



# *Equity Valuation using FactSet*

Created by: Professor Patrick Gregory, CFA

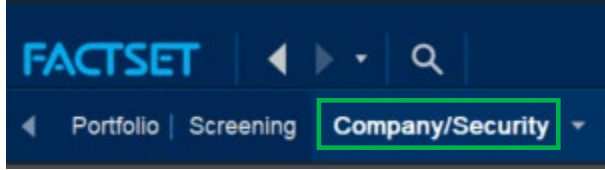
# Table of Contents

<u>Section</u>	<u>Page</u>
I. Company Information	
a. Company Data	3
b. Beta	5
c. Financials	6
d. Filings	10
e. Projections and Estimates	12
f. Pricing Data	13
g. Discounted Cash Flow Inputs	
i. Risk Free Rate	14
ii. WACC Calculation	14
iii. Equity Risk Premium	15
II. Comparable Companies Information	18
III. Industry Information	19
IV. Macroeconomic Information	20

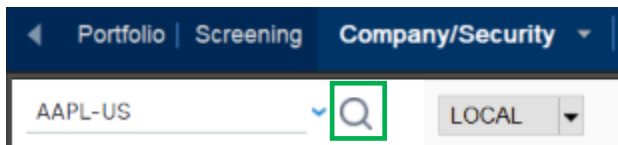
# I. Company Information

## a. Company Data

1. After opening FactSet Workstation, select the *Company/Security* tab in the navigation panel.



2. Select the magnifying glass to open the Identifier Lookup. Skip the following steps if you know the ticker of the company by typing it into the search bar.



3. In the Identifier Lookup, type the ticker or name of the company you are interested in into the filter by keyword box in the top left. In the categories section, select equities. These equities can be domestic listings or ADRs. Choose the security you are interested in by highlighting it, selecting *Add ID* and clicking *OK*.

The screenshot shows the Identifier Lookup interface. At the top left, there is a 'FILTER BY KEYWORD' box containing 'AAPL'. An arrow points from the annotation '1. Type ticker/company' to this box. Below the search bar is a 'Categories' list on the left, with 'Equities' selected and highlighted in blue. An arrow points from the annotation '2. Equities category' to this selection. The main area displays a table of results for '6 of 6' items. The table has columns for Name, Symbol, Ticker-Exchange, Region, and APIR CODE. The first row is highlighted in blue.

Name	Symbol	Ticker-Exchange	Region	APIR CODE
Apple Inc.	AAPL-US	AAPL-USA	United States	-
Apple Inc. Units Thailand Depository Receipt Re...	AAPL80X-TH	AAPL80X-BKK	Thailand	-
Apple Inc. Shs Canadian Depository Receipt Rep...	AAPL-CA	AAPL-NEOL	Canada	-
Apple Inc Shs Unsponsored Brazilian Depository...	AAPL34-BR	AAPL34-BSP	Brazil	-
Apple Inc. TraCRs	TCXAPL-AU	TCXAPL-CHIA	Australia	-
Apple Inc. Shs Cert Deposito Arg Repr 0.1 Shs	AAPL-AR	AAPL-BUE	Argentina	-

At the bottom right of the results table, there is an 'Add ID' button.

The screenshot shows the 'Identifier Lookup' window with the search term 'AAPL' and the category 'Equities'. The results table lists several securities, with 'Apple Inc.' highlighted. A callout box with the text '1. Highlight the security' points to this row. Below the results, an 'Add ID' button is visible, with a callout box '2. Click on the Add ID' pointing to it. At the bottom right, an 'OK' button is highlighted, with a callout box '3. Select OK' pointing to it. The 'Selected (1)' section shows 'Apple Inc.' with the symbol 'AAPL-US'.

**Identifier Lookup**

**FILTER BY KEYWORD** **Your Category** Equities **Applied Filters** Active Primary Common Clear All Reset

AAPL

**Categories**

- Portfolios
- Assets
- Bank Loans
- Commodities
- Cryptocurrency
- Deals
- EDGAR CIKs
- ETFs
- Equities** 7266
- Exchange Rates

**Results** 6 of 6 **Show** 100

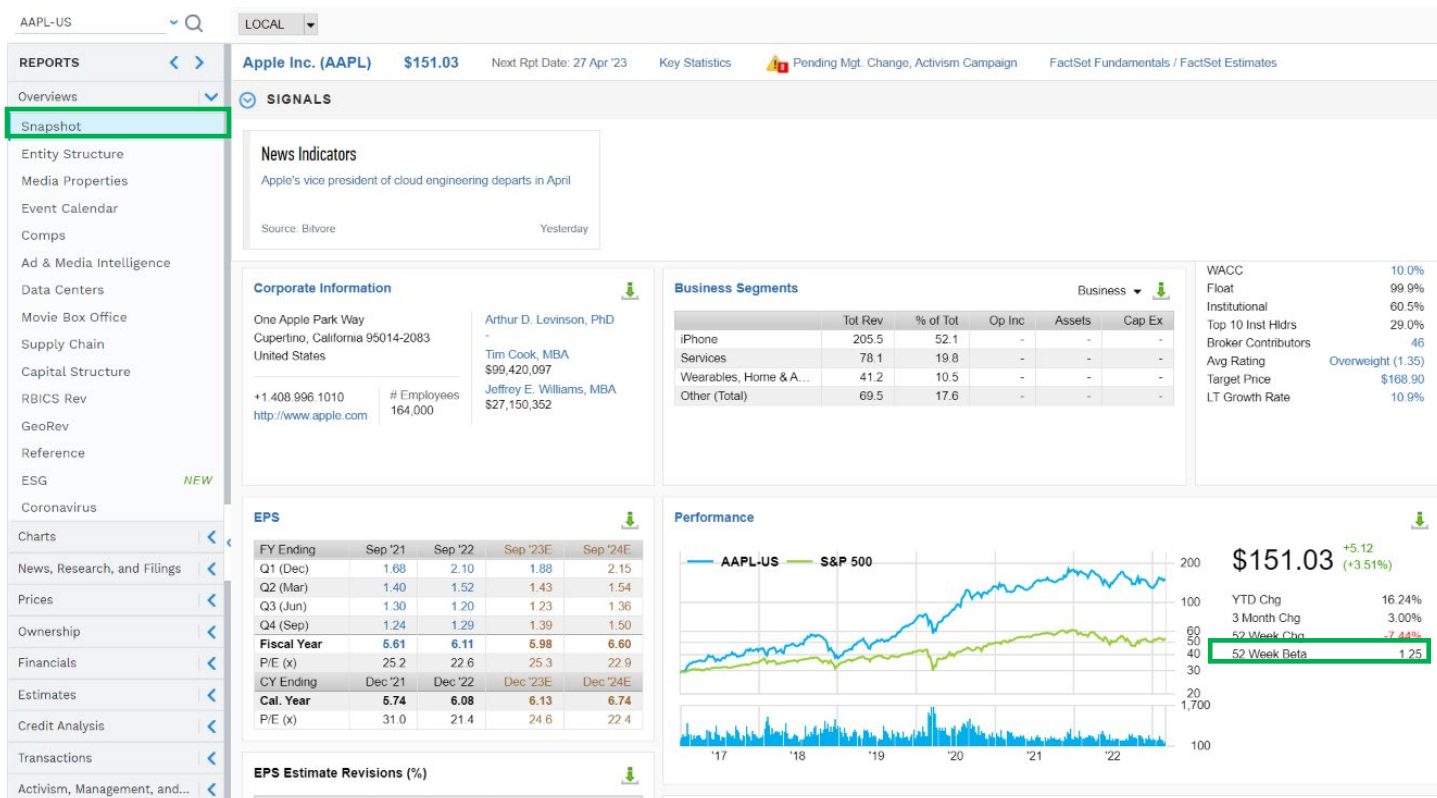
Name	Symbol	Ticker-Exchange
Apple Inc.	AAPL-US	AAPL-USA
Apple Inc. Units Thailand Depository Receipt Rep...	AAPL80X-TH	AAPL80X-BKK
Apple Inc. Shs Canadian Depository Receipt Rep...	AAPL-CA	AAPL-NEOL
Apple Inc Shs Unsponsored Brazilian Depository...	AAPL34-BR	AAPL34-BSP
Apple Inc. TraCRs	L-AU	TCXAPL-CHIA
Apple Inc. Shs Cert Depo	AR	AAPL-BUE

**Selected (1)**

Name	Symbol
Apple Inc.	AAPL-US

**Buttons:** Add ID, OK, Cancel

Now you have access to information about the company organized into vertical tabs. To get an overview of the company, refer to the *Snapshot* section under the *Reports* tab, where you can find general information such as a business description, industry metrics, and key statistics.



**b. Beta**

In the *Performance* table, FactSet provides a 52-week unadjusted beta. This beta is calculated using regression analysis of the company’s daily stock price returns against a market proxy (S&P 500) over a 52-week period.

Beta gives you information about the volatility of a stock compared to the overall market, therefore it is a measure of systematic risk. A beta higher than 1.0 indicates the stock is more volatile than the overall market, and a beta lower than 1.0 indicates the stock is less volatile than the overall market.

Additional beta measures can be found in price summary within the *Prices* tab in the *Volatility* table.

Volatility				
	90 Day	52 Wks	3 Yrs	5 Yrs
Beta (Raw)	0.90	1.12	1.10	1.02
Beta (Adjusted)	0.93	1.08	1.07	1.01
Alpha	0.16	0.03	0.02	0.05
R-squared	0.21	0.43	0.40	0.31
Average Price Change	0.24%	0.09%	0.06%	0.10%
Standard Deviation	17.91	21.19	22.41	22.37

Data uses Daily Prices

Comparing beta measures over different time periods can provide you with insight on if the stock has become more or less volatile than the market over time. The beta input you choose should reflect your views about the future expected volatility of the company.

Adjusted beta is a forward-looking measure that uses the historical beta as an input. The formula for adjusted beta assumes that a security's beta moves toward the market average (1.00) over time.

$$\text{Adjusted Beta} = \text{Raw Beta} * (0.67) + 1.00 * (0.33)$$

### c. Financials

Next, you can find the company's historical financial statements in the *Financials* tab. In the settings, there are options such as adding growth rates and margins to the table.

The screenshot displays the GAAP/IFRS Income Statement for Apple Inc. (AAPL) with the following data:

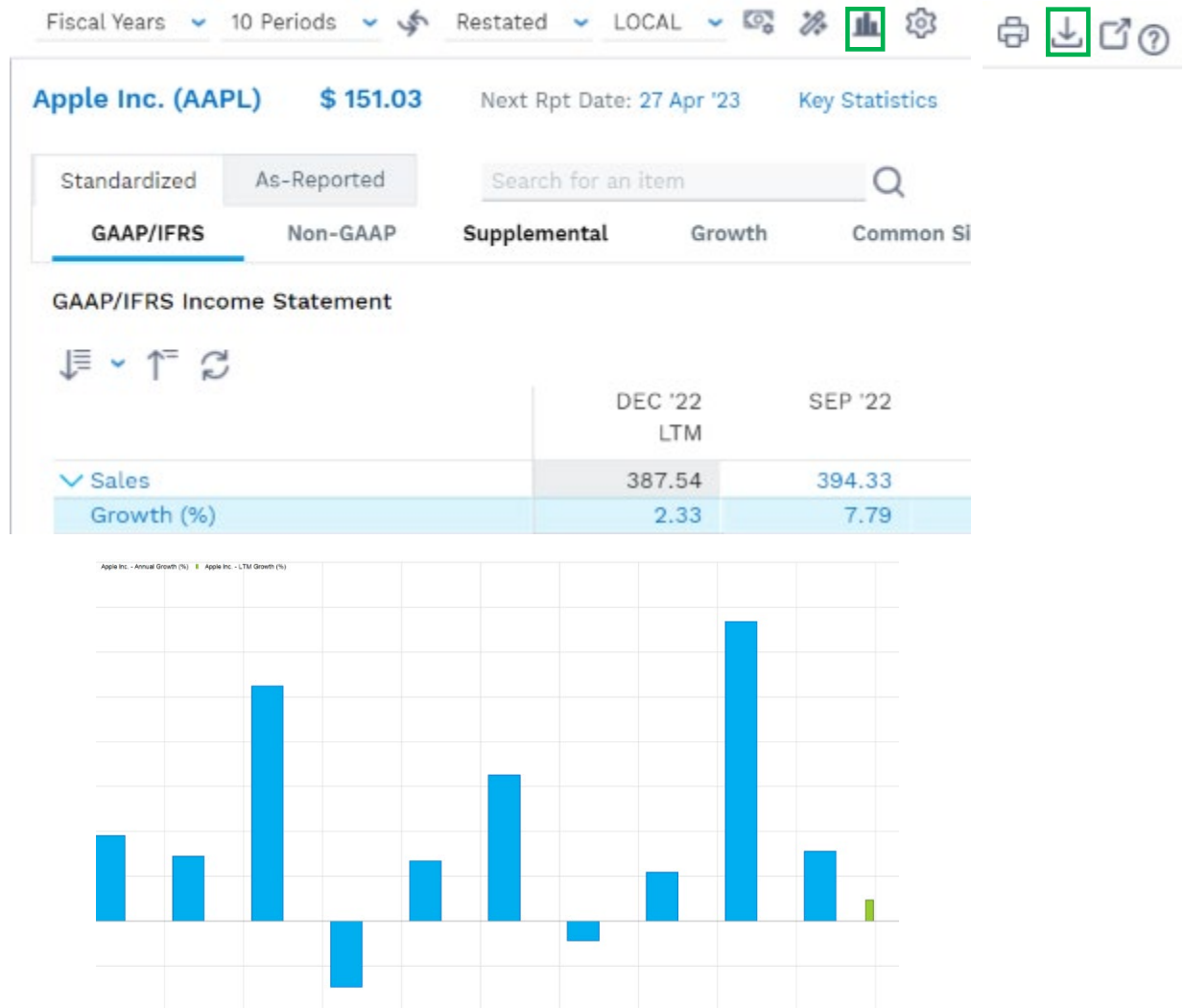
	DEC '22 LTM	SEP '22	SEP '21
✓ Sales	387.54	394.33	365.82
> Cost of Goods Sold (COGS) incl. ...	220.67	223.55	212.98
✓ Gross Income	166.87	170.78	152.84
> SG&A Expense	52.91	51.35	43.89
✓ EBIT (Operating Income)	113.97	119.44	108.95
> Nonoperating Income - Net	2.76	2.60	2.90
> Interest Expense	3.24	2.93	2.65
> Unusual Expense - Net	0.00	0.00	0.00
✓ Pretax Income	113.49	119.10	109.21
> Income Taxes	18.31	19.30	14.53
Consolidated Net Income	95.17	99.80	94.68
✓ Net Income	95.17	99.80	94.68

The 'Options' dialog box contains the following settings:

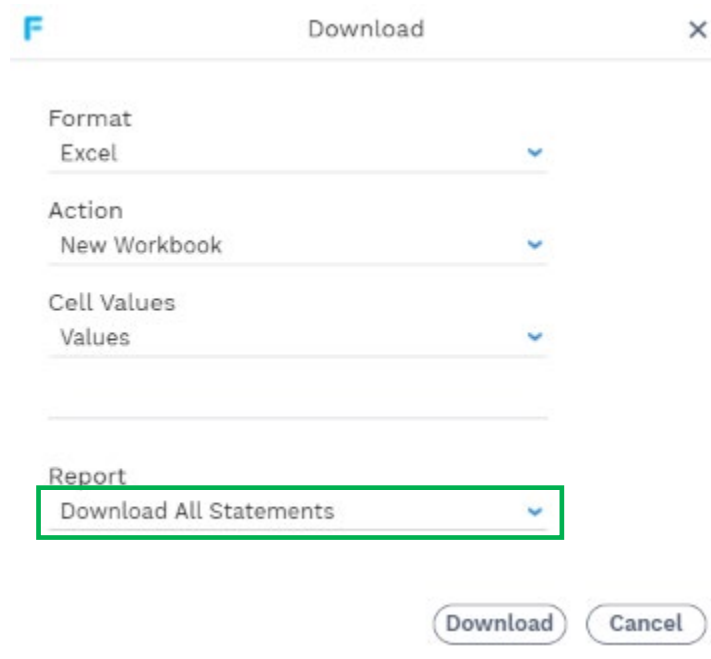
- Units: Automatically Set
- Decimals: Automatically Set
- Show Sparklines:
- Show Inline Growth & Ratios:
- Show Unreported Data:
- Show Expanded Header:

Buttons: Ok, Cancel

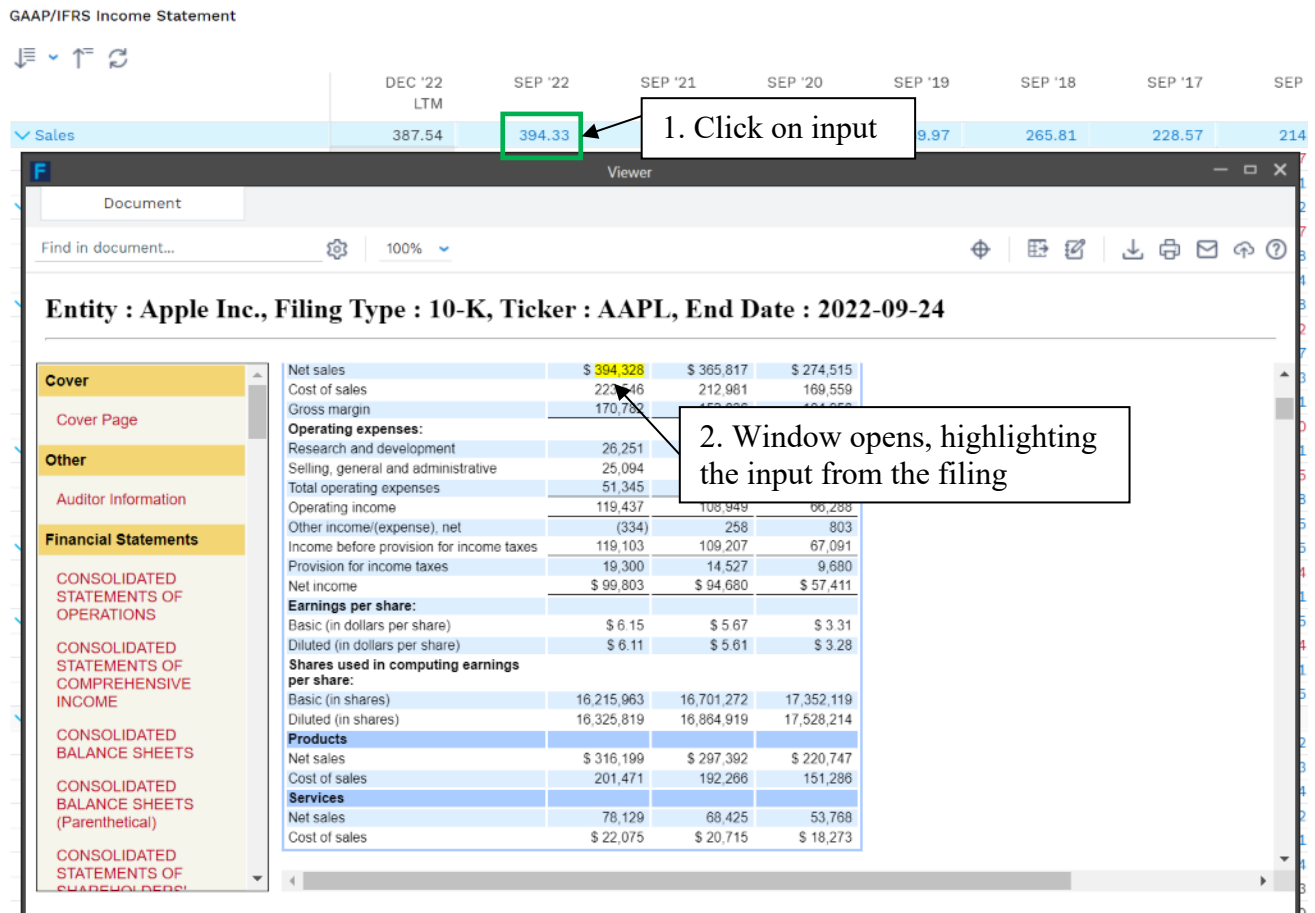
Additionally, you can chart line items to observe trends. For example, if we wanted to analyze Apple’s sales growth rate, highlight the line and click on the bar chart icon. This will open a *Charting* tab that contains a bar chart for the selected line item.



Next, you can download and export all the financial statements by clicking *Download* in the top right. Selecting *Download All Statements* under the report selection will export everything to Excel.

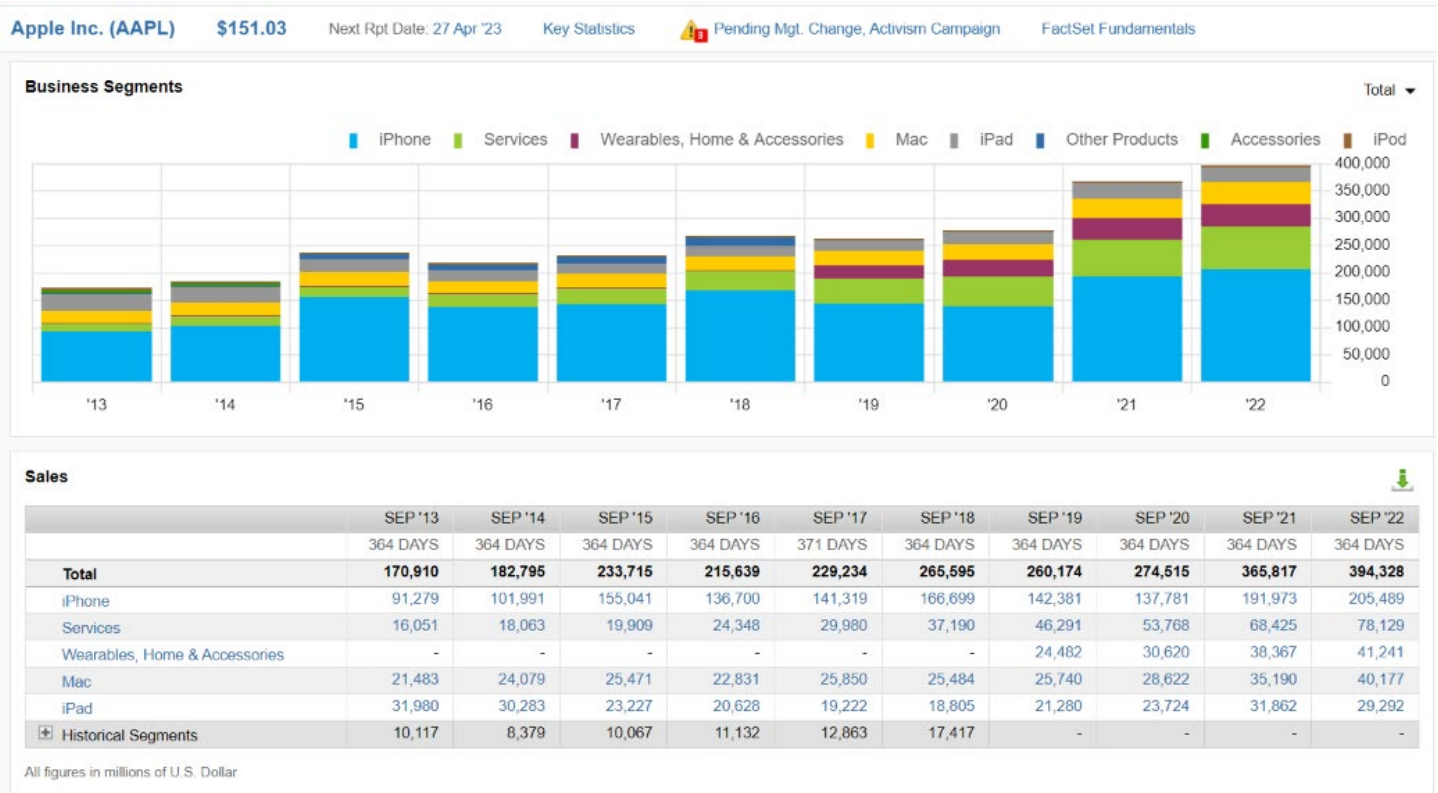


If you would like to trace the origins of a specific numeric input within the financial statements, click on it and a window will open showing you the exact origin from the 10K or 10Q filing where the input comes from.





Also, the *Financials* tab contains a breakdown of revenue segments in the *Segment History* section. Apple reports its revenues based on the product categories seen below.



This allows us to observe trends in Apple’s revenue composition. In this scenario, you would investigate how the iPhone and Services segments have become a larger portion of total revenue. Next, you could think how segment trends may evolve in the future, and how shifting trends could impact the company’s profitability. For example, if a certain growing segment is more profitable than others, that implies a favorable improvement in margins. Companies do not always disclose segment margins, but if they do, these inputs are critical in the valuation process. If they do disclose specific percentages, or general trends, it would often be in earnings releases or earnings calls.

*Ratio Analysis* contains a historical overview of profitability, valuation, operating and leverage ratios. This information is useful when identifying how a company ranks on the above characteristics. For example, based on the profitability measures, we can observe a slight deterioration in Apple’s profit margins in 2016 and 2017, which was most likely caused by an increase in research and development spending coupled with slower revenue growth.

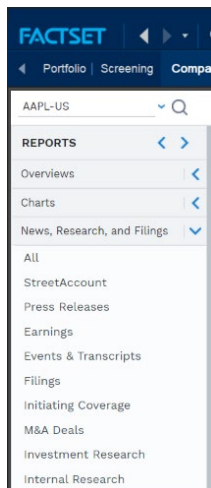
Apple Inc. (AAPL) \$207.53 Next Rpt Date: 31 Oct '18 Key Statistics FactSet Fundamentals											
Profitability (%)											
	5Y Avg	SEP '17 371 DAYS	SEP '16 364 DAYS	SEP '15 364 DAYS	SEP '14 364 DAYS	SEP '13 364 DAYS	SEP '12 371 DAYS	SEP '11 364 DAYS	SEP '10 364 DAYS	SEP '09 364 DAYS	SEP '08 364 DAYS
Gross Margin	38.19	38.01	38.61	38.49	38.58	37.24	43.63	41.00	39.30	35.32	34.31
SG&A to Sales	10.31	11.74	11.31	9.68	9.84	8.96	8.60	9.23	11.22	15.11	14.99
Operating Margin	27.88	26.26	27.30	28.81							
Pretax Margin	29.32	28.04	28.65	31.35							
Net Margin	21.76	21.15	21.33	23.09							
Free Cash Flow Margin	26.29	22.38	24.78	30.27							
Return on Assets (%)	17.32	13.87	14.93	20.45							
Return on Equity (%)	36.85	36.87	36.90	46.25	33.61	30.64	42.84	41.67	37.06	23.35	27.19
Return on Common Equity	36.85	36.87	36.90	46.25	33.61	30.64	42.84	41.67	37.06	23.35	27.19
Return on Total Capital	26.42	20.80	22.90	32.30	27.50	28.63	42.84	41.67	37.06	23.35	27.19
Return on Invested Capital	27.47	22.23	24.27	34.08	28.12	28.63	42.84	41.67	37.06	23.35	27.19
Cash Flow Return on Invested Capital	40.01	29.25	34.97	51.87	42.49	41.49	52.21	60.33	49.18	41.58	53.97

Operating margin declines to 26.26% in 2017 from 28.81% in 2015 due to slower sales growth and increased in R&D spending

Valuation (x)											
	5Y Avg	SEP '17 371 DAYS	SEP '16 364 DAYS	SEP '15 364 DAYS	SEP '14 364 DAYS	SEP '13 364 DAYS	SEP '12 371 DAYS	SEP '11 364 DAYS	SEP '10 364 DAYS	SEP '09 364 DAYS	SEP '08 364 DAYS
Price/Sales	3.06	3.54	2.89	2.87	3.37	2.63	4.04	3.49	4.15	4.56	3.56
Price/Earnings	14.10	16.73	13.56	12.44	15.62	12.14	15.11	14.61	19.29	28.99	23.93
Price/Book Value	4.95	5.89	4.69	5.36	5.30	3.51	5.30	4.90	5.60	5.90	5.42
Price/Tangible Book Value	5.31	6.27	5.03	5.80	5.75	3.69	5.55	5.20	5.73	6.02	5.56
Price/Cash Flow	9.81	12.73	9.42	8.18	10.33	8.38	12.40	10.09	14.54	16.28	12.06
Price/Free Cash Flow	11.84	15.82	11.68	9.49	12.30	9.88	14.82	11.38	16.29	18.35	13.60
Dividend Yield (%)	1.88	1.56	1.93	1.73	1.80	2.36	0.40	0.00	0.00	0.00	0.00
Enterprise Value/EBIT	10.78	13.85	10.66	9.58	11.42	8.38	10.93	9.52	12.82	19.54	12.19
Enterprise Value/EBITDA	9.27	11.85	9.03	8.19	9.92	7.36	10.32	9.04	12.14	17.83	11.33
Enterprise Value/Sales	2.99	3.64	2.91	2.76	3.28	2.37	3.83	3.02	3.60	3.95	2.35
Total Debt/Enterprise Value	0.10	0.14	0.14	0.10	0.06	0.04	0.00	0.00	0.00	0.00	0.00

#### d. Filings



The following step in your company analysis process involves parsing through the filings to get a better understanding of the business. This helps you learn about the risks, trends, and opportunities associated with the company. The filings also contain financial information and accounting details in the footnotes.

You can access SEC filings from *News, Research and Filings* section under the Reports tab. You can also access the most recent *Press Releases* from the same tab, where you can find synthesized information for upcoming and past filings before the official filing document has been made public.

In the *Earnings* section, you will find all interim and annual filings, ready to be exported in PDF or Word format. Additionally, you can listen to transcript recordings.

#### Types of Filings

- **10K** – annual financial statements that follow a set structure of presentation; contains important information such as latest share count on the cover, financial statements, management discussion and analysis, and footnotes.

- **10Q** – interim financial quarter performance and highlights; less detailed footnotes and analysis than 10Ks; 10Q forms are unaudited and filed within 40-45 days of quarter end.
- **8K** –required in the case of a materially significant event that affects a company’s financial position or share price; earnings press releases (PR) are often filed as 8K’s; such earnings releases usually become public before the official 10Q or 10K filing; the nature of PR may contain more information on GAAP to non-GAAP reconciliations and future guidance; 8K’s are also filed in the case of acquisitions, substantial asset sales or restructurings.
- **Form 14A (Proxy)** – represents a notification to shareholders about matters to be brought before meetings; usually contains latest share count (better source than 10Q’s or 10K’s when it’s a more recent filing); contains a great amount of detail around acquisitions as it solicits shareholder approval.

There are additional types of filings, but the above are some of the most used by analysts when performing company valuation.

You can also find initiation and research reports in the *Initiating Coverage* and *Investment Research*. Initiation reports often contain more extensive analysis on a company’s business and financials, but they can also be outdated.

### Debt Schedule Information



The *Credit Analysis* tab provides detailed information on a company’s debt, including debt structure and schedule information, balances of short- and long-term debt, interest expense, maturity and ratings.

In the *DCS Overview* section, you can find a quick summary of ST and LT debt balances from the most recent filings, as well as interest expense, leverage ratios and credit rating.

The Altman Z-score is a combined measure of credit strength that estimates a company’s likelihood of bankruptcy. The score is based on five financial ratios that measure profitability, leverage, liquidity, solvency, and asset turnover. A score above 2 is usually considered healthy.

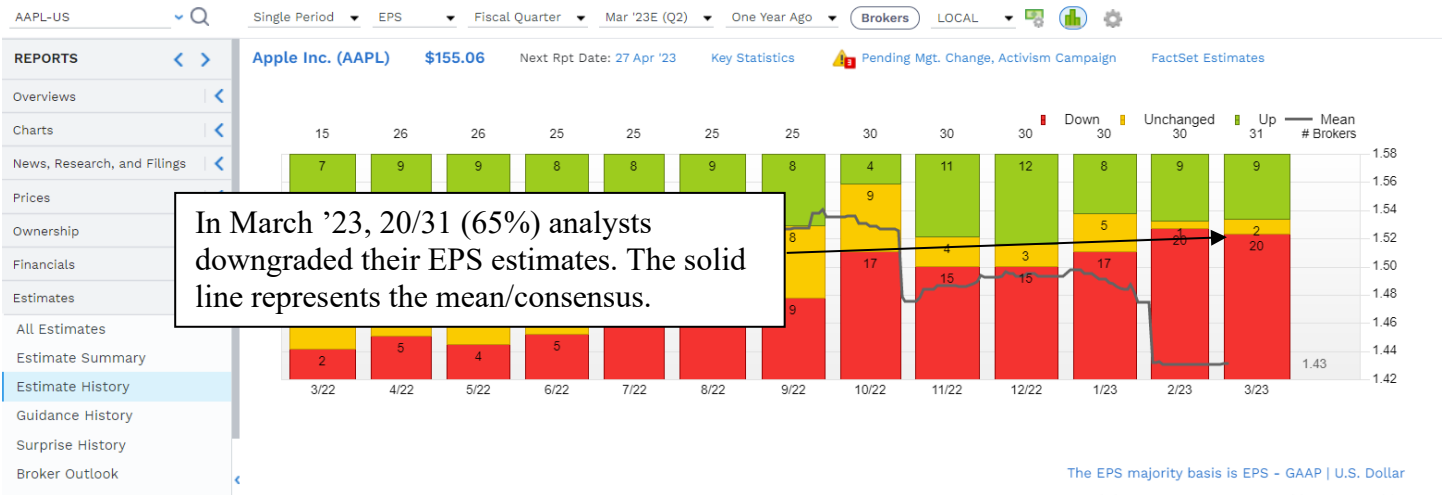
Again, in the *DCS Overview* section, you can find information on maturity dates by clicking on the bar chart or grey table icon to change between a graphical or table format.

Historical Credit Analysis		<input type="checkbox"/> Compare To	SP50-SPX 
	31-Dec-2022	24-Sep-2022	
ST Debt	11,483.0	21,110.0	
LT Debt	99,627.0	98,959.1	
Cash & ST Investments	51,355.0	48,304.0	
Curr. Portion LT Debt	9,740.0	11,128.0	
Capital Leases	0.0	812.0	
EBITDA	125,288.0	130,541.0	
Interest Expense	3,240.0	2,931.0	
Free Cash Flow	97,498.0	111,443.0	
Operating Cash Flow	109,190.0	122,151.0	
Net Debt/EBITDA	0.5x	0.6x	
Net Debt/(EBITDA-Capex)	0.5x	0.7x	
LT Debt/EBITDA	0.8x	0.8x	
Total Debt/EBITDA	0.9x	1.0x	
EBITDA/Interest Expense	38.7x	44.5x	
EBIT/Interest Expense	35.2x	40.7x	
CFO/Interest Expense	33.7x	41.7x	
LT Debt/Total Equity	175.6%	195.3%	
LT Debt/MCAP	0.0x	0.0x	
LT Debt/LT Debt + Total Equity	63.7%	66.1%	
LT Debt/LT Debt + MCAP	4.6%	4.0%	
LT Debt/Total Assets	28.7%	28.1%	
LT Debt/TEV	4.1%	4.0%	
Altman Z-Score	6.5	6.6	
S&P Rating	-	-	
Moody's Rating	-	-	

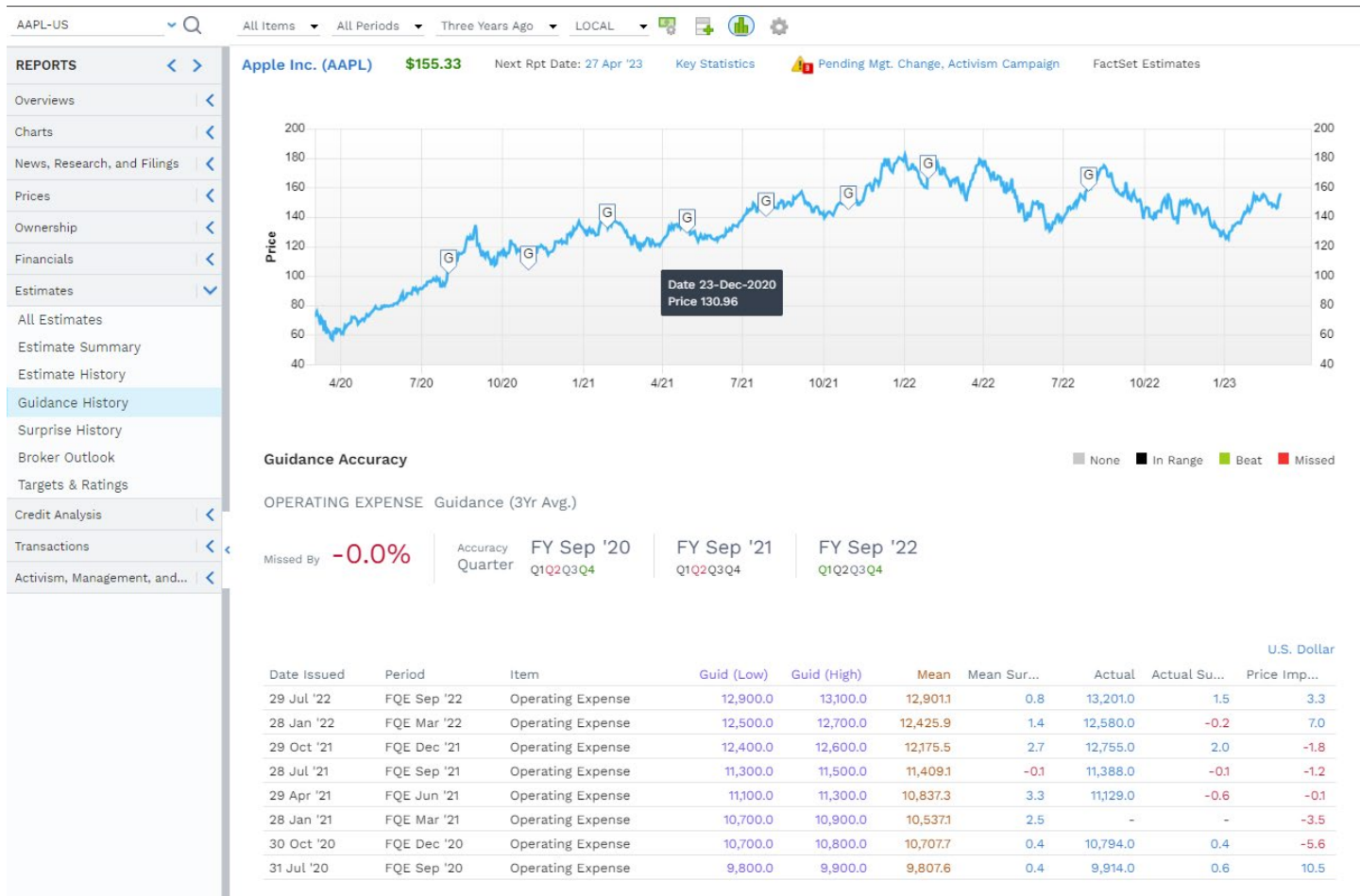
LT Debt by Maturity Summary					Maturity Type: <span>Aggregate</span>  		
	Revolving Credit	Term Loans	Notes/Bonds	Total Classified	Capital Leases	Adj.	LTD Total
2023	0.0	0.0	9,750.0	9,750.0			
2024	0.0	0.0	10,913.2	10,913.2			
2025	0.0	0.0	10,901.3	10,901.3			
2026	0.0	0.0	11,714.5	11,714.5			
2027	0.0	0.0	9,817.3	9,817.3			
2028	0.0	0.0	4,800.0	4,800.0			
2029	0.0	0.0	4,986.2	4,986.2			
2030	0.0	0.0	3,405.3	3,405.3			
2031	0.0	0.0	4,817.3	4,817.3			
2032	0.0	0.0	1,500.0	1,500.0			
> 2033	0.0	0.0	38,551.4	38,551.4			
Other	0.0	0.0	-52.6	-52.6			
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>111,104.0</b>	<b>111,104.0</b>	<b>0.0</b>	<b>-1,737.0</b>	<b>109,367.0</b>

**e. Projections and Estimates**

In the *Estimates* tab you can access analysts' growth projections, guidance, and surprise history. Consensus ratings, number of analysts covering the stock, and high-level projections information are found in the *All Estimates* section. For well-covered companies you may find projections broken down by reporting segments.



In the *Guidance History* section, you can observe historical trends and surprise levels on company provided guidance.



### f. Pricing Data

When trying to get historical price data for a specific period, go to the *Price History* section under the *Price* tab. You can select data for single or multiple securities, and get different types of price statistics (Price, % Change, Open, High, Low, Dividend Yield, Short Interest, and Return and Volume data).

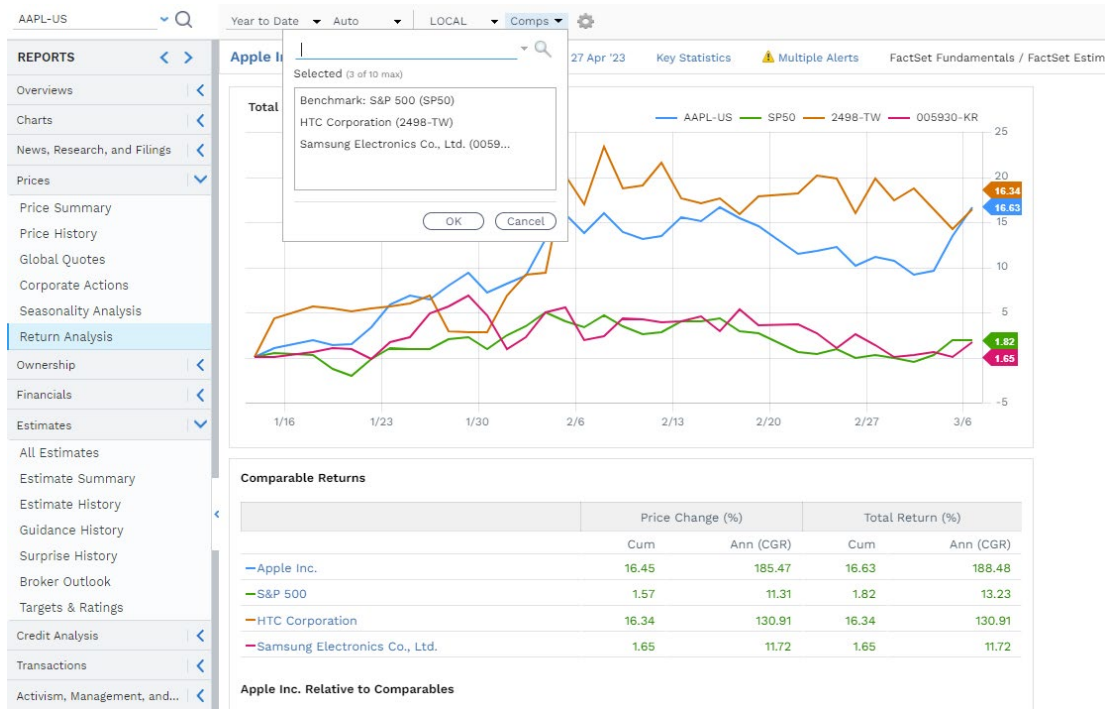
Short interest represents the number of shares that have been sold short and are not yet covered and closed out. The short interest can be expressed either in absolute number of shares, or as a percentage of total average daily volume.

You can export custom period pricing data in Excel by clicking on the download button to the right of the screen:



In the *Return Analysis* section, you can compare a company's price performance against an index or peers, by clicking on *Comps*, entering the respective peer and index tickers, and clicking *OK*.

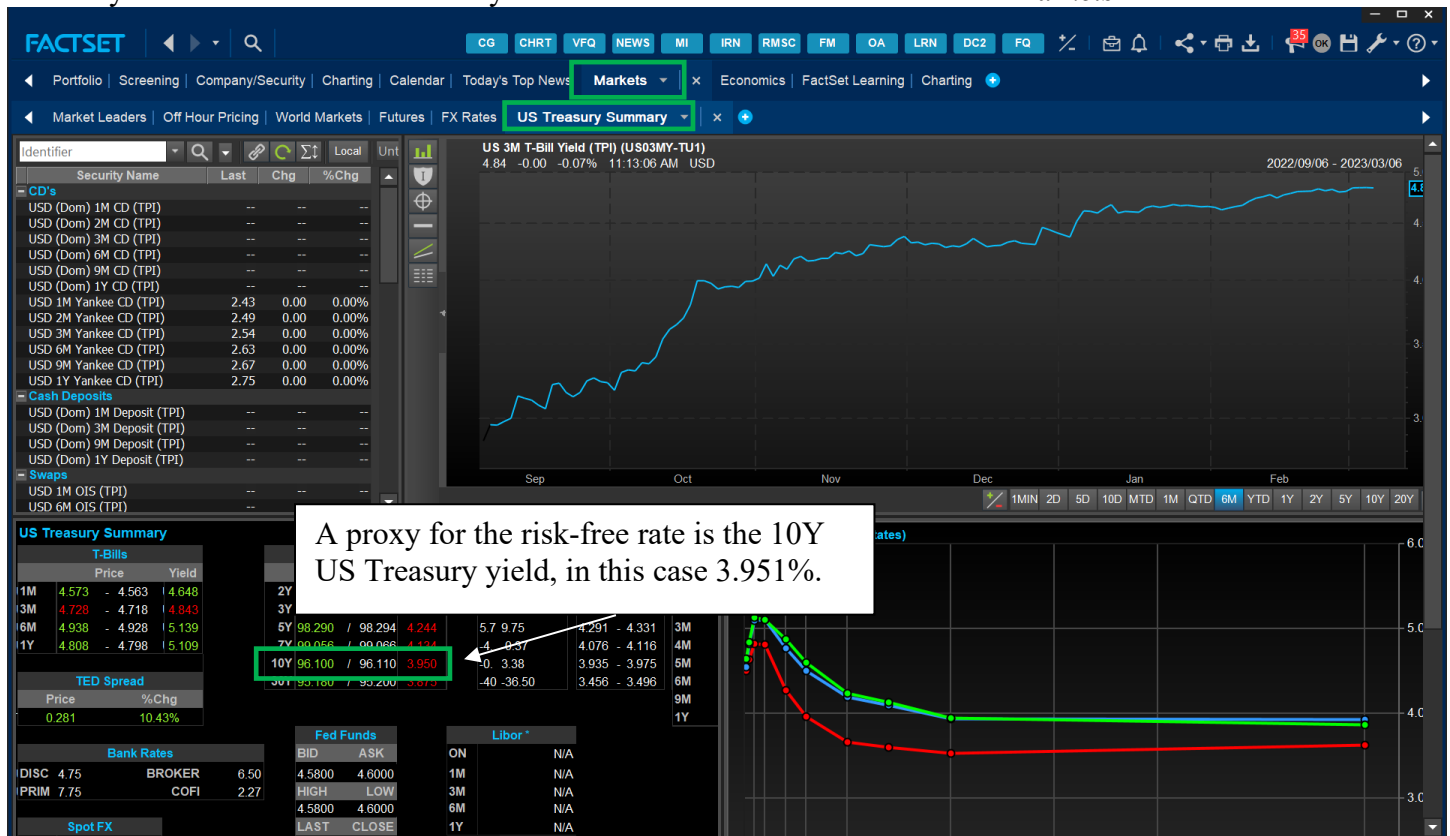
We can observe that Apple outperformed the S&P500, Samsung and HTC year-to-date below.



**g. DCF Inputs**

**i. Risk Free Rate**

You may find information on Treasury securities of different maturities in the *Markets* tab on the toolbar.



**ii. Weighted Average Cost of Capital**

The following table represents all inputs needed to calculate a company's WACC:

<b>Input</b>	<b>Formula / Where to find it?</b>
<b>Beta</b>	<i>Company/Security</i> tab → <i>Prices</i> tab → <i>Price Summary</i> section; can also compute on your own by regressing the stock price against a market proxy.
<b>Risk-Free Rate</b>	<i>Markets</i> tab → <i>US Treasury Summary</i> tab
<b>Weight of Debt</b>	Calculate using inputs from the <i>Credit Analysis</i> tab → <i>DCS Overview</i> section and market value of equity
<b>Weight of Equity</b>	Calculate using inputs from the <i>Credit Analysis</i> tab → <i>DCS Overview</i> section and market value of equity
<b>Cost of Equity</b>	$R_f + \text{Beta} \times \text{Equity Risk Premium}$
<b>Cost of Debt (after-tax)</b>	$K_d \times (1 - t)$

### iii. Equity Risk Premium

The equity risk premium is the expected return on stocks, net of the risk-free rate in an economy. This excess return compensates investors for taking on the relatively higher risk of equity investments compared to risk-free securities. Consequently, riskier securities demand a higher premium.

We can consider the concept of equity risk premium in two directions:

- Historical equity risk premium
- Implied equity risk premium

The historical equity risk premium is a backward-looking measure and can be estimated by observing stock market and government bond performance over a defined period. The time frame and method of calculation will affect the estimates.

We can calculate the ERP using the formula:

$$\text{ERP} = \beta_a (R_m - R_f),$$

Where:

- $\beta_a$  is the asset beta
- $R_m$  is the return of the overall market
- $R_f$  is the risk-free rate

The implied equity risk premium is a forward-looking measure and can change depending on your period of analysis. We can estimate it using a discounted cash flow approach and current stock index levels to calculate the future risk premium implied by the current stock price levels. This approach assumes that the current valuation levels are correct, or put in other words, markets are efficient.

You may find both estimates on [Damodaran Online](#). After opening the website, go to the *Data* section.



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Then choose *Current Data*.

## Data: Current

[About Data](#) - 
 [Data Breakdown](#) - 
 [Current Data](#) - 
 [Archived Data](#) - 
 [Webcasts/Tools](#)

Data of last update: *January 5, 2018*

Topic	Current data set as html (just US)	Regional datasets (downloadable Excel)	Description
Corporate Governance	<a href="#">Insider and Institutional Holdings by Industry Sector</a>	1. <a href="#">US</a> 2. <a href="#">Europe</a> 3. <a href="#">Japan</a> 4. <a href="#">Emerging Markets</a> 1. <a href="#">China</a> 2. <a href="#">India</a> 5. <a href="#">Global</a>	Insider holdings and institutional holdings as a percent of outstanding stock, classified by industry.
	<a href="#">Historical Returns on Stocks, Bonds and Bills - United States</a>	<a href="#">Download</a>	Historical returns on stocks, bonds and bills for the United States from 1928 to the most recent year. It is a useful starting point for estimating historical equity premiums.
	<a href="#">Implied Equity Risk Premiums - United States</a>	<a href="#">Download</a>	These risk premiums are estimated based upon a simple 2-stage Augmented Dividend discount model and reflect the risk premium which would justify their current level of the index, given the dividend yield, expected growth in earnings and the level of the long term bond rate.
	<a href="#">Risk Premiums for Other Markets</a>	<a href="#">Download</a>	These are risk premiums estimates for other markets based upon the country ratings assigned by Moodys. Starting in June 2012, I am also reporting equity risk premiums based upon CDS spreads, where those are available.
	<a href="#">Levered and Unlevered Betas by Industry</a>	1. <a href="#">U.S.</a> 2. <a href="#">Europe</a> 3. <a href="#">Japan</a> 4. <a href="#">Emerg Mkt</a> 1. <a href="#">Just China</a> 2. <a href="#">Just India</a> 5. <a href="#">Global</a>	Levered, unlevered and pure play betas by industry.
	<a href="#">Marginal tax rate by country</a> For full version go to the <a href="#">KPMG site</a>	<a href="#">Download</a>	From the KPMG survey of corporate tax rates by country. Please give them full credit when you use any of the information from this file.
Discount Rate Estimation	<a href="#">Total Beta By Industry Sector</a>	1. <a href="#">US</a> 2. <a href="#">Europe</a> 3. <a href="#">Japan</a> 4. <a href="#">Emerg Mkt</a> 1. <a href="#">Just China</a> 2. <a href="#">Just India</a> 5. <a href="#">Global</a>	Betas adjusted to reflect a firm's total exposure to risk rather than just the market risk component. It is a function of the market beta and the portion of the total risk that is market risk. These betas might provide better estimates of costs of equity for undiversified owners of businesses.

You can access a spreadsheet with calculated Historical ERP by clicking on download.

In the downloaded spreadsheet you can adjust for short-term (ST) and long-term (LT) estimates. Damodaran uses 3-month treasury notes as a proxy for the short-term risk-free rate, and 10-year US Treasury bonds for the long-term risk-free rate. After inputting LT for the risk-free rate, scroll down to the bottom of the spreadsheet to see the historical premia for different periods.



	A	B	C	D	E	F	G	H	I	J	K
100		2009	25.94%	0.14%	-11.12%	\$142,344.87	\$ 1,967.29	\$ 5,344.65	25.80%	37.05%	4.29%
101		2010	14.82%	0.13%	8.46%	\$163,441.94	\$ 1,969.84	\$ 5,796.96	14.69%	6.36%	4.31%
102		2011	2.10%	0.03%	16.04%	\$166,871.56	\$ 1,970.44	\$ 6,726.52	2.07%	-13.94%	4.10%
103		2012	15.89%	0.05%	2.97%	\$193,388.43	\$ 1,971.42	\$ 6,926.40	15.84%	12.92%	4.20%
104		2013	32.15%	0.07%	-9.10%	\$255,553.31	\$ 1,972.72	\$ 6,295.79	32.08%	41.25%	4.62%
105		2014	13.52%	0.05%	10.75%	\$290,115.42	\$ 1,973.77	\$ 6,972.34	13.47%	2.78%	4.60%
106		2015	1.38%	0.21%	1.28%	\$294,115.79	\$ 1,977.91	\$ 7,061.89	1.17%	0.09%	4.54%
107		2016	11.77%	0.51%	0.69%	\$328,742.28	\$ 1,988.00	\$ 7,110.65	11.26%	11.08%	4.62%
108		2017	21.64%	1.39%	2.80%	\$399,885.98	\$ 2,015.63	\$ 7,309.87	20.25%	18.84%	4.77%
109											
110		<b>Arithmetic Average</b>									
111		1928-2017	11.53%	3.44%	5.15%						
112		1968-2017	11.41%	4.82%	7.17%						
113		2008-2017	10.27%	0.42%	4.29%						
114											
115		<b>Geometric Average</b>									
116		1928-2017	9.65%	3.39%	4.88%						
117		1968-2017	10.05%	4.77%	6.76%						
118		2008-2017	8.42%	0.41%	3.86%						
119											

		<i>Risk Premium</i>		<i>Standard Error</i>	
		Stocks - T.Bills	Stocks - T.Bonds	Stocks - T.Bills	Stocks - T.Bonds
		8.09%	6.38%	2.10%	2.24%
		6.58%	4.24%	2.39%	2.70%
		9.85%	5.98%	6.12%	8.70%

		<i>Risk Premium</i>	
		Stocks - T.Bills	Stocks - T.Bonds
		6.26%	4.77%
		5.28%	3.29%
		8.01%	4.56%

Which average is best?

Arithmetic averages assume security prices follow a random walk; returns are normally distributed and independent.

Geometric averages account for compounding. They are often used for measurement of long-term market risk premium and buy-and-hold strategies.

In your choice, consider the maturity chosen for the risk-free rate proxy, as well as the horizon of the investment. Short (long) term risk free rates are best matched with short (long) term risk free premia. Be consistent in your choices.

To look at the implied ERP, click download next to the data description field. The following spreadsheet will open.

Date updated 5-Jan-18															
Created by: Aswath Damodaran_adamodar@stern.nyu.edu															
What is this d Implied Equity Risk Premiums (by year) S&P 500															
Home Page: http://www.damodaran.com															
Data website: http://www.stern.nyu.edu/~adamodar/New_Home_Page/data.html															

Year	Earnings Yr	Dividend Yr	S&P 50C	Earning	Dividend	Dividends + Buyba	Change in Eearnir	Change in Divide	T.Bill Ra	T.Bond Rc	Bond-Bill	Smoothed Growth	Implied Premium (DC	Analyst Growth Estim	Implied Premium (FCF
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%	4.16%
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%	4.37%
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%	6.43%
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%	4.36%
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	3.29%	3.16%	3.33%	2.24%	2.24%	6.95%	5.20%
2011	7.72%	2.07%	1257.60	97.05	26.02	71.28	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%	6.01%
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%	5.78%
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%	4.96%
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%	5.78%
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.51%	6.12%
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%	5.69%
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%	5.08%

\* Earnings and dividends numbers each year reflect the estimated numbers as of the end of the year. These numbers get updated later in the year but I do not update the numbers in this spreadsheet, since I would not have had access to them at the end of the year.

Implied Premium (ECFE)	
1961 - 2017	4.16%
1998 - 2017	4.51%
2008-2017	5.54%

The implied ERP is calculated using current index levels, expected dividends on stock, and expected earnings growth rates. On the actual downloaded spreadsheet, time periods may not be noted, but you can check them by clicking on the cell with the percentage number and trace the formula in the spreadsheet. More information and definition of each variable can be found [here](#).

## II. Comparable Companies Information

In the *Overviews* tab, go to the *Comps* section.

The screenshot shows the FactSet interface for Apple Inc. (AAPL) with a market cap of \$155.71. The 'Comps' section is highlighted in the left sidebar. The 'Selected Financials' table is displayed below, comparing Apple's performance with its peers.

Company Name	Ticker	Fiscal Period	Sales (\$)		EBITDA			EBIT			FCF			
			FY1	FY2	FY1	Margin FY1 (%)	FY2	Margin FY2 (%)	FY1	Margin FY1 (%)	FY2	Margin FY2 (%)	FY1	FY2
Apple	AAPL-US	12/31/2022	389,106.8	416,233.9	125,481.7	32.2	134,056.4	32.2	113,286.7	29.1	121,667.5	29.2	94,958.6	108,586.7
Evercel	EVRC-US	03/2021	-	-	-	-	-	-	-	-	-	-	-	-
Sonim Technologies	SONM-US	09/30/2022	-	-	-	-	-	-	-	-	-	-	-	-
UAV	UMAV-US	09/30/2022	-	-	-	-	-	-	-	-	-	-	-	-
American Aires	WIFI-CA	09/30/2022	-	-	-	-	-	-	-	-	-	-	-	-
Ascorm Holding	ASCN-CH	06/30/2022	316.8	339.1	27.9	8.8	37.9	11.2	14.9	4.7	24.3	7.2	10.5	22.9
Bigben Interactive	BIG-FR	09/30/2022	315.8	405.8	65.3	20.7	104.2	25.7	21.3	6.7	47.2	11.6	-16.3	-7.4
Cellularline	CELL-IT	06/30/2022	159.0	-	-	-	-	-	-	-	-	-	-	-
<b>Average</b>						<b>20.6</b>		<b>23.0</b>		<b>13.5</b>		<b>16.0</b>	<b>31,650.9</b>	<b>36,200.7</b>
<b>Median</b>						<b>20.7</b>		<b>25.7</b>		<b>6.7</b>		<b>11.6</b>	<b>10.5</b>	<b>22.9</b>

You may add or remove comps. To remove a company, click remove next to the name in the *Selected Financials* table. To add a company, enter the ticker into the search box to the right above the table.

MSFT

Company Name	Ticker
Apple	AAPL-US
Evercel	EVRC-US
Sonim Technol	SONM-US
UAV	UAV-US
American Aires	WIFI-CA
Ascom Holding	ASCN-CH
Bigben Interactive	BIG-FR
Cellularline	CELL-IT

The default snapshot shows valuation metrics, but you can adjust the output by clicking on the boxes above the tables.

View :  Selected Financials  Valuation  Capitalization  Margins  Performance | Custom ▾

You can add metrics by creating custom tables, choosing the custom drop-down menu. A window will open, allowing you to choose from different categories of data (Profitability, Price performance, Growth, Valuation).

Create Table ✕

**Add Table Name**  
Enter text here...

**Select Table Columns**

Available

Search...

- Capacity
- Credit Analysis
- Debt Capital Structure
- Efficiency
- Growth
- Industry Classification
- Industry Metrics
- Liquidity
- Ownership
- Price and Performance
- Private Company
- Profitability
- Reference
- Size

Selected

Ticker

CompanyName

### III. Industry Information

The *Industry* tab is the place to find industry metrics and valuation levels to inform yourself about the performance and outlook of a specific sector. In the Apple example, we would be looking at the Telecommunications Equipment industry.

**Search for a sector or enter your company's ticker to load the sector information**

**United States / Telecommunications Equipment** YTD Return: 15.7% Source: FactSet Related Industries

**Performance**

United States / Telecommunications Equipment -IND - Total Return (Blue line) vs United States - Total Return (Green line)

	%
1Wk %Chg	2.9
1M %Chg	-2.0
3M %Chg	2.1
6M %Chg	-2.5
YTD %Chg	15.7
1Yr %Chg	-9.2
3Yr %Chg	109.7
5Yr %Chg	237.9
10Yr %Chg	775.7

**Characteristics - LTM**

	Current	United States
P/E	25.2	18.2
P/E (NTM)	24.3	18.5
PEG (NTM)	2.3	1.6
P/Book	34.4	3.5
P/Tang Book	42.9	-
ROE	134.5	16.2
Div Yld	0.6	1.6
Net Debt/EBITDA	0.6	1.9
P/Sales	5.8	2.0
P/CF	22.2	13.7
EV/Sales	6.0	2.4
EV/EBITDA	19.5	13.4
Capex Growth	2.5	15.8

Symbol	Type	Sales (\$m)	Employees	MV (\$m)	EV (\$m)	Price (loc)	Target Price (local)	Rec	P/E (LTM)	EV/EBITDA (LTM)	EBIT Margin (LTM)
AAPL-US	Public	394,328	164,000	2,389,589	2,449,344	151.03	168.90	Overweight	25.0	18.2	29.8
CommScope Holding Co., Inc.	Public	9,228	30,000	1,626	12,001	7.80	11.70	Hold	4.6	8.2	12.7
Motorola Solutions, Inc.	Public	9,112	20,000	44,582	49,823	266.56	294.00	Overweight	25.4	19.0	26.2
Garmin Ltd.	Public	4,860	19,700	19,025	17,712	99.26	105.00	Hold	19.3	14.2	21.0
Ciena Corporation	Public	3,633	8,079	7,286	7,324	49.09	62.43	Overweight	23.0	13.1	11.7
ViaSat, Inc.	Public	2,788	7,000	2,491	5,615	32.61	51.00	Overweight	-	7.2	-4.0
FLIR Systems, Inc.	Private	1,924	4,179	-	-	-	-	-	-	-	-
Ubiquiti Inc.	Public	1,692	1,377	16,394	17,190	271.23	320.50	Hold	38.6	-	-
Plantronics, Inc.	Private	1,679	6,500	-	-	-	40.00	Hold	-	-	-
Infinera Corporation	Public	1,573	-	1,632	2,154	7.33	8.50	Hold	52.1	13.3	4.7

In the *Snapshot* section, you will see characteristics, market performance of the sector and key players. You may also find information on sales and earnings outlooks, analyst recommendations and revisions, and historical multiples trends. The *Industry* tab contains a wide variety of sector-level financial metrics, valuation ratios, peer price performance, estimates, and even M&A trends.

#### IV. Macroeconomic Information

Lastly, you can get GDP, inflation, short-and-long-term generic government bond yields, and additional economic and fiscal information in the *Economics* tab.

Portfolio | Screening | Company/Security | Charting | Calendar | Today's Top News | Markets | **Economics** | FactSet Learning | Charting | Industry

Calendar | Country/Region | Comparison | Estimates | Policy Rates

For CPI, GDP, unemployment, and interest rates go to the *Country/Region* section, type the country into the search bar in the top left, and select the *Economic Synopsis* report.

Portfolio | Screening | Company/Security | Charting | Calendar | Today's Top News | Markets | **Economics** | FactSet Learning | Charting | Industry

Calendar | **Country/Region** | Comparison | Estimates | Policy Rates

cc\_US

**REPORTS** | **United States** | Data as of: 06-Mar-2023

Overviews

- Economic Synopsis
- Market Synopsis
- Key Indicators
- Entity Structure
- Corporate Finance
- Estimates
- Government Finance
- Balance of Payments
- Consumption & Income
- Energy
- Flow of Funds
- Foreign Trade

### Economics Summary

Monthly Indicators	Feb-23	Jan-23	Dec-22	Nov-22	Oct-22
Retail & Food Svs Sales (%m/m, sa)	-	3.0	-1.1	-1.1	1.1
Civilian Unemployment Rate (%)	-	3.4	3.5	3.6	3.7
Housing Starts (Thous. Units, saar)	-	1,309.0	1,371.0	1,419.0	1,426.0
CPI (%m/m, sa)	-	0.5	0.1	0.2	0.5
Industrial Production (%m/m, sa)	-	0.0	-1.0	-0.6	0.0
Consumer Confidence (CB, 1985=...)	102.9	106.0	109.0	101.4	102.2
ISM Manufacturing Report (%)	47.7	47.4	48.4	49.0	50.0
Leading Economic Index (%m/m)	-	-0.3	-0.8	-0.9	-0.9
Quarterly Indicators	Dec-22	Sep-22	Jun-22	Mar-22	Dec-21
Current Account Balance (Bil. \$)	-	-217.1	-238.7	-282.5	-224.8
Real GDP Growth (%q/q, saar)	2.7	3.2	-0.6	-1.6	7.0

Source: FactSet Economics

### Economic Outlook

National Accounts	Q2 '22	Q3 '22	Q4 '22	CY '22	Q1 '23	Q2 '23	CY '23	CY '24
Real GDP (%q/q, SAAR)	-0.6	3.2	2.7	2.1	0.5	-0.3	0.6	1.3
Trade Balance (Bil. Ch...)	-1,430.5	-1,268.8	-1,238.4	-1,356.6	-1,280.8	-1,265.3	-1,261.7	-1,059.9
Inflation								
CPI (%q/q, SAAR)	9.7	5.5	4.2	8.0	4.8	3.8	4.0	2.5
Other Indicators								
Current Account (Bil. U...)	-238.7	-217.1	-220.0	-981.0	-217.0	-214.0	-880.8	-858.0
Industrial Production (...)	5.0	1.3	-2.4	3.8	-1.1	-3.4	-1.2	0.5
Unemployment Rate (%)	3.6	3.5	3.6	3.6	3.6	4.0	4.1	4.6
Housing Starts (Thous.)	1,647.3	1,450.0	1,405.3	1,555.6	-	-	1,239.5	1,321.0
Interest Rates								
Federal Funds Target ...	1.75	3.25	4.50	4.50	5.00	5.13	4.75	3.25

Sources: FactSet Economics, FactSet Economic Estimates