Fulcrum Issues

Equity Returns and Inflation | Choose Your Own Adventure

A feature article from our U.S. partners.

FOURTH QUARTER 2022

More Than Meets the Eye

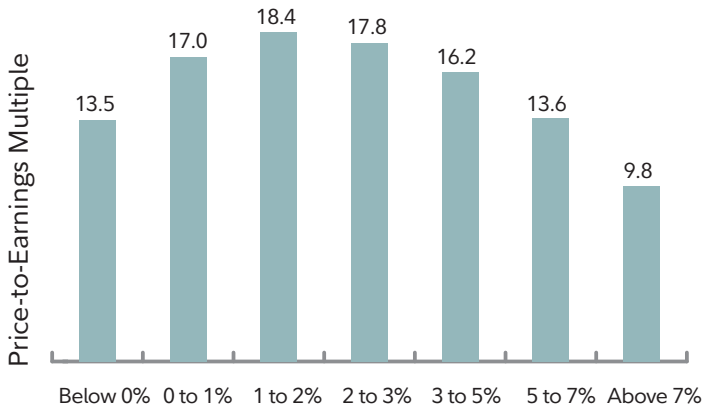
Fulcrum Issues serves as a forum for Fidelity's Target Date team to highlight topics that we believe are important for multi-asset class investors to consider when making investment decisions. We focus our research and analysis on the expectations for future cash flows and discount rates embedded in asset valuations, as well as the investor behavior that can magnify price movements. We seek to identify embedded optionality in asset prices, where the distribution of future returns is skewed and provides opportunities for active asset allocation decisions to add value for shareholders.

In our **report** from 2Q 2021, we made the case that investors had become overly complacent in extrapolating the low-growth, low-inflation environment of the past decade into the future. In our view, this complacency had cascaded across the expectations embedded in many asset prices. We saw commodities as an asset class that stood to benefit in a world where inflation exceeded expectations and that tighter discounting conditions could potentially pressure asset valuations linked to long-duration cash flows (see also: **Fulcrum Issues: Fed Tapering | 1Q 2022**).

Over the past year, we have seen investors and central bankers increasingly recognize these changes in the market environment. Central banks globally are struggling to contain inflation caused by a combination of extraordinary monetary and fiscal stimulus, supply shortages, and tight labor markets. While we expect headline inflation to peak and moderate in the months ahead, continued price pressures in the service sector (including housing) may well keep core inflation elevated for quite some time to come.

Markets and investors crave certainty. For example, companies with more predictable earnings streams are rewarded with higher multiples and lower borrowing costs (and conversely for companies with more cyclical revenue profiles or less predictable cash flows). Similarly, investors prefer a stable environment with relatively low inflation, as evidenced by the price-to-earnings (P/E) multiple for equities in various regimes. Exhibit 1 shows the S&P 500 P/E ratio for various ranges of inflation since 1950, with the highest multiples occurring in environments in which inflation ranged between 1% and 3%. Periods of higher inflation often correspond to elevated interest rates, which in turn increase the cost of capital, reduce the present value of future earnings, and lower the multiples investors are willing to pay.

EXHIBIT 1: HISTORIC S&P 500 P/E MULTIPLES AT VARIOUS INFLATION RATES



Source: Standard & Poor's/Haver Analytics, data from 1/01/49 through 9/30/22

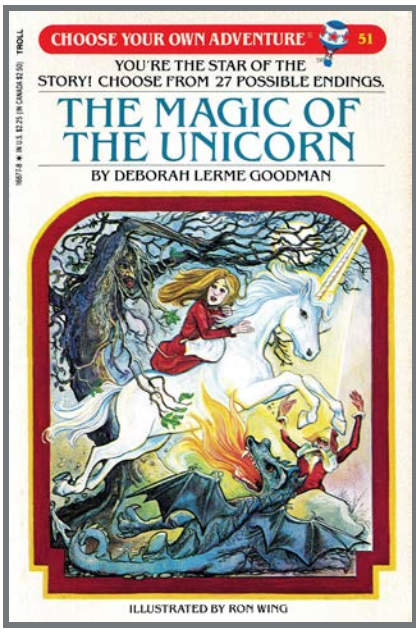
It is less clear how higher inflation affects corporate fundamentals and profitability. Because revenues are realized in nominal terms, inflationary effects leading to higher prices can portray a robust picture for revenues, even if volumes are the same or lower. However, profits and free cash flows are central to equity valuations and depend on other elements that are affected by inflation to varying degrees – e.g., the cost of goods, labor, capital (physical and financial), and taxes. In addition, investors must grapple with the discount rate and level of valuation to apply in their pricing frameworks against a backdrop of higher inflation.

Understanding how today's inflationary environment could impact corporate fundamentals in the future is a Fulcrum Issue, which we believe will be a key factor in equity performance for U.S. and non-U.S. markets. Our research frameworks help to provide insights for the potential paths of equity performance in inflationary periods. In the following sections, we provide greater details on the key macro drivers of corporate fundamentals, the potential impact on discount rates, and the effects on valuations to help frame the trade-offs that we observe across U.S. and non-U.S. markets.

A Framework to Choose Your Own Adventure

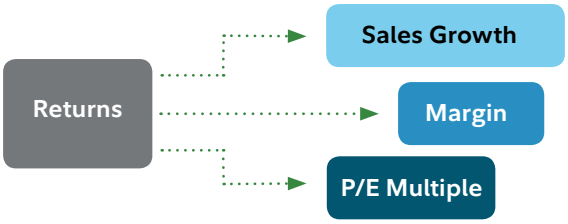
In 1979, the first "Choose Your Own Adventure®" book was published by Bantam Books. Each subsequent year featured additional releases in the series, until the final publication in 1999. We are sure that many readers have fond memories of the "CYOA" series and being immersed in the distinctly envisioned worlds of choices, paths, and outcomes.

The series has parallels to the present environment. The first publication in 1979 coincided with the beginning of the "Great Moderation," a period that has extended for multiple decades and been characterized by low inflation, declining interest rates, and strong corporate profits. The last publication in 1999 was released at the end of a period of record valuation levels for many technology and emerging-growth companies, similar in ways, in our view, to the equity market's recent lofty valuations and the private market replete with companies sporting unicorn valuations. For investors, the current investment landscape may feel like trying to navigate one of the adventures embodied in each of the books – many different paths to choose with uncertain outcomes.



When comparing the U.S. (S&P 500), and developed equity markets (MSCI EAFE), we believe that investors must make assumptions and apply probabilities to potential paths that could occur – i.e., embark on choosing one's own adventure. Our research frameworks provide structure to facilitate debate about the range of potential outcomes, starting by decomposing equity returns into component pieces as depicted in Exhibit 2. Like three legs of a stool, sales-per-share growth, percent change in net margins, and percent change in P/E multiple combine to produce the equity price return[1]. This framework provides a range for each variable across candidate scenarios to compare and contrast potential outcomes across different equity markets.

EXHIBIT 2: A FRAMEWORK TO DECONSTRUCT EQUITY RETURNS IN INFLATIONARY PERIODS



Source: Fidelity Investments.

While similar approaches are often used by investors, our decomposition is distinctive in that it splits fundamental growth into two terms (sales per share and margins) and uses an explicit interest rate change to estimate the multiple. In the table on page 3, we outline each of the return drivers, our methodology for estimating each variable, and the corresponding inflation sensitivity we see based on our analyses. The composition of markets has changed since the last major inflationary episode, becoming more global and tech heavy, thus we would like to utilize data from recent history in calibrating our models.

By removing the nominal component from earnings, the resulting margins become more symmetric with respect to the influence of inflationary or deflationary pressures.

[1] An estimated dividend yield could be added to give a total return. Our focus is on price return, given the uncertainty in earnings and multiples in this environment. We note that the return decomposition is approximate, due to interactions between sales, margins, and multiples. Empirically, most of the interaction terms have a small mean and variance, typically about 1/10 that of the individual factors. For the largest of these interactions, the margin multiple term, the average contribution is negative and ranges between 0% and –1% per six-month periods, depending on the index. In our view, it is a reasonable approximation to use the sum of the sales per share, margin, and multiple growth rates as the expected return.

RETURN DRIVERS METHODOLOGY		
Return Driver	**Calculation**	**Inflation Sensitivity**
Sales-per-share Growth	We estimate next six months' growth rate using a regression involving recent sales growth, asset return factors, and macro variables.	CPI appears in the S&P 500 and EAFE sales growth models, with a sensitivity of around one, meaning headline inflation flows nearly 1 for 1 into sales growth.
Net Margin	We use a regression to obtain the sensitivity of margin changes to prior margins, asset return factors, and macro variables. We allow the factors and coefficients to be different from those in the sales growth models.	PPI drives regional net margins, meaning that companies are able – all else equal – to pass on higher costs. Weaker economic conditions (through higher recession odds and unemployment) pressure margins, rather than inflation.
P/E Multiple	We obtain an estimated P/E multiple from a Gordon growth model, which expresses price as year-ahead dividend over the difference between discount and growth rates. We allow the risk free rate to increase due to inflation, producing a larger divisor for price thus a lower P/E.	In the Gordon growth model, inflation enters via central banks' responses to rising prices. Each region is compared with itself, before and after rate increases, using market rates as reference points.

Source: Fidelity Investments.

Consequently, we can be more confident that estimates obtained using the last 25 years of data, where deflationary shocks were a key risk, remain relevant for future margins, even if the period is characterized by greater inflation risk.

We use quantitative techniques, along with our macro and fundamental insights, to develop forecasts of sales-per-share growth, net margins, and multiples. For sales-per-share growth and net margins, we estimated their sensitivities to a range of market and macro variables, which we then use to construct optimistic and pessimistic scenarios for the coming months.

To estimate an appropriate P/E multiple for the market, we use the Gordon growth model, which measures the sensitivity of the P/E to future dividends, the growth rate of dividends, and discount rates. In this rising rate environment, a key driver of this model's P/E multiple is the change in the risk-free rate. Comparing the pre-monetary tightening with a range of potential outcomes under different interest rate scenarios allows us to form optimistic and pessimistic scenarios for multiples.

When taken together, these models for sales-per-share growth, margin growth, and multiples can be combined to help develop forecasts for the range of potential returns for the S&P 500 and MSCI EAFE, under different scenarios.

Evaluating the Range of Potential Outcomes for the S&P 500

Exhibit 3 and 4 outline the factors that we view as being significant to sale-per-share growth and margins. We also summarize scenarios that we consider to estimate the range of outcomes for each dependent variable. We focused on identifying factors for which correlations are significant and that have relationships that are fundamentally intuitive and logical. The frameworks are parsimonious and require assumptions for three to four factors. In our view a limited set of factors simplifies the analysis and focuses attention and debate on the key factors that influence returns.

S&P 500 Sales-Per-Share Growth

Our model for S&P 500 sales-per-share growth contains four factors, as shown in Exhibit 3, which was distilled from an initial universe of over 30 candidate factors. We created a pessimistic and optimistic scenario for sales-per-share growth. Scenario 1 corresponds to higher odds of economic weakness and moderate inflation, while Scenario 2 corresponds to continuing economic resilience and sticky inflation.

In Exhibit 3, we show the sensitivity of sales-per-share growth to each variable, with scenarios based on our view of plausible potential values (other than lagged sales-per-share, which is known). For context, our measurement of the relationship of CPI and sales-per-share growth highlight that corporations are able to capture 85% of inflation in their sales growth (i.e., the model coefficient). In Scenario 1, we estimated 2% CPI in the next six months (4% p.a.), where inflation would be weaker due to shifting supply/demand dynamics, and a higher probability of being in a recessionary environment with the yield curve steepening (i.e., 10-2s spread is widening).

In Scenario 2, we assume a higher run-rate for inflation, a lower recession probability, and further yield-curve inversion (i.e., the need for tighter financial conditions).

Combining these expectations and forecasts, our model shows a conservative estimate of 0.6% sales-per-share growth over the next six months in Scenario 1, and a more robust 4.5% estimate of sales-per-share growth in Scenario 2.

EXHIBIT 3: SENSITIVITY OF S&P 500 SALES-PER-SHARE GROWTH TO EACH VARIABLE

Factor	Model Coefficient	Scenario 1: Pessimistic	Scenario 2: Optimistic
Lagged Sales-per-share Growth	0.5246	3.1%	3.1%
Exit Recession Next 6M[2]	-0.0381	75.0%	25.0%
Growth in CPI	0.8482	2.0%	3.0%
10s–2s Spread Change (%)[3]	-0.0159	35.0%	-35.0%
Estimate Percent Change in Sales-per-share Growth		0.6%	4.5%

[1] From prior three months ending 9/30/22.
[2] Choose from 0-100% probability.
[3] Growth in CPI.

Sources: Bloomberg, FactSet. FRED and Fidelity Investments

S&P 500 Net Margin Change

For the S&P 500 net margin change, we conducted a similar exercise based on the four descriptive factors in the table below, again distilled from a broader universe. We forecast the change in net margin over the next six months, then divide by the current net margin to obtain the growth rate. Similarly, we develop two scenarios for each factor to frame potential future paths. For both scenarios, the change in margin over the last three months is known.

EXHIBIT 4: SENSITIVITY OF S&P 500 NET MARGIN CHANGE TO EACH VARIABLE

Factor	Model Coefficient	Scenario 1: Pessimistic	Scenario 2: Optimistic
Lagged Change in Net Margin[1]	0.2422	-0.87%	-0.87%
In Recession Flag[2]	-0.0082	75.0%	25.0%
PPI Final Goods % Change[3]	0.0726	2.5%	3.5%
10s-2s Spread Change (%)[3]	-0.0027	35.0%	-35.0%
Estimated Change Net Margin		-0.6%	0.1%
Estimated Percent Change Net Margin		-4.8%	0.6%

[1] From prior three months ending 9/30/22.
[2] Choose from 0-100% probability.
[3] Estimate for next six months.

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

We seek consistency with our forecasts for sales-per-share growth. In Scenario 1, producer prices (i.e., inflation) are expected to moderate, with the recession probability being elevated and the yield curve steepening. In Scenario 2, prices are rising at a more robust pace with lower recession probability and tightening financial conditions.

In aggregating the effects of the four variables, we obtain a 60bps potential decrease in Scenario 1 (a -4.8% reduction to the current, 13% net margin) and a 8bp potential increase in Scenario 2 (a 1% potential net margin growth).

Combining these assumptions and forecasts, we obtain an estimate of -4.2% EPS growth over the next six months for Scenario 1 and 5.1% potential EPS growth in Scenario 2. Averaging the pessimistic and optimistic forecasts suggests an approximate 0.4% EPS growth for S&P 500 over the next six months. While far from robust, this suggests EPS growth may fall less precipitously than many might expect, highlighting the nuances of being in an inflationary backdrop.

Evaluating the Range of Potential Outcomes for MSCI EAFE

For EAFE, we apply the same process outlined above for the S&P 500, considering the explanatory variables we evaluated for the S&P 500 (except replacing S&P fundamental lags with EAFE lags). In addition, we add several eurozone-specific variables for rates, macro (CPI, PPI, and unemployment), and recession probabilities.

EAFE Sales-Per-Share Growth

This model includes three factors shown in Exhibit 5 below and maintains substantial explanatory power, due in part to the significance of the currency factor (DXY). Unlike the S&P 500, the EAFE framework excludes a lagged sales-per-share term.

EXHIBIT 5: SENSITIVITY OF MSCI EAFE SALES-PER-SHARE GROWTH TO EACH VARIABLE

Factor	Model Coefficient	Scenario 1: Pessimistic	Scenario 2: Optimistic
Average Daily DXY % Change[1]	-0.8247	5.0%	-5.0%
Eurozone Enters Recession[2]	0.0448	75.0%	25.0%
Euro CPI SA % Change[1]	1.3350	2.0%	3.0%
Estimate Sales-per-share Growth		1.0%	8.4%

[1] Estimate for next six months.
[2] Choose from 0-100% probability.

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

We develop two scenarios for consideration. In Scenario 1, which is the pessimistic case for EAFE sales growth, the U.S. dollar (USD) strengthens, recession risks are rising, and inflation is moderating, given improving supply/demand imbalances. In Scenario 2, the optimistic case for EAFE sales, we consider the effects of weakening USD, lower recession probability and moderately higher inflation.

In assessing the variables for EAFE, the average daily U.S. Dollar Index (DXY) percent change historically has explained over half the variation in historical EAFE sales-per-share growth. Sales in foreign currency, measured in USD, decrease when the USD strengthens. However, the coefficient of this term is less than one in magnitude, indicating that sales of goods in foreign currencies have benefited, at the margin, from being undervalued versus the USD.

According to our model, the eurozone entering a recession historically has been positive for EAFE sales-per-share growth. While this interaction may seem counterintuitive, it is consistent with the lagged timing of sales-per-share relative to the economic cycle. Lastly, the ability for non-U.S. firms to pass through higher costs has been stronger than the ability for companies in the S&P 500 to do so, potentially attributable to markups in finished goods beyond increases in commodity prices in CPI.

In aggregating the effects, we obtain a 1.0% sales-per-share growth with pessimistic assumptions, and 8.4% growth under more optimistic assumptions. This range is wider than that of the S&P 500 and centered at a larger value. The size of the range is driven primarily by the implicit volatility in DXY: 8.3% of the spread between the two cases is attributable to the assumptions for this factor.

EAFE Net Margin Framework

EXHIBIT 6: SENSITIVITY OF MSCI EAFE MARGIN CHANGE TO EACH VARIABLE

Factor	Model Coefficient	Scenario 1: Pessimistic	Scenario 2: Optimistic
Lagged Net Margin Change[1]	0.3101	-0.2%	-0.2%
USA Exits Recession Next 6M[2]	-0.0068	75.0%	25.0%
Euro Unemployment Next 6M[3]	-0.0065	50.0%	0.0%
Euro PPI % Change[4]	0.1110	3.0%	6.0%
Estimated Change Net Margin		-0.6%	0.4%
Percent Change Net Margin		-5.9%	4.3%

[1] From prior three months ending 9/30/22.
[2] Choose from 0-100% probability.
[3] 1% is entered as 1.0.
[4] Estimate for next six months.

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

Similar to the S&P 500, lagged margins and PPI are included. Eurozone PPI has been approximately 11% over six months, and with tight energy supplies, it could remain elevated. Consequently, our estimate in Scenario 1 is 3% PPI (6% p.a.) and in Scenario 2 we use 6% (12% p.a.). The probability that the U.S. exits a recession in the next six months is consistent with estimates in other scenarios with 75% and 25% used, accordingly. Lastly, since early 2021, changes in eurozone unemployment have been declining; however, based on expectations for weakening global growth, we assume it either rises by 50bps (1% p.a.) or remains flat.

Combining the contributions from these four variables, we observe a 58bp potential decline in margins for Scenario 1, and a potential 42bp increase in margins in Scenario 2. Or –5.9% net margin decline in Scenario 1 and a +4.3% net margin growth in Scenario 2 from the current EAFE net margin of just under 10%.

Combining the sales per share and net margin contributions, we observe a potential –4.9% EPS growth for MSCI EAFE under the assumptions in Scenario 1 and +12.8% for Scenario 2. The wider range of EPS growth for MSCI EAFE, compared with S&P 500, seems reasonable given the uncertainty in energy supplies, fragmentation risk from ECB tightening, and the evolution of the Russia-Ukraine War. Even though these factors do not directly enter the framework, they affect inflation, recession, and rates estimates.

Averaging the conservative and aggressive cases results in a potential EPS growth rate of 4.5%.

Multiple Estimation Framework

To estimate the range of potential multiples over future periods, we apply a framework that draws on the Gordon growth model as its foundation. The Gordon growth model derives the price of an equity in a given year, based on the year-ahead dividend that is expected to be paid divided by the difference between the discount rate and its dividend growth rate.[2]

The Gordon growth model is intended to be used when corporate earnings are in a steady state, with similar rates of growth in successive periods. We apply this framework to estimate the change in multiples across a transition period, in which the Fed and other central banks are responding to higher inflation and potential risks to growth. We make the following assumptions:

- We assume that the equilibrium period, prior to the Fed increasing rates, is the second half of 2021, when the Fed was still expanding its balance sheet and fed funds futures started to reflect the possibility of higher rates. We take the average multiple over six month-end dates to get the equilibrium value of the difference between the discount rate and growth rate. We estimate this difference to be about 1.36% for the S&P 500 and 2.64% for EAFE.
- Across the transition period when the Fed increased rates, the secular growth rate and equity risk premium do not change. Consequently, the only adjustment comes from the change in the risk-free rate, which we take to be the 10-year Treasury for our assumption for the S&P 500, and a weighted 80/20 combination of the 10-year German Bund and 10-year Japanese Government Bond (JGB) for our assumption for MSCI EAFE.

The spread between the discount and growth rate for the S&P 500 starts at a smaller level compared to the spread for EAFE. This relationship signals that valuations for companies in the S&P 500 are more sensitive to changes in the risk-free rate.

This process is illustrated in Exhibits 7 and 8:

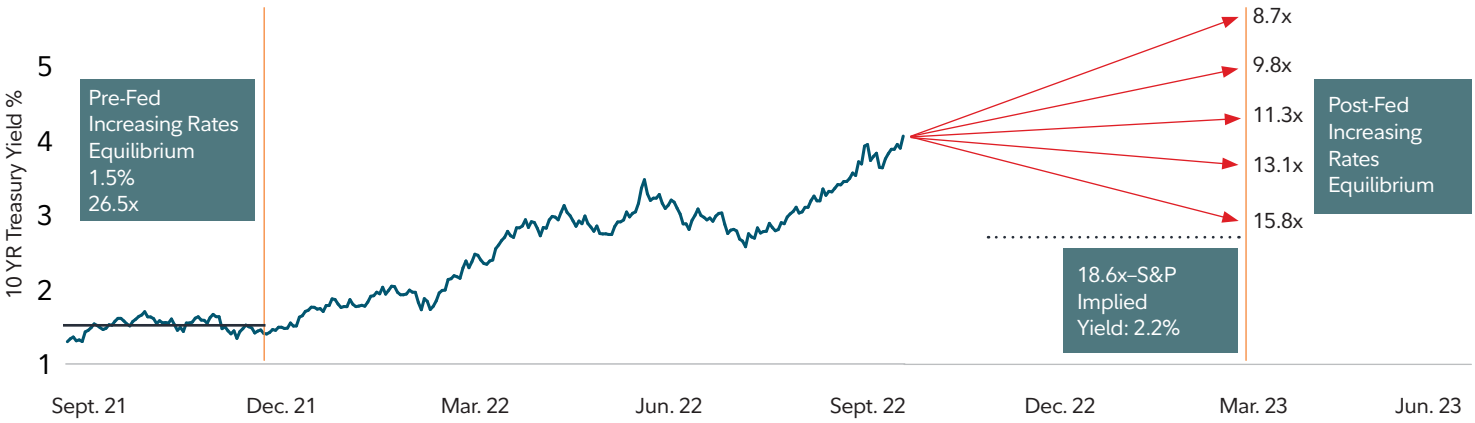
- In the equilibrium period on the left, the 10-year Treasury yield was approximately 1.5% and the S&P 500 trailing 12-month multiple was approximately 26.5x.
- Subsequently, the 10-year Treasury yield has increased to 4.1% (dark teal line) and the S&P 500 multiple fell to 18.6 times last 12-month EPS (LTM). This valuation level implies an eventual yield of 2.2% (dashed horizontal line), suggesting that investors may expect rates to normalize lower to justify today's valuation, multiples may experience further compression to reflect higher rates, or some combination of both.
- At some point in the future, we assume rates will settle into an equilibrium that balances growth and inflation. This equilibrium may follow additional increases in interest rates, a recession or soft landing. In Exhibit 7, potential new equilibrium rates are shown versus the current 10-year yield with arrows. Each of these possible rates has a corresponding S&P multiple. For example, the 10-year yield settling at 4.1% corresponds to a potential 9.8x multiple for the S&P, which may suggest further pressure on current valuations and for the earnings to grow into current valuation.

[2] Expressed as a formula, the current price, P_t, in the Gordon model is the year-ahead dividend, D_{t+1}, divided by the discount rate, k, minus the growth rate, g:

$$P_t = \frac{D_{t+1}}{k - g}$$

This model applies in equilibrium, meaning that these rates are unchanged over time. Source: Fidelity Investments.

EXHIBIT 7: 10-YR TREASURY YIELD AND POTENTIAL IMPACT ON S&P 500 P/E MULTIPLES



Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

A similar assessment can be applied for the relationship of valuations for MSCI EAFE and the 80/20 Bund/JGB yield in Exhibit 8:

- In fall 2021 (left side), the average 80/20 Bund/JGB yield was approximately –0.2% (solid black line) and the EAFE multiple was 18.2x. Subsequently, the 80/20 weighted yield has risen to 1.5% (dark teal line) and the EAFE multiple has declined to 11.6x, corresponding to an implied risk-free rate of approximately 1.3% (dashed horizontal line).
- Eventual EAFE risk-free rates are connected to the current rate by arrows, and each arrow has a corresponding EAFE multiple. For example, when the market's implied expectation for the terminal risk-free rate is 1.8%, the framework suggests that the resulting EAFE multiple could be 10x.
- Compared with the S&P 500, the EAFE-implied risk-free rate is closer to the scaled market yield of the Bund and JGB. This framework suggests that MSCI EAFE's valuation may have less downside from additional increases in rates, based on current valuations.

EXHIBIT 8: SCALED 80/20 BUND/JGB YIELD AND POTENTIAL IMPACT ON MSCI EAFE P/E MULTIPLES

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

Choose Your Own Path

In this section, we tie together our scenarios for EPS growth with the potential path for multiples to estimate the potential range of returns for the S&P 500 and MSCI EAFE. Because there is uncertainty about the eventual equilibrium risk-free rate, and the path for the economy as well as central bank actions to reach equilibrium, we develop scenarios and probabilities to derive potential multiples for the S&P 500 and MSCI EAFE, based on assumptions that range from pessimistic to optimistic. These are derived by estimating ranges for the change in interest rate levels and the final yield we reach to arrive at a potential P/E multiple. The details of each of these scenarios and the probabilities can be found in the appendix.

Summarizing the results for the S&P 500 potential P/E multiple in Exhibit 9, our pessimistic scenario which is centered around the current market yield for 10-year Treasuries has a potential average yield of 3.4% and implied P/E of 11.9x LTM earnings for the S&P 500 (versus 17.5x today). In a more optimistic scenario, which assumes rates level out at 2.75%, the implied P/E multiple is 15x LTM earnings.

EXHIBIT 9: S&P 500 | RANGE OF POTENTIAL INTEREST RATES AND P/E MULTIPLES

Scenario	10 yr Yield	P/E Multiple	Implied % Change
Pessimistic Weighted	3.4%	11.9	-31.8%
Optimistic Weighted	2.8%	15.0	-14.5%

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

We repeat this process for the MSCI EAFE Index, in conjunction with an 80/20 weighted combination of the 10-year German Bund and the JGB as the risk-free rate. As shown in Exhibit 10, for the pessimistic case, we estimate with an effective yield of 2.3% and a 10.1x weighted EAFE multiple (compared to 11.6x today). For the optimistic case, we obtain a 1.7% effective yield and a 11.3x multiple.

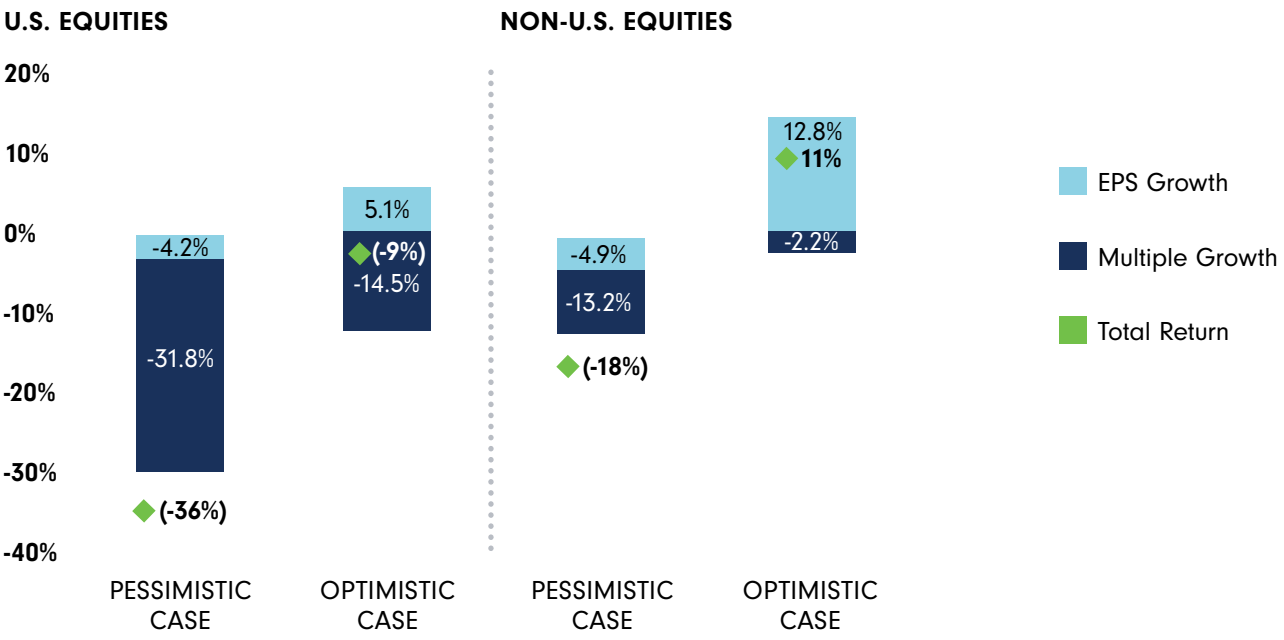
EXHIBIT 10: MSCI EAFE | RANGE OF POTENTIAL INTEREST RATES AND P/E MULTIPLES

Scenario	80/20 Yield	P/E Multiple	Implied % Change
Pessimistic Weighted	2.3%	10.1	-13.2%
Optimistic Weighted	1.7%	11.3	-2.2%

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

To obtain a range of potential returns for U.S. and non-U.S. developed-market equities, we combine the scenario returns from EPS growth and multiples derived from our Gordon growth analysis to frame the potential.

EXHIBIT 11: RANGE OF POTENTIAL 6-MONTH RETURNS FOR S&P 500 AND MSCI EAFE



Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

Conclusions

- Earnings can potentially grow in an inflationary environment, much like they did on average in the 1970s.
- Central bankers inclined to combat inflation are likely to continue to increase rates, leading to higher discount rates as our base case.
- Equities in the U.S. have had a narrower and more stable range of earnings growth, while the range for international developed markets equities has been more uncertain.
- The U.S. equity market appears to have more downside to valuations in a regime of higher discount rates, both in absolute terms and relative to international markets.
- If earnings do in fact decline as the effects of demand destruction outweigh inflation, the U.S. appears to have less valuation support.

We continue to maintain our view that inflation will prove more durable than investors expect. As a result, we have positioned the target date strategies relative to benchmarks to be overweight non-U.S. equity assets, where we see lower potential downside and greater margin of safety. Conversely, we have positioned the TDFs to be underweight in U.S. equities, where valuations are more expensive in our view. As is always the case, we revisit our assumptions and convictions as new information emerges. With all that being said, it only seems appropriate to conclude as any "Choose Your Own Adventure" series would…The End.

Appendix

EXHIBIT 12: SCENARIO WEIGHTS FOR 10-YEAR TREASURY YIELDS

Change in 10 yr Yield	Final 10 yr Yield	S&P P/E Multiple	Pessimistic Probability	Optimistic Probability
3.5%	5%	7.9	0.0	0.0
3.0%	4.5%	8.7	10.0%	0.0
2.5%	4.0%	9.8	20.0%	5.0%
2.0%	3.5%	11.3	35.0%	10.0%
1.5%	3.0%	13.2	20.0%	35.0%
1.0%	2.5%	15.8	10.0%	35.0%
0.5%	2.0%	18.9	5.0%	10.0%
0.0%	1.5%	26.5	0.0%	5.0%

Sources: Bloomberg, FactSet, FRED and Fidelity Investments.

EXHIBIT 13: SCENARIO WEIGHTS FOR BUND/JGB YIELD

Delta Bund/ JGB Yield	Bund Yield	MSCI EAFE P/E Multiple	Pessimistic Probability	Optimistic Probability
3.0%	3.5%	8.2	15.0%	5.0%
2.5%	2.9%	9.0	20.0%	10.0%
2.0%	2.3%	10.0	35.0%	20.0%
1.5%	1.6%	11.3	20.0%	35.0%
1.0%	1.0%	13.0	10.0%	20.0%
0.5%	0.4%	15.1	0.0%	10.0%
0.0%	-0.3%	18.2	0.0%	0.0%

Source: Bloomberg, FactSet, FRED and Fidelity Investments.

FIDELITY CANADA INSTITUTIONAL™

Written by: Fidelity's Target Date Investment Team

Term	Definition
S&P 500 Index (S&P 500)	The S&P 500 is a market capitalization-weighed index of 500 widely help U.S stocks and includes reinvestment of dividends.
MSCI EAFE Index (EAFE)	The MSCI EAFE is a market capitalization-weighed that is designed to measure the investable equity market performance for global investors in developed markets, excluding the United States and Canada.
U.S. Dollar Index (DXY)	The U.S. Dollar index is a measure of the value of the U.S. dollar relative to a basket of foreign currencies.
Price-to-Earnings (P/E) Ratio Trailing	The ratio of a company's current share price to its trailing 12-month earnings per share.
Consumer Price Index (CPI)	Measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.
Producer Price Index (PPI)	Family of indexes that measures the average change over time in selling prices received by domestic producers of goods and services.

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Diversification and asset allocation do not ensure a profit or guarantee against loss.

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