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U.S. Equity Strategy

SPX 2900 - This Is How We Get There

MACRO STRATEGY

U.S. Equity Strategy
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In this report, we present our framework for projecting index and sector P/E ratios and earnings, establishing our price target of 2900 for the S&P 500 index (SPX) and positioning recommendations for GICS sectors.

Our basic strategy is to forecast the trailing P/E ratios for the index and sectors one year out and then combine them with corresponding EPS projections to calculate a price projection.

For SPX our projected one year out P/E ratio is a weighted average of the current P/E ratio and long term P/E "fair level" which itself is dynamic and depends on a range of macro factors. This explicitly acknowledges the reality that the P/E ratio can deviate from its fair value for extended periods of time and only slowly mean reverts to a fair level. After examining a range of variables we find that a parsimonious set includes interest rates, inflation, inflation volatility, and industrial production.

The one-year-out P/E ratios for each sector are modeled as a function of the one-year-out SPX P/E ratio and the current level of the sector P/E ratio. Thus we assume that SPX P/E ratio effectively captures all the macro effects and our sector P/E ratios are best viewed from a relative value lens.

We forecast the EPS for the S&P 500 index and each sector using two complementary approaches: a top-down approach which incorporates the projections for a range of macroeconomic indicators and a bottom-up approach which leverages bottom-up consensus estimates after adjusting them for their historical biases and economic environment.

Based on this framework we forecast a robust earnings growth of 19% for the S&P 500 index but expect the P/E ratio to moderate to 18.3. Our framework predicts substantial variation in returns across sectors. Financials, Information Technology, and Consumer Staples are projected to outperform, Materials, Industrials, and Energy are in-line and Consumer Discretionary and Utilities are the underperformers.

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 27.

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A Framework for Projecting Index and Sector P/E Ratios and Earnings

In this note, we present our quantitative framework for establishing the price target for the S&P 500 index (SPX) and positioning recommendations for GICS sectors. Our basic strategy is to forecast the trailing P/E ratios for the index and sectors one year out and then combine them with corresponding EPS projections to calculate a price projection.

For SPX our projected one year out P/E ratio is a weighted average of the current P/E ratio and long term P/E "fair level" which itself is dynamic and depends on a range of macro factors. This explicitly acknowledges the reality that the P/E ratio can deviate from its fair value for extended periods of time and only slowly mean reverts to a fair level. After examining a range of variables we find that a parsimonious set includes interest rates, inflation, inflation volatility and industrial production.

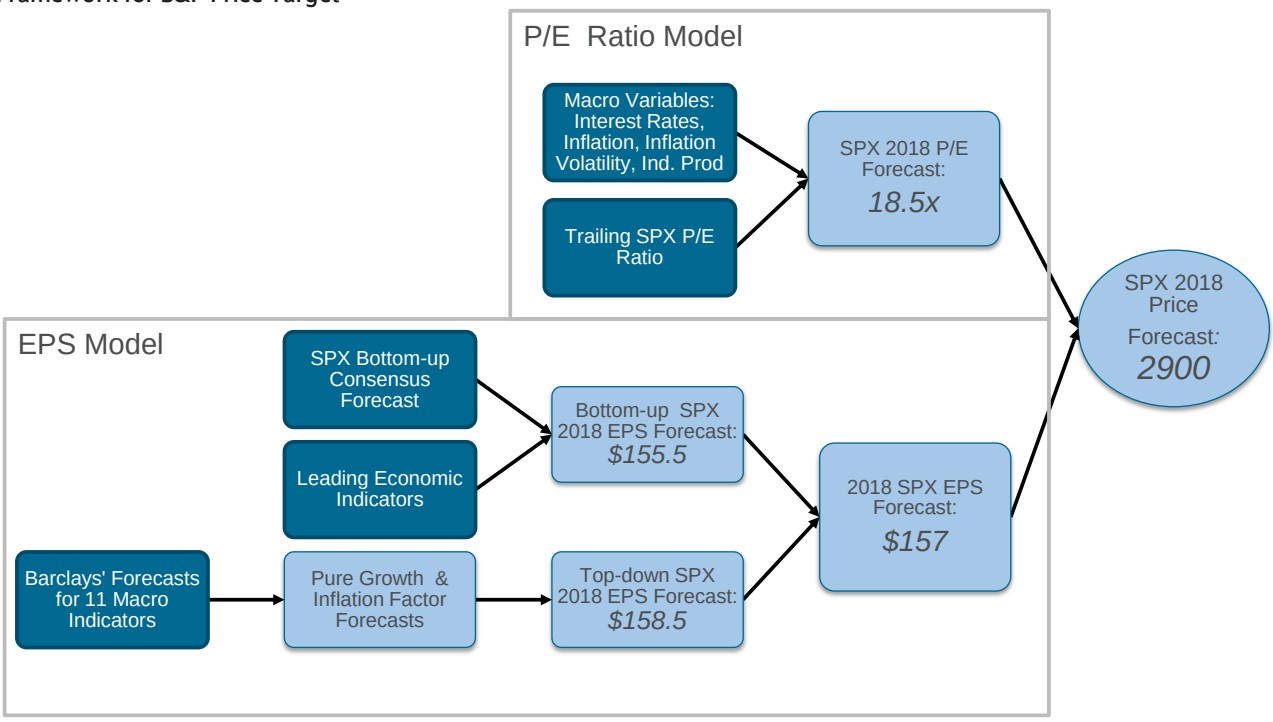
The one-year-out P/E ratios for each sector are modeled as a function of the one year out SPX P/E ratio and the current level of the sector P/E ratio. Thus we assume that SPX P/E ratio effectively captures all the macro effects and our sector P/E ratios are best viewed from a relative value lens.

We go top-down and bottom-up to forecast EPS

We forecast the EPS using two complementary approaches: a top-down approach which incorporates the projections for a range of macroeconomic indicators and a bottom-up approach which leverages bottom-up consensus estimates after adjusting them for their historical biases and economic environment.

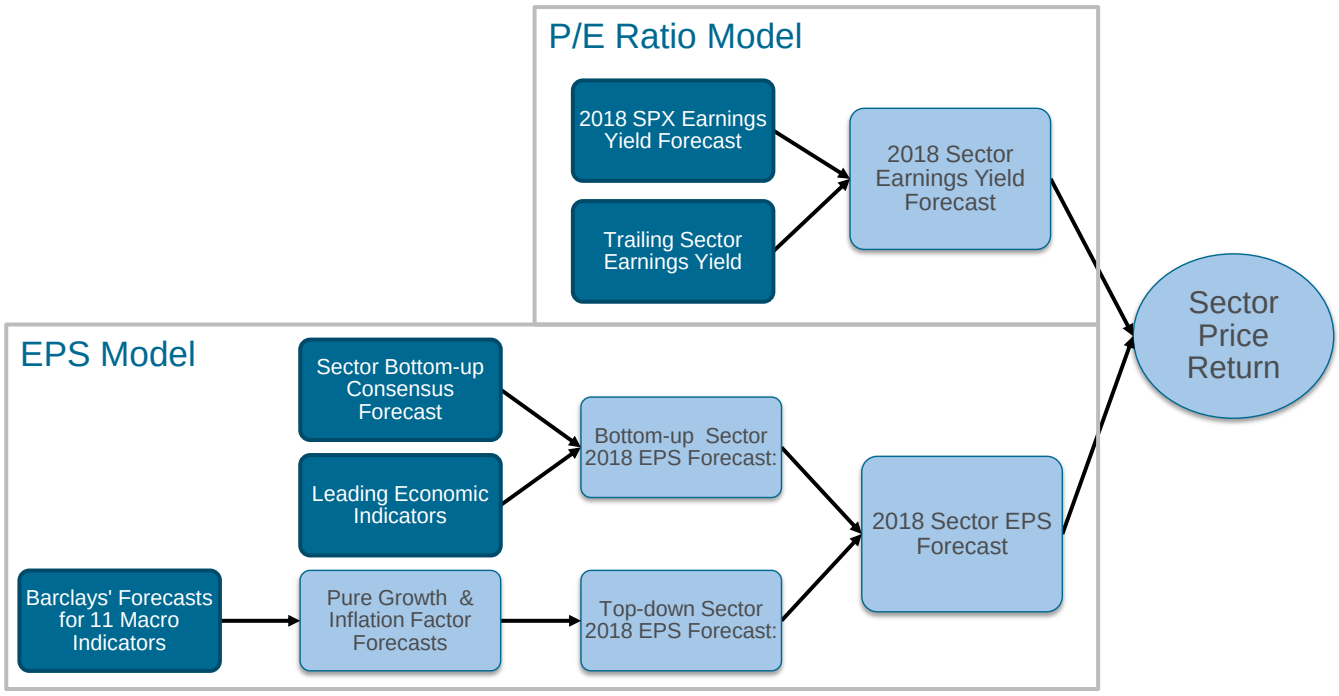
Figure 1 and Figure 2 summarize our basic strategy for the index and sector price returns respectively.

FIGURE 1
Framework for S&P Price Target



Source: Barclays Research

FIGURE 2
Quantitative framework for calculating 2018 Sector Price upside



Source: Barclays Research

Based on this framework we forecast a robust earnings growth of 19% for the S&P 500 index but expect the P/E ratio to moderate to 18.3. Our framework predicts substantial variation in returns across sectors. Financials, Information Technology, and Consumer Staples are projected to outperform, Materials, Industrials and Energy are in-line, and Consumer Discretionary and Utilities are the underperformers.

Model for the P/E Ratio for the S&P 500 Index

In this section we discuss our framework for forecasting the P/E ratio for the S&P 500 index one year out. As we discuss in detail, we will express this as a weighted average of the current P/E ratio and long term P/E "fair level" which itself is dynamic and depends on a range of macro factors.

We emphasize that the "E" in the P/E ratio is the last twelve month (LTM) index EPS (earnings per share). Although the forward earnings P/E ratio is a popular valuation metric, it does not directly fit our goal of projecting prices over a one-year horizon. The "E" in the forward P/E ratio is the consensus EPS for the next year (NTM) and hence to calculate the price one year forward we would need to project the consensus NTM EPS instead of the actual LTM EPS after one year which is a much harder task since we would need to project how expectations will evolve.

Further although the "P" in this ratio is non-controversial there are many different possibilities for the actual "E." In order to align with the bottom-up consensus estimates we use the "analyst comparable" EPS which hews most closely to operating earnings as defined by sell-side analysts. There is clearly a fair amount of subjectivity in this measure and although we use the comparable EPS sourced from IBES/Thomson Reuters in our analysis, this appears to be quite close to those sourced from Bloomberg. These comparable EPS

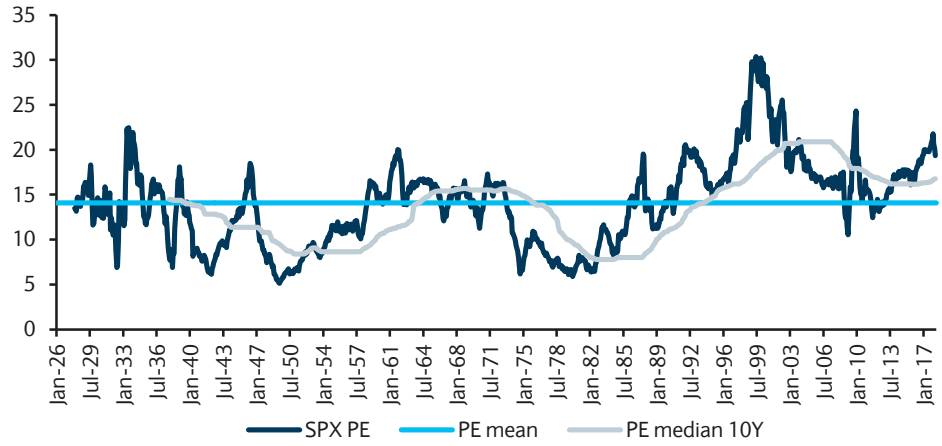
estimates are only available from 1985 via IBES and ideally we would like to extend our analysis further back in time to understand behavior over different economic environments. We do have a much longer history available for SPX but this is for "as reported" or GAAP earnings. In order to be consistent we construct proxy comparable EPS by regressing the latter with basic earnings over the past few decades.

Simple Mean-Reverting Model

Figure 3 plots the evolution of the S&P 500 P/E ratio calculated by using the LTM trailing "analyst comparable" EPS since 1926. We see that although this has varied quite significantly over this period of time it has been fairly range-bound around the mean level of ~14 (the median level is also quite similar). The same figure also plots the trailing 10-year median value of the P/E ratio and we see that since 1990 there appears to be somewhat of a regime shift to a slightly higher level. Since 1960, where the data quality is more reliable, the mean value is 15.4.

FIGURE 3

SPX P/E ratio has been range-bound but has shifted to a higher level since mid-1990s



Source: Barclays Research, Robert Shiller, Thomson Reuters

Trailing values of the P/E ratio are an excellent predictor of its future values

It is important to note that although the P/E ratio is range-bound over long periods of time, the speed of the reversion is quite slow. In other words, the trailing values of the P/E ratio are an excellent predictor of its future values. For example, regressing the one year out P/E ratio versus the current level results in the following model:

$$PE_{t+12} := (0.80 \pm 0.08) PE_t + (0.20 \pm 0.08) PE_{mean} + 2.9\varepsilon_t,\ PE_{mean} = 14, \qquad R^2 = 63\%$$

Thus, the next year's P/E ratio is a weighted combination of the current P/E ratio and the long-term mean. However, the weight on the current P/E is much larger than the long-term mean and thus the mean-reversion is quite slow. We note that although the R^2 is high, the standard-error is actually quite large (~ 3 points or ~ 20% of the mean value).

The above simple model assumes that the mean to which the P/E ratio reverts is a constant. It is tempting to assume that the trailing median might be a better proxy for this long-term reversion level but that turns out to be a worse assumption. Intuitively, the mean level should be a dynamic function of the macro-environment and over the next few sub-sections we examine several candidate variables for modelling this dynamic mean level.

Relationship of P/E Ratio to Risk-Free Interest Rates: It's Complicated

Intuitively, the level of risk-free interest rates should be a key driver for valuations and indeed most investors believe that rising interest rates are bad for equities and the P/E ratio. However, as we discuss in this section, empirically, the relationship is not so simple.

The usual intuition that higher rates are bad for equities is based on an asset-allocation framework. Thus, the earnings yield (the inverse of the P/E ratio) can be thought of as a measure of the total yield that investors can accrue from owning equities. If risk-free rates increase, the relatively lower earnings yield would induce them to rotate out of equities, which would push up earnings yields (or push down the P/E ratio). More formally, one could view the equity price as a discounted cash flow of uncertain earnings where the discount rate should in principle equal the risk-free rate plus a premium (the so-called equity risk premium) given the uncertainty in earnings. This is similar to, say, corporate bonds whose yields trade at a premium to Treasury yields.

For example, as a rough analogy to the classic Gordon dividend growth model, we can write:

$$P = \frac{E_0(1+g)}{R-g} = \frac{E_0(1+g)}{R_f + ERP - g}$$

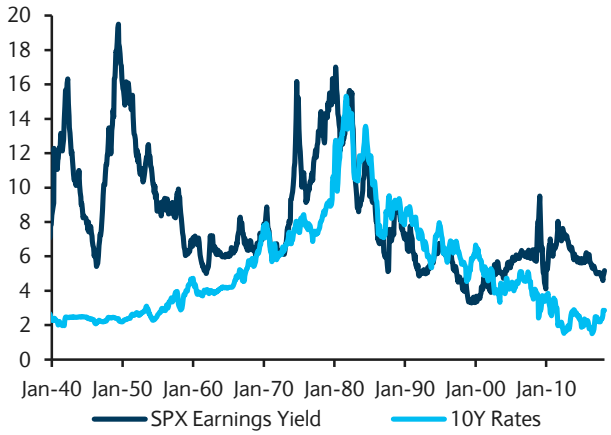
Thus, the stock price (P) is determined by the ratio of current earnings (E_0) and the difference between a discount rate (R) and the long-term earnings growth rate (g). The discount rate itself can be decomposed into the risk-free rate (R_f) and the equity risk premium (ERP). Therefore, earnings yield (EY), which is the inverse of the P/E ratio, can be written as:

$$EY = \frac{1}{PE} = \frac{E_0}{P} = \frac{R_f + ERP - g}{1+g}$$

If this equation were to be exact, and assuming that the risk premium and the expected growth are relatively constant, earnings yield should be linearly related to risk-free interest rates. This underlies the so called "Fed model" which posits that the earnings yield should be a linear function of risk-free rates.

FIGURE 4

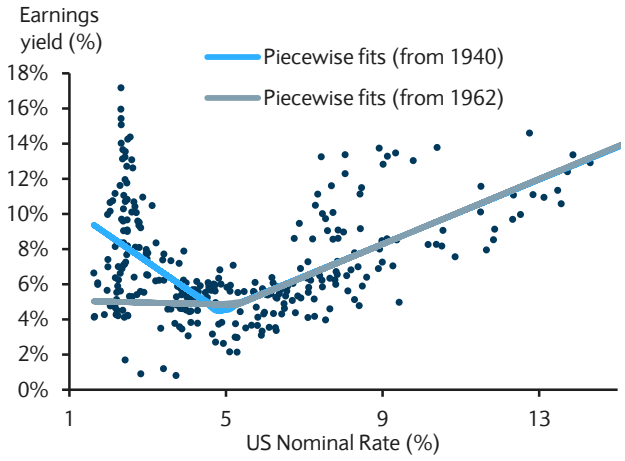
SPX earnings yield has moved in lockstep with nominal interest only between 1960s and 1990s



Source: Barclays Research, Robert Shiller, Thomson Reuters

FIGURE 5

Earnings yield decouples from interest rates when rates are below 5%



Source: Barclays Research, Robert Shiller, Thomson Reuters

Figure 4 plots the earnings yield versus 10-year Treasury yields over time and we clearly see that the relationship between these two variables has not been very consistent. These two variables did move in lockstep between 1970 and the early 2000s but they have diverged significantly both before and after this time period. Figure 5 shows a scatter plot of the two variables and we see that the relationship is highly non-linear. The plot also shows a piece-wise linear fit where the break-point is estimated to be ~5 in the 10y nominal yields. Above this level the earnings yield increases linearly with rates and in fact the coefficient is close to

1. Thus, in the high rates regime, the Fed model appears to work very well. But clearly the relationship is completely different below 5%. Now the dependence changes sign and in fact the earnings yield increases (P/E ratio decreases) as rates decrease. However, we caution that this negative stronger slope is a consequence of the data prior to 1960. If we only use the data since 1960, the slope below 5% is essentially zero. As is evident from Figure 4, Treasury yields have continued to broadly decline since the 1990s but earnings yields have had several ups and downs.

Going forward we will restrict ourselves to data since 1960 so that our model is more aligned with recent behavior.

Over this time period we get the simple relationship:

$$PE_{t+12} = (17 \pm 3) - (1.3 \pm 0.6)\text{Max}(R_{ft} - 5.5,0) \ + 4\varepsilon_t, \qquad R^2 = 35\%$$

Thus, the P/E ratio is essentially like a short call option on the level of nominal rates with a strike of 5.5%. This break-point appears to occur at exactly the same point at which the rate-equity correlation transitions from negative to positive as we have noted in a previous report (*"Whither Equity-Rate Correlation?"* 24 July 2013).

Why does the intuitive expectation not work? A potential explanation is that the intuition that equity yields should be positively correlated with nominal rates is based on the assumption that as nominal risk-free interest rates change the equity risk premium and growth rate would remain constant. However, that is clearly an unrealistic assumption since the factors affecting nominal rates can also affect equity risk premium and growth rates expectation. Thus, nominal risk-free interest rates can be decomposed into inflation expectations, real rates (which are affected by growth expectations, savings etc) and a term premium. Clearly the factors which affect these components are also likely to affect the equity risk premium and equity growth expectations, resulting in a complex and dynamic relationship.

Incorporating Other Macro Variables

A small number of variables can account for the bulk of macroeconomic impact on P/E

We examined a host of other macro variables in our model which should intuitively affect the P/E ratio, including inflation and inflation volatility, economic growth, credit spreads, term structure of interest rates, volatility of industrial production, equity return volatility, change in short-term rates, growth, and volatility of trailing earnings. However, we find that (in addition to the non-linear dependence on interest rates) the following parsimonious set captures most of the macroeconomic impact on the P/E ratio.

- Inflation measured as the y/y growth in the CPI index
- Log of Inflation volatility measured as the 12-month standard deviation of CPI y/y growth
- Economic growth measured by the y/y growth in Industrial Production

The other variables are either not significant to begin with or their effects are subsumed by these variables.

The key variables are shown in Figure 6 along with their coefficients in a multiple-regression model where we normalize all the variables by using their Z-scores. Thus, the coefficients can then be thought of as their impact on the P/E ratio for a one standard deviation move in each variable from a mean value of 15.4. Although we included linear terms of 10y Treasury yields the coefficient was not significant.

FIGURE 6

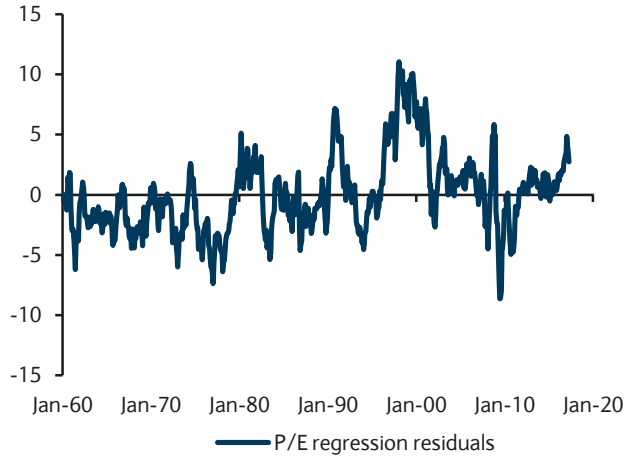
The dynamic mean-reversion level of the P/E ratio can be captured by a small set of macro factors

Variable	Coefficient	t value
(Intercept)	15.4	16.7
| 10Y Treasury Yields - 5.5|	-1.4	-2.2
CPI.YoY	-2.7	-4.4
Log(CPI Volatilty)	-1.2	-1.7
IP.YoY	-1.6	-2.3
R-square = 54%, Standard Error = 3.3		

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller
Note: Regression of PE_{t+12} versus Z-score of the macro variables from 1960. t-stats are adjusted for auto-correlation using the Newey-West procedure

FIGURE 7

The corresponding residuals of the regression are relatively range-bound



Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

The signs of the dependence on inflation and inflation volatility are intuitive: the P/E ratio decreases as they increase. In particular, note that the contribution of inflation is the largest of the two, and its persistent decline over the past few decades partly explains why the median level of the P/E ratio has increased. The negative sign for future growth is somewhat non-intuitive in that as growth increases the P/E ratio decreases. This seems counter to the observation that high-growth stocks typically have higher P/E ratios. However, what is true across the cross-section of stocks need not hold at the aggregate level, which is more driven by business cycle dynamics.

Figure 7 shows the residual for this dynamic mean-reversion-level model (or "level" model for short) and we see that the extremes occurred during the dot-com bubble during 2000 when the P/E ratio was too high and then again during the 2008 crises when it dropped to quite low levels due to higher risk aversion. More recently, over the last few years the P/E ratio has been trading rich, although it has normalized to some extent this year.

Combined Model

Having established a model for the dynamic mean reversion level for the P/E ratio based on macro-variables, we next combine it with the mean-reversion model. We could, of course, simply add the current value of the P/E ratio to the model in the previous section but in our view is it more useful to keep the two effects separate. Hence, we regress the one-year-out P/E ratio on the current P/E ratio and the mean level predicted by the dynamic regression level model. This results in a model of the form:

$$PE_{t+12} \coloneqq (0.58 \pm 0.08)PE_t + (0.46 \pm 0.12)PE_{level,t} + 2.4\varepsilon_t, R^2 = 76\%$$

For comparison, the pure mean reversion model since 1960 is:

$$PE_{t+12} \coloneqq (0.84 \pm 0.09)PE_t + (0.16 \pm 0.10)PE_{mean} + 2.6\varepsilon_t,\ PE_{mean} = 15.4, \qquad R^2 = 70\%$$

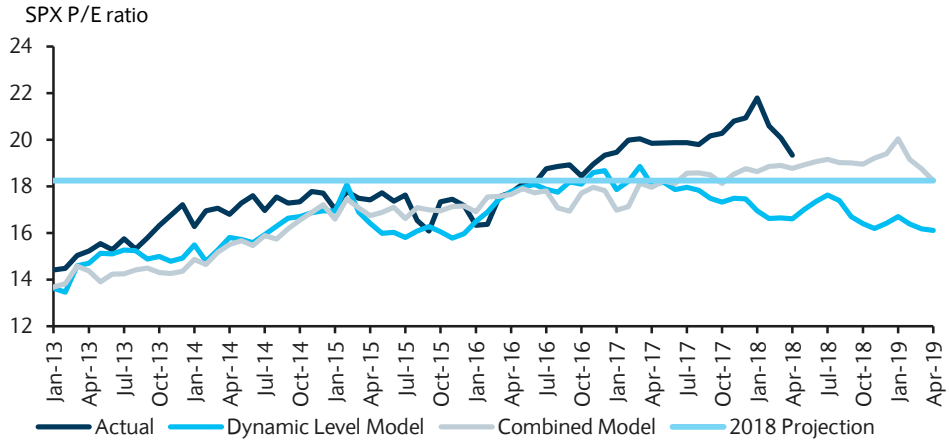
Effectively, we are replacing the constant mean level with a time-dependent level. The R-square and standard deviation improvement is modest but the coefficient on the current P/E level drops from 0.84 to 0.58; the reversion speed to this dynamic level is much faster.

Figure 8 shows the actual one-year-out P/E ratio versus that predicted by the pure level and the combined model. Note that the actual level stops at April 2017 (since this is a one-year-

forward value). However, we can calculate the predicted values over the past year since the values of the dependent variables are known. We see that the prediction from the Dynamic Level model has been drifting down since 2016. As a result, the combined model has not increased as strongly with the actual P/E ratio. In particular, the one-year-out projection now stands at 18.3, which we will adopt as our projection for the end of 2018.

FIGURE 8

Our combined model predicts that the SPX P/E ratio would decline to ~18.3 in a year



Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

Sector P/E Model

In this section we develop a framework to project the one-year-forward P/E ratio for each GICs sector. Although we do not set explicit price targets for each sector, the relative valuations will be useful for determining our sector allocations.

In principle, we could extend our methodology for SPX P/E ratio from the previous section for each sector. However, there are a few issues with that approach. Firstly, we have a more limited history for sector-level fundamental data (since 1985) which would mean that the calculated effect of macro variables will not be as robust. Secondly, the sector P/E ratios are much more volatile even after we use the "analyst comparable" EPS.

Instead we take a more pragmatic approach and relate the sector P/E ratios to the SPX P/E ratio. Since at the sector level earnings can become negative, we will model earnings yields (inverse of the P/E ratio), which are better behaved.

This approach is justified since the correlation between the P/E ratios for the sectors and the index is surprisingly high. Figure 9 compares the earnings yields for two cyclical sectors (Industrials and Information Technology) with that of SPX. The fact that these move in tandem is not too surprising given that their earnings growths are also synchronized (Figure 10). We note that the earnings yields for Industrials very closely track that of SPX despite the fact that Industrials make up only ~10% of the index by weight.

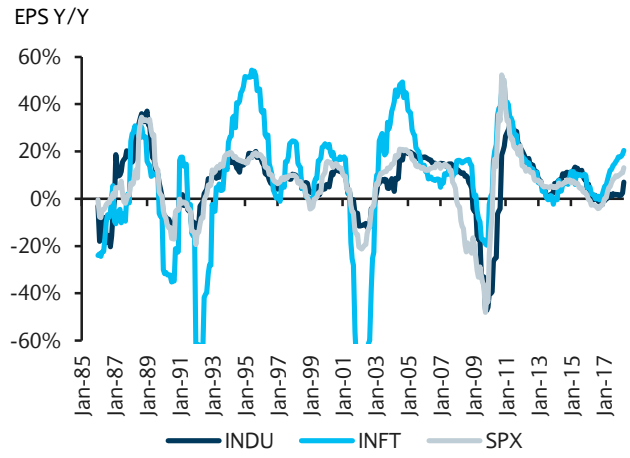
FIGURE 9

Earnings yields for cyclical sectors move in tandem with that for SPX…

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

FIGURE 10

…Which is not surprising given the high correlation of the corresponding earnings growth



Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

However, Figure 11 shows that the correlation between earnings yields for defensive sectors (Health Care and Consumer Staples) is also quite high despite the fact that the earnings for these sectors are relatively immune to cyclical downturns (Figure 12). This implies that all of the sectors trade at a common equity risk premium which in turn induces a strong market beta for even the defensive sectors.

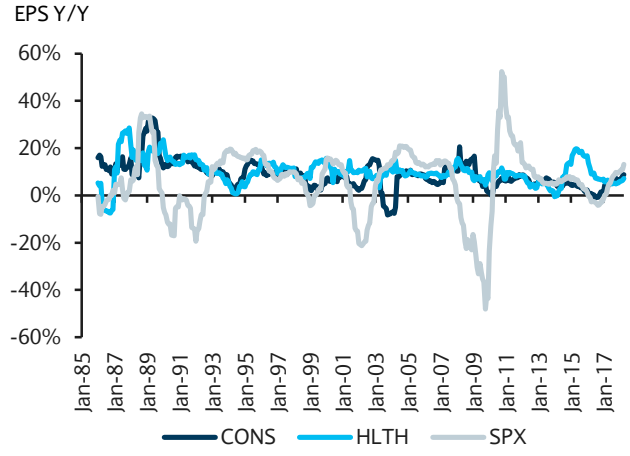
FIGURE 11

Earnings yields for defensive sectors are equally well synchronized with SPX…

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

FIGURE 12

… Even though their earnings do not co-move with SPX



Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

We quantify the relationship between the earnings yield of each sector with that of SPX by doing a straight linear regression. This is a more general approach compared with the more common approach of simply examining the spread between the P/E ratios. This modelling approach implicitly assumes that all the macro information is encapsulated in the SPX earnings yield.

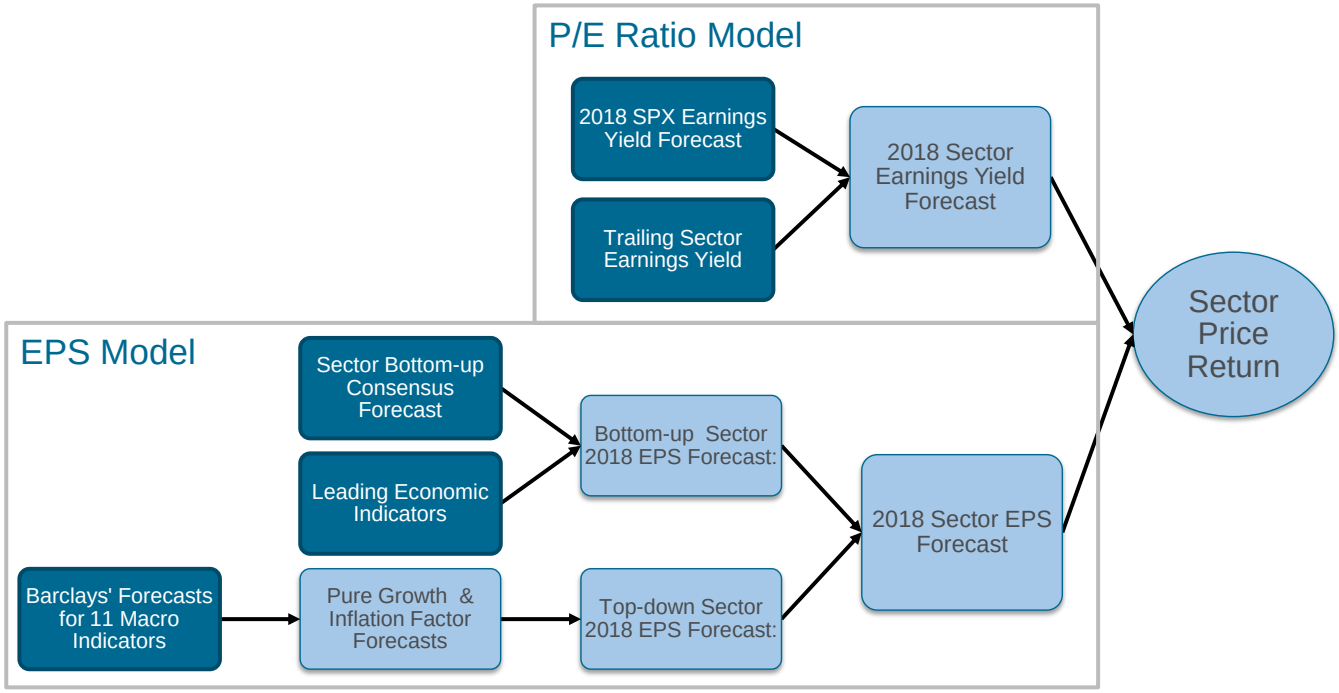
In order to account for the fact that a relative dislocation between a sector and the broad index may not mean-revert quickly, we also include the current value of sector earnings yield, similar to what we did for the SPX P/E model in the previous section. The regression model for each sector m can therefore be written as:

$$EY_{t+12}^{m} = \alpha^{m} + \beta_1^{m} EY_t^{m} + \beta_2^{m} EY_{t+12}^{SPX} + \varepsilon_t^{m}$$

Note that the SPX earnings yield is also a one-year-out level. For fitting the coefficients this is not a problem since we also know these values. For forecasting, we plug in the values of projected values of the SPX Earnings Yield using the model in the previous section.

Figure 13 summarizes our framework for sector price projections.

FIGURE 13
Quantitative framework for calculating 2018 Sector Price upside



Source: Barclays Research

Figure 14 shows the results of this regression. We see that broadly the earning yields for cyclical sectors have a high correlation with SPX. In particular, for Industrials the coefficient for the SPX Earnings Yield is 1 and the intercept and trailing values are essentially zero, indicating that the Industrial earnings yields essentially move in lockstep with SPX. The R-squared for the Energy and Financial sectors is low but that is simply because of the extreme volatility for them in 2015 (Oil crash) and 2008 (credit crises), respectively.

FIGURE 14

Model for Sector P/E ratio relative to SPX P/E ratio and trailing P/E ratio has high R-squared for most sectors

	Coefficient			t-stats			
Ticker	Intercept	SPX.fEY	EY	Intercept	SPX.fEY	EY	r.squared
INFT	-2.7%	1.02	0.35	-5.4	11.8	4.6	84%
INDU	0.2%	0.95	0.01	0.3	5.8	0.2	72%
HLTH	0.0%	0.34	0.63	0.0	2.1	5.6	66%
CONS	1.5%	0.45	0.24	1.7	3.3	1.2	62%
COND	-0.8%	0.79	0.26	-0.8	2.7	1.4	59%
MATR	-2.2%	1.12	0.27	-0.6	2.3	1.2	55%
UTIL	2.0%	0.29	0.49	1.4	1.3	2.9	46%
ENRS	-1.2%	1.01	0.26	-0.4	2.8	1.4	40%
FINL	2.1%	0.51	0.22	0.7	0.8	0.8	10%

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

Figure 15 shows the predicted values for each sector one year out where we have used the one-year-out level for the SPX P/E ratio of 18.3 calculated in the previous section.

FIGURE 15

Predicted one-year-out P/E ratios for SPX and GICS sectors

Ticker	Current (May - 2018)	Predicted (May 2019)
FINL	15.7	15.9
INFT	20.9	22.1
CONS	18.1	19.1
HLTH	16.8	17.7
MATR	19.4	18.9
SPX	19.4	18.3
INDU	19.7	18.3
ENRS	31.9	19.6
COND	23.2	21.4
UTIL	16.7	15.4

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

Compared to the current level of the P/E ratios we see that the biggest change is for the Energy sector and that is a consequence of the fact that the current P/E ratio is quite high given the low trailing earnings. However, as we see in the next sections, the future earnings growth is quite high, which justifies the current trailing P/E ratio.

Bottom-Up EPS Forecast Model

In this section we present our model for EPS projections which incorporates bottom-up consensus forecasts for the full S&P 500 index and sectors. The basic strategy is to use these forecasts (which are calculated by aggregating the EPS forecasts for individual stocks made by equity analysts) but correct them for their biases. Bottom-up consensus forecasts tend to be optimistic, especially one year out.

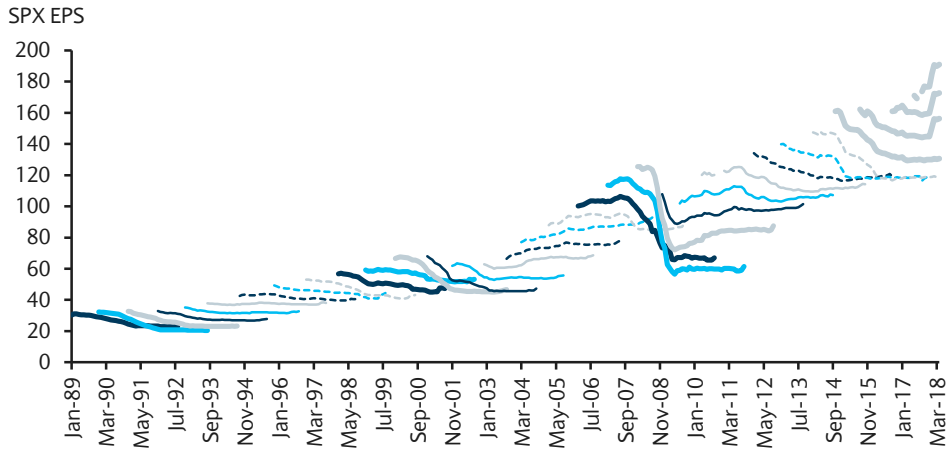
Bias in Consensus S&P 500 EPS Forecasts

The bottom-up forecasts are calculated by aggregating the EPS forecasts for individual stocks made by equity analysts collected by IBES. A key advantage of using these consensus forecasts is that they incorporate forward-looking information about each individual stock and, importantly, also include company guidance where available.

However, as we have documented before (see "*U.S. Small & Mid Cap Strategy: Investing in Earnings Surprises*," 7/29/2014) these aggregate consensus forecasts tend to be biased, and further, these biases evolve over time. This is illustrated in Figure 16 where we plot the evolution of the consensus S&P 500 EPS forecast for each calendar year as it converges to the actual EPS. Note that the EPS for a particular calendar year is calculated by using the calendar year of the reported annual earnings of the company (not its fiscal year). As the actual EPS becomes available for a company, we use it in the calculation for the index EPS. As a result, by definition the consensus forecasts converge to the actual forecasts.

FIGURE 16

Consensus SPX EPS estimates for a given calendar year are revised substantially over time



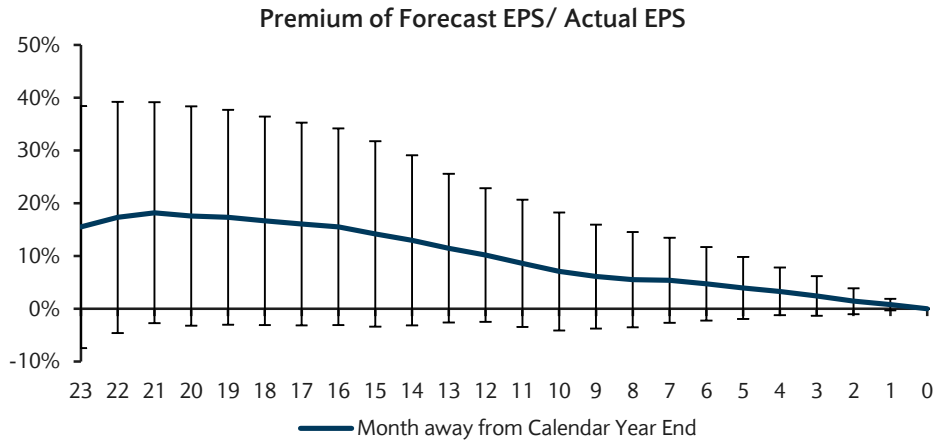
Source: Barclays Research, Thomson Reuters

Note: Calendar year EPS is calculated using the calendar year of the annual fiscal period end for each company. If the fiscal period occurs in January the prior year is used (e.g. a company with an annual fiscal end of 1/31/2017 would be included in calendar year 2016).

Figure 17 aggregates the information by calculating the average and standard deviation of the consensus forecasts relative to the actual forecast. Note that in this chart, the zero point is the end of the calendar year and the series continues for another six months since the actual EPS for some companies is only known several months after that point. We see that on average the consensus forecasts start out quite optimistic and slowly converge.

FIGURE 17

On average, consensus expectations start optimistic and slowly converge to the actual numbers

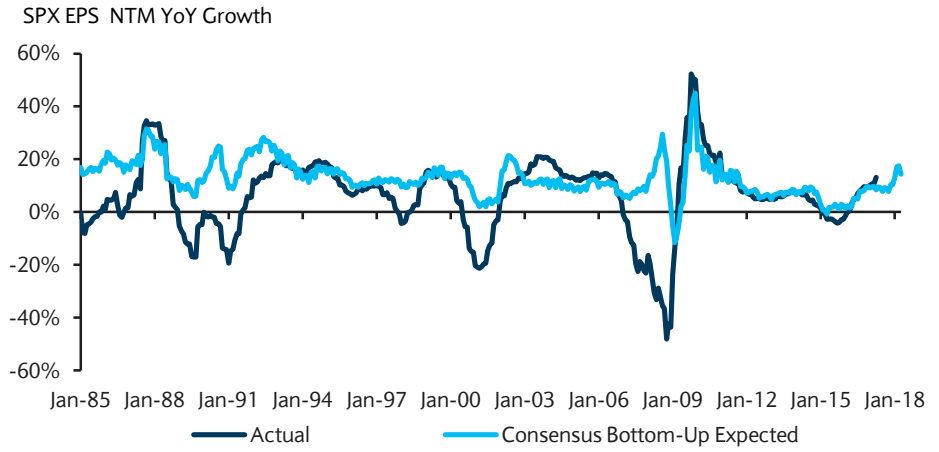


Source: Barclays Research, Thomson Reuter

For our benchmark model we would like to estimate the EPS one year forward, so for now we focus on that horizon. For this purpose we define the projected EPS growth as the log of the ratio of consensus NTM (next 12 months) EPS versus the actual LTM (last 12 months) EPS. We compare this with the actual EPS growth defined as the log of the ratio of the NTM actual EPS versus the actual LTM EPS.

FIGURE 18

Bottom-up consensus expected growth is always positive and does not anticipate recessions



Source: Barclays Research, Thomson Reuters, IBES

Figure 18 plots these two growth numbers since 1985. A striking feature that emerges is that the one-year expected growth is almost always positive. As a result, on average the expected growth is substantially higher than the actual growth. However, we clearly see that this bias arises primarily because of the unexpected recession induced decline in earnings which are hard for analysts to forecast. During the non-recession phases the bias is not as substantial; moreover its sign has not been consistent across different expansion periods. In particular, during the mid-2000s actual growth was consistently higher than expected growth, while during the mid-1990s the opposite was true. During the current expansion, consensus expectations have been mildly optimistic. This means that, as we discuss next, correcting for this bias is non-trivial.

Correcting the Bias in Consensus Forecasts

As a first step we simply regress the expected growth versus actual growth and find:

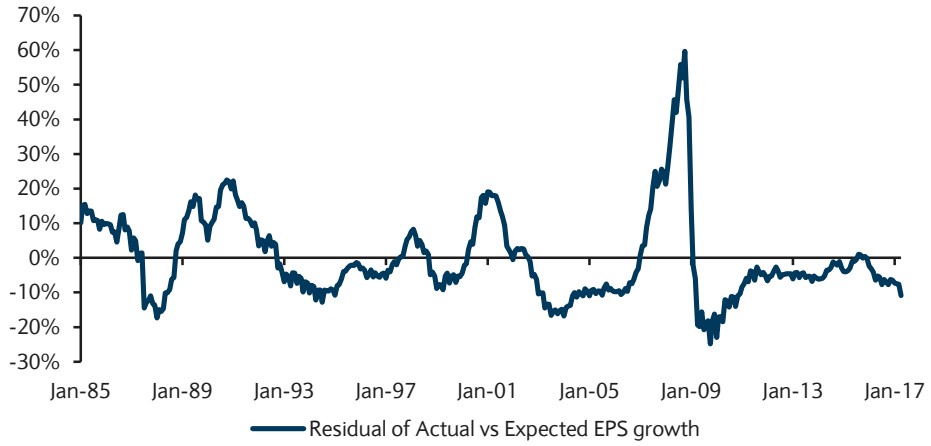
$$E_{Act}(t+1) = (-0.05 \pm 0.01) + (0.86 \pm 0.09)E_{Exp}(t) + 12\varepsilon(t),\ R^2 = 18.7\%$$

The R-square is quite low but this is not surprising given the inability of consensus expectations to capture recessions. The intercept is significantly negative at -5% earnings growth and the coefficient is also less than one given the upward bias in expected growth.

Figure 19 plots the resultant residual along with the regression statistics. However, although the mean value of the residual is zero on average, the residual is consistently negative during expansion periods. In other words, the model is trading the possibility of a negative earnings shock by systematically down-playing the expected growth during expansionary periods, which is clearly not acceptable.

FIGURE 19

Simple regression of actual versus expected EPS growth leads to consistent negative residual during expansion periods



Source: Barclays Research, Thomson Reuters, IBES

Ideally we would like to account for the fact that when we are in an expansion phase the bias is not very strong but becomes significantly upwardly biased as we enter into a recessionary phase. To achieve this we need to use an indicator that forecasts an incipient recession. After surveying several candidate variables we find that the LEI (Leading Economic Index published by the Conference Board) is the best candidate for this purpose. This index is calculated by averaging the Z-scores of the 10 sub-indicators which have shown good predictive power for forecasting future economic conditions.

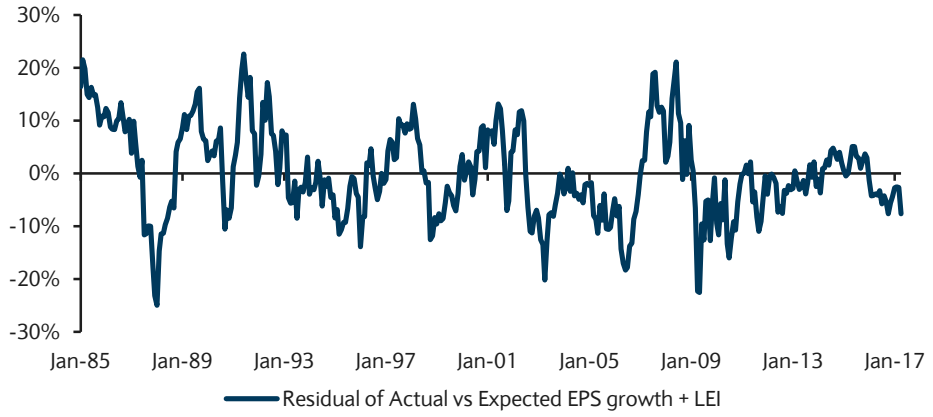
We find that the trailing one quarter return (LEI_{3m}) of this index is a timely indicator for forecasting actual S&P earnings growth. Further, the interaction term of this variable with expected growth also has significant explanatory power. Thus, the model for expected growth becomes:

$$E_{Act}(t+1) = (-0.03 \pm 0.01) + (0.46 \pm 0.06)E_{Exp}(t) + (2.9 \pm 0.4)LEI_{3m}(t) +$$

$$(20 \pm 2)E_{Exp}(t)LEI_{3m}(t) + 8\varepsilon(t),\ R^2 = 63\%$$

In other words, the beta of the expected growth now also depends on LEI_{3m}. If $LEI_{3m}$is positive then the effective beta is higher, but it drops and can indeed reverse sign as the LEI growth turns negative. The R^2 for this model is significantly higher at 63% relative to the pure expected growth model (23%). Figure 20 plots the residuals of this regression and we see that it is now much more normal and evenly distributed.

FIGURE 20
Including trailing LEI returns in the model makes the residual less biased



Source: Barclays Research, Thomson Reuters

What about Trailing Actual Earnings Growth?

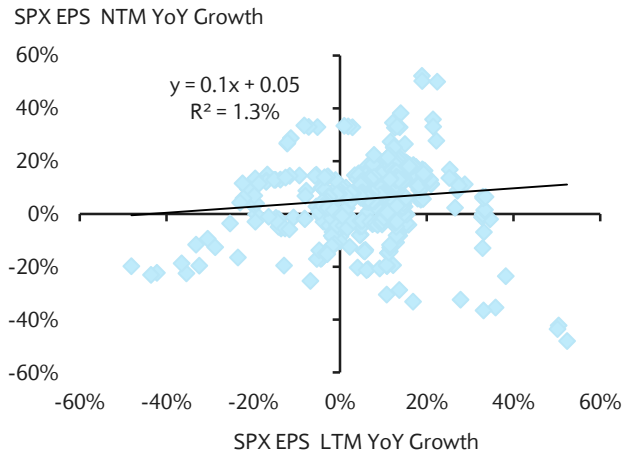
Besides using forward-looking indicators such as bottom-up consensus earnings and the LEI index, a natural question is whether trends in trailing earnings can add further value.

Unfortunately, as shown in Figure 21, trailing growth in actual LTM EPS has very low predictive power. A follow-on question is whether it might be more appropriate to use a longer term measure of the actual EPS growth. Figure 22 shows the relationship between future EPS growth and trailing five-year earnings growth. Interestingly, the relationship is strong but the sign is negative, implying that strong trailing growth indicates an earnings drop! In our opinion, this somewhat non-intuitive relationship is a consequence of the fact that each business cycle over the past few decades has lasted roughly seven years. Thus, after dropping significantly during a recession, earnings typically rebound strongly as the economy moves into an expansion phase, which leads to this dynamic.

Adding this variable does improve our model but we opt to leave it out for two reasons. First, the LEI growth directly attempts to model this and so this amounts to double counting. Second, using the five-year growth implicitly assumes that the length of the business cycle is fixed, which is not true over a longer period of time. In particular, the current cycle might last for a longer period of time and adding this variable would create a persistent drag on projected earnings.

FIGURE 21

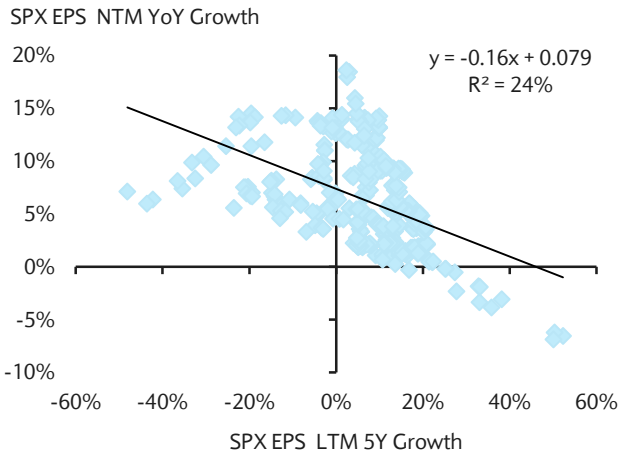
Trailing EPS growth is not helpful in predicting forward growth



Source: Barclays Research, Thomson Reuters

FIGURE 22

Trailing 5-year growth has a strong negative correlation with future growth



Source: Barclays Research, Thomson Reuters

We next apply the same approach to generate GICS sector level projections. The result of a similar regression is shown in Figure 23

FIGURE 23

Bottom-up model for index and sector EPS forecasts has robust R-squares for most sectors

	Coefficient				t-stat				
Ticker	Intercept	Exp Growth	LEI	Exp Growth:LEI	Intercept	Exp Growth	LEI	Exp Growth:LEI	r.squared
SPX	-3%	0.5	3.0	20.5	-1.2	2.3	6.0	4.6	63%
MATR	-13%	0.8	8.1	10.2	-2.1	4.2	4.4	2.5	59%
INDU	-1%	0.4	4.4	-1.8	-0.5	2.6	7.0	-0.6	55%
ENRS	-5%	1.2	3.7	3.2	-0.9	7.1	1.5	0.7	54%
COND	-4%	0.6	1.8	21.0	-0.7	2.8	0.5	1.7	49%
CONS	1%	0.8	-0.1	0.9	0.3	3.3	-0.2	0.2	39%
HLTH	4%	0.6	0.2	-4.3	2.7	5.0	0.4	-0.9	38%
FINL	-7%	0.8	3.6	4.1	-0.8	3.7	1.2	0.8	33%
INFT	-5%	0.5	4.2	7.5	-0.5	1.1	1.6	0.5	30%
UTIL	-2%	0.7	0.6	-0.4	-0.8	2.7	0.8	0.0	18%

Source: Barclays Research, Thomson Reuters

Thus we see that the R-squares are quite robust across the board. As expected the R-squares are higher for the more cyclical sectors and the coefficients for LEI are also much higher and significant. Figure 24 shows the predicted growth for 2018 estimated EPS relative to 2017 EPS for each sector and the overall index. We see that in general our forecasts are below that expected by the raw bottom-up consensus for most sectors except for the Energy sector, which is higher. For reference, the SPX bottom-up 2018 forecast is currently $160 (versus $132.5 for 2017) and our forecast is slightly lower at $155.5.

FIGURE 24

The EPS forecasts from the Bottom-up model are below consensus for the SPX and all the sectors except for Energy

Ticker	EPS				
	Actual 2017	Consensus 2018	Consensus y/y	Bottom-Up 2018 Fcast	Bottom-Up Fcast y/y
FINL	26.9	34.8	29%	32.3	20%
INFT	54.6	66.5	22%	62.7	15%
CONS	28.0	30.4	9%	30.0	7%
HLTH	54.6	61.6	13%	60.7	11%
MATR	17.6	22.3	27%	21.7	23%
SPX	132.4	160.6	21%	155.6	18%
INDU	30.0	36.7	22%	34.6	15%
ENRS	15.0	28.2	88%	32.0	114%
COND	35.2	41.4	18%	40.4	15%
UTIL	14.8	15.7	6%	15.3	3%

Source: Barclays Research, Thomson Reuters

Top-Down Model for Forecasting EPS

In this section, we construct a framework to generate projections for S&P 500 index and sector EPS using forecasts for macroeconomic indicators. The basic idea is to first construct a contemporaneous model that relates historical y/y EPS growth to changes in macro variables over the same time period. The resultant betas can then be combined with current forecasts for these macro variables to construct forward-looking EPS projections. For our baseline projections we use Barclays economists' forecasts and supplement the results using consensus forecasts from the Survey of Professional Forecasters (SPF) conducted by the Philly Fed. A key attraction of this framework is that investors can use their own macro forecast to derive EPS projections.

Selecting Macro Variables: What Drives EPS?

Although in general a broad variety of macro variables are likely to drive EPS growth, our choice is significantly restricted since we require forecasts to be available for these variables. Thus, for example, survey-based variables such as PMI while likely to be useful are not included since we don't have forecasts for them. Although the list of variables in the SPF is somewhat larger, for simplicity we limit ourselves to variables for which Barclays' economists produce one- to two-year forecasts. We further require that these variables have history going back to 1985 (which is when we have "analyst comparable" EPS data available).

FIGURE 25

Initial macro variables for consideration

Variable	Mnemomic	2018 Barclays Forecast	Variable Transformation	2018 Transformed Value (%)	Group	Correlation to SPX EPS Growth
Unemployment Rate	UNEMP	3.5	-Change	0.6	Employment	65%
Employment (avg mnthly Chg,K)	EMP	189	% Change	1.5	Employment	54%
Core CPI Rate	CORECPI.CHG	2.2	Change	0.5	Inflation	-2%
Core PCE Rate	COREPCE.CHG	1.9	Change	0.4	Inflation	36%
CPI Rate	CPI.CHG	2.6	Change	0.4	Inflation	37%
PCE Rate	PCE.CHG	2.1	Change	0.4	Inflation	45%
GDP Deflator Rate	PGDP.CHG	2.1	Change	0.3	Inflation	47%
Real Government Consumption and Expenditures Growth	RGOV	2.8	-1	-2.8	Output	38%
Nominal GDP Growth	NGDP	5	NONE	5	Output	8%
Real Private Consumption Growth	RCONSUM	2.5	NONE	2.5	Output	39%
Real GDP Growth	RGDP	2.9	NONE	2.9	Output	51%
Industrial Production Growth	INDPROD	3.1	NONE	3.1	Output	63%
Real Private Investment Growth	RPRIVATE	5.8	NONE	5.8	Output	65%
Housing Starts	HOUSING	1323	% Change	9.3	Housing	41%

Source: Barclays Research, FRED, Thomson Reuters
Note: Data as of 6/1/2018. For more information see "*U.S Country Snapshot*," 1 June 2018 and "*2018-2019 Housing Market Outlook: Ten years after the crash: Early signs of overextension,*" 11 January 2018

These variables are listed in Figure 25 with their raw forecast values by Barclays' economists for 2018. We group the variables into four broad categories (Employment, Inflation, Output and Housing). Depending on the type of indicator, the actual variable which enters in our model will either be the percentage change or the difference relative to the previous year. Thus, for instance, for most output variables we will use the growth of the corresponding chain-weighted index (e.g. Industrial Production) and for inflation variables we use the change in the corresponding rates. We further flip the signs of the transformation for unemployment rate and government spending to ensure that the correlation with EPS is positive. Figure 25 also shows the correlation of the transformed macro indicator versus y/y S&P 500 EPS growth since 1985, which is quite high for the majority of the indicators.

A key problem with directly using these variables is that they are highly correlated. Figure 26 illustrates this by showing the correlation matrix for the two variables with the highest correlation with EPS growth within each group (we also include government spending given its low correlation with other variables). We see that both the correlation within each group and across the group can be quite high. Although Employment and Output variables are highly correlated (+80% >), they both are relatively uncorrelated to inflation variables (< 50%) as well as government spending (< 50%). However, both Employment and Output variables are also somewhat correlated to Housing.

FIGURE 26

Most macro variables are highly correlated within group, while some (output and employment) are correlated across groups

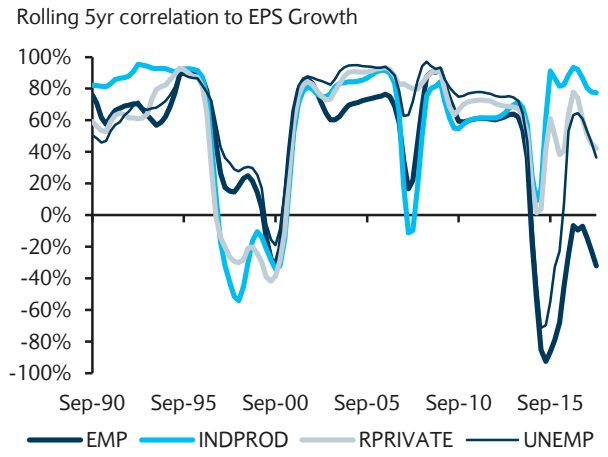
	INDPROD	RPRIVATE	PCE.CHG	PGDP.CHG	UNEMP	EMP	RGOV	HOUSING
INDPROD	1.00							
RPRIVATE	0.87	1.00						
PCE.CHG	0.50	0.43	1.00					
PGDP.CHG	0.41	0.40	0.74	1.00				
UNEMP	0.78	0.84	0.41	0.39	1.00			
EMP	0.83	0.80	0.39	0.36	0.90	1.00		
RGOV	0.29	0.44	0.18	0.31	0.43	0.22	1.00	
HOUSING	0.43	0.71	0.06	0.08	0.67	0.52	0.41	1.00

Source: : Barclays Research, FRED, Thomson Reuters
Note: Correlations are run on a y/y basis from 12/31/1985 – 03/31/2018 using quarterly data.

A simple approach to avoid multi-colinearity would be to simply select a small subset of variables "by hand." One choice would be to pick one output and one inflation variable with the highest correlation with EPS growth. For instance, we could just pick Real Private Investment Growth (RPRIVATE) and GDP Deflator Change (PGDP.CHG).

FIGURE 27

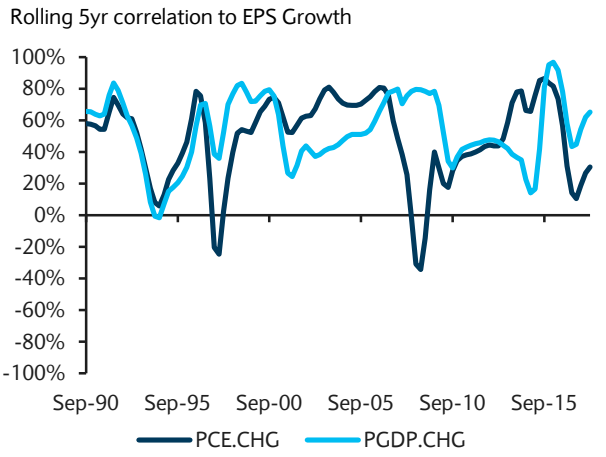
Output and employment variables have inconsistent correlations to SPX EPS Growth over time …



Source: Barclays Research, FRED, Thomson Reuters
Note: Correlations are run with quarterly data. EPS Growth is calculated using analyst adjusted numbers from IBES

FIGURE 28

… as do inflation variables



Source: Barclays Research, FRED, Thomson Reuters
Note: Correlations are run with quarterly data. EPS Growth is calculated using analyst adjusted numbers from IBES

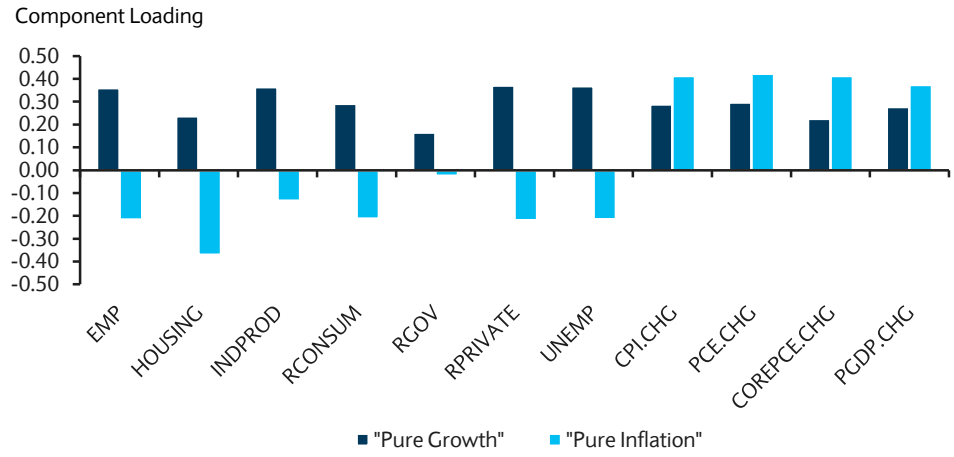
However, Figure 27 and Figure 28 show that the relationship of these macro indicators with EPS growth is not stable across time. During the late 1990s the correlation of the output variables goes from positive to negative, while the employment variable sees a similar flip in 2014. Only the inflation variables show some signs of stability, much more so for PGDP.CHG compared to PCE.CHG (PCE Rate Change). Given the dynamic nature of these correlations it is not prudent to simply pick a few variables based on full period correlations. At the same time, including all of them would also not be advisable given the high correlation between them.

PCA Model

A simple way to control for multi-colinearity is via principal component analysis. This essentially creates uncorrelated linear combination of variables ("principal components") and ranks them by their ability to explain the variance across the entire set of variables. The idea is then to pick a few of these principal components and use them as regressors against SPX EPS growth. We apply this procedure by first filtering out Nominal GDP growth and Core CPI since they have less than 10% R^2 with EPS growth. We also removed Real GDP since we are already including 3 out of 4 of its components (Consumption, Private Investment, and Government Spending). Figure 29 shows the loadings of the first two principal components which explain ~73% of the total variation.

FIGURE 29

The "Pure Growth" component has strong loadings on output and employment variables, while "Pure Inflation" has its strongest loadings on inflation variables



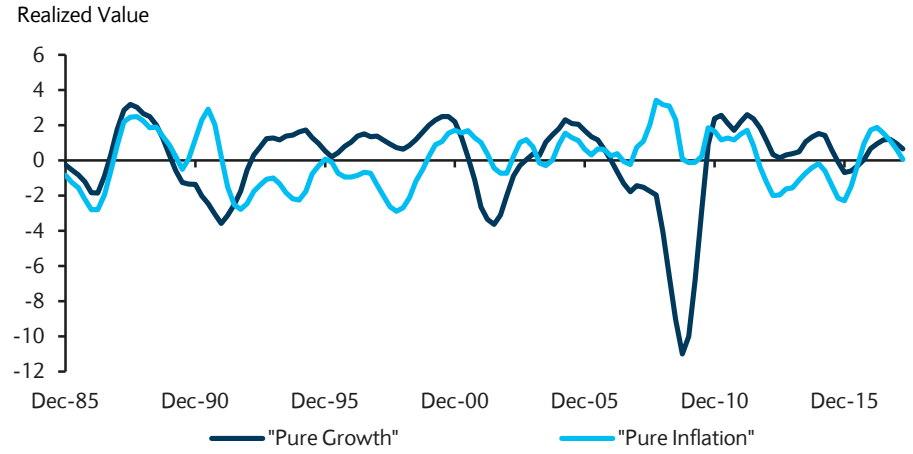
Source: Barclays Research, FRED, Thomson Reuters

Note that these weights are applied to the Z-Score of each variable and so can be thought of as the weights on their volatility normalized returns/changes. Interestingly we see that the weights for the first principal component are almost the same and of the same sign, while for the second component the signs are opposite for the growth and inflation variables. One way to interpret these results is that the first component is a proxy for pure economic growth ("Pure Growth"). This explains the strong loadings on output variables, but also the component of inflation that can be explained by growth. The second component can be thought of as inflation – economic growth, or inflation adjusted for growth ("Pure Inflation"). This is the part of inflation that is not driven by pure economic growth.

Figure 30 shows the realized values of these principal components over time. It is clear that "Pure Growth" strongly tracks the business cycle, while "Pure Inflation" is actually somewhat countercyclical.

FIGURE 30

The "Pure Growth" component tracks the business cycle over time, while "Pure Inflation" is countercyclical

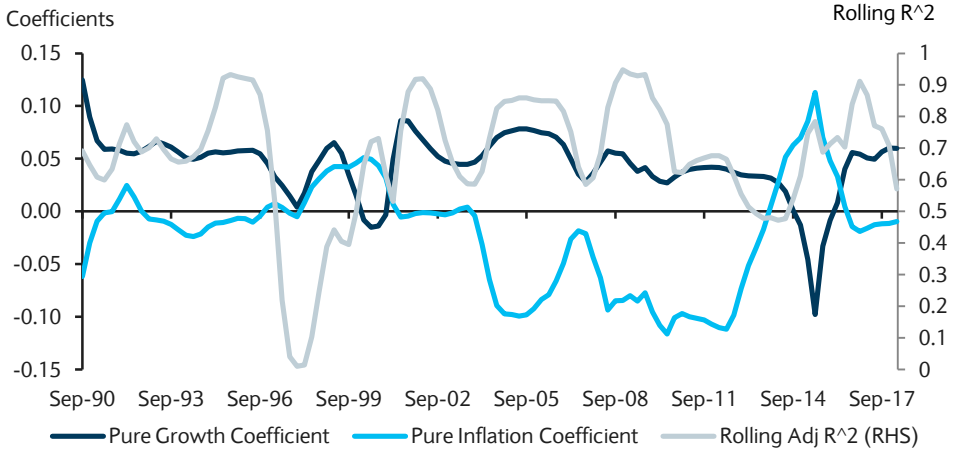


Source: Barclays Research, FRED, Thomson Reuters

Figure 31 shows the five-year rolling R^2 and the corresponding betas for the first two principal components. We see that the R^2 has remained reasonably stable across time (except for dipping briefly in the late 1990s). Further, although the coefficients do vary their signs have remained consistent over time. A similar exercise using only a couple of hand-selected variables results in coefficients that are much more variable.

FIGURE 31

Barring volatility in 2015, the coefficients for "Pure Growth" and "Pure Inflation" when regressed against SPX EPS Growth are relatively stable over time



Source: Barclays Research, FRED, Thomson Reuters

Note: Multivariate regression is done with quarterly data. Regression is of the form EPS Growth ~ Pure Growth + Pure Inflation.

The only period in which there was a significant change in the sign of the coefficients was during the industrial recession in 2015, when output dipped significantly but employment health continued to improve. Since we expect output and employment to move in tandem going forward this divergence doesn't worry us.

Macro Model Works Better for Cyclical Sectors

Figure 32 and Figure 33 show the coefficients for each EPS Model as well as their R^2 using the two principal components for SPX and across 10 GICS sectors. As might have been

expected, the R-squares for cyclical sectors are reasonably high but are quite low for more defensive sectors. For these sectors, the model projection will essentially always equal the intercept term which is the unconditional mean of the EPS growth over the corresponding time period.

Limiting the regression data to 2000 leads to very similar results and coefficients, with the only notable change being improvement in R^2 for the Financials and Materials models, driven by stronger coefficients for Pure Inflation.

FIGURE 32

The simple macro models have decent explanatory power for most cyclical sectors…

1985 - present				
Actual EPS Macro Model Coefficients (T-Stat), YoY Annual				
Universe	Adj R^2	Pure Growth	Pure Inflation	Intercept
INDU	0.66	4.4% (16)	0.5% (1)	6.6% (10)
SPX	0.46	3.9% (10)	-0.4% (-1)	6.2% (7)
ENRS	0.36	9% (6)	12.8% (6)	2.8% (1)
MATR	0.33	8.2% (8)	0.6% (0)	6.2% (3)
INFT	0.24	5.5% (6)	1.7% (1)	7.4% (4)
TELS	0.28	2.9% (7)	-2.1% (-3)	3.4% (3)
COND	0.20	3.5% (3)	-10% (-5)	6.7% (2)
FINL	0.05	8% (3)	0% (0)	4.6% (1)
CONS	0.02	0.2% (1)	0.7% (2)	8.6% (17)
HLTH	0.02	0.1% (1)	0.6% (2)	10% (21)
UTIL	0.02	0.6% (2)	0.2% (0)	1.6% (2)

Source: Barclays Research, FRED, Thomson Reuters
Note: Regressions are done with quarterly data from 12/31/1985 – 3/31/2018.

FIGURE 33

…but have almost no correlation with defensive sector EPS growth

2000 - present				
Actual EPS Macro Model Coefficients (T-Stat), YoY Annual				
Universe	Adj R^2	Pure Growth	Pure Inflation	Intercept
INDU	0.77	4.3% (16)	0.6% (1)	6.9% (8)
SPX	0.44	3.5% (7)	-1.6% (-2)	7.3% (5)
ENRS	0.31	9.1% (5)	16.7% (4)	-1% (0)
MATR	0.47	7.9% (8)	2.3% (1)	7.1% (2)
INFT	0.17	4.1% (4)	2.4% (1)	8.1% (3)
TELS	0.32	3.3% (6)	-3.2% (-2)	3.7% (2)
COND	0.12	1.2% (1)	-9% (-3)	11.7% (3)
FINL	0.21	10.9% (4)	-9.2% (-3)	3.9% (1)
CONS	0.01	0% (0)	0.8% (2)	5.8% (10)
HLTH	-0.02	0.1% (1)	0% (0)	8.9% (19)
UTIL	0.07	1% (2)	1.1% (1)	2.1% (2)

Source: Barclays Research, FRED, Thomson Reuters
Note: Regressions are done with quarterly data from 12/31/1985 – 3/31/2018.

Calculating Index and Sector EPS Top-Down Forecasts

Having calculated the betas to the principal components we can now use the current macro forecasts to project 2018 EPS for the S&P 500 index and the individual sectors. This can be done two ways: 1) use the current 2018 macro forecasts to project 2018 EPS directly, ignoring the realized 1Q18 EPS, or 2) use forecasts from 1Q18 to 1Q19 and prorate these forecasts over the last three quarters of 2018. For simplicity sake we are using the first approach, but have found that our forecasts do not materially change using either method.

The first step is to convert these forecasts for the individual items listed in Figure 25 above into a forecast for the two principal components which are shown in Figure 34 using both Barclays' and SPF forecasts.

Combining the forecasts for the principal components with the corresponding betas we see that the projected SPX Actual EPS Growth for 2018 is 10.6%. This projection is lowered from 10.6% to 10.4% using data from the Survey of Professional Forecasters (SPF). The primary reason for the decrease is the higher projection for the "Pure Growth" variable in the Barclays forecast (1.21) versus the SPF forecast (1.14). This difference stems from the higher projected decline in Unemployment Rate from Barclays' analysts (0.6%) relative to SPF (0.3%).

FIGURE 34

Current Barclays macro forecasts project SPX EPS Growth of 10.6% over the next 12 months

2017Q4 - 2018Q4 Period		Transformed Forecasts (%)	
Macro Variable	**Variable**	**Barclays**	**SPF**
UNEMP	Unemployment Rate	0.6	0.3
EMP	Employment (avg mnthly Chg,K)	1.5	1.4
COREPCE.CHG	Core PCE Rate	0.4	0.4
CPI.CHG	CPI Rate	0.4	0.4
PCE.CHG	PCE Rate	0.4	0.4
PGDP.CHG	GDP Deflator Rate	0.3	0.2
RGOV	Real Gov Consump & Expend Growth	-2.8	-1.3
RCONSUM	Real Private Consumption Growth	2.5	2.8
INDPROD	Industrial Production Growth	3.1	3.3
RPRIVATE	Real Private Investment Growth	5.8	6.1
HOUSING	Housing Starts	9.3	8.5
Pure Growth	Pure Growth Factor	1.21	1.14
Pure Inflation	Pure Inflation Factor	0.71	0.62
Variable		**Cont to EPS Growth**	
Pure Growth	Pure Growth Factor	4.7%	4.4%
Pure Inflation	Pure Inflation Factor	-0.3%	-0.2%
Intercept	Intercept from Regression	6.2%	6.2%
Total	Total EPS Growth	10.6%	10.4%

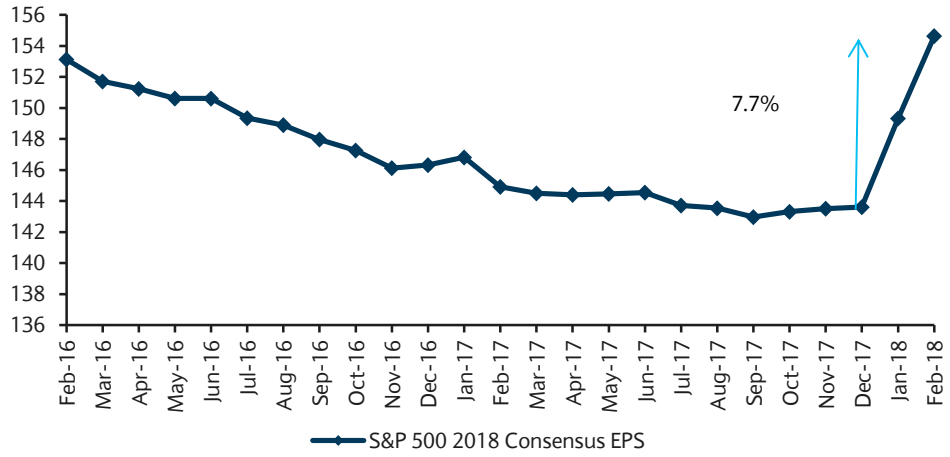
Source: Barclays Research, FRED, Thomson Reuters. For more information see "*U.S Country Snapshot*," 1 June 2018 and "*2018-2019 Housing Market Outlook: Ten years after the crash: Early signs of overextension,"* 11 January 2018.

The 10.6% SPX growth estimate is slightly above the historical average, but this isn't that surprising given the strength of our analysts' estimates and consensus forecasts. Pure growth contributing 4.7% to EPS growth would be a 0.5 standard deviation move since 1985, while contribution by Pure Inflation of -0.3% would also be a 0.5 standard deviation move. Considering that 10.6% SPX EPS growth is a 0.32 standard deviation move, the projected growth we are seeing is simply mirroring the optimism from our analysts' projections.

However, these forecasts are much smaller relative to that from the bottom-up consensus forecasts discussed in the previous section. For example the S&P 500 index bottom-up consensus forecast is ~20%. The key missing ingredient is the effect of tax law changes enacted by the Trump administration on 2018 EPS, which is likely to be substantial. In our report published immediately after the law was passed (see "*Assessing the Impact of US Tax Reform on US Equities,"* 19 December 2017), we estimated that the impact on S&P 500 EPS would be ~7%. As shown in Figure 35, the jump in the calendar 2018 EPS forecast by the end of February was consistent with our estimate. Taking into account the effects of the recent U.S. Tax Reform, the adjusted SPX EPS growth estimate is 18.1%, much closer to the estimate from our bottom-up approach.

FIGURE 35

Jump in 2018 Calendar SPX EPS early in the year was consistent with our projections



Source: Barclays Research, Thomson Reuters

Note: For additional information, see "*Assessing the Impact of US Tax Reform on US Equities,*" 19 December 2017

We next use the betas to the two macro factors for each sector calculated in Figure 32 with their forecasts to determine the projected top-down impact. The results are shown in Figure 36 where we show the raw and tax-bill adjusted impact.

FIGURE 36

Calculating SPX EPS by using the individual sector forecast leads to slightly higher projections

	2017->2018 Top down Forecast		Tax Bill Impact			Final EPS Forecast
Ticker	Barclays Economics	SPF	Consensus Change	Barclays Forecast (Dec 16th)	Final Estimated	Barclays Economics
SPX	10.6%	10.4%	7.7%	7.2%	7.5%	18.1%
Sum of Sectors	11.8%	11.5%	7.7%	NA	7.0%	18.8%
COND	3.9%	4.5%	6.8%	5.4%	6.1%	10.0%
HLTH	10.6%	10.6%	5.5%	5.1%	5.3%	15.9%
FINL	14.2%	13.6%	12.1%	11.3%	11.7%	25.9%
INFT	15.2%	14.6%	4.8%	5.3%	5.0%	20.2%
INDU	12.3%	11.9%	8.8%	10.9%	9.8%	22.1%
UTIL	2.5%	2.4%	0.7%	NA	0.7%	3.2%
ENRS	22.6%	20.9%	23.0%	3.8%	3.8%	26.4%
MATR	16.5%	15.8%	6.1%	5.8%	6.0%	22.5%
CONS	9.3%	9.2%	3.9%	12.0%	3.9%	13.2%
TELS	5.4%	5.4%	17.0%	NA	17.0%	22.4%

Source: Barclays Research, FRED, Thomson Reuters

Note: Consensus change is the change in 2018 SPX consensus EPS from Dec 2017 to Feb 2018. The Barclays Forecast of the Tax Bill Impact is sourced from the report *Assessing the Impact of US Tax Reform on US Equities, 12/19/2017*. For the final Tax Bill Impact we take the average of the two, except for Staples (only Change in Consensus) and Energy (only Barclays Forecast).

We compare our estimates for the tax bill impact with the actual change in calendar 2018 EPS from December 2017 to February 2018 for each sector and we see that they are in close alignment except for the Energy and Consumer Staples sectors. The much higher increase in the Energy sector EPS was driven by the increase in oil prices. The increase in

Staples EPS was much smaller than we anticipated. One potential reason is that analysts believe that given the secular headwinds facing these companies management is likely to come out with price discounting and wage increases as the first use of tax dollars. To estimate the final tax impact we use our estimates for the Energy sector, the change in consensus for Staples and the average of our estimates and change in consensus for the other sectors.

It is also instructive to calculate the forecast by rolling up the individual sector forecasts. This corresponds to a richer model for SPX since it effectively has 20 parameters rather than the two for the simple SPX model. The corresponding projecting is slightly higher.

Putting It All Together: Modest Upside for SPX but Substantial Dispersion across Sectors

We summarize the output of the models discussed above in Figure 37. For EPS forecasts we compare the EPS forecasts from our bottom-up and top-down approaches with the 2017 actual and 2018 bottom-up consensus levels. We also show the current and our forecasted P/E ratio. As a reminder, these P/E ratios are based on trailing "analyst comparable" 12-month earnings. We show the current (as of May 2018) P/E levels and our May 2019 levels which we adopt for our end of 2018 levels.

FIGURE 37

Combining our top-down and bottom-up EPS projections with P/E ratio forecasts results in modest upside for the S&P 500 index but substantial dispersion in sector returns

	EPS						P/E Ratio		Price Fcast	
Ticker	Actual 2017	Consensus 2018	Bottom-Up 2018 Fcast	Top-Down 2018 Fcast	Final 2018 Fcast	Final Fcast y/y	Current	2018 Fcast	Level	Upside
FINL	26.9	34.8	32.3	34.8	33.6	25%	15.7	15.9	534	18.6%
INFT	54.6	66.5	62.7	66.9	64.8	19%	20.9	22.1	1431	16.9%
CONS	28.0	30.4	30.0	31.9	31.0	11%	18.1	19.1	590	16.2%
HLTH	54.6	61.6	60.7	64.0	62.4	14%	16.8	17.7	1105	16.1%
MATR	17.6	22.3	21.7	22.1	21.9	24%	19.4	18.9	414	14.1%
SPX	132.4	160.6	155.6	158.6	157.1	19%	19.4	18.3	2875	6.3%
INDU	30.0	36.7	34.6	37.4	36.0	20%	19.7	18.3	660	5.9%
ENRS	15.0	28.2	32.0	19.5	30.1	101%	31.9	19.6	588	5.4%
COND	35.2	41.4	40.4	38.8	39.6	13%	23.2	21.4	849	1.0%
UTIL	14.8	15.7	15.3	15.2	15.3	3%	16.7	15.4	235	-8.7%

Source: Barclays Research, Thomson Reuters, Bloomberg, Robert Shiller

It is remarkable that despite the quite different approaches, our top-down and bottom-up EPS forecasts are largely in agreement for the full index and across sectors. For the SPX index, both the bottom-up and top-down forecasts are modestly below the consensus forecast of $160. Although the discount is relatively modest, the divergence is likely to grow as the business cycle matures. This is a consequence of the fact that the LEI is, as of now, not indicating a growth slowdown consistent with our view that we are likely just entering the late stage of the business cycle. As the cycle matures, the divergence between our forecasts and consensus is likely to grow.

The only sector where there is a major difference in EPS is for the Energy sector where the top-down forecast is much lower. Given that Energy earnings are rapidly rebounding given the run-up in oil prices, in this instance we trust the bottom-up forecasts more and we use the average of the consensus and our bottom-up forecasts our final EPS forecast. For all the

other sectors and SPX, our final forecast is the average of the bottom-up and top-down forecasts.

By and large, our forecast 2018 P/E ratios are not significantly different from the current level P/E levels. The biggest difference is, again, for the energy sector where our model makes the reasonable prediction that as earnings rebound the P/E ratio will drop to its longer term average.

Figure 37 combines our EPS and P/E projections to calculate the 2018 price projections for the index and sectors. Our projected price for SPX based on our framework is $2875 and we round it to adopt 2900 as our official price target (which corresponds to a 18.5x P/E ratio and $157 EPS estimate).

Although our framework does generate price levels for each sector, we do not intend to set official price targets for each sector. Instead we take the corresponding price upside generated from our quantitative framework as a starting point and combine it with implications of several other factors to come up with final sector allocation recommendations. These other factors include how sectors perform across the business cycle, how they are impacted by the regulatory and trade policy arrows of Trumponomics, and how they are positioned vis-a-vis the secular trends in disruptive innovation sweeping the economy.

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