

Preparing a Multi-Asset Class Portfolio for Shocks to Economic Growth

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Many investor portfolios are propelled by assets tied to economic growth. Over the past two decades, increasing emphasis has been placed on reaching for ever higher returns, with the result that portfolios have become even further skewed toward growth assets. Diversification, a powerful force in portfolio construction, has been hobbled by high common risk factor exposures across creatively named investments that continue to deliver highly correlated returns, mainly driven by equity risk.

These brittle portfolios are especially at risk from a change in global growth regimes because the impact would be felt across a majority of assets rather than being isolated in one corner. For these reasons, preparing portfolios for a realignment in economic growth is a primary portfolio construction decision. One remedy is a renewed emphasis on assets that are less sensitive to growth: bonds, real assets, and some alternatives.

Economists refer to rapid, unexpected changes in economic or market conditions as *shocks* and study their likely consequences. Shocks can be negative (those are the ones we are most concerned about, naturally) or positive. The reason for concern about negative shocks to global growth is obvious: Stocks go down as well as up. But why should one be concerned about *positive* shocks? Because, when framed in terms of opportunity cost,

it can be very expensive to miss out on periods (e.g., the recovery after the global financial crisis) when stocks experience large gains.

Portfolio management, at its simplest, consists of balancing the opportunity for gain against the concern about risk and the possibility of loss—in the language we have been using, positive versus negative shocks.¹ This article will lay out a high-level framework for thinking about one specific kind of risk: that posed by changes in economic growth rates, both in the short or intermediate run and in the long run. As we will soon argue, it is the long run that counts most.

This exploration of the impact of shocks to growth is intended to help investors think more productively about the asset allocation decision, the part of the investment process that has the greatest impact on both risk and long-run performance.

TYPES OF SHOCKS TO ECONOMIC GROWTH

Exhibit 1 categorizes shocks to economic growth as local or global and short-term or long-term. When you live in a large developed country such as the United States, a local (U.S.) shock can feel global, and it can

¹Our approach relies for its basic framework on the foundational work of Markowitz [1952] and Sharpe [1963, 1964].

EXHIBIT 1

A Classification Scheme for Economic Shocks, with Examples

Local	Savings and Loan Crisis in the United States	Fall of Berlin Wall and Soviet Union
	Asian Currency Crisis of 1997	Sudden Decline of Japanese Growth Rate Around 1990
Global	Oil Price Shocks (positive and negative)	Great Depression of 1929–1939
	Global Financial Crisis of 2007–2009	World War II and Subsequent Recovery
	Short Term	Long Term

Source: Constructed by the authors.

affect global economic performance to some degree, but a downturn (or upturn) in the United States should not be mistaken for a global one. For example, China grew rapidly during the U.S. downturn of 2000–2002. True shocks to global growth are rare, and we have only one example in recent history: the global financial crisis of 2007–2009 and its aftermath. One has to go back to the 1970s to find another global downturn of comparable impact, intensified (but not caused) by a dramatic rise in oil prices. (It might be surprising to see the global financial crisis categorized as short term. Its ramifications lasted the better part of a decade, a long time by most people’s reckoning, but we could have easily tipped into a great depression, and we did not; moreover, the stock market performed very well in the recovery.)

“Local” changes can, of course, include those taking place on a scale smaller than that of a whole country: San Francisco has gained at the expense of Cleveland, and technology has gained at the expense of manufacturing. It is hard, however, to make bets on cities or regions or industries through *asset allocation*. This can be done through *stock selection*.

HISTORY AND FUTURE OF GLOBAL GROWTH

We have rudimentary data on economic output covering many centuries of history, but accurate data go back to the first Industrial Revolution, which began in Britain, the United States, and a few other countries in the late 18th century. In these countries, in what we now call the developed world, growth in real incomes *per capita*—the most representative measure of economic progress—has proceeded at a rate of about 1.7% per year.

Before that, growth was much slower. Total growth (not per capita) is affected by population growth, which used to be faster than it is now, but it is the welfare of individual human beings that counts.²

Exhibit 2 shows the growth of real (inflation-adjusted) gross domestic product (GDP) per capita in the United States from 1789 to 2018.³ Although the United States is obviously not the only important country, it is the only one for which we have such a long data series. Therefore we will study this series, noting that the rest of the world has played catch-up in the last half-century, with countries such as China experiencing higher growth rates than the United States has ever experienced.

At this vast time scale, there are only three major departures from the trendline in 230 years: the depression of the early 1800s, the Civil War, and the Great Depression, plus the recovery from it during World War II. Even the global financial crisis shows up as only a little blip. It is possible to detect a slowdown in the last decade or so, but only because you know it is there. Slowdowns in earlier eras, when manufacturing was a bigger slice of the economic pie and subject to more dramatic shifts in output, are much more obvious in the graph.

Exhibit 2 illustrates the principle, perhaps best expressed by the respected bond manager Howard Marks [2018, p. 48], that

[M]ost of the cycles that attract investors’ attention consist of oscillations around a secular trend or central tendency. While those oscillations matter a great deal to companies and markets in the short run, changes in...the underlying trendline itself will prove to be of much greater significance...[and] will make the biggest difference in our long-term experience.

More recently, global growth has been concentrated in emerging markets. Exhibit 3 shows the emergence of several such economies after 1948 and compares them to developed markets.

²There is an old and unresolved debate on whether stock market forecasters should use per capita or total (including population) economic growth rates. As we have argued, we think per capita is more revealing, but it is also possible for stockholders to profit from growing populations—because there are more customers and more workers—so we see both sides.

³GDP, a measure of output, is very closely related to income.

EXHIBIT 2

Long-Term Economic Growth in the United States Is Remarkably Stable—Real GDP per Capita in Current U.S. Dollars as of July 31, 2018



Source: Calculations by the Franklin Templeton Capital Market Insights Group using data sourced from Research Affiliates, Morningstar, the Bureau of Economic Analysis, and the St. Louis Fed.

On this scale we can see that the recent slowdown in the United States is real, although improvements in lifestyle and product quality do not show up in GDP data (a smartphone replaces dozens of gadgets we do not need to buy anymore). China, India, and Indonesia, subsisting (or starving) at medieval levels of poverty only two generations ago, have joined the world's middle-income economies by achieving growth rates that were unimaginable for developed countries. Sometimes it pays not to be the first mover, but instead to incorporate the lessons learned by pioneers.

Exhibit 3 shows vividly why U.S.-based investors should build global portfolios. We do not know where the next great bull market is going to be. Already, the companies in the S&P 500 earn about 40% of their profits outside the United States, explaining some of

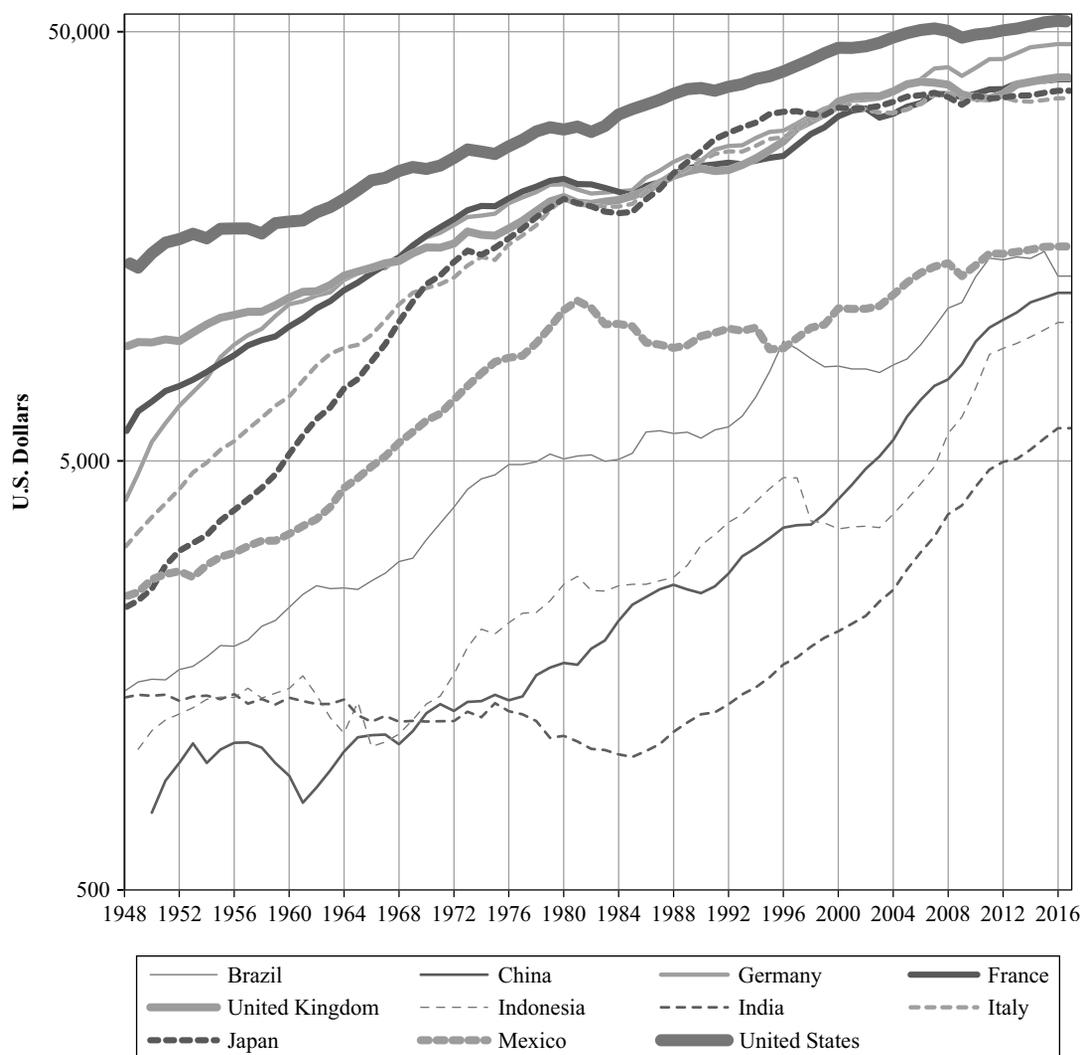
the robust performance of that index. However, buying companies that are domiciled outside the United States is also a fruitful strategy—the developed non-U.S. markets greatly outperformed the U.S. market in the 1980s, and emerging market stock prices boomed in 2003–2007. Investors can participate in such periods through global diversification.

BEHIND THE NUMBERS

Although long-run or trendline global economic growth rates have been fairly stable in modern times, equities are a *leveraged bet* on growth. Thus, markets are many times more volatile than growth rates. Exhibit 4 shows real U.S. stock prices (the S&P 500, price only, *not* including dividend reinvestment) and real earnings

EXHIBIT 3

The U.S. Economy Remains Wealthy, but the Rest of the World Is Catching Up—Real PPP GDP per Capita in Current U.S. Dollars as of December 31, 2018



Note: PPP = purchasing power parity.

Source: Calculations by the Franklin Templeton Capital Market Insights Group using data sourced from the Maddison Project Database, version 2018; Bolt et al. [2018].

(a proxy for fundamental value) against the backdrop of the per capita income data that were shown in Exhibit 2. The period shown, shorter than what we used for Exhibit 2, starts in 1871 when a reliable predecessor to the S&P index begins.⁴

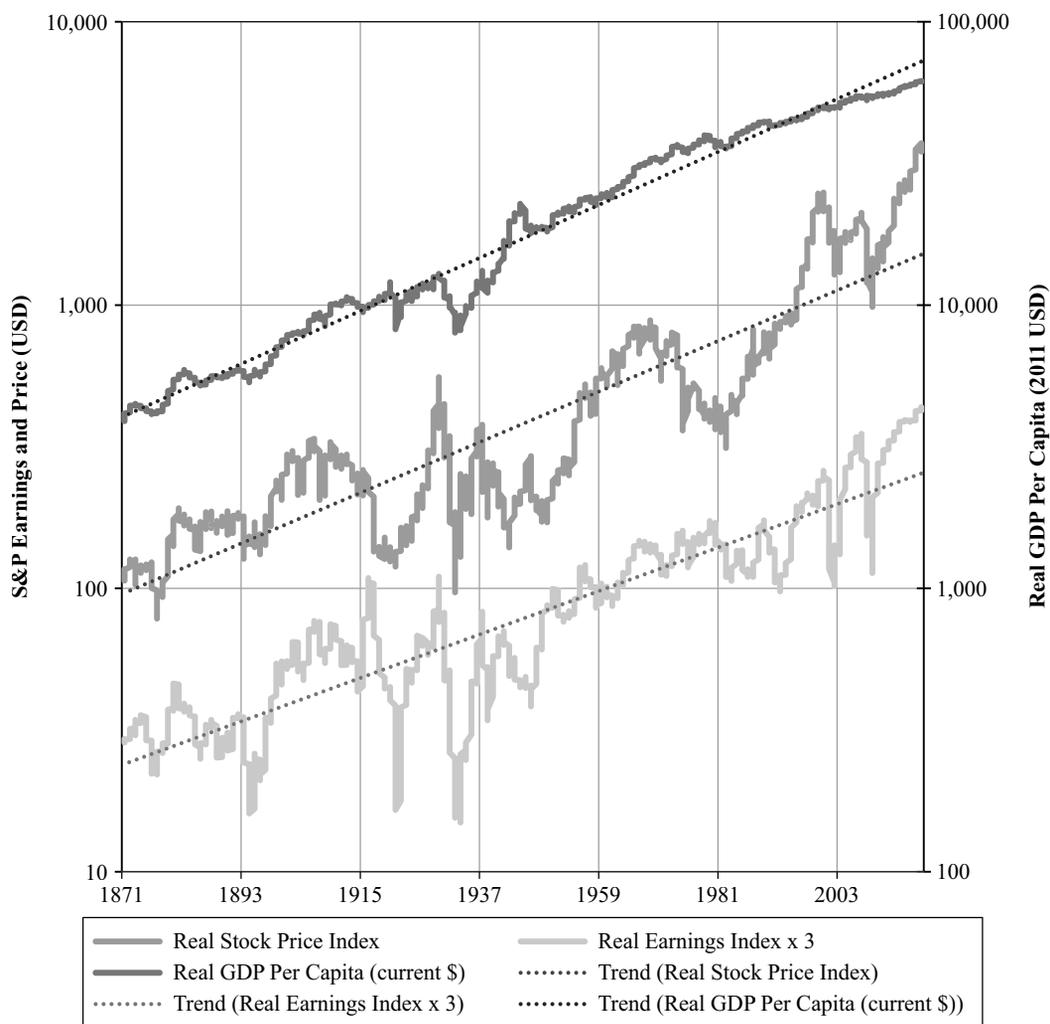
⁴For stock prices, we use the Cowles index from 1871 to 1925 and the S&P 90 from 1925 to February 1957; thereafter, the S&P 500 is used. See Cowles et al. [1939]. Historical data on the S&P 90 and S&P 500 are from Ibbotson Associates [2015] and were updated by the authors. The stock price index is initialized

There is obviously a relationship among all three series, but it is loose and they are on different scales.

at 100.00 on December 31, 1870, and is formed by chain-linking annual, price-only (i.e., not including dividends) returns. Annual earnings are from Robert Shiller's web page at <http://www.econ.yale.edu/~shiller/data.htm> and are multiplied by 3 to reduce the vertical distance required to graph the data. GDP data are from the St. Louis Fed. All stock prices, earnings, and GDP data are presented in real terms (i.e., converted to current dollars using the Consumer Price Index and predecessor indexes).

EXHIBIT 4

Markets Exhibit Periods of Volatility but Experience Long-Run Growth Parallel to the Economy—Real GDP Growth versus S&P 500 Price and Earnings Growth from January 1, 1871 to March 30, 2018



Note: Trend = exponential growth rate.

Source: Calculations by the Franklin Templeton Capital Market Insights Group using data sourced from Research Affiliates, Morningstar, the Bureau of Economic Analysis, the St. Louis Fed, and Bloomberg.

Specifically, market prices are more volatile than per capita incomes, and (interestingly) earnings are even more volatile than market prices. This last observation makes sense because the market price is theoretically the discounted present value of all future earnings—not just the current year's earnings, which tend to be distorted by short-term booms and busts.

Most of the looseness of the relationship in Exhibit 4 is intrinsic, as we just discussed, but some can be explained by the fact that a large majority of businesses contributing to the GDP in a given country are held

in sole proprietorships, partnerships, and other private structures. These are much less available for widespread public investment or simply cannot be accessed. This is part of the logic behind expanding into private markets: The public equity markets are the easiest to access and measure and have the lowest transaction and management costs, but they are not the only markets to consider.

During periods of rapid growth, equities can rocket ahead at startling speed: The S&P 500 with dividends reinvested grew by 5,300% between the beginning of 1982 and the end of 2017, and that period included

EXHIBIT 5

Interest Rates Have Extended Cycles in Both Directions—U.S. Benchmark 10-Year Treasury Yield from January 1, 1953 to October 31, 2018



Source: Franklin Templeton Capital Market Insights Group and FactSet. Important data provider notices and terms are available at www.franklintempletondatasources.com.

two crashes (1987 and 2008) and a major bear market (2000–2002). Even after adjusting for inflation, this period was impressive indeed. When growth is slow, markets go up less, fall farther, and stay down longer; 1966–1982 is an example.

GUARDING AGAINST SELECTIVE MEMORY

We would note, as an aside, that most people who are actively participating in markets today only remember sharply rising stock prices from decade to decade (obviously not every year) and falling bond yields. Behavioral scientists call this selective memory *recency bias*, and it can distort people's judgment. Markets have also had long periods of falling stock prices and rising bond yields, as shown in Exhibit 5, and could

again. That is one reason why it is important to study long periods of history—to understand what *can* happen.

POINTS OF INFLECTION

It makes sense to be concerned if you think you are perceiving a point of inflection from a high-growth period to a low one. We may be approaching such an inflection point in the United States, although the timing of it is highly uncertain; prospects in other countries vary widely. In any case, investors should be positioned to defend against such inflection points *all the time*, not just when the risk seems greatest, because—as Howard Marks pointed out—we are not very good at telling risky from low-risk conditions and tend to get the two almost exactly backwards.

As we emphasized at the outset, it is just as important to identify a point of inflection from a low-growth period to a high one as the opposite. Charles Kindleberger, the author of *Manias, Panics, and Crashes*, said “there is nothing as disturbing to your well-being and judgment as to see a friend get rich.” Relative performance does count, and being underweight in equities when they recover from a slump can really hurt relative performance.⁵

POSSIBLE CAUSES OF SHOCKS AND SURPRISES

What could cause a shock, positive or negative, to global growth? Events with negative effects include

- A Fed or other central bank tightening to avoid excessive inflation
- Stagnation in technological innovation
- Labor market difficulties, such as a mismatch between skills needed and skills available
- Poorly thought-out policies, such as trade or industrial policies
- Natural resource crises, wars, and other geopolitical events

We are also concerned that corporate profits are near an all-time high as a percentage of GDP and that these could regress to the mean (i.e., decline) as a result of political or competitive considerations *even if overall growth continues to be robust*.

Positive surprises usually come from improvements in technology or resource availability. These have more of an effect in the long run than in the short run. A positive surprise can also come from accommodative central bank policies, but this tends to work only in recessions.

IMPLICATIONS FOR THE EQUITY ALLOCATION

What to do? Prudent investors usually vary their equity allocation—including equity-like investments

⁵ One reason is that there is some equity in almost everyone’s liability. During the Great Recession, we had a lot of fun booking rooms in luxury hotels at rock-bottom prices. Now, we cannot touch them because the price is set at least partly by demand from investors who had a lot of equities during the recent run-up.

such as high-yield debt and real estate—within a fairly narrow range because they know their forecasts might be wrong. An endowment fund with which one of the authors was affiliated allowed the equity weight to vary between 40% and 80% of total assets. This is unusually wide, and it was difficult to make money from the flexibility; the endowment typically approached 80% equity when a long bull market took it there, whereas doing the opposite would have been ideal. Same story on the downside. Note that we use capital allocations as a proxy for risk contributions to a portfolio, which is how we prefer to think about portfolio construction.

Similar strategic allocation flexibility exists within many public pension plans, although not in all of them, and they have generally allowed equity allocations to drift significantly upward over recent decades as they reached for returns. Exhibit 6 shows the dramatic upward drift between 1954 and 2004, when it was hard to lose money in public equity markets. In subsequent years, this move probably exposed plans to more risk than they wanted—or even knew they were taking.

We generally recommend, for most investors, a more constrained strategy that acknowledges that what we think we know is often wrong: If the target allocation of the portfolio is 60% in equities, it could vary from 50% to 70%, with disciplined rebalancing (to avoid the problem we just mentioned). Moreover, the investor should pay careful attention to changing global growth prospects to take advantage of the ability to vary the equity percentage away from the 60% target, and not just mechanically rebalance to the target.

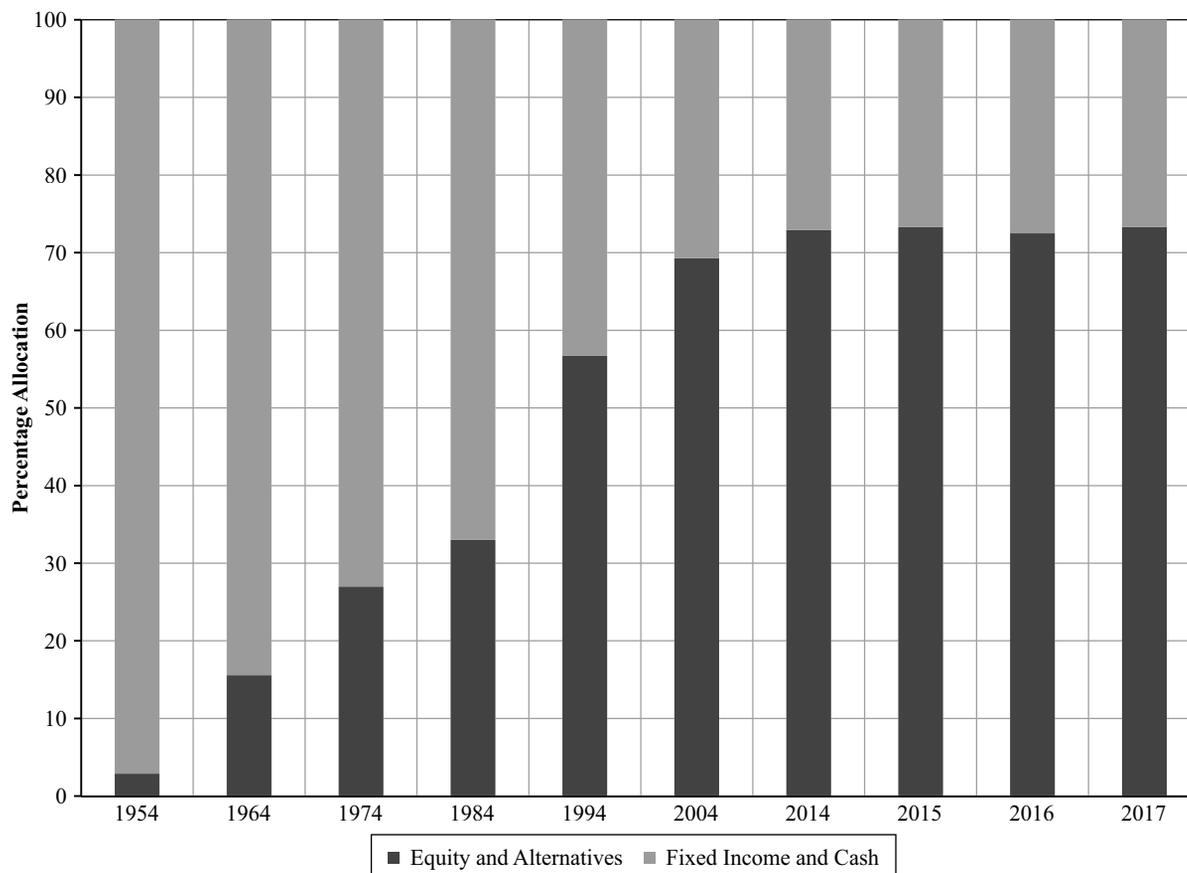
ASSETS OTHER THAN EQUITIES

Defending against global growth surprises means a greater emphasis on asset classes other than equities, especially when compared to the high equity allocations of the last decade or two. Although there are really only two mega-asset classes (fixed claims and variable claims), assets other than equities can be decomposed into three meaningful categories, all of which behave differently, as identified in Exhibit 7. The exhibit shows the macroeconomic environments under which each can be expected to perform well.

Equities have already performed well in the current decade, and investors should guard against the temptation to extrapolate that performance indefinitely into the future. Nominal-bond benchmarks have been

EXHIBIT 6

Pensions Have Broadened Their Exposures in Search of Better Risk-Adjusted Returns—Allocation of Equities and Alternatives vs. Fixed Income and Cash in Public Pensions from 1954 to 2017



Note: Not all of the alternative investments are equity-like.

Source: Calculations by the Franklin Templeton Capital Market Insights Group using data sourced from the U.S. Board of Governors of the Federal Reserve System, *Financial Accounts of the United States*, and *Pew Analysis of State Financial Reports*.

lengthening (increasing in duration, or interest-rate sensitivity) at a time when investors should consider the opposite—reducing the duration—because of the risk of rising interest rates. Because inflation seems to be on the rise, inflation-indexed bonds, which are a type of real asset, are increasingly attractive after a decade of poor performance.

IMPLICATIONS FOR LIABILITIES

Defined benefit (DB) pension liabilities can also be sensitive to global growth shocks. When growth falters, pension payouts may rise in the short run as more people draw on pensions earlier than planned. In addition,

slower growth is usually accompanied by lower long-term interest rates, raising the present value of a liability stream even if the stream itself does not change. Pension liabilities are best hedged by a portfolio mix that is more heavily weighted in fixed income than has become customary.

Positive growth surprises tend to increase pension liabilities as a result of wage increases and growth in the workforce, but the accompanying strong markets usually make it possible to adjust for such changes. Pension executives just need to be aware of the changing environment and plan for larger payouts when the employees retire.

GROWTH SURPRISES AND PENSION FUNDING POLICY

One of the oddities of the DB pension system is that sponsors often do not make contributions to the plan when they are most needed. That is because contribution requirements are subject to a great deal of legal and actuarial discretion, and when times are tough for the pension portfolio, they are also tough for the sponsoring organization itself. Thus, pension executives need to plan for the possibility that, when growth slows and the markets are down, they will also not receive the sponsor contributions they are expecting—or that they will receive a partial contribution that is economically not sufficient. Investment returns, changes in the liability, and changes in funding availability often move together to a surprising degree. Any change for the worse in the economic environment tends to affect all three factors unfavorably at the same time.

This principle also works in the opposite direction: When the economy improves, it also becomes easier to secure pension funding and to manage a liability that is smaller because it is discounted at higher interest rates. In addition, when times are good, there is the temptation to hike benefits, which has tremendous long-term implications for the size of the liability.

As we shall see next, defined contribution (DC) plans are subject to the same phenomenon, although it is manifested somewhat differently in that environment.

DC PLANS

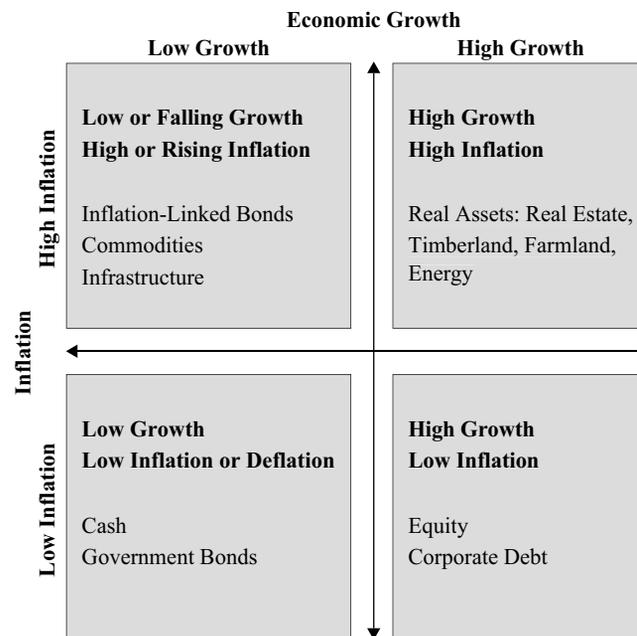
The underlying economics of DC plans are superficially, at least, similar to those of DB plans: Both involve using financial markets to spread the income from one's working life over one's entire life; however, the institutional arrangements and mortality risk spreading are completely different, involving different decision makers and requiring a different vocabulary.

Shocks to global growth, both positive and negative, affect the DC participant's savings balance in proportion to the amount that is invested in equities and equity-like securities. DC portfolios are typically simpler than DB portfolios, with well-diversified equity mutual funds (often index funds) providing the stock market exposure. Alternatives are rarely held.

Target-date funds, and other structures such as target-risk funds, are used in the DC community to pro-

EXHIBIT 7

Principal Asset Classes and the Macro Environments That Favor Them



Source: Constructed by the authors.

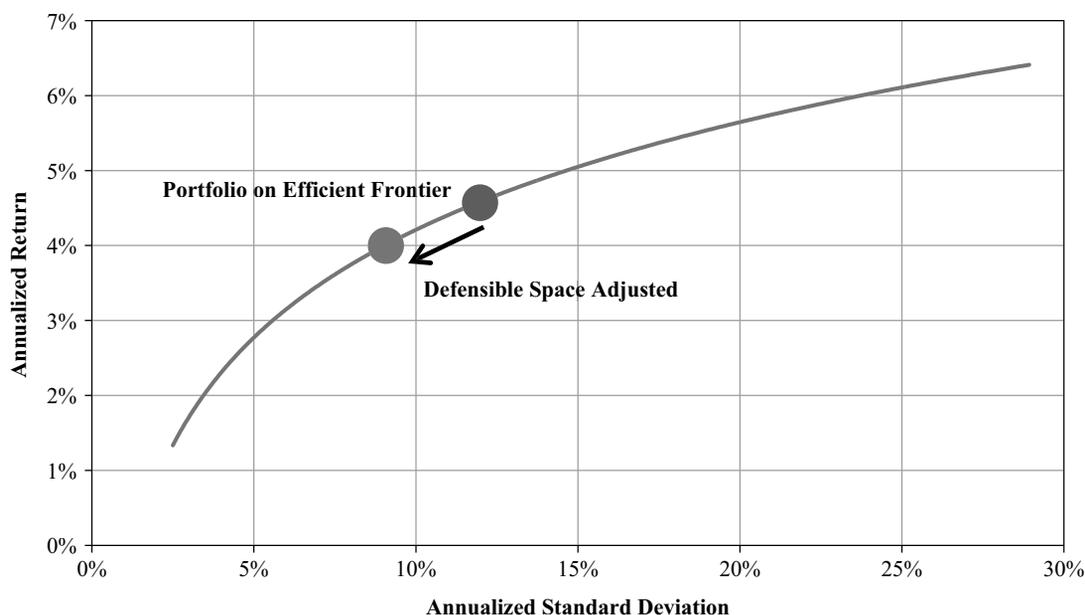
vide prepackaged asset-class diversification and thereby manage the risk of exposure to global growth shocks. This is a start. The equity part of a DC portfolio should be globalized if it is not already. But, as we noted more broadly for all investors, the non-equity asset classes shown in Exhibit 7 need a more prominent place in DC portfolios if investors are to be defended against poor global economic performance.

Target-risk and target-date funds vary widely in their use of fixed income, inflation-indexed and other real assets, and cash. Studies show that equity exposures have drifted upward gradually over time in target-date funds as fund operators try to compete with a well-performing all-equity allocation.⁶ This is the same reason that DB plan equity allocations have increased. Increasing one's equity allocation because a rising market takes you there is a dangerous trend and should be resisted.

⁶See Exhibit 41 by Holt and Larsen [2018]. In addition, BlackRock has raised the equity allocation in its LifePath funds more recently (2012–2016), according to Markov Processes International [2017].

EXHIBIT 8

Moving Along Efficient Frontier to Reduce Risk Defends Against Unwanted (or Unfavorable) Portfolio Outcomes



Note: Efficient frontier reflects Franklin Templeton Multi-Asset Solutions capital market expectations for all asset classes.

Source: Franklin Templeton Capital Market Insights Group, Franklin Templeton Multi-Asset Solutions.

CONCLUSION

Do Not Hold Lazy Portfolios!

From the generational market bottom on March 9, 2009, the S&P 500 quadrupled by January 3, 2018 (a level at which, roughly speaking, it still remains), and a lazy strategy of holding most or all of one's portfolio in that asset class has beaten all comers. This is extremely unlikely to happen again. True diversification, across different asset classes with different underlying return drivers, is the only way to protect the portfolio from unwelcome growth shocks while retaining the possibility of substantial upside. It is not possible to pick the highest-returning asset in advance, or investing would be easy. It is not.

All portfolios should be somewhat lazy in the sense of sticking with a good long-term strategy and only deviating from it when conditions really call for change. Even then, human behavior being what it is, the change in strategy that seems most appealing is likely to be the one that is least productive. Rebalancing to a fixed mix, or using some other contrarian asset allocation strategy, is usually a better idea.

In other words, do not make changes just for the sake of changes; you have to have real conviction in what you're doing, backed by serious analysis and fully informed logic.

However, no one concerned with the health of their portfolio should be *intellectually* lazy. No one should avoid doing the analysis that we have begun to outline here, determining the best mix of risk exposures given one's liabilities and ability to handle risk and then "staffing" that mix with wisely chosen investments. Furthermore, investors should not assume that their portfolios are diversified because they hold many different positions. If the positions are all highly correlated, say because they are all exposed to changes in global growth, then they are not really diversified. One more time: *Diversify across underlying drivers of return.*⁷

Carve Out a Defensible Space Around Your House

The recent California wildfires have proven that a *defensible space*, a cleared area around one's house that is

⁷See Podkaminer [2013, 2017].

not vulnerable to fire, saves lives and property. It really works, and the amount of space needed—10 meters in each direction with no flammable material at all and 30 meters with only trees and no underbrush—is surprisingly large. The worst-case scenario sometimes happens, and you want to be alive afterward.

It is the same with investment portfolios. Take less risk than you think you need to meet your return objectives. Exhibit 8 illustrates this principle. So, find a minimum acceptable investment result and do not take risks that will pierce the minimum under any realistic scenario. Do not follow the crowd into 80% in equities if you cannot afford to lose half of that position while simultaneously making withdrawals for spending (if you are an individual) or for paying benefits (if you are a pension fund)—and while also suffering possible interruptions in the funding source. Furthermore, equities losing half their value is *not* the worst-case scenario—stocks fell 57% in the global financial crisis—but it is a guideline one can use to set general parameters of how much risk is acceptable.

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