinomial model, see Exhibit E.2-7.

2. Using the 'Binomial Option Pricing Model' Excel Program, determine the price of the call and put on the stock given the information on the options provided by Bloomberg (make the number of subperiods at least 30). Compare your Excel BOPM value to the Bloomberg's trinomial model value.

3. Using the Bloomberg historical volatility function (HVG), identify the historical volatility on the stock you selected in Question 1.

Example: To access options on IBM, enter IBM [EQUITY] OMON; type HVG.

For a display example of the HVG Screen, see Exhibit E.4-20.

4. Use Bloomberg's BTMM function to determine the risk-free rate for BOPM: Type BTMM.

CHAPTER 6: THE BINOMIAL PRICING OF OPTIONS ON DIVIDEND-PAYING STOCKS AND STOCK INDICES

1. Estimate the binomial (trinomial) price of call and put options on a selected stock expected to pay dividends using the Bloomberg OV function. Examine the model's call and put values and stock price curve generated from Bloomberg. Select an option with some time to expiration to ensure the stock will pay future dividends. Use either Bloomberg defaulted values for the stock's volatility, risk-free rate, and dividends or input your own.

   Example: Binomial OPM Value on IBM call and put options. To access options on IBM:
   - Enter IBM [EQUITY] OMON
   - Set cursor on option of interest (select a longer term option) and left quick OV.
   - On the OV screen, select Trinomial; on dividend screen, select discrete dividends; on OV screen you can change the volatility or keep the defaulted one (type help for information on program's defaults).

   For an example of the OV Screen for an IBM option using the trinomial model, see Exhibit E.2-7.

2. Using the 'Known-Dividend Payment Binomial Model' Excel Program, determine the price of the call and put on the stock you selected in 1 given the information provided by Bloomberg on the options and the underlying stock's dividend payments and ex-dividend dates. Compare your Excel BOPM values to Bloomberg's trinomial model's values.

3. Estimate the binomial (trinomial) price of a call or put option on a stock index using the Bloomberg OV function. Examine the model's option value and stock price curve generated from Bloomberg. Use either Bloomberg's defaulted values for the stock's historical volatility, risk-free rate, and dividend yield or input your own.

   Example: Binomial OPM Value on S&P 500 call and put. To access options on S&P 500:
   - Enter SPX [INDEX] OMON
   - Set cursor on option of interest and left quick OV
   - On the OV screen, select Trinomial; on dividend screen, input dividend flow; on OV screen you can change the volatility or keep the defaulted one (type help for information on program's defaults).

   For an example of the OV Screen for an S&P 500 spot index option using the trinomial model, see Exhibit E.3-3.

4. Using the Bloomberg historical volatility function, identify the historical volatility of the stock index you selected in Question 3.

   Example: S&P 500, enter SPX [INDEX] OMON; type HVG.

CHAPTER 7: THE BINOMIAL PRICING OF OPTIONS ON CURRENCIES AND BONDS

1. Using the Binomial Model Excel Program, determine the prices of a call and put on an exchange-traded spot currency option. Find information on the options and BOPM inputs using Bloomberg: OMON to select option; DES to obtain information; HVG to find historical volatility; BTMM to find U.S. and foreign interest rate.

   Example: Binomial OPM value of a British pound call or put option. To access PHLX options on the British pounds:
   - Type FCO <go>
   - Select British Pound to bring up OMON Screen.
   - Set cursor on option of interest and left quick DES
   - On DES Screen, you will find current price (Spot $/BP), option exercise price, option expiration, and market price of the option.
   - Type HVG to access graph and table of historical volatility
   - Type BTMM to find U.S. rates and United Kingdom rates
   - Input information in Binomial Model Excel Program to determine the binomial value of the option

CHAPTER 8: THE BLACK-SCHOLES OPTION PRICING MODEL

1. Estimate the Black-Scholes values of call and put options on a selected stock using the Bloomberg OV function. Examine the model's option value and stock price curve generated from Bloomberg's OV function. Examine the option's Greeks: delta, theta, gamma, vega and rho. Use either Bloomberg's defaulted values for the stock's historical volatility, risk-free rate, and dividend yield or input your own.

   Example: Black-Scholes OPM values on IBM call and put. To access options on IBM:
   - Enter IBM [EQUITY] OMON
   - Set cursor on option of interest and left click OV
   - On the OV screen, select Black-Scholes; on dividend screen, select dividend yield; on OV screen you can change the volatility or keep the defaulted one.

   For a display example of the OV Screen valuing IBM options using the Black-Scholes model, see Exhibit E.2-6.

2. Using the Black-Scholes Excel Program, determine the price of the call and put options on the

stock you selected in Question 1 using the option information from Bloomberg's OV Screen on the options. Compare your Excel and Bloomberg B-S values.

3. Using Bloomberg's SKEW function, examine the volatility smile on the stock you selected in Question 1 given different expirations. Identify the implied volatility that best relates to the option you selected in Question 1.

   Example: Volatility Smile for IBM:
   - Enter IBM [EQUITY] SKEW
   - On SKEW Graph Screen, identity volatility with expiration and exercise price closest to the expiration and exercise price on the option you selected in question 1.

   For a display example of the SKEW Screen for IBM, see Exhibit E.2-17.

4. Estimate the Black-Scholes values of call and put options on an index using the Bloomberg OV function. Examine the option's Greeks: delta, theta, gamma, vega and rho. Use either Bloomberg's defaulted values for the index's historical volatility, U.S. risk-free rate, and dividend yield or input your own.

   Example: B-S OPM values on S&P 500 call and put. To access options on S&P 500:
   - Enter SPX [INDEX] OMON
   - Set cursor on option of interest and left click OV
   - On resulting menu click OV
   - On the OV screen, select Black-Scholes; on dividend screen, select dividend yield; on OV screen you can change the volatility or keep the defaulted one (type help for information on program's defaults).

5. Using Bloomberg's SKEW function, examine the volatility smile on the index you selected in Question 4 for different expirations. Identify the implied volatility that best relates to the index option you selected in Question 4.

   Example: Volatility smile for S&P 500:
   - Enter SPX [INDEX] SKEW
   - On SKEW Graph Screen, identity volatility with expiration and exercise price closest to the expiration and exercise price on the option you selected in Question 4.

CHAPTER 9: EMPIRICAL TESTS, APPLICATIONS OF THE OPTION PRICING MODEL AND EXOTIC OPTIONS

1. Select exchange call and put options on a stock and evaluate the following option strategies for different holding periods with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

Example: Construct a profit table for options on IBM for different holding periods

- Enter IBM [EQUITY] OSA; on the OSA screen enter stock position (if any) and then click "Add Options" to identify IBM options
- Input positions; after loading, type 1 and press <go>
- Click "Graph" to see position.
- On graph select different evaluation dates (Eval Dates)
- Press <Help> for information on the OSA

For a display example of the OSA Screens for IBM, see Exhibits E.2-2 and E.2-3. For an example of the profit graph and table with different evaluation periods for a straddle purchase formed with IBM options, see Exhibits E.2-4.

2. Generate a profit graph and table for a calendar call or put spread using the Bloomberg OSA function.

   Example: Construct a profit table for a calendar spread on IBM for different holding periods:

   - Enter IBM [EQUITY] OSA
   - On the OSA screen click "Add Options" to identify IBM options
   - Select call (or put) options with different expirations
   - After loading, type 1 and press <go>
   - Click "Graph" to see position. On graph select different evaluation dates (Eval Dates)
   - Press <Help> for information on the OSA

3. Using the Bloomberg OV function find the delta, theta, gamma, vega and rho values for call and put options on a selected stock. On the OV graph, examine the Greeks (delta, gamma, and vega) values for different stock prices. Use either Black-Scholes or the Trinomial model and either keep Bloomberg's default values for the stock's volatility, risk-free rate, and dividend yield (or dividends for Trinomial) or input your own.

   Example: Black-Scholes Greek values on IBM call and put options. To access options on IBM:

   - Enter IBM [EQUITY] OMON
   - Set cursor on option of interest and left click.
   - On resulting menu click OV. On the OV screen, select Black-Scholes; on dividend screen, select dividend yield or dividends; on OV screen you can change the volatility or keep the defaulted one.
   - On the graph screen (page 2 on OV Screen), change Y-axis: option price, delta, gamma, and vega.

   For a display example of the OSA Screen showing the Gamma Graph for IBM, see Exhibit E.2-8.

4. Using the Bloomberg Exotic Option Valuation function, OVX, find the values, Greeks, and other information for the following exotic options formed with a selected stock or index:

- Chooser Option
- Compound
- Binary option: Cash or nothing or asset or nothing
- Lookback
- Asian

Use Bloomberg defaulted values for the stock's historical volatility, risk-free rate, and dividend yield or input your own.

Example: Exotic option values for IBM options. To access options on IBM:
- Enter IBM [EQUITY] OMON
- On the OMON Screen, type OVX
- On the OVX Menu Screen, select exotic option: Chooser Option, Compound, Binary (Digital) option, Lookback, and Asian.

For a display example of the OVX Screen and the OVX Screen for a chooser option formed with IBM options, see Exhibit E.2-12.

CHAPTER 10: FUTURES AND FORWARD CONTRACTS

1. Find descriptions, recent prices, outstanding contracts, and other information on an exchange-traded commodity futures contract: agriculture and livestock, energy and environment, and metals and industrials.

   Example: Wheat futures contract information:
   - Type CTM to bring up "Contract Table Menu"
   - Click WHET (Wheat)
   - On Wheat screen, type the number of the contract of interest or move your cursor to that contract and click
   - Click CT to bring up the "Contract Table" and type DES

   For specific contract:
   - On "Contract Table," set cursor on contract of interest and left click to bring up menu.
   - Click "Contract Information" and then "Description"
   - On Description Screen, click "Related Function": FHG (Futures History Graph) and EXS (expiration schedule)

   Alternative: Type ticker or identifier with 'a' and [CMDTY]. For crude oil futures listed on the New York Mercantile Exchange (NYMEX):
   - NGa [CMDTY]
   - Click "Contract Information"
   - Click Description

For a display example of the CTM Screen, see Exhibit E.4-1; for a display example of a wheat futures contracts on CBT, see E.4-9; for an example of the Description Screen for a specific

wheat futures contract, see Exhibit E.4-10.

2. Find descriptions, recent prices, outstanding contracts, and other information on different types of exchange-traded financial futures contracts.

   Example: S&P 500 futures contract information:
   - Type CTM to bring up "Contract Table Menu"
   - Click "Equity Index" (24)
   - On Equity Index Screen, page down to find the contract of interest and click
   - Click CT to bring up the "Contract Table" and type DES

   For specific contract:
   - On "Contract Table," set cursor on contract of interest and left click to bring up menu
   - Click "Contract Information" and then "Description"
   - On Description Screen, click "Related Function": FHG (Futures History Graph), EXS (expiration schedule), and FVD (fair value detail)

   Alternative: Type ticker or identifier with 'a' and press [INDEX]. For S&P 500 futures contracts:
   - SPa [INDEX]
   - Click "Contract Information" and then "Description"

For a display example of equity index futures contracts from CTM, see E.4-2; for a display example of S&P 500 futures contracts, see E.4-3; for an example of the Description Screen for a specific S&P 500 futures contract, see Exhibit E.4-4.

3. Find descriptions, recent prices, outstanding contracts, and other information on an exchange-traded interest rate futures contracts.

   Example: Three-Month Eurodollar futures listed on the CME
   - Type CTM to bring up "Contract Table Menu"
   - Click INTR (Interest Rate)
   - On INTR screen, page down to the contract of interest (EDA) and click
   - Click CT to bring up the "Contract Table"
   - On "Contract Table," set cursor on contract of interest and left click to bring up menu
   - Click "Contract Information" and "Description"

4. Find descriptions, recent prices, outstanding contracts, and other information on different types of exchange-traded currency futures contracts.
   Example: British pound futures contract information:
   - Type CTM to bring up "Contract Table Menu"
   - Click CURR (18)
   - On CURR Screen, page down to the contract of interest (British Pound) and click
   - Click CT to bring up the "Contract Table" and type DES

   For specific contract:

- On “Contract Table,” set cursor on contract of interest and left click to bring up menu.
- Click “Contract Information and then “Description”
- On Description Screen, click a function from “Related Functions”

Alternative: Type ticker or identifier with ‘a’ and [CMDTY]. For British pound:

- GBPa [CRNCY]
- Click “Contract Information and then “Description

5. Find recent bid and ask rates on spot and forward rates on specific currency.

   Example: British pound futures spot and forward contracts bid and ask rates:
   - Enter GBP [CRNCY] BBC

6. Find the number of T-bonds or T-notes that can delivered on a selected T-bond or T-note futures contract and identify the cheapest

   Example: 5-year T-Note
   - Type CTM to bring up “Contract Table Menu”
   - Click BOND (16)
   - On BOND screen, page down to find the contract of interest and then click (e.g., US Treasury Note, 5 Yr (FVA))
   - Click CT to bring up the “Contract Table”
   - On “Contract Table,” set cursor on contract of interest and left click to bring up menu
   - Click “Contract Information” and then “Description”
   - On description page, click DLV (Cheapest to Deliver)

   Alternative: Type ticker or identifier with ‘a’ and [CMDTY]. For 5-year Treasury notes:
   - FVa [CMDTY]
   - Click “Contract Information” and then “Description”
   - On Description Screen, click DLV from “Related Functions”

   Alternative: Access futures exchange. For 5-year Treasury notes:
   - Type CEM
   - Click CBT (Chicago Board of Trade)
   - Page down to find US Treasury Note, 5 Yr (FVA) and click
   - Click CT
   - Type DLV

   For a display example of the DLV Screen showing cheapest to deliver bonds, see Exhibit E.4-23.

7. Examine the prices on global commodity prices; type GLCO.

CHAPTER 11: PRCING FUTURES AND FORWARD CONTRACTS

1. Using Bloomberg's FVD (Fair Value Detail) function, find the fair value and carrying cost value (Theo Value) on an exchange-traded stock index futures contract.

Example: S&P 500 futures contract information:

- Enter SPa [INDEX]
- Click "Contract Information" and then Description
- Click FVD under Related Functions

For a display example of the FVD Screen for S&P 500 futures contract, see Exhibit E.4-5.

2. Access Bloomberg information on a currency futures contracts and U.S. and foreign interest rates and then determine the equilibrium price on a currency futures contract using the interest rate parity model. Compare the equilibrium price to the market price.

Example: Equilibrium price of British pound

For information to calculate the interest rate parity value for a British pound futures contract:

- Type CTM to bring up "Contract Table Menu"
- Click CURR (18)
- On CURR screen, page down to the contract of interest (British Pound)) and click
- Click CT to bring up the "Contract Table" and type DES
- On "Contract Table," set cursor on contract of interest and left click to bring up menu:
- Click "Contract Information" and then "Description"
- Find current futures price, expiration (EXS), and current spot exchange rate (TKC).
- For country interest rates information, type BTMM

3. Access Bloomberg information on Eurodollar futures contracts and U.S. interest rates and then determine the equilibrium price on a Eurodollar futures contract using the carrying cost model. Compare the equilibrium price to the market price.

Example: Three-Month Eurodollar futures listed on the CME

For information:

- Type CTM to bring up "Contract Table Menu"
- Click INTR (Interest Rate)
- On INTR screen, page down to the contract of interest and click
- Click CT to bring up the "Contract Table"
- On "Contract Table," set cursor on contract of interest and left click to bring up menu
- Click "Contract Information" and "Description"
- On Description Screen (or Contract Table) find the futures' price and expiation
- For interest rate information (e.g., LIBOR), type BTMM

CHAPTER 12: OPTIONS ON FUTURES CONTRACTS

1. Find descriptions, recent prices, outstanding contracts, historical implied volatility, volatility smile, and other information on an exchange-traded commodity futures option contract: agriculture and livestock, energy and environment, and metals and industrials.

Example: Wheat futures option contract:

- Type CTM to bring up "Contract Table Menu"
- Click WHET (Wheat)
- On Wheat CTM screen, page down to the contract of interest and click
- Click OMON to bring up the "Option Contract Table"
- On "Option Contract Table," set cursor on contract of interest and left click DES
- On Description Screen, click some of the functions from "Related Function" menu
- Type HVG for historical volatility
- Type SKEW for volatility smile.

Alternative: Type ticker or identifier with 'a', press [CMDTY], and type OMON. For crude oil:

- Enter: CLa [CMDTY] OMON
- On "Option Contract Table," set cursor on contract of interest and left click DES

For a display example of the CTM Screen, see Exhibit E.4-1; for a display example of futures and futures option contracts on the Wheat CTM Screen, see Exhibit E.4-8; for example of Description Screen on a wheat futures option contract, see Exhibit E.4-11.

2. Find descriptions, recent prices, outstanding contracts, and other information on different types of exchange-traded financial futures contracts.

   Example: S&P 500 futures option contract information:

   - Type CTM to bring up "Contract Table Menu"
   - Click "Equity Index" (24)
   - On Equity Index Screen, page down to the contract of interest (SPA) and click
   - Click OMON to bring up the "Options Contract Table"
   - On "Option Contract Table," set cursor on contract of interest and left click DES
   - On Description Screen, click some of the functions from "Related Function" menu
   - Type HVG for historical volatility
   - Type SKEW for volatility smile

   Alternative: Type ticker or identifier with 'a', press [INDEX], type OMON. For S&P 500 futures contracts:

   - SPa [INDEX] OMON
   - On "Option Contract Table," set cursor on contract of interest and left click DES

For a display example of the CTM Screen, see Exhibit E.4-1; for a display example of futures and futures option contracts on Equity Index CTM Screen (futures options are in gray), see Exhibit E.4-3; for an example of HVG Volatility Graph on S&P 500, see Exhibit E.4-20; for an example of HIVG graph, see Exhibit E.4-21.

3. Find descriptions, recent prices, outstanding contracts, and other information on different types of exchange-traded currency futures contracts.

Example: British pound futures contract information:

- Type CTM to bring up "Contract Table Menu"
- Click CURR
- On CURR screen, page down to the contract of interest and click
- Click OMON to bring up the "Options Contract Table"
- On "Option Contract Table," set cursor on contract of interest and left click DES
- On Description Screen, click some of the functions from "Related Function" menu
- Type SKEW for volatility smile

Alternative: Type ticker or identifier with 'a', press [CMDTY], type OMON. For British pound:

- GBPa [CRNCY] OMON
- Click contract of interest

4. Estimate the Black-Scholes Option Model values of call and put options on a commodity futures contract using the Bloomberg OV function. Examine the futures option's Greeks: delta, theta, gamma, vega and rho. Use either Bloomberg defaulted model input values or input your own.

   Example: Black-Scholes OPM values on wheat futures call and put options:

   - Type CTM to bring up "Contract Table Menu"
   - Click WHET (wheat)
   - Click OMON to bring up the "Options Contract Table"
   - On "Option Contract Table," set cursor on contract of interest and left click OV to bring up option value screen

For a display example of the OV Screen for a wheat futures option, see Exhibit E.4-13.

5. Using the "Black Futures Option Excel Program", determine the prices on call and put commodity futures options you selected in Question 4. Compare your Excel Black futures option values to the Bloomberg B-S values.

6. Using Bloomberg's OV function, determine the values of the call and put options on a currency futures contract.
   Example: OPM value of call and put options on British pound futures:

   - Type CTM to bring up "Contract Table Menu"
   - Click CURR
   - Click OMON to bring up the "Options Contract Table"
   - On "Option Contract Table," set cursor on contract of interest and left click OV to bring up option value screen.

7. Using the "Black Futures Option Excel Program", determine the prices on the call and put currency futures option contracts you selected in Question 6. Compare your Excel Black futures option values to the Bloomberg B-S values.

8. Select an exchange-traded futures and futures options on either a commodity or financial futures contract and evaluate the following futures and futures option strategies with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

   Example: To construct a profit table for S&P 500 futures and futures options:
   - Type CTM to bring up "Contract Table Menu"
   - Click "Equity Index"
   - On Equity Index Screen, page down to contract of interest (S&P 500 futures, SPA) and click
   - Click CT, Contract Table
   - On CT Screen, type OSA
   - On the OSA Screen enter futures position (if any) and then click "Add Options" to identify futures options
   - Input futures option positions; after loading, type 1 and press <go>
   - Click "Graph" to see position.

   For a display example of the OSA Screen for S&P 500 futures, see Exhibit E.4-6.

CHAPTER 13: MANAGING EQUITY POSITIONS WITH STOCK INDEX DERIVATIVES

1. Using the HEDG function, calculate the number of futures contracts needed to hedge the systematic risk of a selected stock.

   Example: IBM
   - Enter: IBM [EQUITY] HEDG

   For a display example of the HEDG Screen for IBM, see Exhibit E.4-25.

2. Set up an equity portfolio consisting of at least four stocks using PRTU. Given the portfolio's market value and average beta, determine the number of S&P 500 futures contracts needed to hedge the portfolio's position at a specified future date (select a futures contract expiring closest to that date).

   Example: Construct Energy Stock Portfolio (see Section E.5) and determine the number of S&P 500 futures contracts needed to hedge the portfolio.

   To construct portfolio:
   - Type PRTU
   - On PRTU Screen, click "Create New" button
   - Input information
   - Hit Menu
   - Type PER and 1 <go>

- Type RPT
- From RPT Screen, find portfolio beta and market value
- For other information on your portfolio, type PMEN to access a menu of functions

For display examples of the PRTU and RPT Screens for forming the Energy Stock Portfolio, see Exhibits E.5-1 and E.5-2. Note: On the RPT Screen, the Energy Stock Portfolio Value is $291,070 and the portfolio's Beta is1.27

To access information on S&P 500 futures:
- Enter SPa [INDEX] CT
- Click contract with expiration closest to specified futures date

Use price sensitivity model, to determine number of futures contracts.

3. For the stocks in the equity portfolio you formed using PRTU in Question 2, construct and evaluate put-insured positions on some of the stocks in your portfolio using OPSA/OSA function.

   Example: Construct Energy Stock Portfolio (See Section E.5).
   - Type PRTU
   - On PRTU Screen, click the name of the portfolio you constructed in Question 2.
   - Type PMEN to access menu of functions and click "Equity Analytics"
   - On the Equity Analytics Screen, access the option scenario screen (OPSA/OSA)
   - On the OSA Screen, press amber "Source" key and then "Portfolio" to find your portfolio in PRTU, and then click your portfolio
   - Click "Add Options" to input option positions for selected stocks
   - Click "Graph" to see profit table and graph for each hedged stock position

   For display examples of the OPSA Screen and profit table on the Energy Stock Portfolio, see Exhibits E.5-4 and E.5-5.

CHAPTER 14: MANAGING FOREIGN CURRENCY POSITIONS WITH DERIVATIVES

1. Examine current spot, forward, and cross exchange rates for 11 key currencies using Bloomberg's FXC function.

   Example: Enter [CRNCY] FXC

   For display example of the FXC Screen, see Exhibit E.4-27.

2. Find the current spot and forward rates on a selected currency using Bloomberg's BQ function:

   Example: For British pound, enter GBP [CRNCY] BQ

For display example of the BQ Screen, see Exhibit E.4-28.

CHAPTER 15: MANAGING FIXED-INCOME POSITIONS WITH INTEREST-RATE DERIVATIVES

1. Find descriptions, recent prices, outstanding contracts, and other information on different types of exchange-traded interest rate futures and futures option contracts.

   Example: T-Bond futures and futures option contracts
   - Type CTM to bring up "Contract Table Menu"
   - Click "BOND"
   - On Bond Screen, page down to the contract of interest and click
   - Click CT to bring up the futures contracts and OMON to bring up the "Options Contract Table"
   - On option table or contract table, set cursor on contract of interest and left click to bring up menu
   - Click "Contract Information" and then "Description"
   - On Description Screen, click some of the function from "Related Function" menu.
   - For T-Bond or T-Note contracts, click DLV to find cheapest to deliver bond
   - Type HIVG for historical implied volatility
   - Type SKEW for volatility smile

For a display example of the CTM Screen, see Exhibit E.4-1; for an example of a Description Screen for a T-Bond futures contract, see E.4-18; for an example of HIVG graph, see Exhibit E.4-21; for an example of DLV Screen, see Exhibit E.4-23.

2. Select an exchange-traded futures and futures option on a T-bond or T-note and evaluate the following futures option strategies with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

   Example: To construct a profit table for T-note futures and futures options:
   - Type CTM to bring up "Contract Table Menu"
   - Click "Bond"
   - On Bond Index Screen, page down to the contract of interest and click (e.g., 5-year T-note, FVA)
   - Click CT
   - Type OSA
   - On the OSA screen enter futures position (if any) and then click "Add Options" to identify futures options
   - Input positions; after loading, type 1 and press <go>
   - Click "Graph" to see position

3. Select an exchange-traded futures and futures option on an interest rate contract and evaluate the following futures option strategies with a profit table and graph using the Bloomberg OSA function: call purchase, put purchase, straddle purchase, straddle sale, synthetic long position, or synthetic short position.

   Example: To construct a profit table for Eurodollar futures and futures options:
   - Type CTM to bring up "Contract Table Menu"
   - Click "Interest Rate"
   - On Interest Rate Screen, page down to the contract of interest and click (e.g., Eurodollar, three month, CME)
   - Click CT
   - Type OSA
   - On the OSA screen enter futures position (if any) and then click "Add Options" to identify futures options
   - Input positions; after loading, type 1 and press <go>
   - Click "Graph" to see position

4. Using the FYH function, determine the number of futures contracts needed to hedge a fixed income security.

   Example: Hedge IBM bond with 7.5% coupon and maturing 6/15/13
   - Enter IBM [CORP]
   - Click 7.5% IBM bond maturing 1/15/13
   - Type FYH

   For a display example of FYH Screen for hedging the IBM 7.5% bond, see Exhibit E.4-26.

5. Examine the global market for interest rate and bond futures contracts.

   Example: For world bond futures, type WBF
   Example: For world interest rate futures, type WIR

CHAPTER 16: MANAGING FIXED-INCOME POSITIONS WITH OTC DERIVATIVES

1. Using Bloomberg's SWPM function, form and evaluate a cap, floor, and collar.
   - Type SWPM
   - Click "New Deal" for menu
   - On drop-down menu, click interest rate derivative to evaluate: cap, floor, or collar

   Alternative: Type BCCF

   For a display example of SWPM Screen for evaluating a Cap, see Exhibit E.6-3.

2. Using Bloomberg's USSW function, examine some of the current information and market data on futures and LIBORs that a bank would consider in forming a cap, floor, or collar.

Type USSW

CHAPTER 17: INTEREST RATE SWAPS

1. Using Bloomberg's SWPM function, form and evaluate a generic interest rate swap.

   - Type SWPM

   For a display example of SWPM Screen for a generic interest rate swap, see Exhibit E.6-1.

2. Using Bloomberg's IRSM function, examine some of the Bloomberg functions for analyzing interest rate swaps.

   - Type IRSM

3. Using Bloomberg's ASW function, determine the relative value of a selected bond through the interest rate swap market.
   - Load bond: Enter IBM [CORP]
   - Click 7.5% IBM bond maturing 1/15/13
   - Type ASW

CHAPTER 18: SWAP DERIVATIVES: FORWARD SWAPS AND SWAPTIONS

1. Using Bloomberg's FWCV function, evaluate projected forward rates, interest rate swap curves, and other information needed to value forward swaps and swaptions.

   - Type FWCV

2. Using Bloomberg's SWPM function evaluate a cancelable swap.

   - Type SWPM
   - Click "New Deal" for menu.

3. Examine Bloomberg's SWPL function for evaluating more complex swaps.

CHAPTER 19: SWAP VALUATION

1. Examine Bloomberg's OVSW function for valuing a swaption.

   - Type OVSW

CHAPTER 20: CURRENCY AND CREDIT SWAPS

1. Examine some of the following Bloomberg functions related to evaluating and obtaining information on currency swaps:
    - PSFX for creating currency swaps
    - IYC for obtaining information on yield curves for different countries

2. Using Bloomberg's WCDS function, examine the swap prices for different companies.

    - Type WCDS

3. Using Bloomberg's ASW function, determine the Z spread on a corporate bond to determine the company's CDS value.

    - Load bond: Enter IBM [CORP]
    - Click 7.5% IBM bond maturing 1/15/13
    - Type ASW

CHAPTER 21: EMBEDDED OPTIONS

1. Select a company of interest and identify the outstanding warrants issued by the corporation. Access information and determine the option pricing model values and Greeks on one of the company's outstanding warrants.

    Example: Warrants on IBM
    - Enter IBM [EQUITY] <go>
    - On IBM Menu, click "Option, Warrants, and Convertibles"
    - On Options, Warrants, & Convertible Screen, click WCM
    - On WCM Screen, move cursor to warrant of interest and click to bring up menu
    - On Menu Screen, type DES
    - On Description Screen, click OV

    For display examples of Description Screen and OV Screen for an IBM warrant, see Exhibit E.2-16 and E.2-17.

2. Select a company of interest and identify the outstanding convertible bonds issued by the corporation. Access information on one of the company's outstanding convertibles.

    Example: Duke Energy convertible bonds
    - Enter DUK [EQUITY]
    - On Duke Menu, click "Option, Warrants, and Convertibles"
    - On Options, Warrants, & Convertible Screen, click Convertible Bond Information Table
    - On resulting Convertible Security Table, move cursor to convertible bond of interest and click to bring up menu.

- On Menu, type DES

For display example of Description Screen for a Duke convertible, see Exhibit E.6-6.

3. Analyze the convertible bond you selected in Question 2 using the following Bloomberg functions:
    a. CNVG to graph the convertible's underlying bond and stock price
    b. OVCV to determine fair value of the convertible.

CHAPTER 22: MORTGAGE- AND ASSET-BACKED SECURITIES AND THEIR DERIVATIVES

1. Select an agency MBS of interest (e.g., FHLMC, FNMA, or GNMA).
   - For FHLMC: Enter FHR [MTGE] <go>
   - For GNMA: Enter GNR [MTGE] <go>
   - For FNMA: Enter FNR [MTGE] <go>

2. Analyze the MBS you selected in Question 1 using the following Bloomberg functions:
   - CFG for a Cash flow analysis
   - WALG for determining the Weighted Average Life
   - CLC for Collateral Information
   - CPH for Historical prepayments
   - PVG to see a chart of prepayment models available on Bloomberg

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