FWI Tear Sheet Users' Guide

FRAMEWORK Investing

1. Option strategy table

2. Tear Sheet title & conviction rating

3. BSM Cone Graph

4. IOI's Take & Drivers

5. Valuation & Return table

6. Historical Metrics table & Market Risk commentary

7. Complex Valuation Range graph

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① Option strategy table

B / S	P / C / S	Strike	Exp.	Premium
Buy	Stock	155.00	N/A	($155.00)
Sell	Call	155.00	OCT 20, '17	$5.05
Effective Buy Price (w/o dividends)				($149.95)

② FWI Tear Sheet : IBM (IBM)

Bullish Bond Replacement (Low Conviction)

Data as of 27 June, 2017

Framework's Take

Buffett doesn't see much upside and, in fact, our upper valuation scenario is in line with the option market's best-case price projection for IBM as well. However, the downside does seem undervalued, even with low implied volatility readings in the 17% range. IBM is a complex company going through a major transformation while providing investors and analysts very little granular data to process. "Strategic Initiatives" now represent roughly 40% of revenues and is growing at a 12% annualized rate. The rest of the business is shrinking at roughly a 10% rate. Several of the company's segments' growth rates turned barely positive in 1Q17... Baby steps...
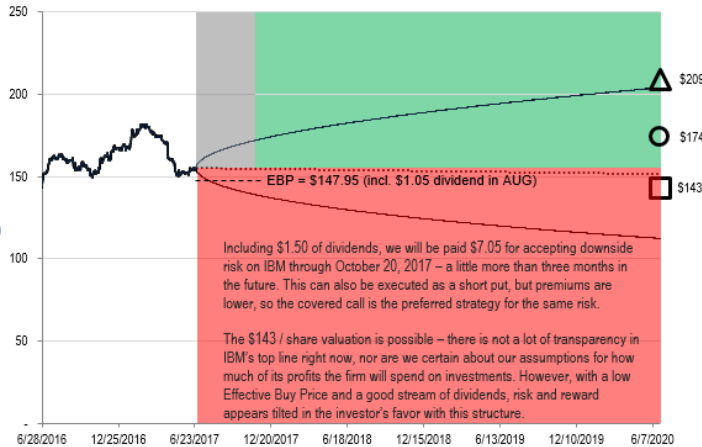
Drivers

Revenues	Great pricing power due to regulatory leniency. Volumes from all segments at risk from trade probs (China/Mexico). Proj: +1% (Best), -3% (Worst).
Profitability	We adjusted IBM's required maintenance capex down, pushing up our measure of profit. Proj: 17% (B), 15% (W)
Investment Level / Eff.	Co has been selling off legacy businesses and buying new ones, so difficult to judge required spending. We're sticking with 25%. Proj (med-term growth): +7% (B), +5% (W)
Balance Sheet	No hidden assets / liabilities found in our analysis.

③ BSM Cone Graph

EBP = $147.95 (incl. $1.05 dividend in AUG)

△ $209
○ $174
□ $143

Including $1.50 of dividends, we will be paid $7.05 for accepting downside risk on IBM through October 20, 2017 – a little more than three months in the future. This can also be executed as a short put, but premiums are lower, so the covered call is the preferred strategy for the same risk.

The $143 / share valuation is possible – there is not a lot of transparency in IBM's top line right now, nor are we certain about our assumptions for how much of its profits the firm will spend on investments. However, with a low Effective Buy Price and a good stream of dividends, risk and reward appears tilted in the investor's favor with this structure.

⑤ Valuation & Return

Valuation Uncertainty: High

	Low	Likely	High
Stock Fair Value ($)	143	174	209
Stock Return (%)	-8	12	35
Option Period Return (%)	-3	5	5
Option Annual Return (%)	-9	15	15

⑥ Historical Metrics

	Historical Median	
	5-year	10-year
Revenue Growth (%)	-6	-2
Profit Margin (%)	15	15
Med-term Growth (%)	-3	-1

Market Risk

The price fell into the $120-range within the last 52 weeks – this is roughly congruous with our Price-to-Sales downside gauge. IBM's biz is changing and growth will not be uniform quarter-to-quarter. Buffett's disinvestment news also may push stock price down.

⑦ Complex Valuation Range graph

Scenarios Key
ST Rev Growth | ST OCP Margin | Med-Term Growth

Case / Scenario	Value
PSR Implied Low	126
-3%	15%	5%	143
252-day Low	144
* -3%	15%	7%	154
-3%	17%	5%	163
1%	15%	5%	172
-3%	17%	7%	174
252-day High	182
1%	15%	7%	184
PSR Implied High	186
* 1%	17%	5%	195
1%	17%	7%	209

1-year Trading Range

Potential Price Range Based on Historical Price-to-Sales
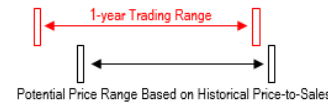
Probability / Materiality
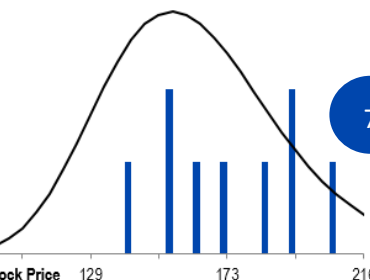
Stock Price: 0, 43, 86, 129, 173, 216

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Financial statement and market data by: **YCHARTS**

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Figure 1

Please see the textual explanation of the above sections listed on the following pages.

1 Option Strategy Table

B / S	P / C / S	Strike	Exp.	Premium
Buy	Stock	155.00	N/A	($155.00)
Sell	Call	155.00	OCT 20, '17	$5.05
Effective Buy Price (w/o dividends)				($149.95)

Figure 2

This figure is a simple, tabular listing of the option strategy highlighted in the Tear Sheet. The example in Figure 2 highlights a strategy of selling a covered call—a bullish "bond replacement" strategy used to generate income. The abbreviations in the table have the following meanings:

Abbreviation	Meaning	Note
B / S	Buy / Sell	Options can either be bought or sold to gain or accept exposure, respectively.
P / C / S	Put / Call / Stock	Some of the strategies Tear Sheets will involve transacting in several options or overlaying a stock with an option or options and some will involve only buying or selling a single option. As such, this table can have one or more rows in it.
Strike	Strike Price	The price at which an option's range of exposure begins.
Exp.	Expiration month	Listed options expire on a date specified by the exchange. The "intrinsic value" of an option on its expiration date is determined by the relationship of the stock's price at that time to the strike price of the option.
Premium	Premium (and / or price paid for a stock)	Premium is the amount one must pay to buy an option or the income one receives from selling an option on a per share basis. In a strategy involving buying a stock (e.g., a "Covered Call"), we will list the price of the stock in this column.

② Tear Sheet Title

FWI Tear Sheet : IBM (IBM)
Bullish Bond Replacement (Low Conviction)
Data as of 27 June, 2017

Figure 3

The first line of the title gives the name of the stock and its ticker. The second line of the title specifies the common name for the option position (e.g., "Long Call", "Covered Call", etc.) and shows an indication of Framework Investing's conviction for the investment. If there are valuation scenarios below the current price, we list our conviction level as "Low;" if the present price is at or below the lowest valuation scenario, we list our conviction level as "High." The third line specifies the date on which the option and stock price data was drawn.
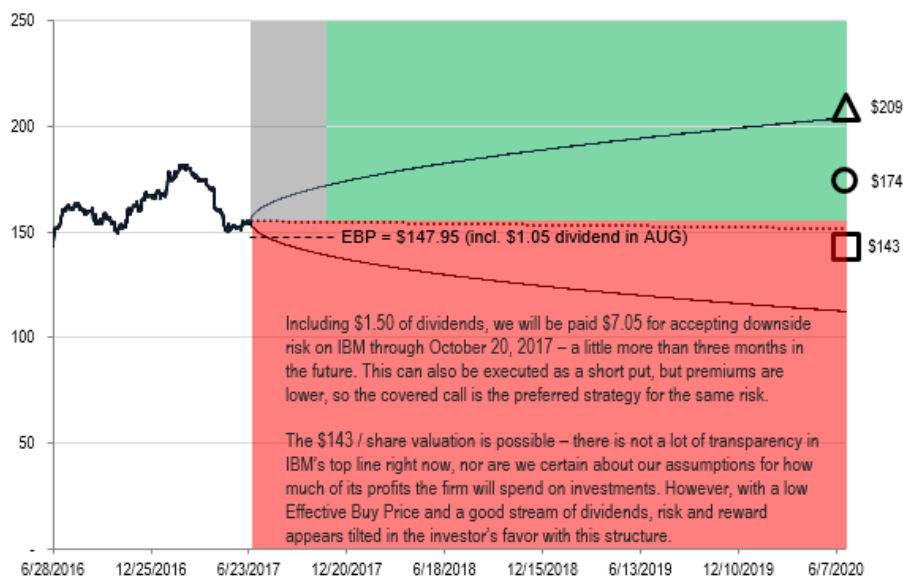
③ BSM Cone graph

Figure 4

This is the quintessential FWI graph showing the following elements:
1) Historical price of the underlying stock over the past year of trading.
2) Conical section indicating the option market's expectations for the future price of the stock.[1]

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[1] In FWI's BSM Cone diagrams, you may see two conical sections, with a dashed line showing the outer cone. This dashed line represents the "ask vol" and the inner, solid line the "bid vol." The fact that the dotted line is outside of the solid one indicates that the ask price is higher than the bid price, and means that the range of possible stock price outcomes as seen by sellers is wider than that seen by buyers. For an explanation of the conical section, please consult *The Intelligent Option Investor*.

3) Best, worst, and most likely case valuations based on FWI's fundamental analysis of the company indicated by a triangle, square, and circle, respectively.

4) Shaded region showing the area of exposure for the option strategy. Green shading signifies gaining exposure through purchase of a contract; red shading signifies accepting exposure through the sale of a contract; gray shading indicates a cancellation of exposure.

5) Break-even line. This diagram does not show the break-even line, but it will be labeled in most Tear Sheets. For bullish strategies, we will use the term "Effective Buy Price (EBP)" and for bearish ones, "Effective Sell Price (ESP)". Please consult The Intelligent Option Investor for an explanation of how to calculate EBP and ESP.

6) We also often include some commentary about the option strategy and / or the option market's view of the stock detailed in the Tear Sheet.

An intelligent investor has an edge when the market price of a stock is significantly different than its intrinsic value range or when the range foreseen by the option market is much wider than that of its intrinsic value range. In the above example, the option market's range of outcomes is much wider than what we believe the uncertainty of the firm is on a fundamental basis.

4 **FWI Take & Drivers**

Framework's Take

Buffett doesn't see much upside and, in fact, our upper valuation scenario is in line with the option market's best-case price projection for IBM as well. However, the downside does seem undervalued, even with low implied volatility readings in the 17% range. IBM is a complex company going through a major transformation while providing investors and analysts very little granular data to process. "Strategic Initiatives" now represent roughly 40% of revenues and is growing at a 12% annualized rate. The rest of the business is shrinking at roughly a 10% rate. Several of the company's segments' growth rates turned barely positive in 1Q17... Baby steps...

Drivers

Revenues	Great pricing power due to regulatory leniency. Volumes from all segments at risk from trade probs (China/Mexico). Proj: +1% (Best), -3% (Worst).
Profitability	We adjusted IBM's required maintenance capex down, pushing up our measure of profit. Proj: 17% (B), 15% (W)
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Balance Sheet	No hidden assets / liabilities found in our analysis.

Figure 5

These sections provide a brief overview of the investment thesis (FWI's Take) and the drivers to the FWI valuation (Drivers). Fundamental valuations hinge on three factors: 1) how fast will revenues likely grow in the near term (3-5 years), 2) how efficient will the firm be in converting those revenues to profits in the near term, and 3) how much medium-term (3-10 years) growth can be expected based on the firm's opportunities for investment (we call this factor "Investment Efficacy"). In some cases, a company can have "hidden" assets or liabilities (e.g., real estate recorded at the low historical cost, underfunded pension) that may affect the valuation as well—we mention those here as well, and factor them into our valuation.

5 **Valuation & Return table**

Valuation & Return	Valuation Uncertainty: High		
	Low	Likely	High
Stock Fair Value ($)	143	174	209
Stock Return (%)	-8	12	35
Option Period Return (%)	-3	5	5
Option Annual Return (%)	-9	15	15

Figure 6

This is a tabular display of the valuations shown in the BSM Cone graph. We have separated out the stock return (calculated on the basis of the market price for the asset as of the date on the Tear Sheet) for each of the cases.

Option returns are a bit more difficult to represent because of the effects of time value. The figures listed here assume that the stock price moves to the listed valuation exactly at the expiration of the option.

In addition to the tabular display, we also list a Valuation Uncertainty Rating. Valuation uncertainty is a function of the degree to which each of the main valuation drivers may vary during different economic conditions. Companies with great revenue variability combined with operational and / or financial leverage, and which may experience a rebound or a sharp fall over a business cycle are associated with the highest uncertainty levels.

6 **Historical Metrics & Market Risk**

| Historical Metrics	Historical Median		Market Risk
	5-year	10-year	The price fell into the $120-range within the last 52 weeks – this is roughly congruous with our Price-to-Sales downside gauge. IBM's biz in changing and growth will not be uniform quarter-to-quarter. Buffett's disinvestment news also may push stock price down.
Revenue Growth (%)	-6	-2	
Profit Margin (%)	15	15	
Med-term Growth	-3	-1	

Figure 7

The table on the left shows the actual historical values for the three key valuation drivers. Revenue growth and profitability are assessed for the near term (usually 3-5 years) and medium-term growth for a period of varying lengths depending on the particulars of the company being analyzed. FWI uses a three-stage valuation model that consists of 1) an explicit forecast of near-term economic conditions, 2) an optional high-growth period for companies likely to grow more quickly than the general economy, and 3) a terminal value based on the likely growth of the economy at large. In the case of investments in mature businesses, we may forego the inclusion of the high-growth stage, analyzing the short-term cash flows followed by the stage three "terminal" growth factor.

We use historical medians since this measure gives a better indication of central tendency than does average when there are large outliers.

The market risk commentary uses the price-to-sales ratio as a rough guide to assess the potential market risk of an investment. Market risk relates to the market's perception of how expensive or cheap a stock's price is. Market risk is separate from valuation risk (mentioned above) since market risk deals with market perceptions of price and valuation risk relates to the variability in the value that can be created by a firm due to operational factors.

7   **Complex Valuation Range graph**

Figure 8
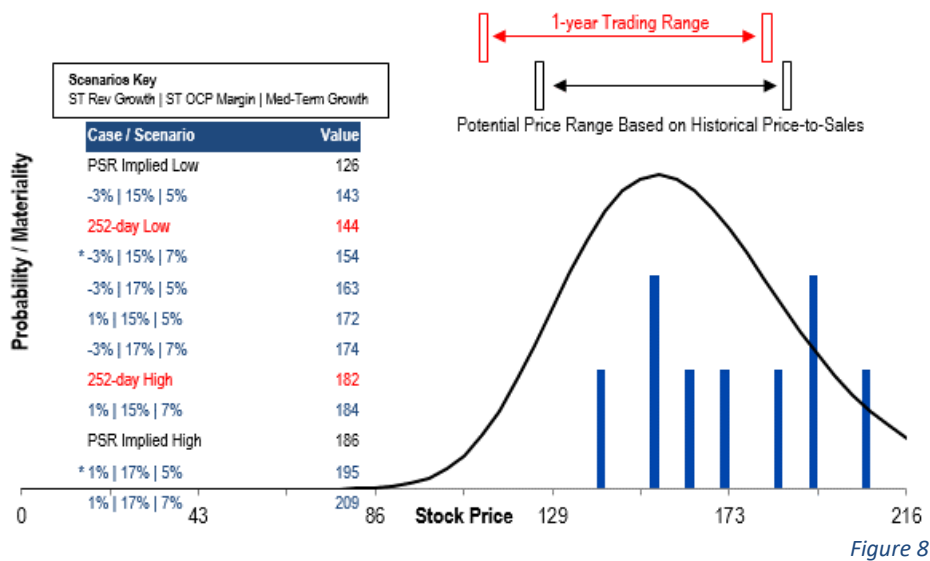
This graph shows the relationships between four valuation / market elements:

1) FWI valuation scenarios (blue columns)
2) High- and low price range for the stock over the last year (red bars)
3) Stock price range implied by overlaying historical price-to-sales ratios (PSR) on IOI's best and worst case revenue scenarios (black bars).
4) Option market's probability distribution (curve)

The table shows the numerical values of the FWI valuation scenarios, the high and low stock prices, and the stock prices implied by the PSR. All scenarios FWI considers as having a material chance of occurring are shaded in blue and the height of the corresponding columns on the graph is relatively high. All scenarios FWI considers as not having a material chance of occurring are shaded in gray and the height of the corresponding columns on the graph is relatively low (not pictured in this example. If possible, FWI will identify a likely best-case valuation and a likely worst-case valuation and identify it in the table with an asterisk and on the graph using relatively taller columns.

In the tabular display FWI valuation scenarios are identified according to the following convention:

Near-term Revenue Growth | Near-term Profitability | Medium-term FCF growth

Taking this into consideration, we can translate the entry listed as "3% | 28% | 6%" as identifying the scenario assuming 3% year-over-year revenue growth and 28% profitability for the stage one valuation period and an 6% growth in free cash flows in the stage 2 valuation period.

The purple curve shows the price range considered most likely by the option market. For a lognormal curve, the point on the curve representing the "expected" value lies a bit to the right of the peak of the curve. As such, by looking at the purple curve, you can see the range of stock prices for Apple that the option market considered most likely when these data were drawn.

At FWI, we believe that attempting to make too fine a distinction between the probabilities that various scenarios will occur is an exercise in false precision. The height of the blue and gray bars is therefore not proportional to FWI's perceived probability of a stock price being realized in the marketplace. Tall blue bars simply mean "most likely"; shorter blue bars simply mean "material chance of occurrence"; short gray bars simply mean "immaterial chance of occurrence".

Conclusion

Any document rich in information will require some time and effort to fully understand. If you have questions or comments about Tear Sheet calculations or FWI valuation methodology, please feel free to contact us through the contact form on the Framework Investing website.