Scope
This workshop’s aim is to demonstrate how to produce the charts used in the technical analysis of equities, using Baruch’s Subotnick Center’s FactSet and Bloomberg market data systems or public internet sites. This document will help you review the skills covered in class. It is not meant to be a complete course in technical analysis. We suggest Baruch courses, books and websites where you can obtain further information. This tutorial should not be construed as investment advice.

Prerequisites
You should have taken an SFSC FactSet Bloomberg I or workshop and have a basic understanding of the stock market and trading.

Background
We invest in equities to profit by their appreciation and dividends. We must choose which stocks and at what price; that is, what and when to buy and when to sell. The techniques used to help make that decision are generally classified as either fundamental or technical analysis.

In fundamental analysis we look at a firm’s accounting data, (balance sheet and income statements), earnings, sales forecasts, competition, industry positioning, products, profitability and management quality and use the data to project the future stock price. We focus on future expectations of the business and ignore the past price action.

In technical analysis, we assume that security’s prices are not random, but follow repeating patterns. We must identify these patterns and where our stock fits in the trend. It assumes that all we need to know is made clear by the price history of the stock. Some technical analysts, or chartists, don’t even look at the business conditions of a firm, but rely only on the price action that they have charted. Proponents of the efficient markets theory do not believe in the efficacy of technical analysis, but believe each price is independent of the previous price and has no predictive power.

Critics of technical analysis say that it is subjective; technicians can differ in how they read the same chart. It may be after the fact, that charts look obvious weeks later, but ambiguous in real time. Also success dependent upon the specific parameters set by the user. Finally, it doesn’t always work. Many investors use both techniques, often using fundamental analysis to choose an investment and technical analysis to choose the right time to buy or sell. You decide what tools are best for your style of investing. Regardless of the techniques you choose, it is always the skill of the individual analyst that determines success.
Beginning Your Analysis

Begin by reviewing the overall market’s direction using broad indices, e.g., those from Dow Jones, S&P, Russell, etc. Identify the best and worst performing sectors; locate the best and worst performing issues that you may consider buying or shorting and that require further analysis. Remember, short term vs. long term views often differ and picking the time period to analyze is important in reaching your conclusion.

Today we will demonstrate several technical analysis tools. We are not endorsing or recommending any of these, representing only a limited sample of popular techniques.

- Support and Resistance
  - Previous low and high trends
- Trends – Moving Average
  - Directional trending vs. trading range
- Momentum
  - MACD using exponential moving averages
- Relative Strength -- RSI
  - Divides stock price by index (S&P500)
- Money Flow
  - Buying / selling pressure

Courses at Baruch
To learn more about technical analysis, relevant courses at Baruch include:

- Fin 3710 Investment Analysis
- Fin 4710 Advanced Investment Analysis
- Fin 4777 Special Topics in Finance with Prof. Kamich

Check the Baruch course catalog for more information

Sources of Further Information
There is a great deal written on investments, including technical analysis. Much of this material is available at the Baruch library. Here are a few suggestions specifically on technical analysis:

How Technical Analysis Works, by Bruce Kamich (Prof. Kamich teaches Fin 4777 at Baruch)

Evidence-Based Technical Analysis: Applying the Scientific Method and Statistical Inference to Trading Signals by David R. Aronson (Prof. Aronson previously taught Fin 9790 at Baruch)


Martin Pring’s Introduction to Technical Analysis and Technical Analysis Explained by Martin Pring
Websites that may be of interest
http://stockcharts.com/ is John Murphy’s web site
http://www.mta.org/ Market Technicians Association website
http://bigcharts.marketwatch.com/ Marketwatch
http://www.freestockcharts.com/platform/v1 (Requires IE or Firefox, not Chrome browsers)

Skills for Today (FactSet and Bloomberg)
1. Create and customize a price history chart
   a. Intraday, daily and long term with volume data
   b. Candlestick chart
2. Identify trend lines, support and resistance levels
3. Moving Averages 50, 200 day and exponential moving average
4. MACD The Moving Average Convergence Divergence
5. RSI – Relative strength index
6. Money Flow
7. Saving and sending files
8. Using help
Technical Analysis with FactSet

Open with FactSet by going to Windows Start, All Programs and select FactSet.

The default Learning Center page opens. Enter the symbol of the stock of interest in the upper left hand corner. Further to the right you select the Charting tab.

It will bring up the chart window and if you haven’t already done so, enter your security symbol in the upper left corner, in this case MSFT. The default chart is a one year Open High Low Close (OHLC) price history and volume chart. An individual day’s OHLC data is displayed at any point where you place your mouse pointer on the chart.

Place your mouse cursor on the price history line to select it and right click. From the drop down list you can choose Frequency, to define the frequency of the data displayed. The default is daily data. The frequency of the data (daily, weekly, hourly, etc.) will automatically change to be appropriate to the time period. **Note that the volume chart in the lower frame must also be adjusted to match the parameters set.** It will not do so automatically.
Candlestick Analysis

Again, select the chart and right click. From the drop down menu select Draw Style and Candle. The OHLC now is formatted as a candlestick chart.

Candlestick analyses originated in the 1700’s at the Dojma Rice Exchange in Osaka Japan. They use open, high, low and close price data but formatted differently. If the close is below the open (if the value of the security has fallen from the opening price, not last night’s close) the candlestick body is filled (black). If the close is higher than the open, the candlestick body is left hollow. The lines above and below the body are called shadows; they show the high and low prices for the period. Candles are drawn as follows:

The originators of candlestick analysis charts viewed the market place as a battle between buyers and sellers. The winner of the battle at the end of each period is determined by examining:

- Whether the body of the candlestick is hollow or filled (whether the close is higher or lower than the open).
- The length of the body.
- Whether there are shadows at either end of the body, and if there are shadows, their length.

Candlestick analyses are interpreted in much the same way as bar analyses. Recognizable patterns develop which aid the trader in forecasting the likely direction of prices. For example, long filled bodies indicate strong selling whereas long hollow bodies indicate strong buying. Additional information can be found at: stockcharts.com/school/doku.php?id=chart_school:chart_analysis:introduction_to_candlesticks

Support and Resistance

Technical analysis has at its heart an assumption of repeating patterns. From the price history, typically daily close prices, we identify support and resistance levels and turning points based on known patterns. Examples include:

- Head and shoulders
- Double and triple tops and bottoms
- Triangles, rectangles, saucer and V bottoms and wedges
- Reversals
- Flags and pennants (consolidation)
- Breakaway, runaway and exhaustion (gaps)

Please refer to the readings for more information on reading these patterns.

Support is the level where the asset’s price is considered a good value and buyers will come in and start buying. Resistance is the level where the price is considered too high for the asset and investors will begin selling. Between them is the trading range. Breaking through either level indicates a change in investor sentiment. We use the line function to connect historical low points and then historical high points to indicate the two levels.

You now have a daily last sale line chart and we can draw the trend lines. When a market is in an uptrend, price values follow an upward path where the high points are successively higher and the low points are also successively higher. We will draw lines the most recent highs and lows, identifying the resistance and support levels for MSFT.
Change from candlestick to line chart. Select the chart and right click. From the drop down menu select Draw Style and Line. This type of chart displays closing price each day. On the left are a series of icons. The second from the bottom draws trend lines.

On the left you will see another of options. Please open DRAWING, (which may rest on the bottom of the list). After selecting, choose Trendline. A trend line is a straight line that connects two or more price points and then extends into the future to act as a line of support or resistance. Left click and you will see a + cursor. You can place your cursor at oldest low points of the chart and draw the line indicating support. Do the same for the resistance line at the high closes. As with most charts there is some art to deciding exactly where to place these lines. Try to fit it across as many high or low points as feasible. In my example below, this 6 month MSFT has support at about $40.50 and resistance at about the price of $46.81. Will it break through resistance or retreat? Someone else might choose a different time period and place resistance and support lines differently and read an entirely different meaning from the chart.
Adding Moving Averages

We will start by adding 2 simple moving averages. Start with a last sale line graph of Microsoft. At the top of the chart is a drop down for Series. Select Plot 1, Price, then Moving Average. You can choose either exponentially weighted (EMA) or simple moving averages. Add both the 50 and 100 day simple moving averages. If you believe that current data is more important than older data, you could have used the EMA. This example has two signals. If the 50 day MA moves down and crosses below the 100 day MA it would be a bearish signal.

In the upper left hand corner of the chart you will see description of each analysis you added and the color coding to identify each chart line.
At the top of the chart is the Series drop down, select New PLOT and go the drop down for Technical Indicators and MACD and New PLOT again and choose and RSI.

MACD -- Moving Average Convergence Divergence

Moving average convergence divergence, (MACD) was developed by Gerald Appel.

- Oscillator to measure market momentum
  - Note: MACD can be pronounced as either “Mac-Dee” or “M-A-C-D.”
- Consists of two lines, the MACD line and the signal line
- The MACD line measures the difference by subtracting the longer 26 day exponential moving average (EMA) from the shorter 12 day exponential moving average (EMA)
- A 9-day EMA of the MACD Line is plotted with the indicator to act as a signal line and identify turns. The MACD Histogram represents the difference between MACD and its 9-day EMA, the Signal line. The histogram is positive when the MACD Line is above its Signal line and negative when the MACD Line is below its Signal line.
  - The signal line is a moving average of the MACD line. MACD oscillates above and below a zero line without upper and lower boundaries
- A buy signal is generated when the MACD line crosses from below to above the signal line, the further below the zero line that this occurs the stronger the signal
- A sell signal is generated when the MACD line crosses from above to below the signal line, the further above the zero line that this occurs the stronger the signal
RSI -- Relative Strength Index

The RSI chart is below the MACD chart. RSI was developed by Welles Wilder, Jr. It compares the magnitude of recent gains to recent losses in an attempt to determine overbought and oversold conditions. It ranges between 0 and 100 with scores >70 are said to be overbought and <30 oversold conditions and signal possible trend reversals. It must be interpreted with conjunction with price movements. It typically uses 9 or 14 time periods.

- If the RSI is above 70 and you are looking for the market to form a top, then the RSI crossing back below 70 can be used as a sell signal (in non-trending markets)
- The same is true for market bottoms, buying after the RSI has moved back above 30
Money Flow

From the Series tab, select New Plot, Technical Indicators and then select Money Flow.

Money Flow is a momentum indicator that measures the amount of money moving into a stock when its price is advancing relative to the amount being invested when the price is declining.

- Compares the closing price to the daily high-low range to determine how much volume is flowing into, or out of, an instrument, and then it compares this result to the total volume
- It assumes that market strength is usually accompanied by prices closing in the upper half of their daily price range
- If prices consistently close in the upper half of their daily high-low range on increased volume, then the indicator will be positive. This indicates that the instrument is strong

To calculate money flow, the closing price on each day is multiplied by the volume on that day to arrive at the day's money flow. When today's price is higher than yesterday's price, money flow is considered to be positive. If today's price is lower, then money flow is negative. The Money Flow Ratio is calculated by summing positive money flow over the preceding 50 trading days and dividing that by the sum of negative money flow over the same period. The ratio appears on the price history chart using the left axis; it is the trend of the line that is relevant rather than specific data point values. Watch for when trends of price movement and money flow diverge; the divergence can indicate situations of "buying on weakness" or "selling on strength" and may be a leading indicator of a price reversal to follow. In our chart below we see money going into MSFT at this time. However it is rather volatile and not trending, so again, your judgment must be used.
To access the underlying data, perhaps for a spreadsheet, right click anywhere on the chart and select Copy As and Excel CSV. Save it to your desktop or paste it directly into a blank Excel spreadsheet. It will provide the following data table of all the charts you created. (You can also use the wrench tool to save the raw data or FDS codes to Excel).

Help

Use the “?” symbol on the top line of icons for Help.

Saving Your Work

Once you have a chart that meets your needs, right click anywhere on it and from the drop down you can select Copy As and then Bitmap. Email your chart using your open email program. Alternatively, on the top line is an email icon, which drop down can copy the chart to the clipboard and you can paste it into a Word or PowerPoint as needed.

Please close FactSet and Logoff your workstation before leaving.
Technical Analysis Using Bloomberg

After logging in to Bloomberg,
1. Get a quote for a stock, for example Apple by entering its symbol (AAPL) and the Equity key.
2. On the top of the quote page, click on Analyze Equity Security Menu and then
3. Click on 17) GP Price History Graph. This will bring up an historical closing price chart.
On the left you will see a number of time periods, where you can set the dates of the chart and the frequency of the data. You can also change from line to OHLC or candlestick chart. The bottom bar chart represents the trading share volume, with a simple moving average (SMA) of the volume, defaulting to 15 days. Right clicking on the SMA chart line shows a drop down list where you can set the volume display parameters. The Event tab will label chosen events such as earnings, on the chart.

On right is the Security/Study field, when clicked gives you the ability to add a large number of technical analysis studies.

Clicking on the Browse button provides a list.
Here we chose the MACD, RSI and Chaiken Money Flow studies. As you select each possible study, a description of the study is provided.

Clicking on the pencil next to each study, allows re-setting of the parameters. Clicking on the bell symbol allows setting of alerts. Clicking the red circled x, deletes the study from your chart. After choosing the studies click update to create the new chart. Click on Security/Study tab again to enlarge the charge to screen size. The result of adding the studies is shown below.
To get the “cheat sheet” for charting and technical analysis, enter CHEAT<GO>, then click on 6) EQUITY and then select 7) Technical Analyst and select the English Technical Analyst cheat sheet. Email the pdf to yourself for later printing.

As always, feel free to explore the other functions available in the Bloomberg charting functions, but please sign off Bloomberg and your workstation before leaving.
Charting with Web Resources

`stockcharts.com` is a very comprehensive site with many and training features. We suggest you explore it and these below at your leisure.

`bigcharts.marketwatch.com/` is another excellent site. Insert your stock symbol and choose Interactive Chart. You set timeframe, compare securities or against indices and add multiple technical indicators.

`finance.yahoo.com` under Charts – Interactive also provides a number of useful charts: