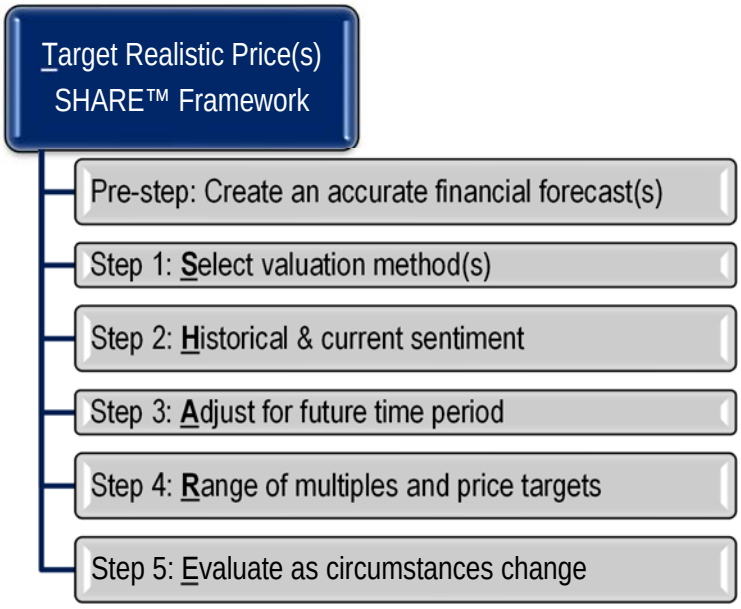
Detailed Reference Card (DRC)

Best Practices for Targeting Realistic Prices (SHARE™ Framework)

Summary of the SHARE™ Process

Exhibit 1: SHARE™ Framework for Targeting Realistic Stock Prices



STEP 1 ("S" in SHARE™): Select Optimal Valuation Method(s)

1. Identify the valuation method(s) currently being used for the stock and sector as well as any other methods used in the past by reviewing publicly-available research reports and speaking with market participants who have been involved with the stock over an extended period of time (e.g. buy-side analyst, portfolio manager, sell-side analyst, sell-side salesperson, investor relations contact of target stock, investor relations contact of competitor of target stock, etc.)
2. If there has been more than one valuation method used by the market in the past identify:
    a. Why it changed; and
    b. What catalyst(s) caused it to change; and
    c. What similar catalysts could cause investors to look at a new valuation method over your investment time horizon
3. If the primary valuation method used by the market for a specific stock differs from its peer group, identify the justification
4. Be reluctant to create a future price target based on a valuation method that has not been widely used by the market in the past or at present (stocks rarely out- or under-perform due to the market changing to a previously-unused valuation method for that stock)
5. Review QRCs:
    a. "Benefits and Limitations of Popular Valuation Methods" to understand the potential shortcomings of the primary valuation method(s)
    b. "Considerations for Identifying the Optimal Valuation Method (flowchart)" to identify the valuation methods that are applicable to the stock

Terms and Definitions Required for the Next Steps

It is important to understand the terms below for Step 2 and Step 3 of the SHARE™ process:

- "Relative multiple" is the stock's or peer's forward valuation multiple divided by a similar forward multiple for an appropriate peer or index (e.g. SBUX's P/E is 15 and S&P 500 P/E is 10x would mean SBUX's relative P/E is 150%)
- "Index" refers to the most appropriate index for the stock
- "Peers" refers to the company's comparable peers. If there is not a clean set of peer companies with similar characteristics, a new universe of peers may need to be created, such as finding companies in other sectors with similar growth, beta, payout ratio, etc.
- "Y1" = year 1, "Y2" = year 2 and "Y3" = year 3
  - For the discussion that follows, assume we are at January 1 of year 1 which means "Y2" begins 12 months from now and "Y3" begins 24 months from now
- When collecting historical forward-looking valuation data, consider using these time periods:
  - From last recession to now: Useful for understanding the valuation trends for the current business cycle
  - Past 10 years: Useful for understanding valuation trends over an entire economic cycle (possibly two)
  - Past three economic cycles (or more): Useful for understanding recurring trends at the different stages of the business cycles for mature cyclical stocks
- Historical and current valuation data should always be forward-looking (e.g. the "E" in a P/E ratio should be next twelve months, or another forward time period). Obtain the historical forward-looking consensus expectations of the key financial metric for the preferred valuation method (e.g. EPS, FCF, book value, sales, etc.) for the stock, its peers and the appropriate index (EQRV in Bloomberg). When it is difficult or impossible to obtain or construct these data series, some or all steps that follow will be difficult to complete. The following table highlights the relative ease or complexity typically involved in obtaining the forward-looking metric, based on the desired valuation method:

Exhibit 2: Availability of Historical Forward-Looking Valuation Metrics

Valuation Method	Need NTM forward consensus estimates for this method	Ease to obtain for stock, peers and index*	Readily available?*
P/E	EPS	Readily available	Most market data service providers have this as a designated field that can be downloaded monthly, going back over 10 years for widely developed stocks in developed markets
P/S	Sales	Can potentially be obtained depending on data service provider	Some market data service providers have historical NTM consensus forecasts of company sales although it may not go back as far as NTM consensus EPS
P/CF	CF	May be constructed without too much effort	May be more difficult to obtain because some services do not capture consensus cash flow. If not available from the data provider, this can potentially be constructed by starting with NTM consensus EPS above and adding back depreciation and amortization (D&A) (assuming it's not volatile from year to year).
PEG	Earnings growth	Can potentially be constructed depending on data service provider	Historical forward-looking EPS *growth* forecasts can be computed if you have two forecasted future time periods at each point in time of the past. Some market data service providers maintain "Current Year" and "Next Year" consensus EPS forecasts, but as you get later into a given year, be aware the growth rate can be skewed due to non-recurring events in the current year that suppress the full year earnings (thus artificially raising the growth rate). If available, use the growth rate between year 2 and year 3 to avoid this problem.
EV/EBITDA	EBITDA	May be constructed with some effort	If not available from the data provider, NTM EBITDA can potentially be constructed by starting with NTM consensus EPS above and adding back D&A (assuming it's not volatile from year to year) and taxes (at a standard tax rate). Also requires obtaining data series of net debt in order to back out equity value from EV.
P/B	Book Value	May be constructed with some effort	If not available from the data provider, can potentially be constructed by starting with the actual BV at the end of the prior period (e.g. at the end of each quarter) and add NTM consensus EPS above less dividends (assume dividends grow at a historical rate into the future) adjusted for planned buy-backs or issuance of equity.
DCF and Residual Income (EVA)	Free Cash Flow	Difficult to impossible to obtain or construct	Both of these methods rely on very long-term forecasts and given that most consensus estimates go no further out than 3 years, it would be very difficult to obtain or construct a historical NTM consensus data series for either valuation method

In the steps that follow, one goal will be to identify the factor(s) that drive a stock's valuation levels. To eliminate the overall market movement, we will be looking at relative valuation, in this case the stock's P/E ratio relative to an index, which is the S&P 500 in the examples that follow.

Having removed fluctuations caused by the overall market's moves (systematic risk), we will look for the variables that can explain the rise and fall of an individual stock's valuation multiples, such as the company's expected EPS or cash flow growth rate. These variables are useful when researching if a stock's current valuation level is in line with *its past* or *currently with similar stocks in other sectors*. Exhibit 3 contains a list of the relevant variables to regress based on the valuation method being used. This exhibit will be used in Steps 2 and 3 (throughout this DRC, we will refer to "variables to regress" which are those found in the table below).

Exhibit 3: Variables to Regress

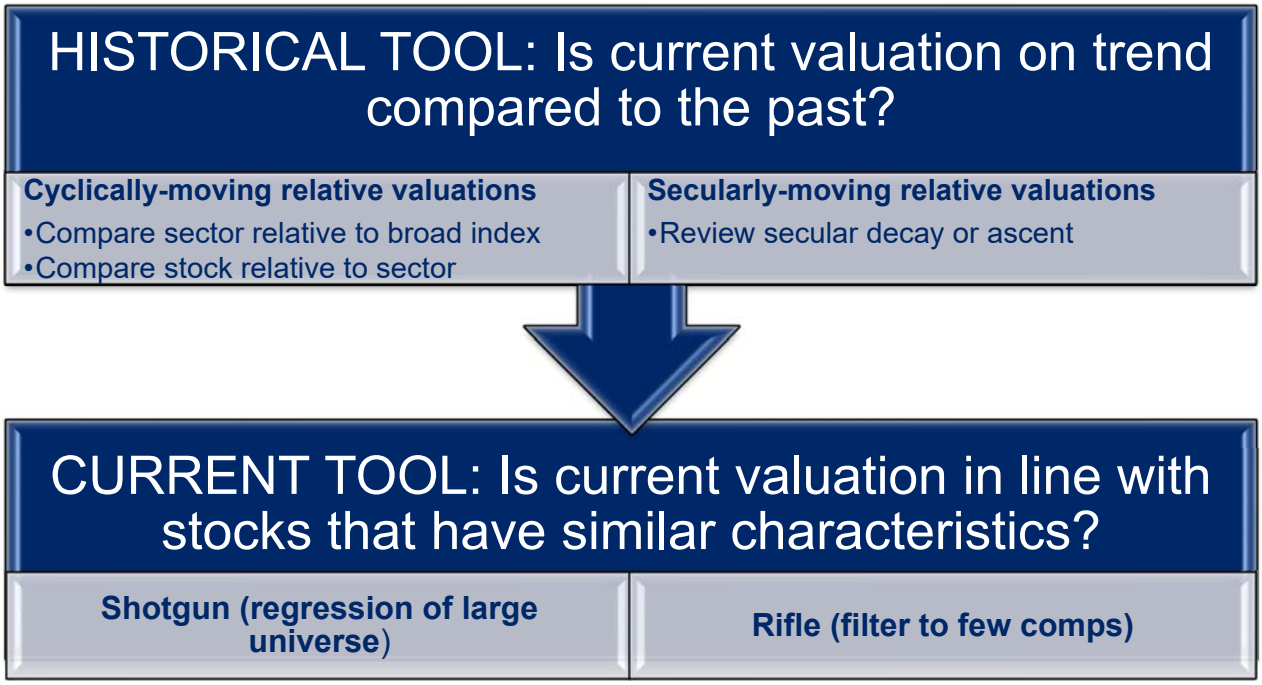
Valuation Method	Factors to Regress
Price Earnings Ratio	Expected Growth, Payout, Risk*
Price to Book Ratio	Expected Growth, Payout, Risk*, ROE
Price to Sales Ratio	Expected Growth, Payout, Risk*, Net Margin
EV to EBITDA	Expected Growth, Reinvestment Rate, Risk*, ROC, Tax rate
EV to Capital Ratio	Expected Growth, Reinvestment Rate, Risk,* ROC
EV to Sales	Expected Growth, Reinvestment Rate, Risk,* Operating Margin

* Proxies for risk include beta and firm size. Source: page 70 of "*Valuation Approaches and Metrics: A Survey of the Theory and Evidence*" Aswath Damodaran, November 2006

STEP 2 ("H" in SHARE™): Historical and Current Sentiment

Identify if a stock's current valuation is in line with *its past* and *currently with similar stocks in other sectors* by following the two-step process summarized in the exhibit below:

Exhibit 4: Step 2 of SHARE™ Framework



Using "HISTORICAL TOOL": Determine if the Current Valuation Is On Trend Compared to the Past

1. For stocks that have a trading history beyond the beginning of the last economic cycle, determine if the stock's relative forward valuation multiple (relative to the market) has predominately moved *cyclically* or *secularly* in the past (if both are evident, use the more recent trend):
    a. If the relative multiple typically moves in *cycles* (reaching similar highs and lows each cycle), identify the cause (EPS growth influenced by the economy, appetite for risk as found in beta, etc.), which will be required to forecast the valuation multiple for the future price target

   b. If the relative multiple has moved *secularly* (reaching new lows or highs year after year beyond one economic cycle), identify the cause of the secular change, which will be required to forecast the valuation multiple for the future price target
2. Based on your conclusion in the step above, follow this step for stocks that have relative valuation multiples that move on a *cyclical* basis:
   a. **Compare sector relative to broad index**. Identify if the stock's sector (peer group) is trading near its average historical P/E ratio relative to the broad index. If not, identify the cause (e.g. macro-economic, industry issue, etc.).
   b. **Compare stock relative to sector**: Identify if the stock is trading near its average historical P/E ratio relative to its peer group. If not, identify the cause (e.g. growth opportunities, changes in ROIC, etc.).

Example for this step, Cyclically-Moving Relative Valuations:

- Note in Exhibit 5 below, the top portion of the chart has a tan line (using the right axis) showing the stock's P/E relative to the market index (S&P 500 in this case). Recall earlier we identify if this key data series is currently on-trend with its past
- The light blue area chart (using the left axis) is the *stock's* P/E ratio relative to the *sector*
- The bottom chart of dark blue area (using the left axis) is the *sector's* P/E ratio relative to the *index*
- The purpose of the exhibit is to determine the element driving the tan line…sector vs. index or stock vs. sector?"
- Mathematically, the light blue area multiplied by the dark blue area gets us the tan line. Viewed another way, we can dissect the tan line as being influenced by the stock, sector or both
  - In the example below, note the tan line is moving much more like the dark blue area which shows that PFE's relative P/E ratio is influenced significantly by sector issues

Exhibit 5: Example of Sector vs. Stock Influences (Pfizer - PFE)

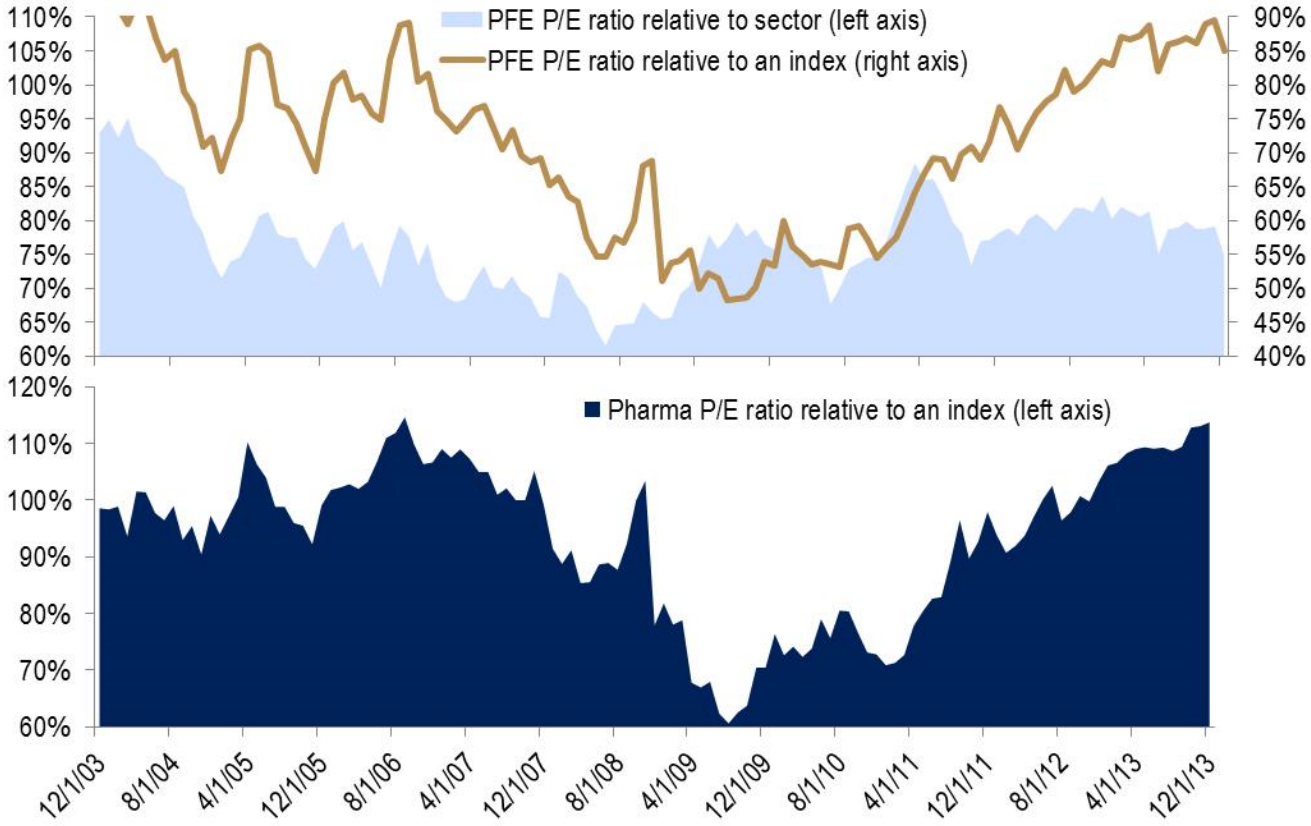
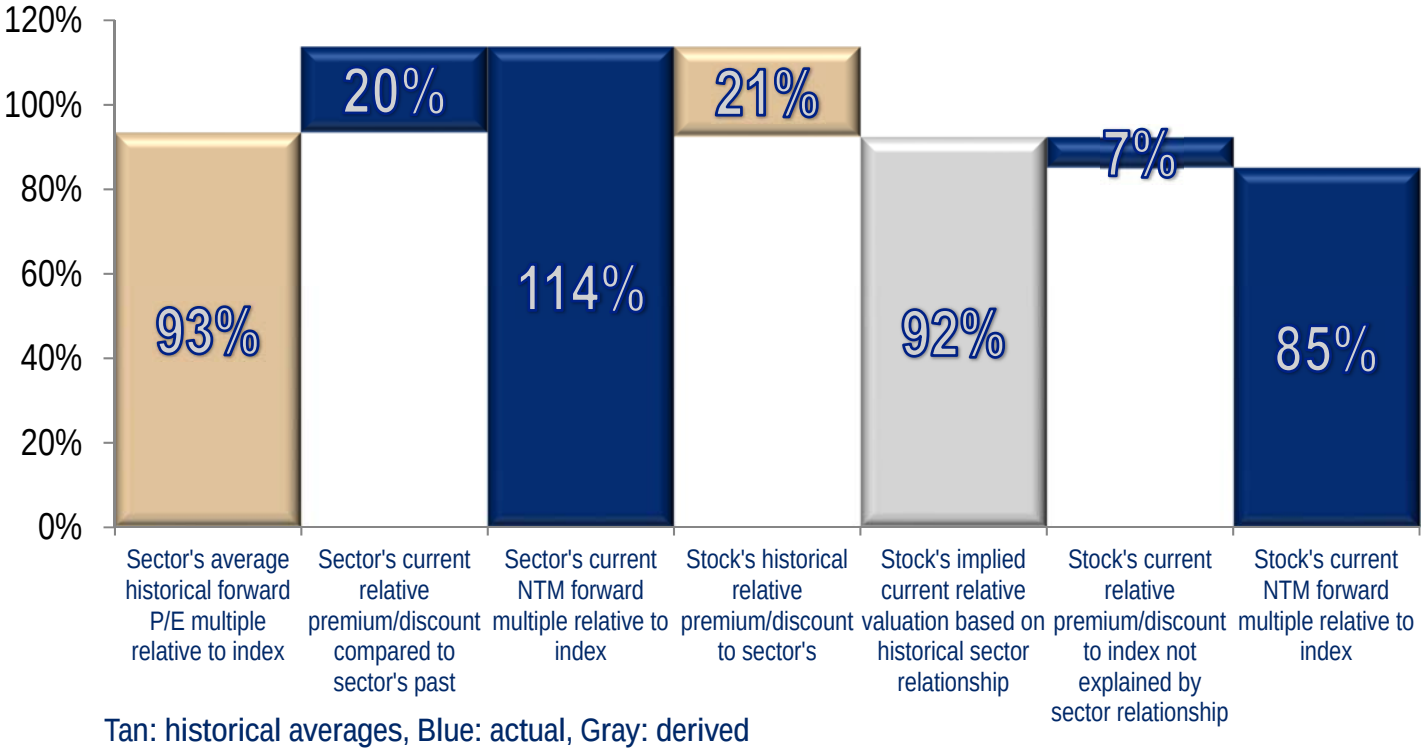


Exhibit 6 below shows the data in another format.

- The first bar shows the pharmaceutical sector's P/E ratio relative to the S&P 500 over the ten years up to this analysis (2003 to 2013), which was 93%, or a 7% discount to the S&P 500's P/E ratio
- The second bar shows how much the sector's valuation at the time of this analysis was above its ten-year average. In this case 20% higher than normal, putting it at 114%, or a 14% premium to the S&P 500 (which is represented as the third bar in the chart)
- Over the ten years up to this analysis, PFE traded at a 21% discount to the sector (fourth bar in chart)
- Assuming PFE should currently be trading at this 21% discount, it should be trading at 92% (fifth bar in chart) of the S&P 500's P/E ratio (an 8% discount)
- In reality, at the time of this analysis, PFE was trading at a further 7% discount to this implied 92%, putting it at 85% of the S&P 500 (last bar on right)

Based on this analysis, it's clear additional research must be conducted to determine why the market is affording the sector a 20% premium to its ten-year average and why PFE is trading at a 7% discount to its historical average.

Exhibit 6: Example of Historical Averages for Pfizer (PFE) from 2003 to 2013



Tan: historical averages, Blue: actual, Gray: derived

To help better understand the anomalies discussed above, find sector, company-specific or macro factors that influence the stock's relative valuation to see if they also contain an anomaly. The four charts below show examples of sector, company and macro factors that have strong relationships with the sector's and stock's relative P/E ratio. Note the first two charts show the pharmaceutical sector's P/E ratio relative to the S&P 500, whereas the second two charts show PFE's P/E ratio relative to the sector's P/E ratio.

Exhibit 7: Pharmaceutical Sector's Relative P/E Ratio and the Sector's Payout Ratio

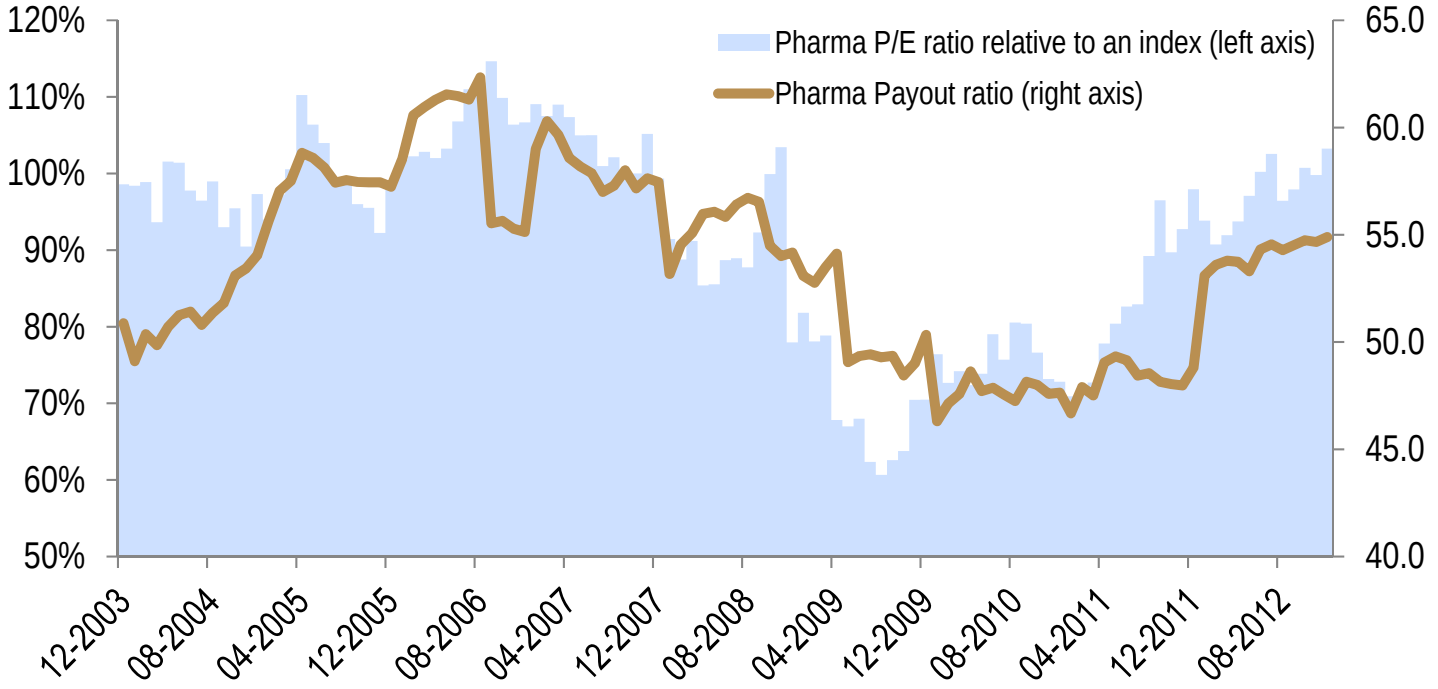


Exhibit 8: Pharmaceutical Sector's Relative P/E Ratio and U.S. Industrial Production

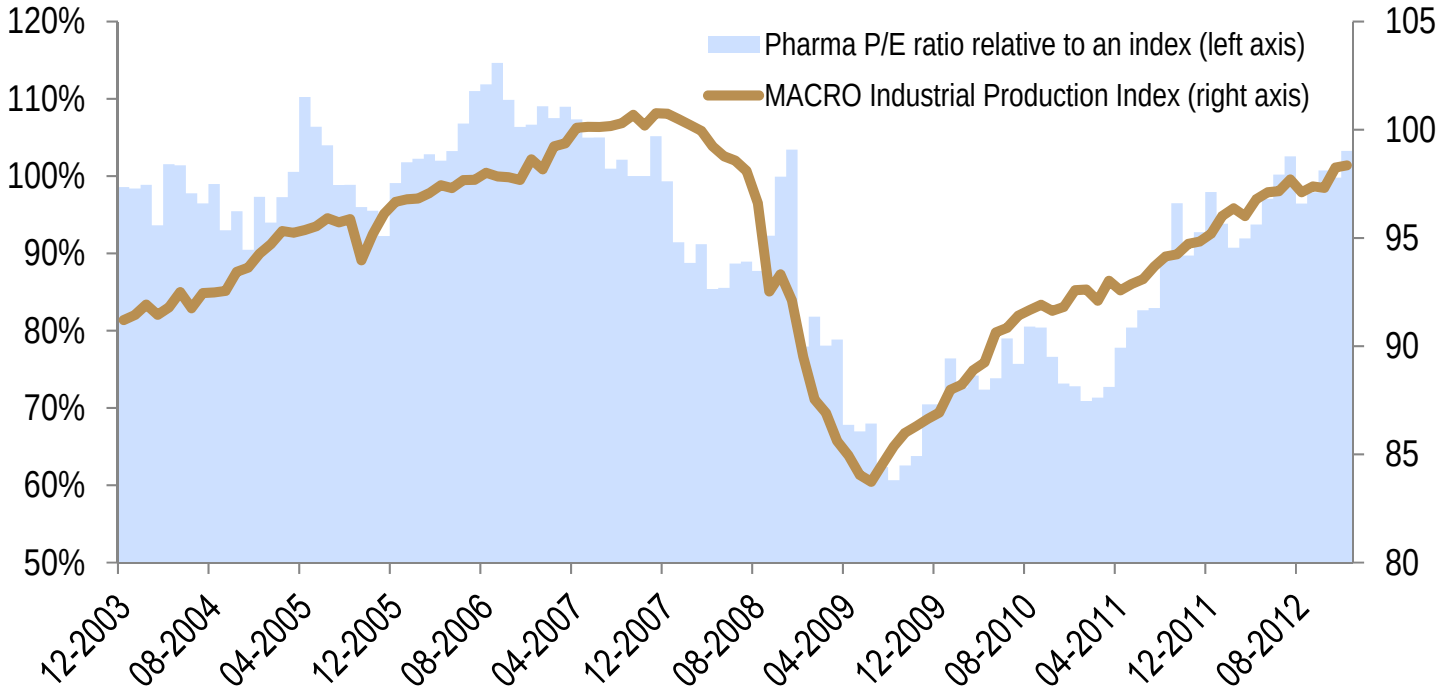


Exhibit 9: Pfizer's Relative P/E Ratio and Its Payout Ratio

Note: the right axis is reversed in order to better illustrate the negative correlation between the data series

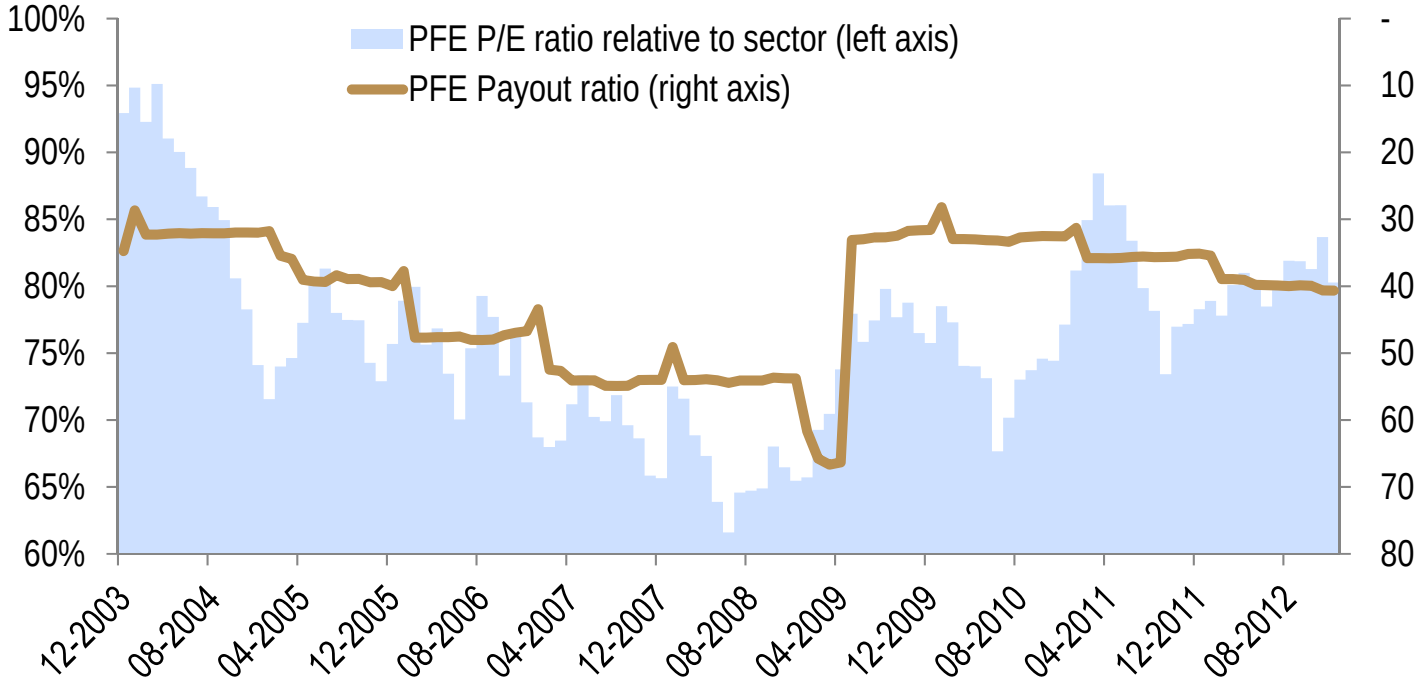
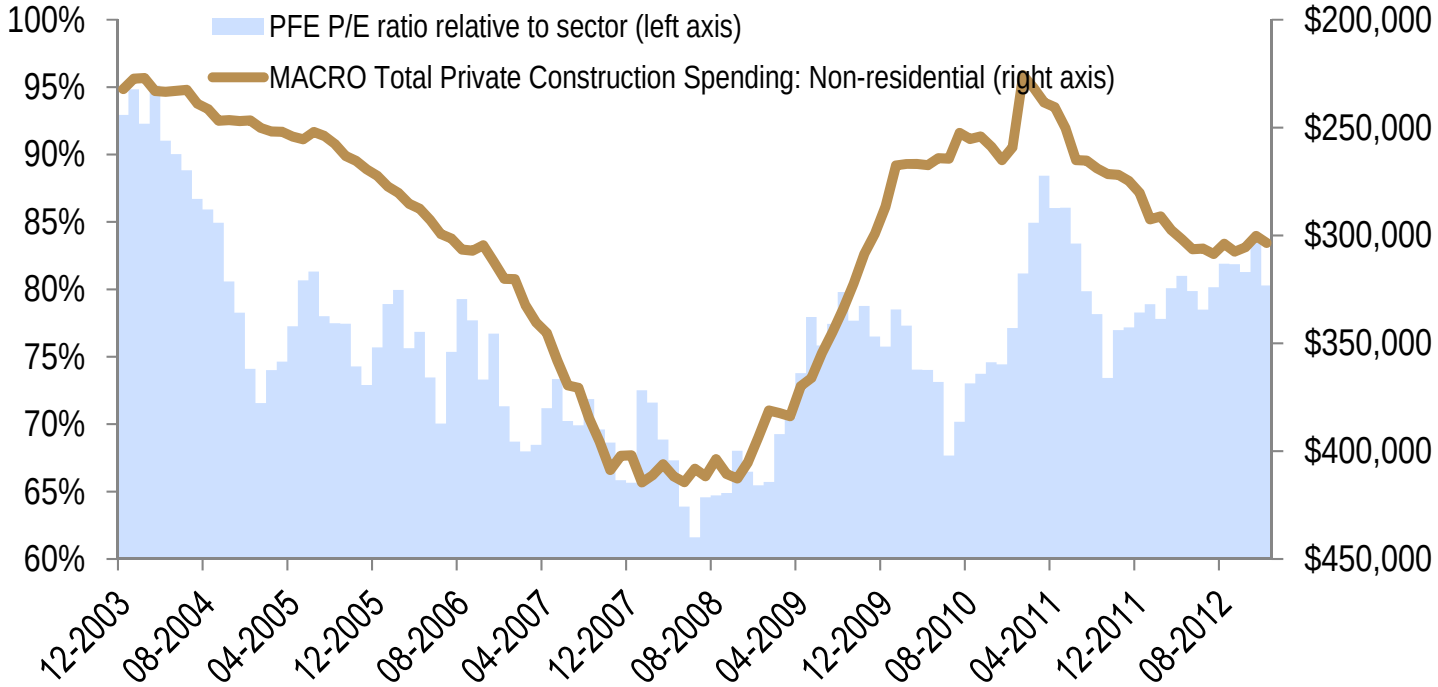


Exhibit 10: Pfizer's Relative P/E Ratio and U.S. Private Construction Spending

Note: the right axis is reversed in order to better illustrate the negative correlation between the data series



While the charts above appear to show relationships between relative P/E ratios and sector, company and macro data, this can be better assessed by conducting a regression analysis. For example, by conducting a regression analysis of the sector's relative P/E ratio and the sector's payout ratio yields the following formula (this can be done in Excel):

$$Pharma\ sector's\ relative\ PE\ Ratio = -0.33 + (Payout\ ratio\ x\ 2.35)$$

At the time of this analysis, the pharmaceutical sector's payout ratio was 54.9%. Plugging this ratio into the equation above results in an implied sector relative P/E ratio of 96%. At the time of this analysis, the sector's relative P/E ratio was 100% (a market multiple), which suggests the sector is "on-trend" with its ten-year average, even though Exhibit 6 showed the sector 20% higher than the ten-year average. A similar analysis can be done for the variables found in the other three charts above.

End of Example for Cyclically-Moving Relative Valuations

c. If EPS growth is being evaluated as the variable that explains a stock's relative P/E ratio level (which is often the case), rather than using the consensus EPS growth rate from FY1 to FY2, consider using FY1 to FY3 because it will provide a larger time horizon which may have a stronger correlation.
d. Be on the lookout for greater forces beyond a stock that may be impacting the entire sector's multiple (e.g. desire to own tech stocks in 1999, defensive names during the sub-prime melt-down, and clean energy stocks in 2008). Assume any current "irrational exuberance" for a stock or sector will eventually revert to more reasonable historical levels.

See more examples of this step in the appendix

3. Follow this step for stocks with relative valuation multiples that move on a *secular* basis.
   a. Treat stocks that have valuations moving on a secular basis different from those that move on a cyclical basis. The rationale is that cyclically-moving relative valuations have historical peaks and troughs to provide upside and downside parameters whereas secularly-moving stocks have not reached a floor (or sometimes ceiling) yet.
   b. Review the historical decay or ascent of the stock's relative forward multiple compared to changes in the variables to regress found in Exhibit 3. For example, regress the historical change in NTM EPS estimates (between Y1 and Y2), payout ratio and beta with the stock's relative multiple at the time. If a strong historical relationship is found (R square of 0.50 or higher), and the current valuation is not on trend, identify the cause.

Example for Secularly-Moving Relative Valuations:

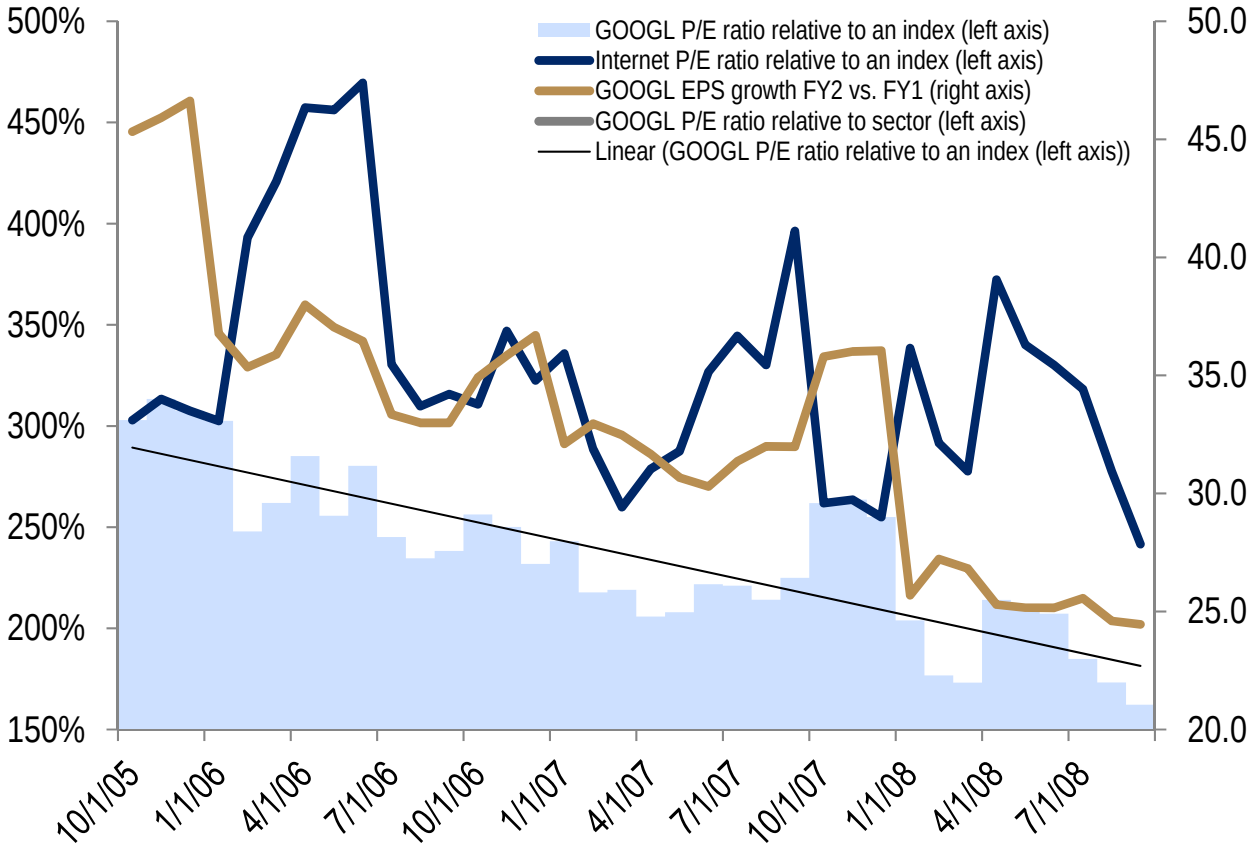
We conducted a regression analysis to identify the trend for GOOG's declining relative P/E ratio which dropped from 300% (of the S&P 500's P/E) in mid-2005 to 200% by mid-2008. At that point it would have been important to know if GOOG's relative P/E was on trend with its historical decay. We regressed the variables found in Exhibit 3 and GOOG's relative P/E ratio on a monthly basis between mid-2005 and mid-2008. The relationship had an R square of 68%, with the equation as:

$$GOOG's\ relative\ PE\ Ratio = 2.15 + (YoY\ Change\ in\ NTM\ EPS\ x\ 1.82) + (Beta * -0.36) + (Payout\ ratio * 0)$$

This equation shows, with a high degree of reliability, where GOOG's relative P/E ratio has been based on the variables above. Specifically, this illustrates that for every percentage point GOOG's EPS growth rate slowed, resulted in a 1.82 point reduction in the stock's relative P/E ratio. In addition, as GOOG's beta dropped, it resulted in a slower reduction of the stock's relative P/E ratio (e.g. when GOOG's beta went from 2.0 to 1.0, statistically it resulted in GOOG's relative P/E

increasing by 17%, but this was not visible because the decline in EPS growth was causing a more dramatic downward move to the company's relative P/E ratio).

Exhibit 11: Example of Secularly-moving Relative Valuation (GOOGL)

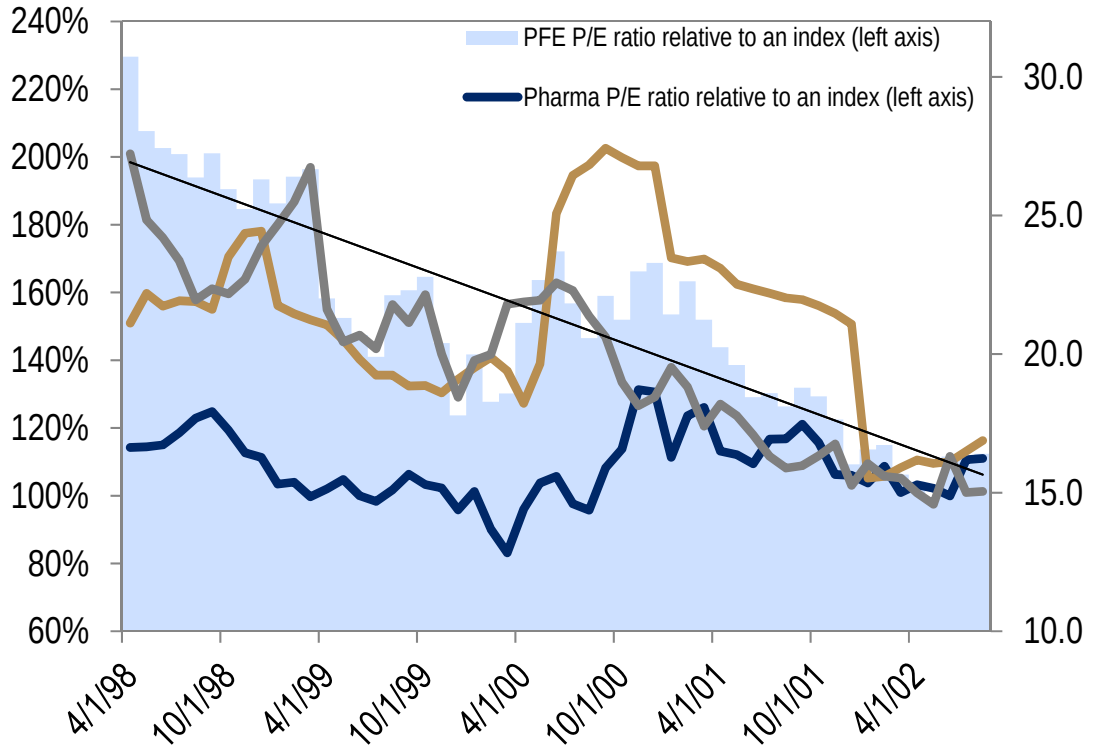


In Exhibit 12 we show the variables for four stocks during periods when their relative P/E ratios were in a secular decline. Note: we have put a box around the EPS growth rate because this usually explains most of the decline. We call these the "decay coefficient" which can be used to see if a stock is on trend. Apply these to the earnings or cash flow growth forecast to get a general idea where the stock's relative P/E ratio will be in the future. Note: this works quite well when a stock is still in a hyper-growth rate (e.g. EPS growing over 25% per year) but as it comes down to more typical relative valuation levels, the relationship breaks down because the stock begins to trade with a cyclically-moving relative valuation.

Exhibit 12: Decay Coefficients for Stocks with Secularly-Moving Relative Valuations

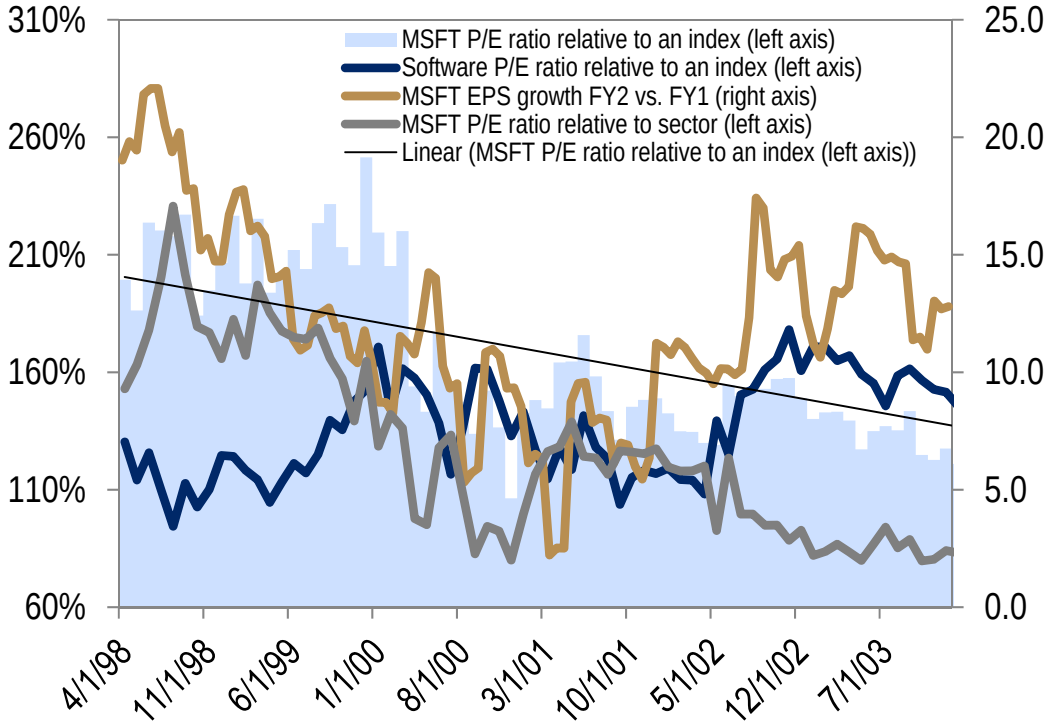
	PFE	MSFT	GOOGL	BBBY
Starting Period	4/30/98	12/31/99	6/30/05	12/31/01
Ending Period	8/30/02	12/31/03	6/30/08	12/31/05
R Square	0.77	0.72	0.68	0.73
EPS growth FY2 vs. FY1	3.11	2.55	1.82	4.90
Payout ratio	-1.74	-1.78	0.00	0.00
Beta	1.54	-1.85	-0.36	0.54

Two of the examples above in chart format below:



$$Relative\ PE\ Ratio\ at\ that\ time = 0.23 + (YoY\ Change\ in\ NTM\ EPS\ x\ 3.11) + (Beta * 1.54) + (Payout\ ratio * -1.74)$$

Adjusted R squared of 0.77



$$Relative\ PE\ Ratio\ at\ that\ time = 4.5 + (YoY\ Change\ in\ NTM\ EPS\ x\ 2.55) + (Beta * -1.85) + (Payout\ ratio * -1.78)$$

Adjusted R Squared 0.72

End of Example for Secularly-Moving Relative Valuations

Determine if the Current Valuation is in Line with Stocks That Have Similar Characteristics

Identify if the stock is currently trading near the same valuation level as stocks in other sectors with similar growth and return characteristics. If not, identify *why* the stock is trading at a discount or premium. There are at least two methods for this process:

1. Regression Analysis ("shotgun" approach)
    a. Start by collecting a sample of at least 300 stocks (preferably over 500) that are in the same financial market as the target stock and do not have substantially different levels of "variables to regress" (found in Exhibit 3) as the stock being analyzed
        i. For example, if the stock has 10% EPS growth rate, screen for stocks with growth rates of 8% to 12% (keep the universe as large as possible while removing only the significant outliers)
        ii. We find that the EPS growth rate is the most important factor to screen when using P/E ratios as the valuation method (adding a screen for payout ratio and beta adds little to the regression accuracy and can actually make it worse by reducing the universe due to these filters)
        iii. Keep the filters wide enough so that there are at least 40 stocks in the remaining population for the next step.
    b. Regress the "variables to regress" for the filtered universe of stocks against their current valuation multiple (on forward data). Similar to above, the regression output formula should look something like this:

$$Predicted\ Relative\ PE\ Ratio = \mathrm{a} + (\mathrm{b1} * forward\ EPS\ growth\ Y2\ vs.Y1) + (\mathrm{b2} * payout\ ratio) + (\mathrm{b3} * beta)$$

c. If the regression above results in a relatively low R squared, remove the most significant outliers. Recall we are not using this equation to pick stocks but rather to get an understanding of the market psychology towards a stock compared to a basket of other stocks in the same market.
d. Assuming the regression equation has an R square of 50% or higher, compute the implied valuation multiple for the target stock. If it differs materially from the stock's current valuation, determine the reason. Recall, if you don't know the cause of an anomaly, you can't forecast the optimal valuation multiple for the future.

Example for Regression Analysis ("shotgun" approach):

At the time of this analysis we regressed over 500 large cap stocks in the U.S. market to find the relationship between their P/E ratios and these three variables: NTM EPS growth rate, beta and payout ratio. The regression formula (78% R square) was used to determine if the stocks below were currently "on-trend" with stocks in other sectors that had similar characteristics:

- Coca-Cola's (KO) predicted P/E ratio based on the regression was 18.2x while the stock was trading at 18.9x. This essentially says investors are willing to pay 4% more for KO's EPS growth, payout ratio and risk profile (beta) when compared to the 500 other stocks in the analysis (based on the regression equation), but it's a relatively small difference which is why we would not consider it to be material. Essentially KO is trading in-line with other stocks based on the market's emphasis on growth, payout ratios and risk.
- At the same time, Microsoft's (MSFT) predicted P/E ratio based on the regression was 16.5x while the stock was trading at 15.6x. This essentially says investors are willing to pay 6% less for MSFT's EPS growth, payout and risk profile when compared to the 500 other stocks in the analysis (based on the regression equation). If this gap were to get much wider it would be critical to understand the market's psychology behind this discount before setting a future price target for the stock.

End of Example for Regression Analysis ("shotgun" approach):

2. Screen for Similarities ("rifle" approach).
    a. Start with a sample of at least 300 stocks that are in the same financial market as the target stock (it can be the same sample as used in the regression analysis above)
    b. Filter the stocks using the "variables to regress" to yield a universe of 5 to 20 comparable stocks that are near similar levels to the target stock
        i. For example, if the consensus EPS growth rate for the target stock is 15% (note: this is for the period between the next 12 month period and the 12 month period that follows afterwards), create a universe of stocks that have the same characteristics.
    c. Compute the average valuation multiple for those stocks. **If it differs materially from the stock's current valuation, determine the reason.**

Example for Screening for Similarities ("rifle" approach):

In our analysis for Microsoft, we started with 500 U.S. large cap stocks and narrowed down using the criteria in Exhibit 13 to be left with the seven comparable stocks in Exhibit 14. Note: for this analysis we had consensus forecasts for Y3 and so we used growth rates between Y1 and Y3 as well as between Y2 and Y3.

Exhibit 13: Process 2 "Rifle Approach" Screening Criteria Table (for MSFT analysis)

Factor	MSFT	Min for Screen	Max for Screen
Expected Growth (Y3 vs. Y1)	16%	13%	19%
Expected Growth (Y3 vs. Y2)	9%	7%	11%
Payout ratio	42%	25%	60%
Beta	0.96	0.76	1.16
Market capitalization	$373B	$5B	None

Exhibit 14: Process 2 "Rifle Approach" Screened Comparable Stocks (for MSFT analysis)

Co. Name	GICS Sub-industry	P/E Ratio on Y2 EPS	Forward EPS Growth (Y3 vs. Y1)	Forward EPS Growth (Y3 vs. Y2)	Payout ratio	Beta	Mkt cap(MM) Current
Microsoft	Systems Software	15.6	16%	9%	42%	0.96	$373,921
U.S. Bancorp	Diversified Banks	12.6	19%	10%	32%	0.78	$76,707
Medtronic Inc.	Health Care Equipment	14.4	14%	7%	28%	1.09	$63,183
General Dynamics Corp.	Aerospace & Defense	15.0	16%	8%	34%	1.14	$40,923
Energizer Holdings Inc	Household Products	15.7	16%	8%	28%	0.98	$7,441
Hancock Holding	Regional Banks	13.7	15%	8%	41%	1.05	$2,810
Progressive Corp	Prop. & Cas. Insurance	14.1	14%	8%	30%	0.76	$14,860
Average w/o MSFT		14.3	16%	8%	32%	0.97	$34,321
MSFT vs. Average		10%	4%	12%	30%	-1%	989%

As shown in Exhibit 14, at the time of the analysis, MSFT was trading at 14.3x earnings, which is a 10% premium to stocks in other sectors with similar characteristics. As noted earlier, it's critical to understand why portfolio managers are willing to pay more for MSFT when compared to the others stocks in the table.

End of Example for Screening for Similarities ("rifle" approach)

Considerations for Step 2 of SHARE™ (Historical and Current Data Review)

- Growth stocks, especially companies that are still early in their lifecycle, often look very expensive on NTM earnings when compared to more mature stocks. The flaw in this analysis is that "NTM" only looks out 12 months and yet it could take 10 years before the company's growth rate slows to the level of the broader market or its peers. Investors who concluded GOOG's 45x earnings was too rich in 2005, would have missed the 500% out-performance (vs. the S&P 500) that took place over the following 5 years. It's important to compare growth stocks to companies with similar longer-term growth rates (Y2 to Y3 or even beyond if possible) so as to capture the company's longer-term earnings or cash flow power. It's also helpful to conduct a longer-term DCF or residual income valuation analysis for these types of stocks, although these methods are not without their own shortcomings.
- When comparing a stock to a peer group, it's important to remove significant outliers from the group or use the median rather than the mean
- If a number of the peers have negative earnings (resulting in no "E" for a P/E), consider computing an earnings yield (E/P)
- For the regressions, be aware the relationship between the "variable to regress" and the stock's valuation multiple may not be a linear relationship (e.g. hyper-growth companies may be afforded a much higher multiple than the implied estimate found on the regression line). A more detailed discussion on this can be found on pages 252 and 281 of the book *Damodaran on Valuation* (second edition).

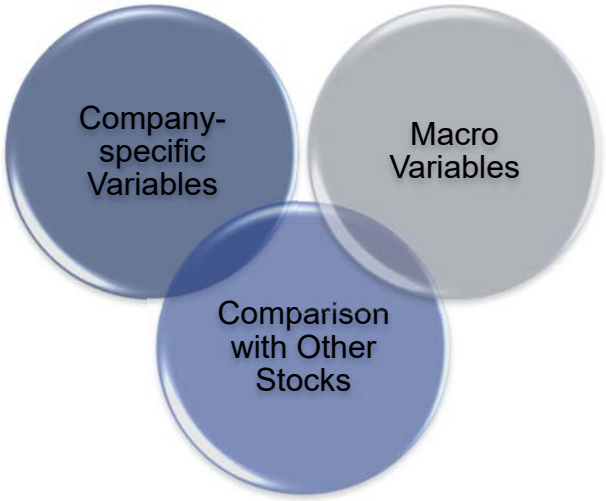
STEP 3 ("A" in SHARE™): Adjust for Future Time Period

This is arguably the most important and difficult step in the SHARE™ framework. Specifically, adjustment of the stock's current valuation metric to forecast its level when the price target is to occur (e.g. one year from now). The most important driver to a stock's future valuation multiple will be expectations of the company's free cash flow (or EPS) growth and so much more emphasis should be put on forecasting cash flow or earnings than the valuation multiple. With that said, the valuation multiple should not be an afterthought or reverse engineered, which occurs all too often.

If a valuation multiple is declining because the market expects the consensus EPS estimates to come down, then the multiple really isn't dropping as much as consensus is just slow to lower estimates. Once the consensus drops the "E", the math causes the P/E ratio to rise back to normal levels, assuming all other elements are kept constant. The same holds true if a stock's P/E ratio is above normal because the market believes consensus EPS needs to rise. It's incorrect to use this temporarily higher P/E multiple for a future price target because once the consensus estimates come up, the multiple will likely go back to more normal levels. Put another way, often, above- or below-trend relative valuations are a sign of impending earnings revisions. If the investment thesis is based on consensus making an impending revision, using an above- or below-trend multiple could be double-counting.

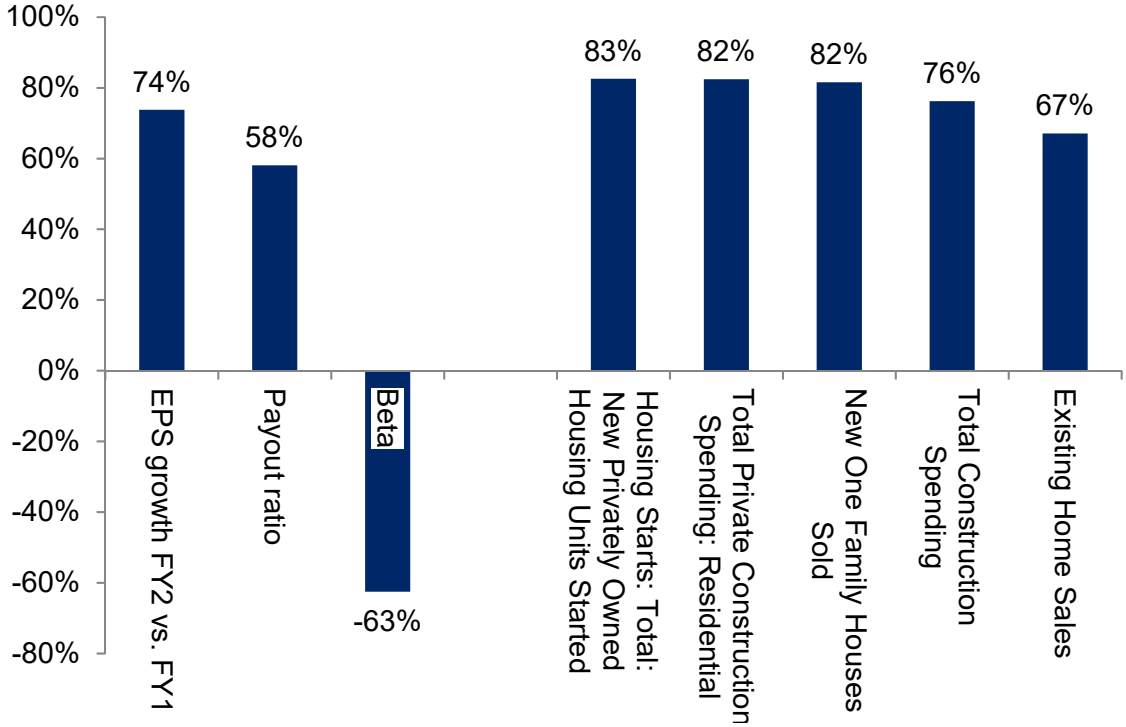
Assuming the EPS (or cash flow) forecast is accurate based on thorough research, these are the 3 approaches that can be used to adjust a stock's current valuation for future time period to generate more accurate price targets:

Exhibit 15: Step 3 of SHARE™ Framework



1. Company-specific and Macro Variables
    a. For company-specific and macro variables, find those that have the strongest historical correlation with movements in the stock's relative valuation such as its relative P/E ratio. For example, Exhibit 16 is a sample of data series that have the highest correlation with Raytheon's relative P/E ratio movements over a ten-year period (company-specific on the left and macro on the right). You'll see from the first bar, the stock's EPS growth rate has a 74% correlation coefficient with Raytheon's relative P/E ratio. Looking on the right side of the chart, which are macro data series, housing starts have the strongest correlation with Raytheon's relative P/E ratio, with a correlation coefficient of 83%.

Exhibit 16: Correlation Coefficients for Raytheon's Relative P/E Ratio and Selected Variables (2003 to 2013)



b. By regressing the stock's relative P/E ratio with the strongest company-specific and strongest macro data series above, we get the regression output found in the first three rows of Exhibit 17 (separate analysis for each data series). By using this data and a forecast for these variables one year from now, we can forecast the stock's relative P/E one year from now. Using the forecast in Exhibit 17, the expected relative P/E ratio is 84% using EPS growth as the predictive variable and 88% using housing starts as the predictive variable (by late-2014, Raytheon's relative P/E ratio had moved to 86% of the S&P 500's).

Exhibit 17: Regression Output for Raytheon's Relative P/E Ratio and Variables to Regress

	EPS growth FY2 vs. FY1	Housing Starts (New Privately Owned)
R Square*	74%	82%
Intercept	0.72	0.60
Variable (multiplier)	1.53	0.0287
Forecast for 1 year from now**	7.7%	1,000K
Expected relative P/E ratio in 1 year (December 2014	84%	88%

* Regression based on data between December 2003 and December 2013

** "Now" is assumed to be June 2013

2. Comparison with Other Stocks: In addition to looking at company-specific and macro data, the third approach that can be used to adjust a stock's current valuation for future time period to generate more accurate price targets, is to revisit the comparisons to stocks in other sectors (shotgun and rifle approaches)
   a. Regression ("Shotgun") Approach
      i. Recall in Step 2, when determining if Coca Cola's and MSFT's relative valuations were *currently* (at the time of the analysis) above or below stocks in other sectors, we created a regression formula of 500 stocks called the "shotgun" approach
      ii. Now use that regression formula to forecast a relative P/E ratio for the stock one year from now. Recall the regression formula needs a next-12-month ("NTM") growth estimate to forecast the relative P/E ratio. Rather than use the consensus expected growth rate over the NTM (which was used to find the *current market* expectations), use your forecast of EPS growth between Y2 and Y3 to forecast a one-year relative P/E ratio. If this is a bit confusing, think of it this way: the months that are currently 13 to 24 from now ("Y2") will be the "NTM" one year from now and the months that are currently 25 through 36 from now ("Y3") will be second time period which is required to compute a NTM EPS growth rate one year from now.
   b. Screening ("Rifle") Approach
      i. Recall in Step 2, when determining if MSFT's relative valuation was *currently* (at the time of the analysis) above or below stocks in other sectors, we screened a universe of stocks to just six that had similar characteristics to MSFT (called the "rifle" approach)
      ii. Now do the same screening analysis, but rather than use the stock's consensus expected growth rate over the NTM as the screening criteria, use your forecast of EPS growth between Y2 and Y3. This will show how much the market is currently paying for stocks with this level of EPS growth, which is a reasonable gauge of the relative P/E ratio the stock will command in a year.

STEP 4 ("R" in SHARE™): Range of Multiples and Price Targets

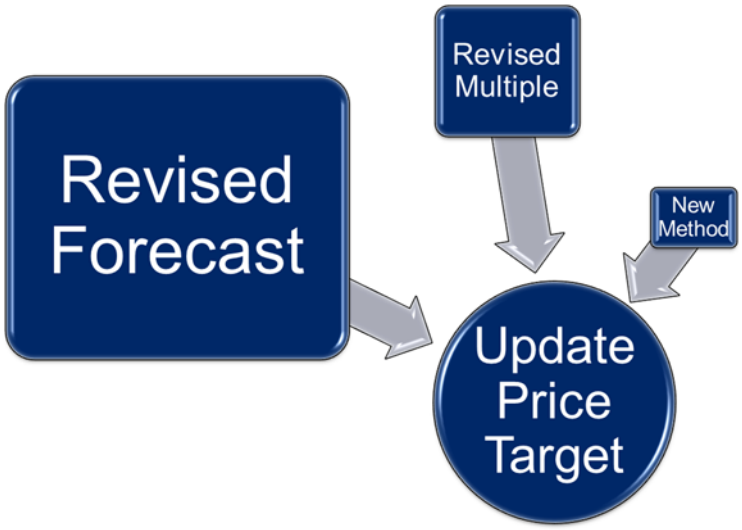
Apply your range of valuation multiple(s) to your future financial forecasts (upside, downside and base-case) to derive a range of price targets, which provides an objective risk/return profile:

1. Rather than set a single-point future price target, set a range of targets, based on your upside, downside and base-case assumptions for each of the two elements of a price target, the *financial forecast* and the *valuation multiple*:
    a. **Financial Forecast**: Create scenarios for your financial forecasts (we recommend creating these during the forecasting phase, which is one step before the TIER™ process begins)
    b. **Valuation Multiple**: Create scenarios for your valuation multiples:
        i. Recall Steps 2 and 3 of the SHARE™ framework included a process of using company-specific and macro variables to predict the stock's relative P/E ratio. Use the regression formulas in those steps and substitute your downside and upside EPS growth rates to derive downside and upside relative P/E ratios
        ii. Also use your comparison to stocks in other sectors ("shotgun" and "rifle" analysis) to generate valuation scenarios:
            1. For the regression/shotgun approach, utilize your downside and upside financial forecasts (for years Y2 to Y3) for variables to put into the regression equation to derive downside and upside valuation multiples one year from now
            2. For the screening/rifle approach, use the standard deviation of the screened universe to identify realistic downside and upside scenarios (one standard deviation is a good place to start but you can go to two if you want to really stretch your thinking)
2. Document a range of exit thresholds in advance of making the recommendation (they may be within the "upside" and "downside" scenarios), which will reduce biases from creeping into decisions at a later date:
    a. **Upside exit threshold**: to begin selling some of the position when it's playing out as expected. This would be the point to stop reiterating the call to your colleagues/clients.
    b. **Upside exit threshold**: to sell the entire position unless new information materializes. This is the point to downgrade the stock.
    c. **Downside exit threshold**: to seriously reexamine the investment thesis (for example, the stock moves 15 percent in the opposite direction of the call)
    d. **Stop-loss exit threshold**: to sell position because the thesis is not playing out

STEP 5 ("E" in SHARE™): Evaluate Price Target as Circumstances Change

There are usually only 3 reasons why you'll want to change a price target. In Exhibit 18, we've attempted to draw these to scale in terms of frequency in which they help in stock picking.

Exhibit 18: Catalysts for Changing Price Targets



- **Revised Forecast**: As your financial forecast (e.g. EPS or cash flow) changes, it will warrant a change to the price target
  - If your valuation is driven by next-12-months (NTM) EPS or cash flow, as each month passes, the estimate will likely change. If the change is relatively small, you may want to wait until the end of the quarter to make these updates
  - Avoid the temptation of changing your financial forecast unless you have an objective, defendable justification (otherwise you may be simply reverse engineering your price target)
- **Revised Multiple**: There may be times when the valuation multiple should be revised:
  - When peer multiples fluctuate (such as a stock's immediate peers as well as stocks in other sectors that have similar characteristics -- the shotgun and rifle approaches)
  - When highly-correlated variables change
    - Company-specific, such as EPS growth rate
    - Macro, such as consumer sentiment
  - For DCF or residual income, when the underlying assumptions change such as risk-free rate, equity premium, or stock's beta
- **New Method**: On rare occasions, there may be justification to change the valuation *method*:
  - If there is more than one valuation method that has been used in the past for a stock or sector, identify the catalyst(s) that caused the method to change, and then determine if there are similar catalysts that could cause investors to look at a new valuation method over a reasonable investment time horizon
  - Examples of when it may be justifiable to shift to an alternative valuation method:
    - At the peak or trough inflection points of the business cycle
    - Moving from one phase to another of a company's or industry's life cycle (e.g. growth to maturity)
    - Company is going through a major secular transformation or restructuring

Stock recommendations tend to fail when they are based solely on the analyst's expectations that:

- The stock's valuation multiple will be re-rated (void of an impending financial forecast change); or
- The market will change its preferred valuation methodology

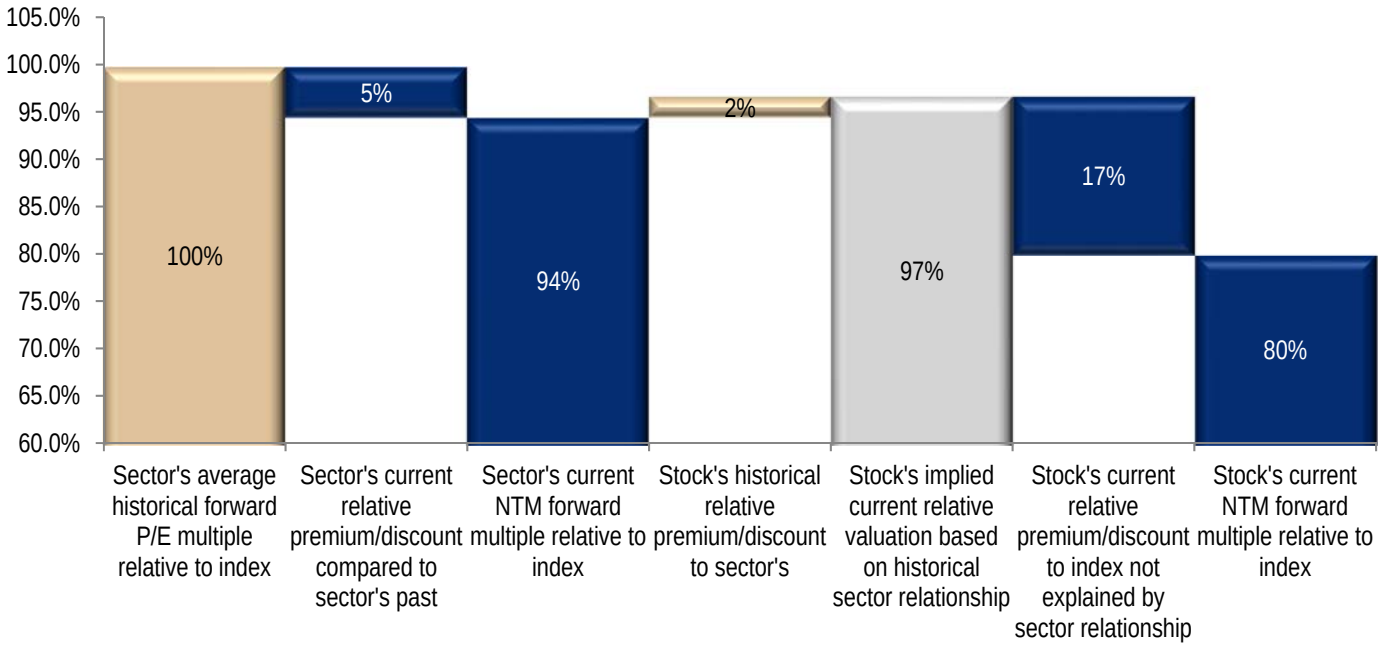
Appendix

Additional Examples for Step 2

Kohl's (KSS)

As shown in Exhibit 19, the apparel retailer sector is trading at only a 5% discount to its ten-year historical average (second bar from the left), which suggests it's "on-trend" and therefore not an issue that requires attention. The stock historically receives a 2% premium to the sector which is currently 17% below this level (second bar from right).

Exhibit 19: Kohl's Corp (KSS), Chart 1

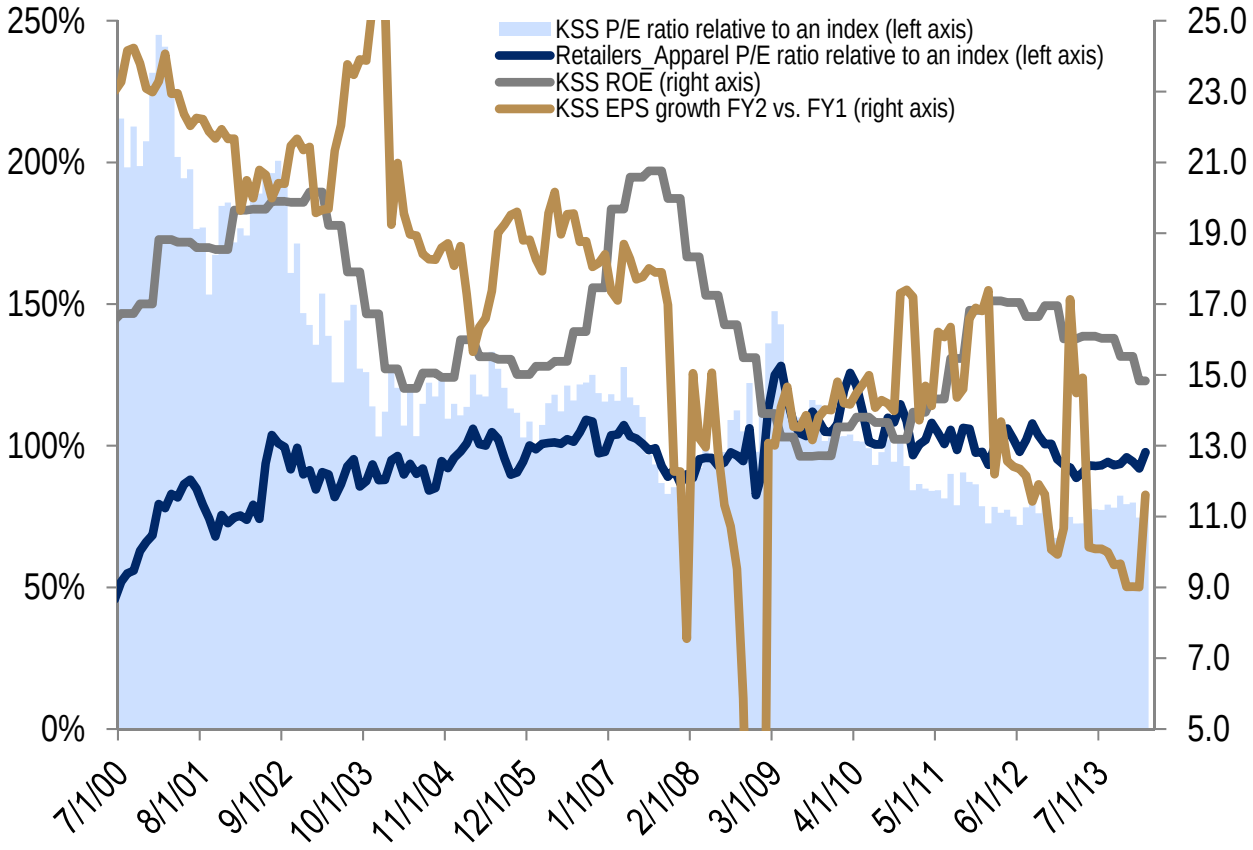


In Exhibit 20 below, which shows these trends over time, it's important to first note that KSS appears to have transitioned from a secularly-moving valuation to one that is cyclically-moving (typical for high-growth stocks as their growth slows). Therefore, the ten-year averages in the chart above for the stock are not very useful. The options are to either look at the stock relative to the sector for only the time when the stock's relative P/E ratio begins to move cyclically, or remove a comparison to the sector altogether.

If we begin with the assumption that KSS' relative valuation cyclicality began at the lowest "bottom" of its secular decline, the stock's relative P/E ratio has been cyclical since early 2008. It hit a 'cyclical" high of 147% in March of 2009 and was 80% at the end of 2013. With this in mind, we review three of the data series in the chart to help identify the factor that best explains the fluctuations:

- The apparel retailer sector's relative P/E ratio (dark blue line, using left axis) from 2008 to 2013 (during this "cyclical" period for KSS's relative P/E movement) has been relatively steady, between 90%-100% of the S&P 500, suggesting KSS' decline is not due to sector-wide factors.
- KSS's earnings growth rate (tan line, using right axis) has declined from 15% to 10% during that time period, suggesting it is the cause of the contracting relative P/E ratio (correlation coefficient is 56%). The analyst would likely want to continue looking for the other factor(s) that help explain changes in the stock's relative P/E ratio before drawing the conclusion that it appears to be on-trend with the company's EPS growth rate (which visually appears to be the case).
- And lastly, KSS's ROE (gray line, using right axis), has increased slightly, from 14% to 15% during that time period, suggesting it is not a factor in causing KSS's relative P/E ratio to contract

Exhibit 20: Kohl's Corp (KSS), Chart 2



Canadian National (CNI)

As shown in Exhibit 21, the railroad sector is trading at a 9% premium to its ten-year historical average (second bar from the left), which is an issue that needs to be investigated before setting a future price target for CNI. Meanwhile, the stock is trading at only a 1% premium to the relationship it has with the sector over the past ten years (second bar from right).

Exhibit 21: Canadian National (CNI), Chart 1

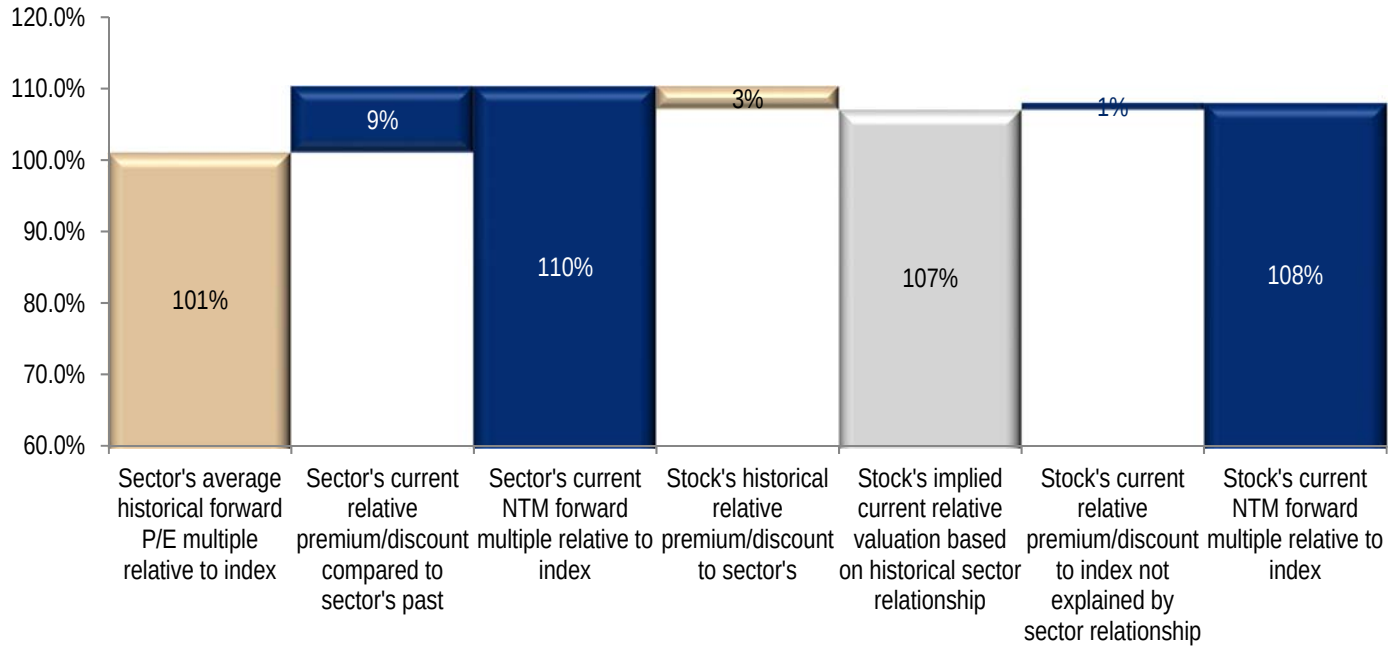


Exhibit 22 below shows these trends over time. Note that the railroad sector's relative P/E ratio (dark blue line using left axis) has expanded from 45% in July 2000 to 110% at the end of 2013, which explains why the sector is currently above its ten-year average. Looking at the chart, there is some cyclicality, but there also appears to be a secular trend. Is the sector's 9% premium compared to its ten-year average due to a longer-term secular issue or just the result of an expanding economy? Reviewing the two charts below, we can draw these conclusions:

- Exhibit 23 shows the sector's relative P/E ratio (blue bars) has risen with its ROE (correlation coefficient of 77%), helping illustrate this factor is more sector-specific than company-specific
- CNI's earnings growth rate (tan line, using right axis) has been flat to slightly declining during this time period, suggesting it is not the explanation for the stock's higher relative P/E ratio
- CNI's ROE (gray line, using right axis), has grown from 9% to 21% during that time period (suggesting cash flow growth is accelerating even in the face of a declining EPS growth rate), which is also a sector trend

Exhibit 22: Canadian National (CNI), Chart 2

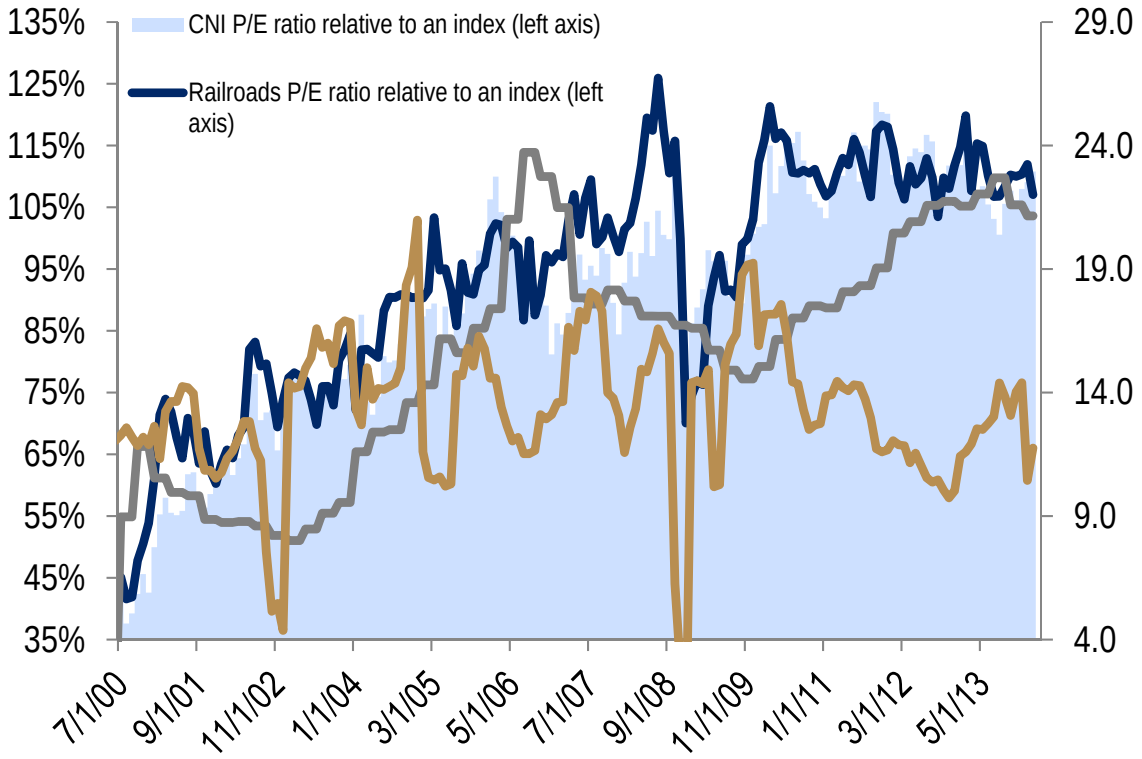
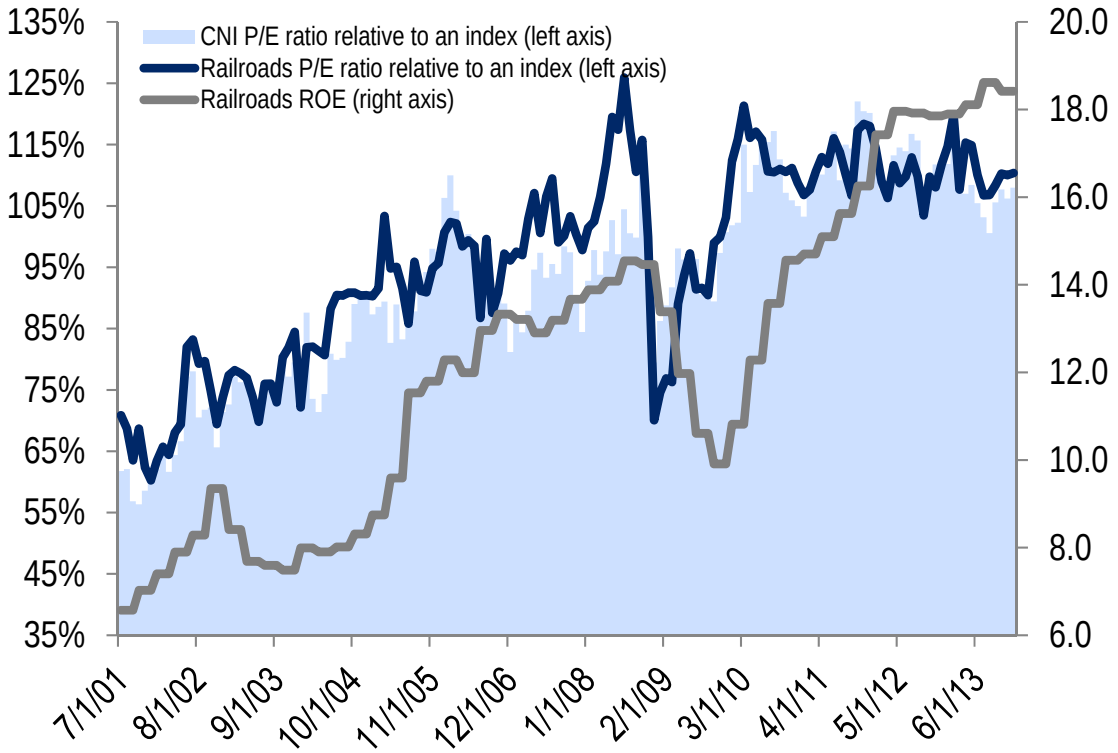


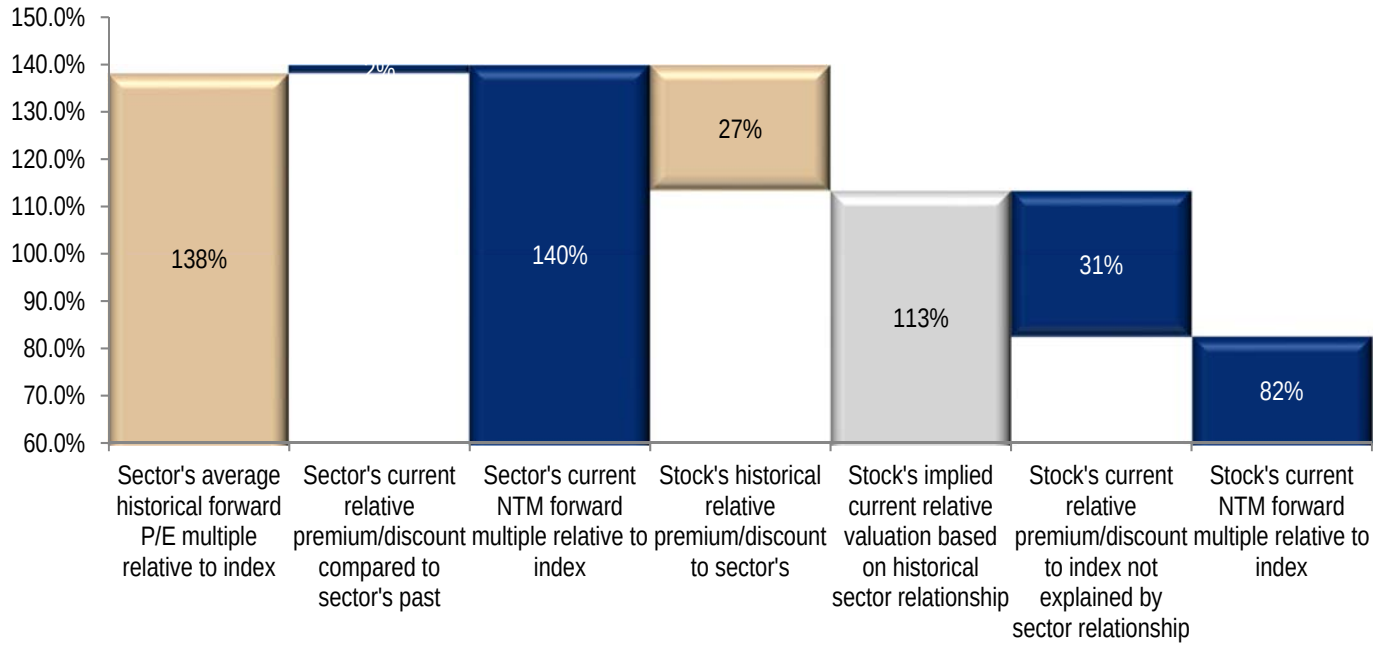
Exhibit 23: Canadian National (CNI), Chart 3



Oracle Corp (ORCL)

As shown in Exhibit 24, the software sector is trading at only a 2% premium to its ten-year historical average (second bar from the left), which suggests it's "on-trend" and therefore not an issue that requires attention. The stock historically receives a 27% discount to the sector which is currently 31% below this level (second bar from right).

Exhibit 24: Oracle Corp (ORCL), Chart 1



In Exhibit 25 below, which shows these trends over time, it's important to first note that ORCL appears to have transitioned from a secularly-moving valuation to one that is cyclically-moving (typical for high-growth stocks as their growth slow). Therefore, the ten-year averages in the chart above for the stock are not very useful. The options are to either look at the stock relative to the sector for only the time when the stock's relative P/E ratio begins to move cyclically, or remove a comparison to the sector altogether.

It's not entirely clear from the chart because ORCL's relative P/E does not appear to have found a definitive "floor", although given that its relative P/E ratio is only 82% of the S&P 500 suggests it's not likely to go much lower.

If we begin with the assumption that the cyclicality began at the last "bottom" of its secular decline, the stock's relative P/E ratio has been cyclical since early August 2009 when it troughed at 92%. It hit a 'cyclical" high of 109% in September 2011 and is currently at 82%. With this in mind, we review three of the data series in the chart to help determine the cause of the move:

- The software sector's relative P/E ratio (dark blue line, using left axis) was 120% in mid-2009 and has increased to 140% by the end of 2013, suggesting ORCL's recent relative P/E ratio decline is not due to industry factors.
- ORCL's earnings growth rate (tan line, using right axis) has been declining from 11% to 9%, suggesting it may be the cause of the lower relative P/E ratio
- ORCL's ROE (gray line, using right axis), during the more recent period has been steady at 29%, suggesting it is not the cause

Exhibit 25: Oracle Corp (ORCL), Chart 2