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1. **Introduction and Overview**

As discussed in his best-seller, “One Up on Wall Street,” legendary investor Peter Lynch compared the company’s price line to its earnings line to determine if a company is undervalued. Buying growth stocks at deeply undervalued prices and selling them when the price rose sharply above the earnings line generally leads to good returns.

GuruFocus’s Interactive Chart feature allows you to construct charts including the famous Peter Lynch Chart. However, you can construct an eclectic variety of charts and do many other cool things with the Interactive Charts feature. This manual will highlight some of the key aspects.

![Interactive Charts](image)

**Accessing Interactive Charts**

You can access the Interactive Charts in several ways, as described in Figures 1.1 to 1.3:

1. On the Search box located underneath the blue “GuruFocus” ribbon, type in a company’s ticker symbol, and choose the one with “Interactive Chart.”
2. On a company’s summary page, scroll down until you see “Peter Lynch Chart.” Click on the “Interactive Charts” link in the upper-right corner.
3. Click on “Interactive Chart” among the tabs listed in the gray ribbon near the top of the page.

Figures 1.1 to 1.3 show how to access the interactive charts feature for Apple Inc. (AAPL), one of several companies that we will discuss throughout this user manual.
Figure 1.1

Peter Lynch Chart

Apple Inc (AAPL)

Figure 1.2

Summary

Figure 1.3
Using the Interactive Chart interface

Once you access the Interactive Charts interface, the Chart automatically graphs the company’s historical stock price line for all years as shown in Figure 2 above. You can limit the time frame to several predefined periods:

- Three months
- Six months
- Year to date
- One year
- Three years
- Five years
- Ten years

Position 1 in Figure 2 shows the location for the predefined time frames. You can also manually set the time period using the “From” and “To” boxes located at position 2. To view the numeric value for each active series on a particular day, simply hover the mouse over the chart (position 3). Finally, you can export the chart to Excel, save the chart as an image or embed the chart to your article using the respective buttons located at position 4.
2. Basic Interactive Chart Features

The Interactive Charts feature allows you to graph the historical trendline of a company’s financials, ranging from the stock price and revenue to the company’s operating margin or days sales outstanding. You can view all of the available financial metrics by clicking the tabs located on the left.

As shown in Figure 3, the available financial metrics are grouped into several tabs, including: most popular, valuation & quality, income statement, balance sheet, cash flow statement and economic indicators. The most popular tab lists the commonly used financial metrics, including the price, revenue, market cap, dividend yield and the key valuation ratios. Other tabs list financial metrics according to the label:

- Valuation & Quality includes the commonly used financial strength and profitability metrics, including the Piotroski F-score, Altman Z-score, the Beneish M-score and all profit margins and returns.
- Income Statement includes revenue, cost of goods sold, SGA expense and gross profit.
- Balance Sheet includes cash, asset accounts, debt and equity accounts.
- Cash Flow Statement includes net income, depreciation, etc.
- Economic Indicators includes gross domestic product and the purchasing managers’ index.

This allows you to graph these economic indicators with company financial information.

- Customized Series: If you have user-defined series, they will show up here. We will discuss this later.
- Technical Indicators include some advanced metrics, including Bollinger bands, moving averages and Keltner channels.

In the “Search Series” box, you can easily find the desired series. For example, you can type “oper” to search for the series, operating margin.
Graphing series within Interactive Charts

As discussed earlier, the Chart automatically graphs the company’s historical stock price. (Note the check mark next to “Price” in Figure 3.) To remove a series, simply uncheck the box next to that series. After you uncheck “Price,” you should have a blank chart. Now you can graph a single series by clicking the check box next to the desired series, e.g., the price-earnings ratio (ttm). After you click the check box next to “P/E (ttm),” you should see Apple’s historical P/E ratios throughout all years. Since we usually only care about the recent 10 years, we can click on the “10y” button among the predefined time periods. The chart will then show Apple’s historical P/E ratios for the past 10 years only. Figure 4 shows the chart output.

![Figure 4](image)

The red numbers next to the tab labels show how many series from each of the tabs are displayed on the interactive chart, allowing you to keep track how many series you have selected. This is helpful when you are graphing multiple series.

Usually, you would like to graph multiple financial metrics for a single company. For example, you may want to discuss Apple’s operating margin and return on equity in a single paragraph. You can graph several financial metrics on the chart, as long as the series do not overlap and cause confusion. Figure 5 displays Apple’s key profit margins and returns.
The series are color-coded so that you can easily distinguish between each of the series, and the legend appears below the chart. Note the red 4 next to valuation & quality: we have selected four series within that tab.

**Comparing and switching companies within Interactive Charts**

You will notice that there are various dialog boxes, buttons and check boxes above the interactive chart. These options, as displayed in Figure 6, allow you to customize the chart output.

You can directly switch companies within the Interactive Chart by typing in the new company’s ticker symbol in the “Switch Ticker” dialog box and clicking Go. For example, you can change the ticker symbol to Baidu Inc. (BIDU). Note that this also changes the header from Apple to Baidu, i.e., the header will now display the key financial information for Baidu.

Often, you would like to compare one company’s financial metrics to a different company. For example, you may want to compare Baidu’s earnings per share to that of Google or Yahoo. From a blank chart, first search for “eps” and click on the check box. You can then add Google’s EPS and Yahoo’s EPS by typing in their ticker symbols in the “Compare Company” dialog box. Figure 7.1 shows the chart output.
By default, the Interactive Chart shows annual data. However, you can change this setting using the three radio buttons next to the “Switch Ticker” dialog box: Annual Data, Quarterly Data and TTM Data. Figures 7.2 and 7.3 show the three Internet content & information company’s quarterly eps and TTM eps, respectively.
Figure 7.2

Figure 7.3
Miscellaneous graphing options

The “% Change” option shows the percentage change of a company’s financial metric year over year. To consider the year over year growth rate for a specific financial metric, click on the “% YOY” check box. You can also use a logarithmic scale, like what Peter Lynch used in his famous chart.

Figure 8.1 shows Baidu’s YOY operating margin growth rate for the past 10 years, and Figure 8.2 shows Baidu’s Peter Lynch Chart with a logarithmic scale.

Figure 8.1
As expected, banks suffered sharp decreases in stock price during U.S. recessions. You can highlight the recession years by clicking on the “U.S. Recession” check box. Figure 8.3 shows the historical stock price for two banks: Bank of America Corp. (BAC) and JPMorgan Chase & Co. (JPM).
Finally, the “Reset All” button reverts the Interactive Chart to its default view, which graphs the active company’s historical stock price line for all years. (The active company is the company that is featured at the top of the Web page.)
3. **Predefined Charts**

GuruFocus offers several predefined interactive charts, including the Peter Lynch Chart and the price-to-sales valuation bands. These two charts allow you to visualize when a company stock is undervalued.

**Peter Lynch Chart**

As discussed in earlier sections of this manual, the Peter Lynch Chart is one of the most famous charts in the investing world. This chart compares the company’s price line to its earnings line, which is 15 times the P/E (nri) by default. However, you can change this value by entering the desired number in the “Price at P/E (w/o NRI) =” box, as highlighted in Figure 9.

![Figure 9](image)

As companies have different price-earnings ratios, the Peter Lynch earnings line is not appropriate for companies with significantly high P/E (nri). For example, Google’s P/E (nri) ranges between 16.5 and 92.6 with a median about 30. An earnings line at P/E (nri) of 15 would inappropriately overvalue Google’s stock, as shown in Figure 9.1.
To account for the median P/E (nri) of 30, we can change the “Price at P/E(nri) =” value from 15 to 30 as displayed in Figure 9. Figure 9.2 shows Google’s earnings line at a P/E (nri) at 30.
Using Figure 9.2, we can more accurately determine when Google traded below its P/E (nri) valuation: in 2009, during the four-year period from mid 2010 to mid 2013, and in 2015. A projection indicates that Google is currently fully valued based on a P/E (nri) of 30.

However, the Interactive Charts feature also allows you to draw the earnings line at the company’s minimum P/E (nri), median P/E (nri) and maximum P/E (nri). These three items are located just above the highlighted blue box in Figure 9. Figure 9.3 shows Google’s earnings line at the company’s minimum, median and maximum P/E (nri).
Figure 9.3

Note how the earnings line at Google’s maximum P/E (nri) is severely above the rest of the chart. You can remove a series by unchecking the box for that series. You can also click on that series to deactivate it. Note that the legend displays the deactivated series in gray, indicating that the series does not appear on the chart. Figure 9.4 shows the chart output after removing the maximum P/E (nri) series.
Using Figure 9.4, we can observe several characteristics of Google’s stock. The company traded near its minimum P/E (nri) valuation near the end of 2008 and mid 2012, indicating that Google is “significantly undervalued” at those times. Investors who bought Google when the stock is significantly undervalued likely realized strong gains in the short term, as suggested by the chart. Unfortunately, Google’s stock currently trades significantly higher than its minimum P/E (nri) valuation.

**P/S valuation bands predefined chart**

As discussed in the definition page for P/E (nri), the P/E can frequently give misleading valuations, especially for cyclical and unpredictable companies (those with a predictability rank of one star or less). Peter Lynch warns that cyclical businesses usually have high profit margins near the peaks of business cycles and low profit margins near recessions. Other valuation metrics, including the Shiller P/E and the P/S ratios give more accurate valuations and thus can more accurately determine when a company stock is undervalued.

GuruFocus also provides valuation bands for P/B, P/S and P/OCF ratios as indicated in Figure 10. You can access these underneath the “Most Popular” tab or search for the valuation bands using “Search Series.” These valuation bands work similarly to those for P/E (nri).
GuruFocus provides the “P/S valuation bands” predefined chart likely because the P/S ratio more accurately identifies when a stock is undervalued than do other valuation ratios. Located just under the Peter Lynch Chart in the “Predefined Charts” drop down box, the “P/S valuation bands” graphs the valuation bands at the company’s minimum and maximum P/S ratios. Figure 11.1 displays Wal-Mart’s P/S valuation bands for all years while Figure 11.2 narrows the chart output to the recent 10 years.
Figure 11.1

Figure 11.2
With these two charts, we can determine when Wal-Mart’s stock is significantly undervalued or significantly overvalued based on P/S valuations. Based on the chart output, we can observe that while Wal-Mart traded near its maximum P/S valuation during the third-quarter of 2008, the stock price gradually decreased near its minimum P/S valuation by the third-quarter of 2011. After Wal-Mart’s stock price gradually increased to its maximum P/S valuation in 2015, the stock plummeted to its minimum P/S valuation during 2015. Investors would realize gains if they bought Wal-Mart during the third quarter of 2011 and sold it after New Year’s Day 2015.

You can also display the valuation at the median P/S to determine the relative valuation of the company. Simply check the “Price at Med P/S” series, which should be the one between the two automatically selected when you choose the “P/S valuation bands” predefined chart. Figure 11.3 shows Wal-Mart’s valuations at the minimum P/S, the maximum P/S and the median P/S.

![Figure 11.3](image-url)
Other predefined charts

While the previous two predefined charts are likely the most useful, the website also provides several other predefined charts.

- **Income Statement**: This predefined chart graphs the company’s revenue, gross profit, earnings before interest and taxes (EBIT) and net income. Figure 12.1 displays Wal-Mart’s income statement chart.
- **Balance Sheet**: This predefined chart graphs the company’s cash & cash equivalents, property, plant and equipment (PPE), total assets, total equity and long-term debt. Figure 12.2 displays Wal-Mart’s balance sheet chart.
- **GDP & GNP**: This predefined chart simply graphs the U.S. gross domestic product (GDP) and gross national product (GNP).
- “**dividend yield**”: This predefined chart just graphs the company’s trailing dividend yield.
- “**price&revenue**”: This predefined chart graphs the company’s price and revenue.
- **Peter Lynch Chart with Estimates**: This predefined chart graphs the company’s Peter Lynch Chart with analyst estimates for what may happen to a company’s earnings in the short term. Figure 12.3 displays Wal-Mart’s Peter Lynch Chart with Estimates. Based on this chart, Wal-Mart’s stock price may increase during 2018 based on its estimated earnings.
- **Peter Lynch Chart with regular earnings**
- **CTAS**: This predefined chart shows the company’s price and valuation at its median P/S.
4. Customized series and user-defined charts in Interactive Charts

We have recently introduced two user-friendly features within Interactive Charts: customized series and user-defined charts. These further increase the interactivity of the Charts feature.

**Customized series**

If you try to search for “Sloan Ratio” in the search series box, you will notice that we do not have the Sloan Ratio as one of the available series. However, with the customized series feature, we can graph this series as a function of other, available series.

Let us focus on Baidu, one company stock that has poor earnings quality based on its Sloan Ratio. This ratio is defined as follows:

\[
\text{Sloan Ratio} \% = 100 \times \frac{\text{Net Income} - \text{Cash Flow from Operations} - \text{Cash Flow from Investing}}{\text{Total Assets}}
\]

To create a customized series, first click on the “Customized Series” button among the list of buttons in Figure 6. Figure 13 repeats Figure 6 with the “Customized Series” button highlighted.
Once you click on Customized Series, you should see a pop-up box similar to the one displayed in Figure 13.1. In the textbox given, you can type in the formula for the customized series. For our example, you would type

$$100 \times ('Net\ Income' - 'Cash\ Flow\ from\ Operations' - 'Cash\ Flow\ from\ Investing') / 'Total\ Assets'$$

Note some particulars about your formula: the parameters must have single quotes around them and are case-sensitive. As you type into the text box, the drop-down menu will populate the available financial metrics that match the letters you entered. You can select the term for accuracy, as mentioned in the pop-up box.

Once you enter your formula, you will see a screen similar to one shown in Figure 13.2, which displays your formula, tells you if it is valid or not and allows you to name the customized series and pick the appropriate Y-axis. You must choose one of the Y-axis options given before you can finish the series.
Figure 13.2

Option 2 is most appropriate for the Sloan Ratio as it is a ratio. Choose Option 2 and click Finish to save the series. However, by saving the series, you reset the interactive chart. You can click “Reset All” to return the chart to show the price line. Remove “Price” to return to a blank chart. Figure 13.3 shows Baidu’s annual Sloan Ratio for the past 10 years.
Figure 13.3

To edit or delete a customized series, first hover the mouse over the desired customized series. Note that this also pop-ups the formula used to draw the series. Use the “pencil on clipboard” button to edit the series or the “X” to delete the series.
**Saving user-defined charts**

In addition to creating customized series, you can also create user-defined charts with the Interactive Charts feature. As discussed in the GuruFocus research article on the predictability rank, the revenue per share and EBITDA per share metrics can determine how predictable a company earnings have been for the previous 10 years. We will name this chart the “Predictability Chart.”

To save a user-defined chart, first select the series that you want to graph. Then, among the options listed in Figure 6 (and Figure 13), type in the chart name in the “Chart Name” box and click “Save.” You can view your user-defined charts below the predefined charts discussed in section 3 of this user manual. Figure 14 shows the Predictability Chart for Amazon.com, a company that has a five-star predictability rank as of the writing of this manual.

![Predictability Chart](image1)

**Figure 14**

While you cannot delete the predefined charts, you can delete a user-defined chart by first selecting the desired chart to delete and then pressing the “Delete” button next to the chart name. Click “OK” in the dialog box that appears, as illustrated in Figure 14.1.
Figure 14.1
5. Adding text and shapes to the chart

GuruFocus has recently remodeled the Interactive Chart feature to make it as user-friendly as possible. If you recall from Figure 2, we have numbered some characteristics of the Interactive Charts interface. Figure 15 repeats Figure 2 with the addition of position 5, the location of the following features:

- **T**: This feature allows you to add text to the chart.
- **Square**: This feature allows you to add squares and rectangles to the chart.
- **Line**: This feature allows you to add lines to the chart.
- **Circle**: This feature allows you to add circular shapes to the chart.

These features, collectively known as the “Drawing Toolbox,” allow you to highlight certain parts of the chart output and write brief discussions about the chart output. Figure 16 displays Apple’s Peter Lynch Chart with these features in use.
As you can observe, Figure 15 highlights the time periods when AAPL traded below its Peter Lynch earnings line, i.e., the times where AAPL is undervalued. Additionally, the text discusses that Apple is currently undervalued.

To reproduce Figure 16, use the “Square” tool to highlight the sections of the Chart where the green price line dipped below the red earnings line. To add text, use the “T” tool.

The “Line” feature allows you to draw a line on the interactive chart. This can help you determine when a stock trades below a specific price target. Additionally, for mergers and acquisitions, the “line” feature allows you to determine the fairness of the target price. Figure 17 illustrates this by considering SolarCity’s stock price.
Notes to Figure 17: We have drawn the line around $25.37, the target price for Tesla’s acquisition of SolarCity. Based on Figure 17, you can observe that the current price represents a discount to the target price and that the target price is slightly unfair to shareholders.

While you cannot delete shapes from the chart without resetting the chart, one work around is to use the text setting, and then drag the shapes one by one to the corner, then resizing them so that they disappear from the chart.
6. Some frequently asked questions

- How is the financial information presented, i.e., is the data trailing 12-months, annual, etc.?
  - The data for most financial metrics are trailing 12-month data. Due to this, you need to pay attention to the values used in your customized series.

- What membership do you need to use Interactive Charts?
  - The free membership gives limited access to Interactive Charts. Most features, including customized series and exporting to Excel, requires Premium membership. We invite you to start a free seven-day trial by clicking this link.

- Can I change the colors of the series?
  - As of Nov. 18, the writing of this manual, we do not have this service. The series colors have a fixed order.