IQ

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Winter 2019

NEUBERGER | BERMAN

WEATHERPROOFING YOUR WEALTH PLAN

IS YOUR PERSONAL WEALTH PLAN ABLE TO TOLERATE THE RISKS THAT COULD UNDERMINE YOUR FINANCIAL GOALS?

IN THIS ISSUE

JOHN F. GEER, JR., *Managing Editor*

Getting Back Up

Markets staggered late last year, but could fight into the later rounds.

In 2018, U.S. stocks were volatile but generally rewarding through September 30, only to stumble badly in the fourth quarter and generate the S&P 500's first negative year since 2008. The damage was shared. On a global basis, nearly all major asset classes were down—the kind of consistency you would just as soon avoid.

The overall driver seems to have been fear: regarding potential overreach by the Federal Reserve and slower growth in China, with trade conflict and political uncertainty mixed in. Add some technical factors, including poor liquidity and tax-loss selling, and you had the makings of a substantial downturn.

Early in 2019, the narrative and, consequently, results have been more positive. Fed officials are taking a more dovish tone; the U.S. and China are finding more common ground; and there's a sense that the late-year swoon may have gotten ahead of itself.

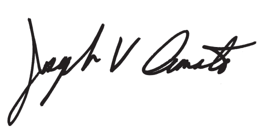
Should investors be wary at this point? The economic cycle is likely in the later rounds, the monetary shift from "QE to QT" is a natural headwind, and earnings growth is slowing. Still, the picture remains fairly balanced. Rather than a steep slope from 2018's stellar growth, we anticipate a soft economic landing in 2019, with U.S. GDP gains of 2.0 – 2.5%. Meanwhile, non-U.S. economies could see budding recovery, supported by China's stimulus and, potentially, further thawing on trade.

U.S. equities look attractive if you think (as we do) that recession isn't coming this year. Potential S&P 500 earnings growth of 5% coupled with buybacks and some multiple expansion could produce a respectable year, assuming sentiment doesn't overwhelm fundamentals. Still, more attractive opportunities may be available in non-U.S. markets—particularly in the emerging world and, to some degree, Japan, where stocks can come off a lower valuation base. We are more cautious on Europe, where geopolitical risk is in the water.

In fixed income, the Fed's current pause on rates—even with the continued roll-off of balance sheet assets—should give investors a little more breathing room. With wider credit spreads, we see select opportunities in medium- to highly rated bonds, particularly at shorter maturities.

All told, the market seems a bit tired, but still in fighting shape as momentum slows. In this conflicted environment, our latest *Investment Quarterly* explores potential ways to help "weatherproof" individual wealth plans for market turbulence and life events. We also consider the merits of staying invested through volatility, and present our "Ten for 2019" trends for this year. Other topics include the role of private equity in portfolios, the move toward "cashless" payment and ways to gain more control over your charitable dollars.

I hope you enjoy this issue of *IQ*. As always, please do not hesitate to contact your Neuberger Berman representative with any questions about the markets or your portfolio.



JOSEPH V. AMATO
President and Chief Investment Officer—Equities

Financial Fitness

Weatherproofing Your Wealth Plan

Is your personal wealth plan able to tolerate the risks that could undermine your financial goals?

STEPHEN P. POLIZZI — *Director of Wealth Planning*

Recent market turbulence is refocusing investors on risk. After a nearly 10-year bull market, many had become accustomed to regular gains in equity holdings and perhaps gave too little attention to managing downside. Today's climate, although often anxiety-producing, can also provide a healthy opportunity to reassess portfolios.

Risk, however, is about more than just markets. It also describes personal circumstances that can undermine long-term portfolio growth and hinder your ability to accomplish your goals. So, beyond reviewing specific investment exposures, now may be an excellent time to stress-test your overall wealth plan—to make sure it is well crafted in light of market realities and your personal situation.

In this article, we provide some key ideas to consider in assessing whether your plan is ready for the individual and market storms that may lie ahead.

PRESSURE POINTS

First, let's cover some key risks and ideas, which will be important to understand as you assess your portfolio:

Market Return and Volatility: Like the weather, these factors are out of your control. But they can be mitigated through proper diversification, tactical tilts (or temporary marginal portfolio adjustments) where appropriate, and manager selection. Having a realistic "required rate of return" will make any wealth plan more viable.

Inflation: Since the financial crisis, inflation has been quite tame. Even today the Federal Reserve is having trouble hitting its target of 2%. Still, the days of globalization-driven disinflation appear to be over, and there's potential for longer-term acceleration. It would not take 1970s-style double-digit price increases to cut into spending power; even an increase of a percentage point or two could have a major impact.

Longevity: It's odd to think of this as a risk, but with the longer lifespans achieved over the past few decades, it's far more likely that you'll outlast your resources. You'll want to take steps to enjoy the benefits of longevity by limiting your financial vulnerability.

Spending: This is the most impactful—and controllable—risk to your wealth plan. Beyond providing for basic needs, your spending will reflect your priorities as to how you want to live and what you want to accomplish with your savings. You can be aspirational, but you also need to be realistic.

Unexpected Events: The death of a spouse, unemployment, divorce, job loss, a casualty event (like a house fire) and extended illness are among the surprises that potentially could wreak financial havoc.

Sequencing: Bad returns are unpleasant; bad returns at the wrong time can be destructive. If you experience downdrafts early in your career, you have time to recoup. But if it happens when you need income, like in early retirement, the need to draw on depleted capital can undermine growth potential.

GAUGING THE VIABILITY OF YOUR PLAN

With these risks in mind, you can proceed with your wealth advisor to assess the current health of your plan. Broadly speaking, a wealth plan starts with a comprehensive picture of you as an individual, including your needs and goals, risk tolerance and time horizon. Next is a stage where your advisor will seek to determine an asset allocation that seeks to achieve your goals in light of these personal factors and market dynamics. In this process, it may be useful to apply both a traditional portfolio growth analysis and what's known as a Monte Carlo simulation (or statistical probability analysis) to highlight the investment challenges and opportunities you may face.

Many investors are familiar with the traditional "straight line" approach, which applies the same hypothetical average annual return every year, offset by outflows and the impact of inflation. Although this method can capture the long-term negative effects of volatility, it does not pick up the sequencing risk mentioned above, or the potential for returns that are well outside the norm. In contrast, Monte Carlo simulations reflect the unpredictability of markets, and illustrate how investments could fare in a variety of scenarios—exceptional, average and poor—over time. Typically, this tool will employ capital markets assumptions across a range of asset classes that include return, volatility and correlation. Both views can help you assess the impact of investment risk/return, withdrawals and time horizon on the viability of a hypothetical portfolio relevant to your situation.

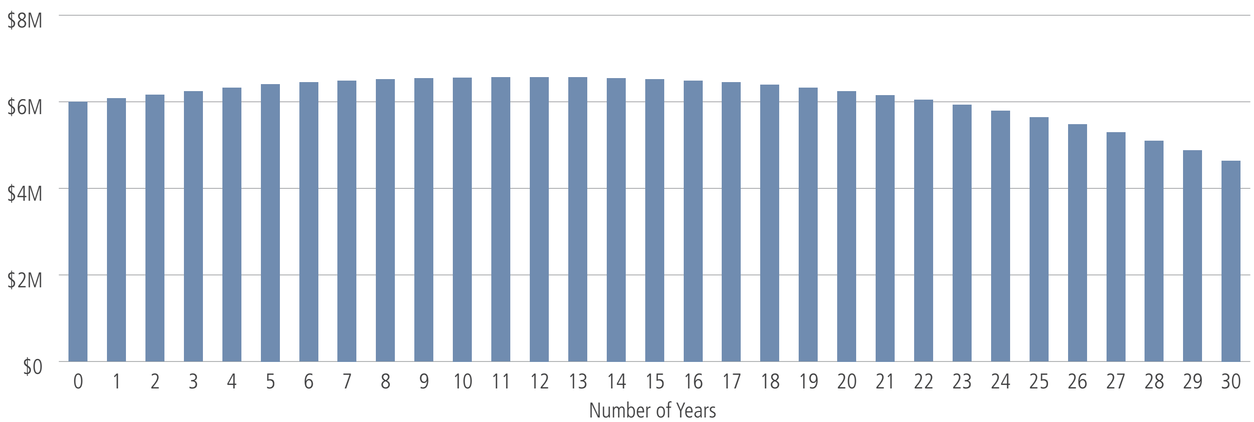
Let's run a hypothetical base-case scenario that uses the two approaches, and then compare it to other hypothetical portfolios, stress-tested based on some of the risks noted above.

HYPOTHETICAL SCENARIOS[1]

John and Jane Moderate, Age 65, 60% Stocks/40% Bonds

In our hypothetical base case, the Moderates are both age 65 with a 30-year life expectancy. They invest $6 million in a portfolio consisting of 60% stocks and 40% bonds, split evenly between taxable investment and tax-deferred retirement accounts. For this purpose, we assume that the portfolio generates a hypothetical blended average annual return of 4.97% annually;[2] we assume a $219,000 initial withdrawal rate (including $19,000 to pay ongoing taxes in the investment portfolio), or 3.65% of portfolio value, which is adjusted upward at an inflation rate of 2.25%. Using a straightforward growth analysis (applying the same average return each year), the portfolio's hypothetical value remains fairly stable over the next 30 years, rising gradually and then declining due to withdrawals, to finish at an inflation-adjusted $4.6 million.

HYPOTHETICAL GROWTH OF $6 MILLION: 60/40 MIX OVER 30 YEARS – AVERAGE RETURNS



Source: eMoney, based on Neuberger Berman inputs.

IMPORTANT: The performance and risk projections/estimates are hypothetical in nature and are based on the assumptions set forth herein. The estimates do not reflect actual investment results and are not guarantees of future results. Results are gross of fees and do not reflect the fees and expenses associated with managing a portfolio. If such fees and expenses were reflected, results shown would be lower. Investing entails risks, including possible loss of principal. **Past performance is no guarantee of future results.**

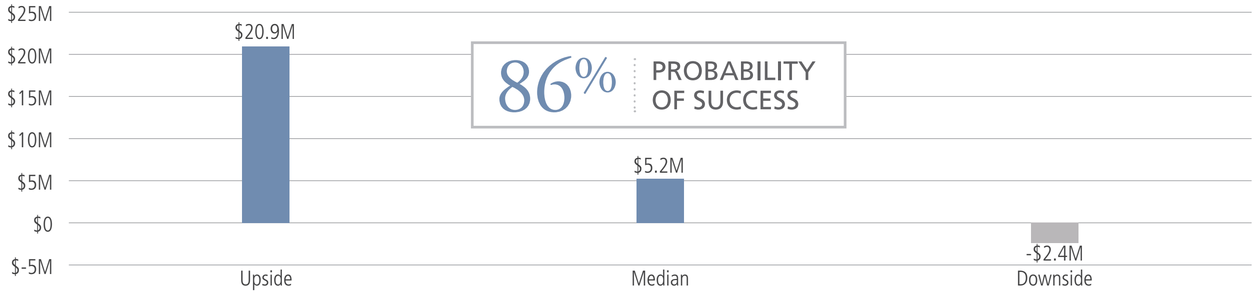
Now, let's use Monte Carlo simulation. Its upside scenario, in which virtually everything goes right (the 25th best of 1,000 different randomly sequenced return outcomes), produces rapid growth to generate an end hypothetical portfolio value of $20.9 million, while its median (or middle) scenario results in an end hypothetical value of $5.2 million. (The difference from the straight-line "average" result is due to differences in methodology. See footnote 2 for more details.) However, the downside scenario (worse than 975 other outcomes) reflects the risk present in even moderate asset allocations, with the hypothetical portfolio running out of money around year 22 (reflected in the accompanying chart in a negative result at the end of the entire period). Assuming the couple lives to age 95, the portfolio is a success (avoids running out of money during the hypothetical period)[3] in 86% of all conceivable situations.

[1]The hypothetical scenarios are for illustrative purposes only and are based upon the following assumptions: initial age of 65, taxable account basis of $2.5 million, application of federal and New York State tax rates; "sunset" of federal tax rates in 2026 to pre-2017 tax reform levels, annual portfolio turnover of 17%. See footnote 2 for return assumptions.

[2]For the "average return" scenarios, our growth analysis employs "geometric" average annual returns, which compound annually over the duration of the hypothetical example. In contrast, a Monte Carlo simulation applies "arithmetic" mean returns (in combination with standard deviation, a common risk measure, and correlations between asset classes) around which it develops multiple return scenarios for the first year of the hypothetical. It then generates another set of hypothetical returns for the second year, which it links to the various first-year returns. This process continues until the final year of the simulation, resulting in a typically wide range of performance outcomes. As they incorporate "risk drag," geometric returns are always lower than the corresponding arithmetic returns, which reflect volatility in combination with standard deviation and correlation. In our examples, the asset class return assumptions (Neuberger Berman's return assumptions for 2018) are as follows: equities (geometric): 5.9%; equities (arithmetic): 7.03%; fixed income (geometric): 3.48%; fixed income (arithmetic): 3.54%. The standard deviation for equities is 15.09% and for fixed income is 3.36%.

[3]We define success more specifically as the ability to maintain positive portfolio asset value for the duration of the planning analysis. In contrast, a failed trial is any trial run that depletes all of the portfolio assets.

HYPOTHETICAL GROWTH OF $6 MILLION: 60/40 STOCK BOND MIX OVER 30 YEARS – MONTE CARLO



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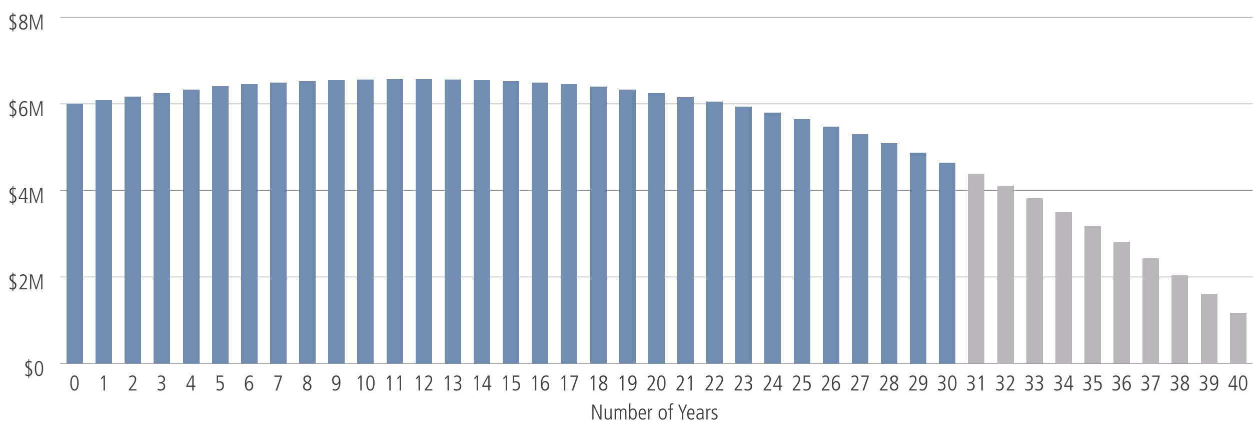
STRESS TEST 1: INCREASED LONGEVITY

Let's change things up to assume (for purposes of illustration) that the couple has a life expectancy of 40 years from retirement, but keep all other assumptions constant. In this case, applying a steady hypothetical 4.97% average annual return, the decline of portfolio value accelerates in later years (in gray), reducing the initial $6 million portfolio to an inflation-adjusted $1.2 million.

HYPOTHETICAL GROWTH OF $6 MILLION: 60/40 MIX OVER 40 YEARS – AVERAGE RETURNS



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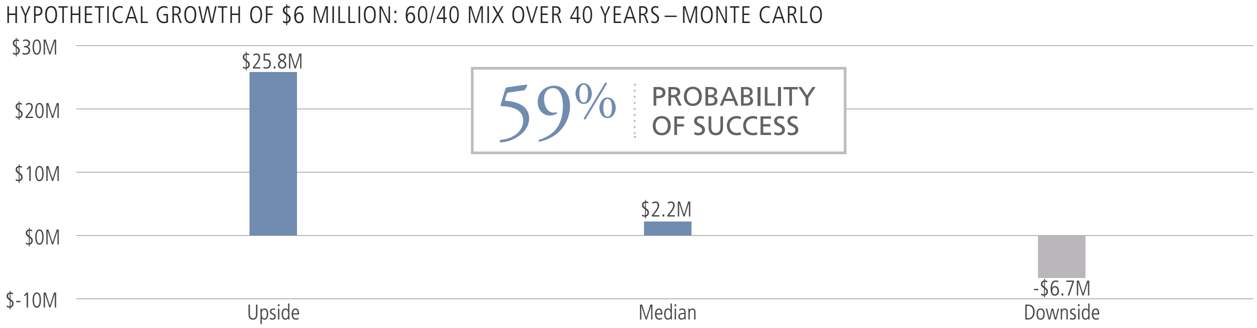
Running a Monte Carlo analysis provides additional information. In the upside scenario,[4] the portfolio benefits from an additional 10 years of growth, increasing to $25.8 million. The median outcome, although it shows some inflation-adjusted deterioration, remains positive. As in the 30-year example, the downside outcome depletes the portfolio around year 22. Importantly, the success rate over the full period declines to just 59%, which is below our 80 – 85% "confidence zone" for successful plans.

HYPOTHETICAL GROWTH OF $6 MILLION: 60/40 MIX OVER 40 YEARS – MONTE CARLO



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[4]The upside scenario provides the 25th best performance out of 1,000 randomly sequenced return outcomes; the downside scenario provides the 25th worst performance out of 1,000 such outcomes.

What can you do about the longevity issue? One obvious (although not always feasible) option is to save more. In this case, adding another $1 million at age 65 would have brought the Moderates' 40-year success rate up to a more acceptable 80%. A reduction in spending could also be on the table.

However, other ideas may help. One is to seek to generate additional revenue streams later in life, for example with an annuity. Buying an immediate annuity allows you to pay a lump sum and begin receiving regular payments starting the next month; with a deferred annuity, you can "turn on" the annuity payments at a later date (for example, at age 85). The longer you wait, the higher the revenue stream. This feature is available for qualified retirement plan assets using "qualified longevity annuity contracts" (QLACs), although certain limitations apply.[5] Typically, deferred annuity contracts say that if you die before the annuity payments start, your heirs will receive some kind of death benefit. However, if you turn on the payments and die shortly thereafter, assuming a single-life payout, the insurance company will keep the balance. It's important to choose the appropriate annuity payout option in light of this risk.

Another idea is the prudent use of equities, which have a higher return profile than most other assets over the long term. Depending on the circumstances, you might marginally increase equity allocations to build capital, and then move gains into fixed income for shorter-term needs, in a practice known as "bucketing."[6] High-dividend stocks could be part of the strategy, to combine appreciation potential with income generation. The tradeoff of higher equity exposure is increased risk, as discussed below.

STRESS TEST 2: CONCENTRATION

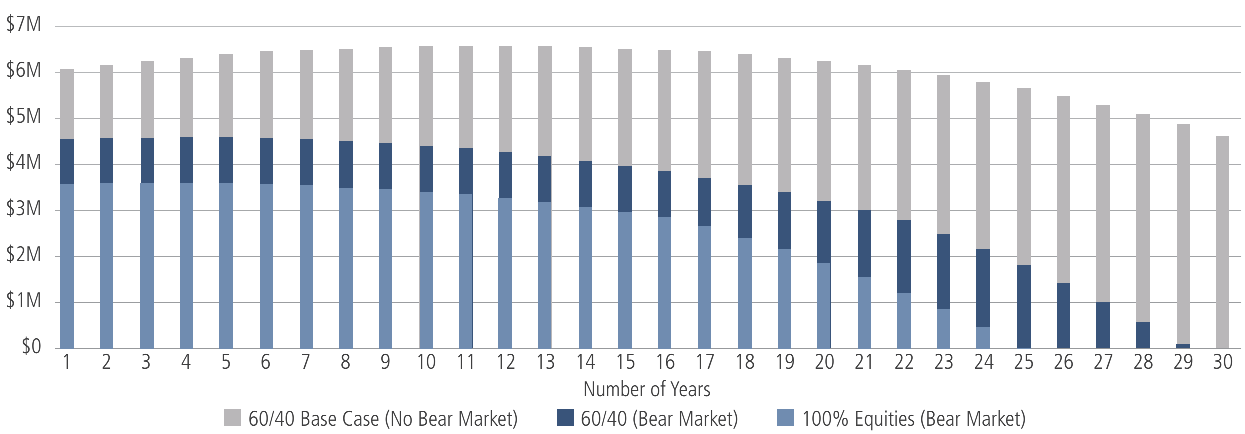
Next, let's consider the potential impact of concentration risk on portfolios. Assume that, instead of investing in a 60/40 mix of assets, the Moderates go for broke with an all-equity portfolio. Obviously, stocks are the asset class of choice for long-term capital appreciation, but higher volatility (including the potential for major drawdowns) makes exclusive investments in equities inappropriate for short time frames and for highly risk-averse investors generally. Starting again with $6 million, the Moderates' 100% equity portfolio (using the standard analysis) provides a hypothetical average annual return of 5.96%, fostering steady portfolio growth over 30 years—in contrast to the base case, where the balance is stable but starts to decline after 15 years or so. Using the Monte Carlo, the range of potential outcomes over 30 years is enormous, from a lottery-like upside of $51.2 million to a downside in which the portfolio runs out of money in about 17 years. Overall, the portfolio has an 80% success rate, which is at the bottom range of our 80 – 85% confidence zone, compared to 86% success in the case of a diversified balanced portfolio of 60/40.

It's important to note that sequencing risk (discussed above) is a particular issue for equities and other higher volatility assets. Leaving all other assumptions in place, let's say that the equity market suffers a major drawdown right before the Moderates' retirement. The combination of a 37% equity decline (the S&P 500's return in 2008) and a 5.24% advance in bonds (the Bloomberg Barclays U.S. Aggregate Bond Index's return in 2008) results in a roughly 21% downdraft for a 60/40 portfolio.

As you would expect, the lower starting point makes it much harder for the portfolios to remain viable in the face of withdrawals and inflation. In our hypothetical average-return analysis, the 60/40 portfolio (dark blue bars in the chart) manages to last 29 years while the all-equity portfolio (in light blue) fails in 25 years. Meanwhile, in the Monte Carlo simulation (not shown), the 60/40 portfolio has a success rate of 50% and the all-equity portfolio just 35%.[7]

SEQUENCING RISK AND EQUITY CONCENTRATION

Hypothetical Portfolio Value After Bear Market Scenario (37% Equity Decline, 5.24% Bond Increase) – Average Returns



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[5]For 2019, the IRS limits premium payments used to purchase a longevity annuity to the lesser of $130,000 or 25% of the participant's account balance on the date of the premium payment.

[6]See "Bucketing and Your Retirement Plan," *Investment Quarterly*, Fall 2017.

[7]Bear in mind that this result does not consider the potential recovery of equities after a sharp decline, which could improve portfolio success rates.

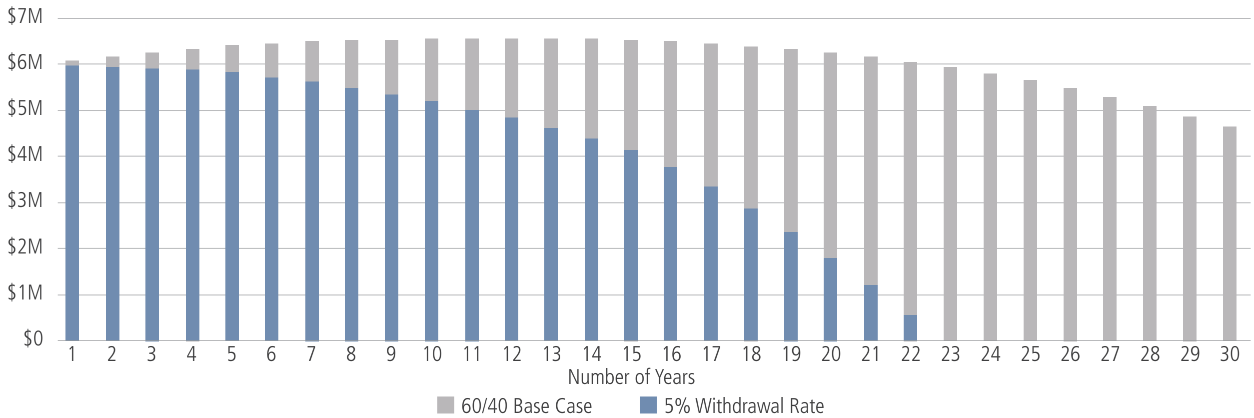
The message here is not to avoid equities, but we do want to reinforce the classic idea of spreading (and thus mitigating) risk within portfolios, and understanding the nature of the assets you hold. Of course, diversification shouldn't stop with equities and fixed income. Equities, bonds, alternative investments and even cash equivalents can help limit volatility, as can diversification within asset classes. Such an approach has the potential to reduce downside while increasing return potential.

STRESS TESTS 3 AND 4: WITHDRAWAL RATE AND INFLATION

Among all the factors affecting your long-term well-being, none is more important than your withdrawal rate because it is the most controllable. You will need to think carefully about your spending needs, with the understanding that your interests and priorities may change over time.[8] A common rule of thumb is that withdrawals of 4% or less (as in our base case) can provide balanced portfolios with good odds to make it through a 30-year period intact.[9] If you increase that rate to 5%, it could cut into principal growth quite quickly. This is reflected in portfolio value over time, both in our average growth and Monte Carlo analyses (see display).

WITHDRAWALS CAN PROFOUNDLY AFFECT OUTCOMES

Hypothetical Growth of $6 Million: 60/40 Mix Over 30 Years – Average Returns



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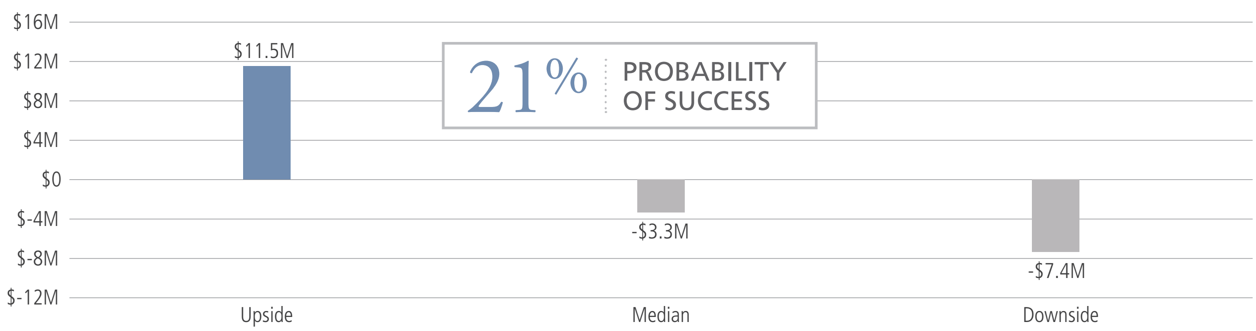
HIGHER WITHDRAWALS REDUCE THE ODDS OF PORTFOLIO SUCCESS

Hypothetical Growth of $6 Million Over 30 Years (5% Withdrawal Rate) – Monte Carlo



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[8]See "Planning in Stages," *Investment Quarterly,* Summer 2018.
[9]See "Bucketing and Your Retirement Plan," *Investment Quarterly,* Fall 2017.

Although we don't show it here, boosting the assumed inflation rate from 2.25% to 4% also has a very negative impact on the portfolio. While it's true that recent inflation rates have been much lower than long-term historical levels, it is not unrealistic to incorporate 3 – 4% inflation projections in your planning for worst-case scenarios. Keeping combined inflation and withdrawal rates below your growth rate should allow for potential portfolio growth over time in real terms. But if they are higher than your returns, that will naturally begin eating away at principal and purchasing power.

ADDRESSING SPENDING AND INFLATION PRESSURES

How can you deal with these two issues?

On spending, you need to be realistic about what will be an acceptable lifestyle, but also make a budget and seek to live within your means so you don't needlessly find yourself financially strapped. To keep withdrawal rates manageable, you may want to link some elements of your spending to market performance. For example, in a strong year like 2017 (S&P 500 total returns in excess of 20%), you could withdraw more from equities to pay for a special trip or a major purchase, and then postpone expenses in a weaker year like 2018. Also, keep in mind that spending in the first 10 to 15 years of retirement is generally higher than in later years, except for typically moderate increases in health care costs.[10]

To help deal with inflationary pressures, you may wish to include exposure to assets that have historically tended to do well in inflationary environments. For example, Treasury-Inflation Protected Securities are indexed to inflation, while real estate and equities generally correlate reasonably well to higher prices. In contrast, traditional Treasuries and other investment-grade fixed income securities are usually more vulnerable to inflation given their sensitivity to rising rates.

CONCLUSION: MAKING THE RIGHT MOVES

Your financial picture is constantly in motion. Market events can have a major influence on whether you are headed in the right direction, but so can unexpected changes in your life. Given your inability to control these forces, it's crucial that you seek to exert control in other ways. Making reasonable assumptions about return potential, understanding your risk tolerance and setting conservative spending targets are among the ways to make your wealth plan more effective and increase your potential for meeting retirement, family and philanthropic goals. Especially in times of market turbulence, having a solid plan can reduce worry about day-to-day price fluctuations, lessen the impulse to make poor choices and help you feel confident about the future.

[10]Source: U.S. Bureau of Labor Statistics.

IMPORTANT: The projections and other information generated by a Monte Carlo analysis tool regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

A Monte Carlo analysis runs multiple simulations of your wealth analysis against future market conditions. The result of introducing random investment volatility to the analysis produces a range of values that demonstrates how changing investment markets may impact your wealth. Tools such as the Monte Carlo analysis will yield different results depending on the variables inputted, and the assumptions underlying the calculation.

Hypothetical scenarios shown are for informational and educational purposes only. Examples are based in part on various assumptions, projections or other information generated by Neuberger Berman regarding investment outcomes. Growth rate assumptions and projections are hypothetical in nature, and do not reflect actual investment results and are not guarantees of future results. Calculations are based upon Neuberger Berman's Investment Strategy Group's capital market assumptions. Assumptions are updated periodically. Changes in assumptions would impact the hypothetical results shown. Estimated returns and volatility should not be used, or relied upon, to make investment decisions. Actual results may vary significantly and actual growth rate may be higher or lower, including negative growth (i.e., investments lose value), than any hypothetical scenarios shown.

See the disclosures and the end of this publication, which are an important part of this article.

Market Focus

Staying Invested but Alert

In periods of volatility, it's important to avoid market timing, while considering both diversification and, where appropriate, tactical tilts.

INVESTMENT STRATEGY GROUP

Through September, the stock market was on a nearly 10-year bull run, enjoying the benefits of loose financial conditions, strong growth and stimulus provided by tax reform. But soon after, a new round of volatility took hold, driven largely by concerns over global economic slowing, trade conflict and Federal Reserve policy. The S&P 500 finished the year down 4.4% on a total return basis (inclusive of dividends) and suffered its worst December since 1931. Early in 2019, equities have regained ground, but more turbulence may be coming.

In the wake of such a turn of events, does it make sense to pull back on equity exposure? The short answer is, it depends. At times, valuations or risk/reward in stocks may appear less compelling and justify trimming holdings, or it could be that equities are too large a weighting in portfolios for individual needs. However, there's a big difference between making measured tactical adjustments, rebalancing to strategic long-term targets or making other informed asset allocation decisions, and drastically drawing down exposures in reaction to market events. The latter is market timing, and might be better described as "mis-timing" because investors often pick poor times to withdraw and reenter markets, ultimately undermining their long-term return potential.

Moreover, it's important to remember that market shifts can happen suddenly. So, just as it may be hard to avoid the sharpest declines, it may be easy to miss a strong upward surge. The next display shows the impact of missing the best days of equity market performance.

JUST AS IT MAY BE HARD TO AVOID THE SHARPEST DECLINES, IT MAY BE EASY TO MISS A STRONG UPWARD SURGE.

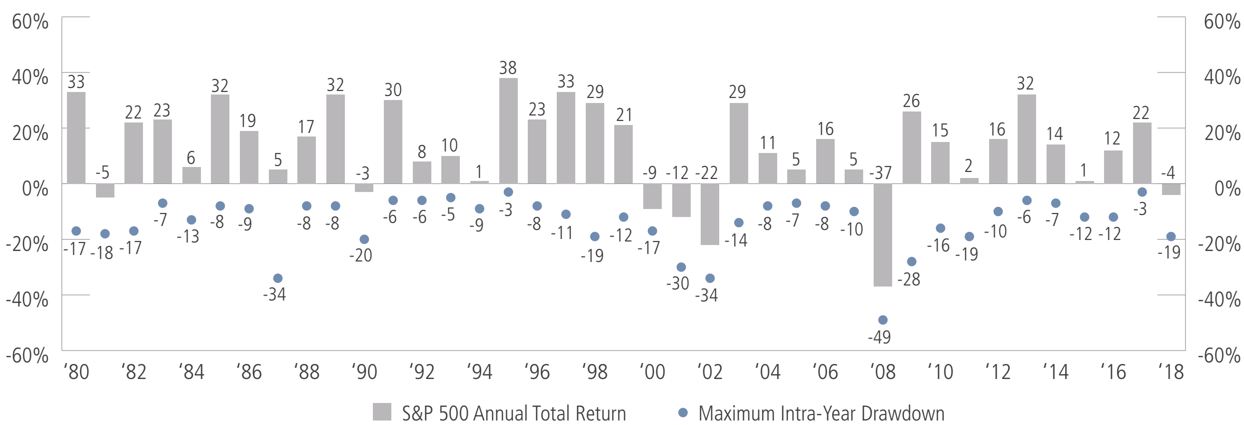
MISSING BEST DAYS HAS HURT PERFORMANCE
S&P 500: Past 25 Years Ending December 31, 2018

	ANNUALIZED RETURN	HYPOTHETICAL GROWTH OF $100
Total	9.1%	$876
Excluding top 10 days	6.1%	$437
Excluding top 20 days	4.1%	$271
Excluding top 30 days	2.3%	$178
Excluding top 50 days	-0.7%	$84

Source: Bloomberg. As of December 31, 2018. Figures are total return. Hypothetical growth results illustrate the growth of a hypothetical investment in the index as of the date indicated and assume reinvestment of any dividends and distributions. Results shown are hypothetical and do not represent the returns of any particular investment. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. **Past performance is no guarantee of future results.**

Another problem with market timing is that it is often difficult to distinguish between a temporary downturn and something more lasting. Although ultra-easy monetary policy contributed to relative market calm in 2012 – 2017, conditions have normally been far more volatile, with the stock market suffering steep drawdowns even in positive years.[1] Fortunately, time is typically an ally of equity investors. The S&P 500 has risen in 70% of all years since 1929. And over its long history, it has moved past many challenges—wars, economic downturns, political crises—to eventually reach new highs. Past is not prologue, as they say, but the difficulties of 2018 will likely seem less severe in the rearview mirror.

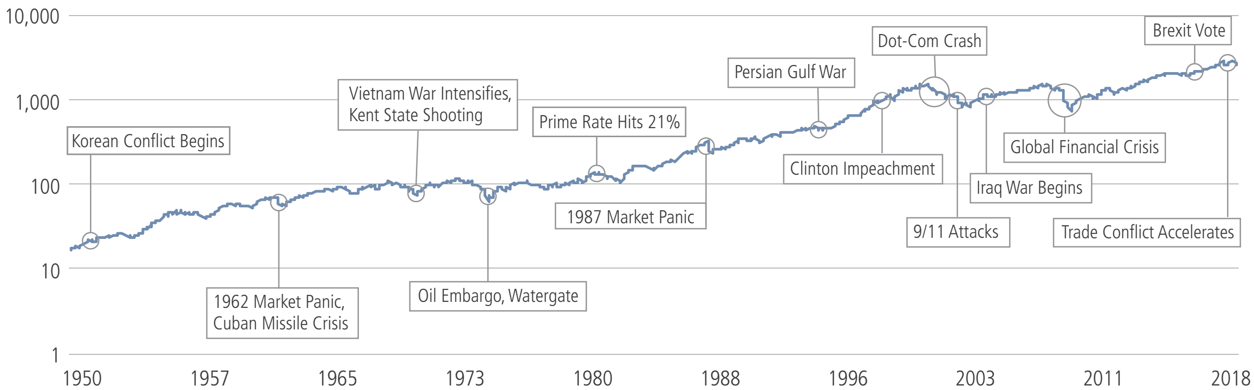
SHARP DRAWDOWNS HAVE BEEN COMMON, EVEN IN UP YEARS



Source: FactSet. Data through December 31, 2018. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. **Past performance is no guarantee of future results.**

[1]For more on the characteristics of severe downturns, read "Preparing for the Next Market Downturn," *Investment Quarterly,* Fall 2018.

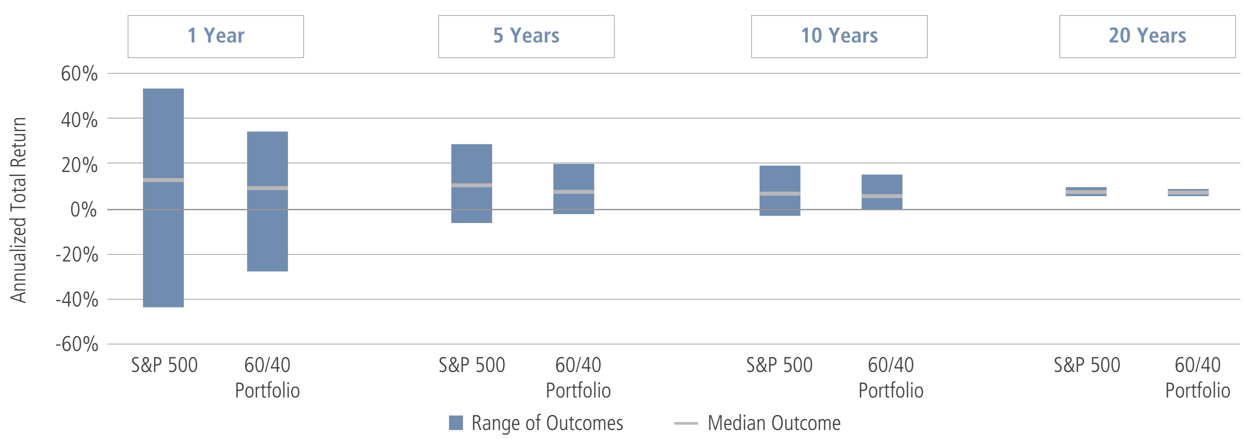
STOCKS HAVE WEATHERED MANY CHALLENGES
S&P 500 Index (Log Scale)



Source: Bloomberg (for S&P data). Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. **Past performance is no guarantee of future results.**

The long-term resilience of the market suggests a key practical point: that staying invested has been rewarding in equity investing, reducing the chance of realized losses. The longer the holding period, the less potential for decline. This is reflected in the display below, showing the range of total returns for rolling one-, five-, 10- and 20-year periods, measured monthly over the last 30 years. Performance in shorter timeframes has been quite varied and often affected by immediate investor sentiment. As periods are extended, volatility has been reduced, narrowing the range of returns around positive averages.

LONG-TERM TIMEFRAMES HAVE REDUCED THE POTENTIAL FOR MARKET LOSS
Range of Market Returns, 1988 – 2018



Source: Bloomberg. As of December 31, 2018. 60/40 portfolio consists of 60% stocks (S&P 500) and 40% bonds (Bloomberg Barclays U.S. Aggregate Bond Index). Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. **Past performance is no guarantee of future results.**

MANAGING RISK THROUGH DIVERSIFICATION

Even with the risk mitigation provided by time, maintaining portfolio diversification has been essential to managing volatility. That is illustrated in the same display with the addition of bonds (i.e., 40%) into the portfolio. This change has markedly reduced the severity of downside outcomes, particularly over the shorter periods, in exchange for lower upside. And as common wisdom would suggest, adding an array of investment types further mitigates risk. Keep in mind that performance leadership has shifted over time (see display below), and that particular asset classes may have quite varied returns, volatility and correlations with one another. Nevertheless, combining some of these assets and their divergent characteristics has tended to improve a portfolio's overall risk/return relationship, and smooth returns over time.

PERFORMANCE LEADERSHIP VARIES, REINFORCING THE VALUE OF DIVERSIFICATION
Annual Total Returns

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Emerging Market Equity 39.8%	Investment Grade Fixed 5.2%	Emerging Market Equity 79%	U.S. Small-Cap Equity 26.9%	Investment Grade Fixed 7.8%	Emerging Market Equity 18.6%	U.S. Small-Cap Equity 38.8%	U.S. Large Cap Equity 13.2%	U.S. Large-Cap Equity 0.9%	U.S. Small-Cap Equity 21.3%	Emerging Market Equity 37.8%	Investment Grade Fixed 0.0%
Commodities 16.2%	High Yield Fixed -26.2%	High Yield Fixed 58.2%	Emerging Market Equity 19.2%	High Yield Fixed 5.0%	Developed Non-U.S. Equity 17.9%	U.S. Large-Cap Equity 33.1%	Investment Grade Fixed 6.0%	Investment Grade Fixed 0.5%	High Yield Fixed 17.1%	Developed Non-U.S. Equity 25.6%	High Yield Fixed -2.1%
Developed Non-U.S. Equity 11.6%	Commodities -35.6%	Developed Non-U.S. Equity 32.5%	Commodities 16.8%	U.S. Large-Cap Equity 1.5%	U.S. Large-Cap Equity 16.4%	Developed Non-U.S. Equity 23.3%	U.S. Small Cap Equity 4.9%	Developed Non-U.S. Equity -0.4%	U.S. Large-Cap Equity 12.1%	U.S. Large-Cap Equity 21.7%	U.S. Large-Cap Equity -4.8%
Investment Grade Fixed 7.0%	U.S. Small-Cap Equity -33.8%	U.S. Large-Cap Equity 28.4%	U.S. Large-Cap Equity 16.1%	U.S. Small-Cap Equity -3.6%	U.S. Small-Cap Equity 16.4%	High Yield Fixed 2.9%	High Yield Fixed 2.5%	U.S. Small-Cap Equity -4.4%	Commodities 11.8%	U.S. Small-Cap Equity 14.7%	U.S. Small-Cap Equity -11.0%
U.S. Large-Cap Equity 5.8%	U.S. Large-Cap Equity -37.6%	U.S. Small-Cap Equity 27.2%	High Yield Fixed 15.1%	Developed Non-U.S. Equity -11.7%	High Yield Fixed 15.8%	Investment Grade Fixed -2.0%	Emerging Market Equity -1.8%	High Yield Fixed -4.5%	Emerging Market Equity 11.6%	High Yield Fixed 7.5%	Commodities -11.3%
High Yield Fixed 1.9%	Developed Non-U.S. Equity -43.1%	Commodities 18.9%	Developed Non-U.S. Equity 8.2%	Commodities -13.3%	Investment Grade Fixed 0.4%	Emerging Market Equity -2.3%	Developed Non-U.S. Equity -4.5%	Emerging Market Equity -14.6%	Investment Grade Fixed 2.6%	Investment Grade Fixed 3.5%	Developed Non-U.S. Equity -13.4%
U.S. Small -Cap Equity -1.6%	Emerging Market Equity -53.2%	Investment Grade Fixed 5.9%	Investment Grade Fixed 6.5%	Emerging Market Equity -18.2%	Commodities -1.1%	Commodities -9.5%	Commodities -17.0%	Commodities -24.7%	Developed Non-U.S. Equity 1.5%	Commodities 1.7%	Emerging Market Equity -14.3%

Source: FactSet, Bloomberg. Asset classes represented as follows: High yield – Bloomberg Barclays U.S. Aggregate Credit Corporate High Yield; developed international equity – MSCI EAFE Index; emerging market equity – MSCI EM Index; U.S. large-cap equity – Russell 1000 Index; U.S. small-cap equity – Russell 2000 Index; commodities – Bloomberg Commodity Index; investment-grade fixed income – Bloomberg Barclays U.S. Aggregate Index. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. **Past performance is no guarantee of future results.**

CONSIDERING TACTICAL TILTS

Although somewhat similar on the surface, market timing and tactical tilts of asset allocation are actually quite different. Both involve portfolio shifts based on current market conditions. However, market timing is about wholesale changes of exposure designed to capitalize on (or avoid the consequences of) a major market turn. In contrast, tactical tilts are generally more moderate, and a supplement to an overall strategic (or long-term) asset allocation. When properly administered, tactical tilts can be a way to capitalize on a portfolio manager's knowledge and research on the economy, inflation, markets, fund flows, company/issuer fundamentals and many other elements, which potentially can help to enhance returns and mitigate risk.

For example, a tactical asset allocation could emphasize U.S. small- over large-cap stocks due to the strength of the domestic versus global economies, favor emerging markets stocks or debt in light of a reversal in U.S. dollar strength, or underweight long-dated bonds given an upward trend in inflation. In contrast to a pure buy-and-hold approach, tactical tilts allow for educated choices in the face of market changes without succumbing to extreme or ill-advised actions.

Note that frequent portfolio turnover can be tax-inefficient, so it's important to weigh potential sales in light of any embedded capital gains, the availability of offsetting losses, the risk/reward tradeoff of holding onto positions and, importantly, the return potential of other available opportunities. This balance can be a key consideration in effectively managing your overall portfolio, and something to be discussed with your advisors.

KEEPING ON TRACK

It's easy to preach the virtues of staying invested, but sometimes it is harder to take that advice. Mark-to-market losses are painful and, with each decline, the fear of continued loss can weigh on emotions. No one suggests passivity in the face of market volatility, but we would argue that a thoughtful, well-informed asset allocation (with both strategic and possibly tactical elements), suiting your individual situation and implemented through skilled portfolio managers, can increase the potential for investment success over time.

WHEN PROPERLY ADMINISTERED, TACTICAL TILTS CAN BE A WAY TO CAPITALIZE ON A PORTFOLIO MANAGER'S KNOWLEDGE AND RESEARCH.

See disclosures at the end of this publication, which are an important part of this article.

SOLVING
FOR 2019

TEN FOR 2019

The past year has seen a sharp increase in market volatility and uncertainty, as investors have grappled with questions about global growth, trade, interest rates and earnings potential. With recent developments in mind, the heads of our investment platforms have identified key themes they anticipate will guide investment decisions in 2019. For more details on their views, read our Solving for 2019 *outlook.*

MACRO: A SOFT LANDING

1

A Soft Landing for the U.S. and the Wider World

We anticipate that U.S. GDP growth will slow from 3.5% to around 2.0 – 2.5% in 2019, and some of the tail risks associated with the U.S. – China trade dispute will dissipate. We believe that U.S. wages will continue to rise, squeezing corporate earnings, but the inflationary effect will be partly offset by lower commodity prices. This would all help to dampen the past year's dollar rally and moderate global liquidity conditions, and would support a re-convergence of the rest of the world's growth rates with those of the U.S.

2

A Recovery Beyond U.S. Shores

We expected the U.S. to diverge from the rest of the world in 2018, but were perhaps surprised at how early, how severe and how long-lasting that divergence has been. As the U.S. – China trade dispute cools and China's fiscal stimulus takes hold, however, we believe the signs of recovery we already see in Japan, Europe and the emerging world will grow and enable some re-convergence, confirming our view that these economies are still mid-cycle relative to the late-cycle position of the U.S.

3

Central Banks Press On With Balance Sheet Reduction

The Federal Reserve will proceed more cautiously with interest rates than anticipated, but we do not expect any change to central banks' approaches to balance sheet management, which means liquidity conditions overall will become tighter. At the European Central Bank, we anticipate balance sheet policy will also proceed as expected, with rates on hold until after the summer.

4

Political and Policy Spotlight Falls on Europe

Last year saw important elections in the emerging world and the U.S., and a worsening of the trade dispute between the U.S. and China. Trade, China's growth trajectory in general and the potential for a lot of noise out of Washington now that the Democratic Party has control of the House of Representatives still pose risks. Nonetheless, the confluence of Brexit, the Italian budget, the populist turn in the east, a weak government in Spain, and the end of the Merkel era in Germany and the Draghi era at the European Central Bank make it likely that Europe will steal the political and policy spotlight in 2019.

FIXED INCOME: THE PAUSE THAT REFRESHES

5 The Fed Pauses for the First Half of 2019

The Fed is likely on hold for at least the first half of the year. The temptation to combat signs of inflation in the pipeline remains strong, however: If the U.S. experiences a soft landing and moderate risk-asset market returns in 2019, it will be in no small part because the Fed resisted the impulse to overshoot with tightening.

6 Credit Drivers Begin to Change (Again)

Last year, we anticipated that continued low default rates would lead to credit spreads being impacted less by fundamentals and more by technical developments, and that was the case until October and November of 2018. At that point we saw the market become more discerning with respect to both sectors and individual issuer creditworthiness, and we expect that to be a key theme throughout 2019 as U.S. growth slows. We see particular opportunity in medium-quality credits in the short and intermediate parts of the curve.

EQUITIES: ATTRACTIVE VALUATIONS ARE BACK

7 U.S. Equity Returns Will Be Determined Primarily by Multiple Expansion

If U.S. equities in 2018 were about strong earnings growth balanced by shrinking valuation multiples, we envision 2019 flipping that around. As the cycle continues to mature, the range of possibilities widens, but the base case is for top lines to be under pressure from slowing U.S. growth while margins are squeezed a little by wage inflation, offset by some multiple expansion from what is now a modest base.

8 The Real Value Will Be ex-U.S., Especially in Emerging Markets

Late-cycle dynamics with moderate multiples could help the U.S. perform better than expected, but even lower multiples and mid-cycle dynamics in Japan, China and the emerging world arguably make them a better source of value. Given our views on heightened political and policy risk in Europe, we think emerging markets provide the most attractive opportunity if you are not forecasting a major global slowdown for 2019.

ALTERNATIVES: INVESTORS WILL RENEW THEIR SEARCH FOR SOMETHING DIFFERENT

9 Greater Appetite for Uncorrelated Strategies

Should the market volatility and tighter cross-asset class correlations that characterized 2018 persist into 2019, achieving genuine portfolio diversification with traditional assets will become increasingly difficult. While many hedge fund strategies—though not all—gave back early gains late in 2018 as they got caught by crowded trades, we do not see this dampening appetite for uncorrelated and absolute return strategies, given these portfolio management challenges.

10 Less Appetite for Traditional Private Equity Buyout

Valuations and leverage in private equity buyout are now such that multiple expansion seems almost impossible. We expect investors to increasingly seek something different in their private asset strategies, such as the economic advantages that come from co-investments, niches such as royalty streams, and private debt managers that can position for the opportunity in stressed leveraged credit markets.

View *Solving for 2019* at www.nb.com/Solving2019

See disclosures at the end of this publication, which are an important part of this article.

Asset Matters

Private Equity and Your Portfolio

Global trends lend support to the long-term case for private equity as part of a diversified asset allocation.

ANTHONY D. TUTRONE — *Global Head of Alternatives*

Private equity has for many years been a niche area of the investment universe, dominated by institutional investors and very wealthy individuals. Today, however, we are seeing trends that are greatly increasing the prominence of the asset class and reinforcing the case for including it in long-term-oriented portfolios across all types of investors.

For many years, the universe of U.S. publicly owned companies has been shrinking. Fewer companies are choosing to list, and those that are listed have been issuing debt to finance share buybacks at unprecedented levels. The path has been quite different for private assets. As the number of public companies has declined, the number of those that are going private or staying in private hands has been steadily on the rise—from about 1,500 in the U.S. 18 years ago to roughly 7,500 today, or some 3,200 more than the number of U.S. public companies.[1]

Although the private investment universe remains a small portion of global market capitalization, private equity and debt are increasingly important in financing a broad range of companies of varying sizes across an array of sectors. Private investors historically focused on leveraged buyouts of low-growth, asset-intensive businesses at depressed valuations. Since then, the opportunity set has increased to include early, mid- and late-stage companies with varying profiles, including high-growth technology firms.

[1] Source: World Bank, World Federation of Exchanges, PitchBook, Credit Suisse. Data is as of December 31, 2017, for listed companies and March 31, 2018, for private companies (latest available).

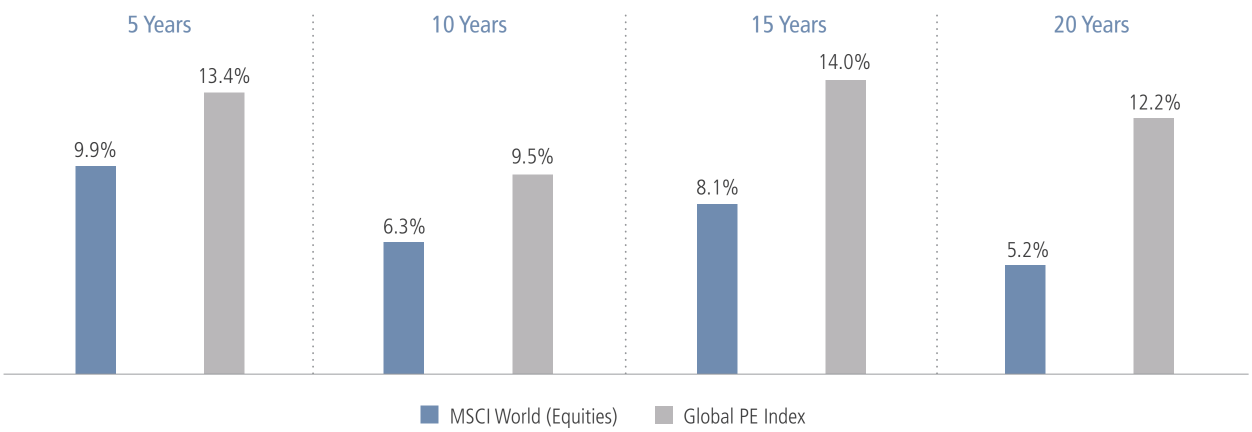
A significant chunk of the expanding private equity opportunity is coming as a result of the diminished role of banks, which are being curbed by post-financial-crisis regulation and technology. For example, direct (non-bank) mortgage lending is growing as many high-quality borrowers are unable to meet new underwriting standards for bank loans. And where banks are involved, private equity firms are increasingly arranging private debt to fill out the capital structure. Private equity firms are funding many of the new lending platforms such as crowdfunding and non-bank payment systems that are disrupting banks' longtime role.

TRADITIONAL APPEAL AND ADVANTAGES

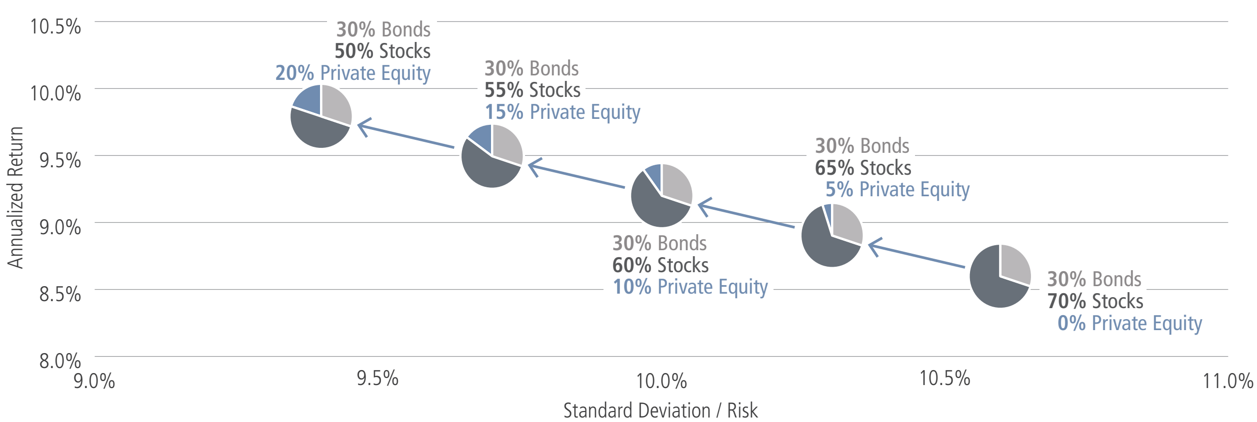
All told, the array and volume of opportunities is surging, suggesting that private equity is gradually becoming less niche and more central to portfolios. However, the mere expansion of an asset class does not justify its inclusion in the portfolios of individual investors. Private equity's appeal is more tangible than that, as the asset class has a history of outperforming traditional assets over time while providing valuable diversification, as shown by the displays below. Not only has private equity outperformed public equities over time, but the addition of private equity has had a tendency to enhance portfolio returns and reduce risk.

PRIVATE EQUITY'S APPEAL: RETURN AND DIVERSIFICATION

Annualized Performance vs. Traditional Equities



Risk and Return of Stock/Bond/Private Equity Portfolios (Past 25 Years, Ending June 30, 2018)



Source: Cambridge Associates (top); Neuberger Berman, FactSet (bottom). The top chart shows the MSCI Equity Index alongside the internal rate of return for the Global Private Equity Index (pooled return) from Cambridge Associates as of June 30, 2018, annualized over 5-, 10-, 15- and 20-year periods. Pooled return aggregates all cash flows and ending NAVs in a sample to calculate a dollar-weighted return. The bottom chart, shows blended portfolio returns over 25 years, ending June 30, 2018. It assumes quarterly rebalancing to the stated allocation (e.g., 70% bonds, 25% equities, 5% private equity. Bonds, stocks and private equity are represented by the Bloomberg Barclays U.S. Aggregate Index, S&P 500, and Cambridge Associates LLC U.S. Private Equity Index. Indices are unmanaged and not available for direct investment. **Past performance is not indicative of future results.**

What's behind these outcomes? In our view, they are driven by several key advantages inherent to private equity investments:

Information and Control

Private equity managers generally have deeper access to information and more direct and transparent governance control, and thus have the ability to create value through strategic and operational improvements.

Timing

Private equity managers often spend months sourcing and completing investments, and can choose between trade sales, sales to other private equity funds and IPOs upon exiting. The flexibility around both the timing of their entry into and exit from positions can provide for advantages over most public market managers.

Distinct Opportunities

Private companies are very different from the larger firms that can cope with and thrive on the demands of public ownership. It is much more difficult for a company that is in a changing industry or early in its growth cycle to do well in the public markets, where investors increasingly demand consistent, linear growth in earnings. Often private companies just don't have a publicly investable equivalent. In a public setting, they might be hidden from view as very small divisions of larger companies; as private holdings, their value may be apparent more readily.

Fitting Private Equity Into a Portfolio

The time horizon, lockup and different nature of opportunities have tended to generate attractive performance and lower correlation to traditional assets. Despite these benefits, however, private equity often will constitute a fairly small allocation within a diversified portfolio—for example, a sample moderate to aggressive profile might have a target allocation of approximately 10% for private equity. Moreover, it's important to consider the investor eligibility requirements, risks and characteristics of private equity in assessing whether it is appropriate for your portfolio.

There are a variety of factors to consider when exploring private equity. First, there is illiquidity. It can take time for private equity investors to identify appropriate investments, and then formulate and execute on an investment thesis. Unlike public markets, where investors can regularly buy or sell their holdings, traditional private equity has lockup periods that can last for years. (It's worth noting that the growth of the secondary market in private equity is making the asset class more liquid, potentially providing liquidity before lockups expire.)

Another factor is what's known as the "J-curve." Investments do not occur all at once; rather, cash is "called" from investors as the manager puts it to work and time is needed for the investments to generate returns. As a result, private equity funds can have negative net returns in the early years. Later, if the investments are successful, they appreciate and are realized, and the fund's net returns become positive.

High investment minimums may also make it difficult for investors to commit to the asset class, particularly steadily over time to provide for vintage year diversification. Thankfully, we are now seeing the release of lower minimum strategies that open up private equity to more individuals, but requirements remain relatively high.

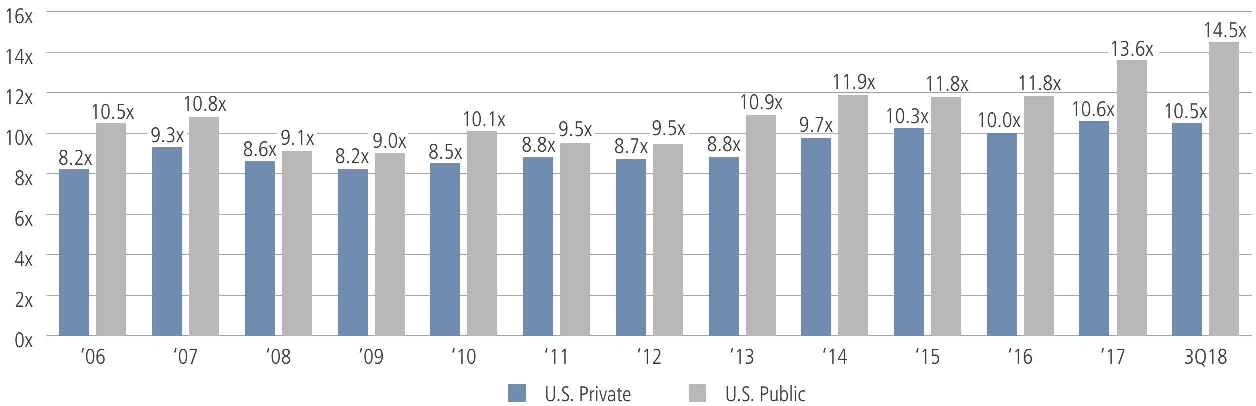
OTHER CONSIDERATIONS

Readers may wonder whether this may be an opportune time to invest in private equity given the current high-priced market environment. However, valuations remain lower than for public equities generally (see display).

OFTEN PRIVATE COMPANIES JUST DON'T HAVE A PUBLICLY INVESTABLE EQUIVALENT.

PRIVATE EQUITY RETAINS A VALUATION DISCOUNT

Enterprise Value/EBITDA



Source: S&P Leveraged Buyout Quarterly Review, S&P Capital IQ. Public multiples are for the Russell 2000 Index. EBITDA refers to earnings before taxes, depreciation and amortization over the last 12 months.

Moreover, pricing should be viewed in the context of private equity's unique qualities: the opportunity for operational/financial improvements and strategic changes facilitated by the private owner's controlling interest, a typically long-term approach, and often specialized experience that can provide competitive advantages. It stands to reason that if an investor maintains exposure to public equities, it may be appropriate to have a strategic weighting in private equity as well.

Of course, investing with a quality manager is crucial. Access to deal flow, information and resources are all things to look for in a private equity firm, allowing for informed investment decisions and selectivity, which is of particular appeal today. Experience across multiple asset classes and market cycles is also important, as well as an attractive track record both in absolute terms and relative to peers. In our view, these qualities are essential in seeking to capitalize on the potential of private equity.

PRIVATE EQUITY SECTORS

VENTURE CAPITAL: Investment in new, potentially high-growth, businesses alongside company management. Venture-capital financed companies may carry more risk than the other private equity segments due to the early stage of the business.

GROWTH CAPITAL: Typically working in partnership with a founder or entrepreneur, the private equity investor provides capital to help a company grow.

BUYOUTS: Investment in relatively mature, established companies, using a combination of debt and equity financing. This group is divided into small-, mid- and large/mega-cap buyouts.

SPECIAL SITUATIONS: Involves restructuring of companies both from a financial and operational standpoint, and may involve the purchase of distressed assets or debt.

PRIVATE EQUITY VEHICLES

PRIMARY FUND INVESTMENT: An investor makes a commitment to a private equity fund that, via a general partner, makes investments in companies. This provides diversification of underlying holdings across the private equity portfolio.

FUND OF FUNDS: In this case, an investor makes a commitment to a vehicle or a fund that in turn makes commitments to individual private equity funds. These commitments are typically quite diverse, with investments across managers and portfolio companies.

SECONDARY FUND: In a secondary fund, the manager buys more mature or seasoned limited partnership stakes from other limited partners, often at a discount.

CO-INVESTMENT: The investor makes an equity co-investment in an operating company, alongside the private equity manager, in a leveraged buyout, recapitalization, growth or venture capital transaction.

PRIVATE DEBT: Investment in the debt of private companies that provide fixed income returns with an illiquidity premium.

Sector Spotlight

Moving Toward a 'Cashless' World

As electronic payments gain traction, what does that mean for cash, society—and investors?

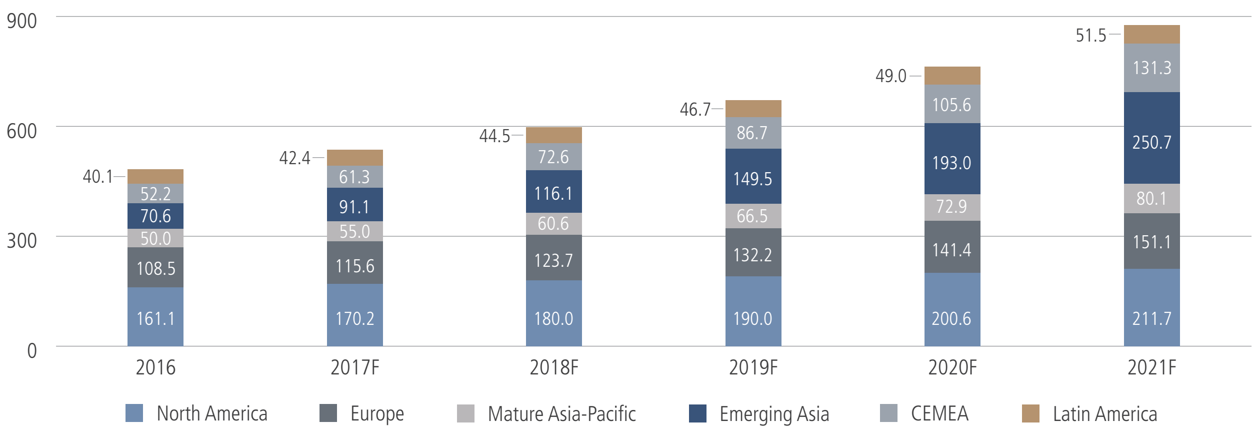
SCOTT WOODCOCK, CFA, CHARLES MURPHY, CFA, AND ALAN TSANG, CFA — *Research Analysts, Global Equity Research Team*

Lunch in Manhattan sandwich shops used to be a cash-and-carry affair, but changes are in the works. Many establishments prefer that you swipe your card or wave your phone. A select few are turning down cash entirely due to security concerns or to keep the lines moving. Over in Shanghai, vendors in dress shops, fruit markets and newsstands will often do a double-take if you don't use one of the two popular payment apps.

Welcome to a brave new world of consumer commerce, where electronic payment is becoming increasingly common, at smaller and smaller denominations, and in many cases completely replacing cash as the tender of choice. How have we arrived here, and what are the potential ramifications both generally and for investors? We take a quick tour in this article.

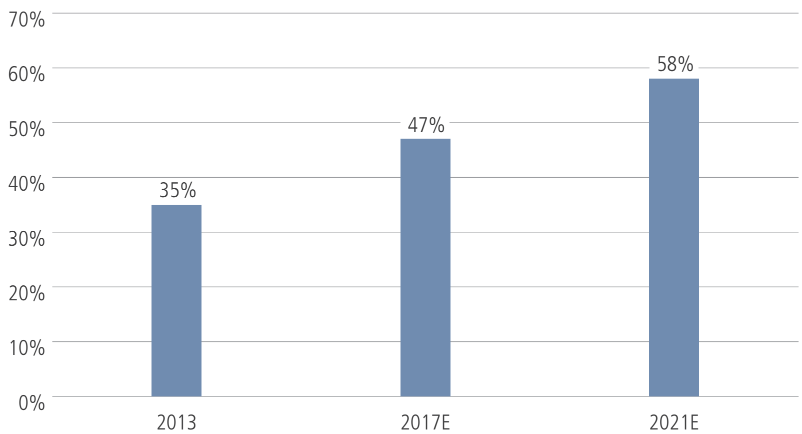
CASHLESS TREND IS GROWING, PARTICULARLY IN EMERGING ASIA

Number of Non-Cash Transactions Worldwide (Billions)



Source: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; countries' central bank annual reports, 2017. This material includes estimates, outlooks, projections and other "forward-looking statements." Due to a variety of factors, actual events may differ significantly from those presented.

ELECTRONIC PAYMENTS TAKING MARKET SHARE
Global Electronic Payments (% of Total Value)



Source: WorldPay. This material includes estimates, outlooks, projections and other "forward-looking statements." Due to a variety of factors, actual events may differ significantly from those presented.

ALTHOUGH THE PERCENTAGE OF TRANSACTIONS IN CASH HAS DIPPED OVER THE LAST DECADE, ITS USE REMAINS STUBBORNLY PERSISTENT.

DEVELOPED MARKETS: MANY WAYS TO PAY

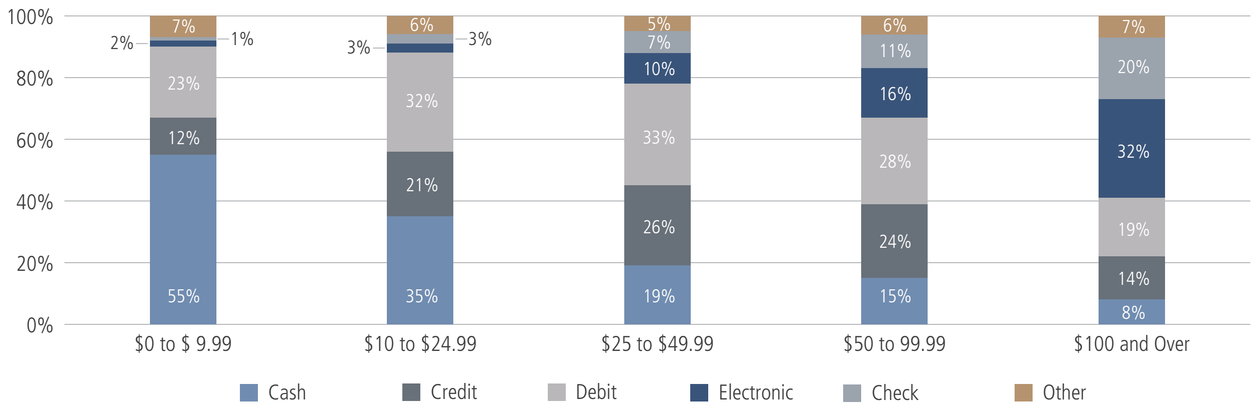
The story of cashless adoption has varied widely across regions and countries. Sweden is way ahead of the cashless curve, Germany toward the back and the U.S. at about the middle.

American consumers have used electronic payments for decades, starting with store cards, and then charge cards like American Express, before moving to cards providing revolving credit, initially through the MasterCard and Visa networks that remain ubiquitous today. The 1990s saw the start of electronic banking, and the explosion of the Internet moved web payments from novelty to necessity, particularly as Amazon and other aggressive online vendors undercut brick-and-mortar competitors. The introduction of debit cards was a huge step forward, as it made electronic transfers available to anyone with a bank account balance. Then, of course, came smartphones, and the introduction of Apple Pay and a host of other payment and retail apps, which continue to add new ways to transact.

There have been starts and stops along the way. As a recent example, despite wide acceptance at stores, U.S. consumers just haven't come to use smartphone payment apps that often. In our view, this is likely because the apps don't provide a real improvement in the user experience. Theoretically, passing your phone above a reader should be quicker than swiping or waiting for approval for a card chip. But people often stumble in getting apps to work or to access dodgy readers. Whether to avoid embarrassment or hassle, or simply because of inertia, they don't mind just using a regular credit card at the checkout counter.

More broadly, although the percentage of transactions in cash has dipped over the last decade, its use remains stubbornly persistent, and the dollar value has actually been increasing. In part, this is due to saturation. Electronic transactions were already common before the new wave of technology, and current payment infrastructure makes it more difficult to get people to change their habits. However, another key issue supporting cash is the challenge of smaller payments. Most people don't think twice about using a credit card to buy a $500 television, but they balk when it comes to a Happy Meal or their dry cleaning. That will likely change over time, as card issuers and networks push their use at more points of sale and as merchants stop flinching at electronic payment for smaller items, making consumers more comfortable in the process.

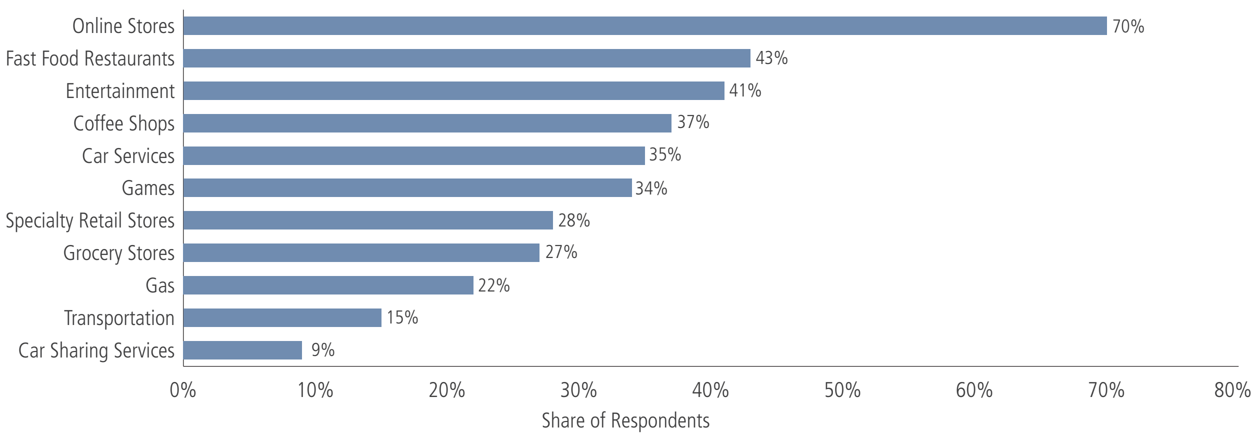
CASH STILL DOMINATES SMALL PAYMENTS
Payment Method by Purchase Amount (U.S.)



Source: Federal Reserve, November 2017. Data as of 2016.

A key turning point could be the contactless card. Traditional swiping cards are convenient but vulnerable to identity theft, as the information on magnetic strips is easily duplicated and sold. Chip-equipped cards are more secure, but tortoise-like, as information is sent from the merchant's reader to the payment processor and then verified once again after a return trip to the reader. However, the new breed of contactless and tapping cards has the same level of security as a chip but they tend to be much faster, and their successes for specific purposes like transportation in Australia and the U.K. are reassuring. Importantly, JPMorgan Chase recently announced that it would soon begin issuing contactless cards, and other banks and payment networks are looking to push these products this year as well. Although this may steal some thunder from mobile apps, it does point to a continued decline in cash usage.

HOW DO MOBILE SHOPPERS SPEND THEIR MONEY?



Source: Statista, based on December 2017 survey. Participants were asked what types of apps they had used in the past three months to pay for goods or services via mobile phone.

As noted, the U.S. is somewhere in the middle in terms of electronic payment adoption. Far at the front is Sweden where cash represents just 1% of the economy, compared to 8% in the U.S. and 10% in Europe overall, and where just 20% of Sweden's consumer transactions are in cash, compared to 80% globally.[1] The country's small, tech-oriented population has long been accustomed to electronic payroll and heavily uses credit cards, while a bank-sponsored mobile payment app called Swish, which facilitates electronic payments between accounts, has become hugely popular. Now, many bank branches don't hold any cash, and about half of merchants say they'll probably stop accepting it by 2025.[2]

In contrast, Germans have long had an affinity for bills and coins, carrying an average of €109 in their wallets compared to €69 in Italy and €32 in France; 80% of transactions in Germany are still handled in cash.[3] This may in part be a function of national pride within Europe's economic powerhouse, or suspicion of electronic transfers. Japan has also been a laggard in adoption, with more than four times the bank notes and coins per resident than nearby South Korea, due not only to tradition but low crime rates, which make holders of cash feel less vulnerable.[4]

IN EMERGING MARKETS, THE STORY HAS BEEN LESS ABOUT CONVERTING CUSTOMERS THAN CREATING WHOLE NEW MARKETS WHERE THERE WAS LITTLE OR NO EXISTING INFRASTRUCTURE.

LEAPFROGGING IN EMERGING MARKETS

In emerging markets, the story has been less about converting customers than creating whole new markets where there was little or no existing infrastructure. In China, commercial banks were historically reluctant to serve retail customers, debt was frowned upon and credit cards were virtually nonexistent. So, when the smartphone craze led to new payment methods, the door was left wide open to innovation. As a result, China has moved from an almost exclusively cash-based economy 15 years ago to one where roughly 60% of transactions (by value) are handled via mobile payments.[5]

This has coincided with intense motivation to achieve broader e-commerce goals. Faced with antiquated payment methods, Chinese e-commerce giant Alibaba created AliPay in 2004 as an escrow system for its dominant consumer-to-consumer digital platform. In recent years, this has morphed into a mobile payment app where customers scan a square-shaped QR code to instantly transfer funds to any vendor with an AliPay account. Then there's WeChat Pay, which was released as an offshoot of Tencent's popular social network, WeChat, and immediately gained a wide user base. Today, it has some 820 million monthly users, while Alibaba has more than 900 million.[6]

[1] Source: Jenkins, Patrick, "'We Don't Take Cash': Is This the Future of Money?", *Financial Times,* May 10, 2018.
[2] Source: Alderman, Liz, "Sweden's Push to Get Rid of Cash Has Some Saying, 'Not So Fast'," *The New York Times,* November 17, 2018. Sweden has seen a mini-backlash against going completely cashless, with some lawmakers seeking to force the country's largest banks to offer cash withdrawals at all their branches. Opposition is apparent in other countries as well. For example, a New York City legislator has proposed requiring restaurants to accept cash to avoid discrimination against the poor.
[3] Source: European Central Bank, November 2017.
[4] Source: Bloomberg Markets, February 6, 2018.
[5] Source: Kapronasia, Euromonitor, National Development Council, World Bank; March 2017.
[6] Source: Alibaba, as of November 2018, and Ipsos, as of July 2018.

CASHLESS CLARITY: TERMS TO KNOW

Charge Card: Purchases on credit, which must be paid off at the end of each billing period.

Credit Card: Allows consumers to maintain a balance, at the cost of a typically high interest rate.

Magnetic Strip Card: Card sends your account information to the processor for approval; security risk is contributing to phase-out.

Chip-Embedded Card: After the processor receives your card's information, it sends a signal to confirm that your card is legitimate. Annoyingly slow, but secure.

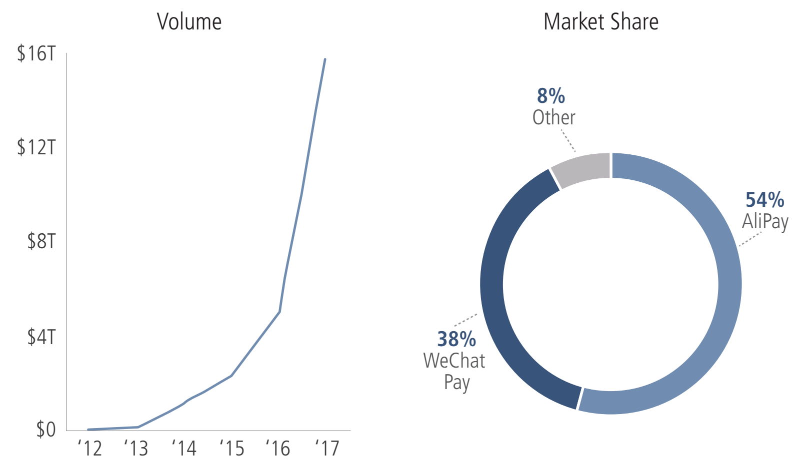
SMS Payment: Payment via text message from a mobile phone. The text goes to the payment provider, which clears the transaction.

Micropayment: Electronic payment involving a small dollar amount (under $12, according to Paypal). These transactions are often handled via SMS.

QR Code: The square pattern that Apple Pay and other payment apps use to execute transactions. Common, but underused.

Contactless Card: A chip card that you tap on or hold over a radio receiver at the counter. Quick, secure and card issuers' answer to QR technology.

CHINA'S MOBILE PAYMENT EXPLOSION



Source: Hillhouse Capital (left), as of December 2017, Analysys (right), as of June 2018.

Another prominent example of leapfrogging in underserved markets is M-Pesa, a mobile-phone based money transfer, banking and microfinancing service that was launched by Vodafone in Kenya in 2007. ("Pesa" is Swahili for money.) Users make deposits in accounts on their cell phones, and then send payments to each other via secure text messages, which can then be redeemed in cash. In a region with limited credit or banking services, M-Pesa has grown quickly. Today, about 40% of the Kenyan population has accounts, and M-Pesa serves some 30 million customers in 10 countries in Africa, the Middle East and Eastern Europe.[7]

Although circumstances vary across emerging markets, the growth of cashless transactions is also being aided by younger populations, who may be more willing to try new technologies, and by a governmental interest in curbing corruption and bringing the black market economy onto tax rolls. In 2016, India famously banned the use of its two largest cash denominations in a move that generated short-term chaos before the vast majority of the bills found their way into banks. In Korea, bribery has been a major concern, so the government has been actively encouraging adoption of mobile payments. The stories vary depending on country, but the trends of government interest, demographics and demand are common to many.

INVESTMENT CONSIDERATIONS

Although adoption has been uneven, it's likely that the cashless trend will continue, with real implications for investors. In our view, for example, the move to digital payment continues to be a tailwind for leading payment processors in developed markets. Companies that supply successful payment apps, whether through hardware or a larger ecosystem, are also likely to do well, although their payment operations may be a modest component of overall earnings. In some cases, payment businesses may be in place to achieve broader business goals like data mining. For example, if Amazon captures more information through its payment systems, that helps connect the dots in building customer profiles and narrow-casted advertising. Traditional banks may be vulnerable due to broader changes in regulation and advancing technology, but many are entering alliances or absorbing non-traditional players to deal with a changing payment environment, and may actually benefit from cost savings tied to reduced

[7] Source: Vodafone.com, as of December 2016.

infrastructure needs. Across the board, security is an important issue that will provide business for fast-moving players. There are some potential losers, naturally. Traditional cash money-transfer businesses face declining margins due to mobile competition, while ATM manufacturers may struggle as banks delay upgrades to pay for higher priorities.

At this point, it is unclear whether most economies will ever become truly cashless. Bills and coins remain a highly convenient means of exchange, whose value isn't reliant on a computer or algorithm, isn't vulnerable to hacking and can't be undermined by deflation or negative interest rates. People are creatures of habit, and the habit of using cash for the very smallest of purchases may be difficult to break. Still, to us the move toward cashless transactions is a meaningful thematic trend, particularly in emerging markets, that should provide investment opportunities for years to come. The trick, as always, is to identify the potential beneficiaries, whether direct or indirect, as well as those who could be run over or rendered obsolete in changing times.

THE MOVE TOWARD CASHLESS TRANSACTIONS IS A MEANINGFUL THEMATIC TREND, PARTICULARLY IN EMERGING MARKETS, THAT SHOULD PROVIDE INVESTMENT OPPORTUNITIES FOR YEARS TO COME

DEBATING CASHLESS' MERITS

As we move toward a cashless (or semi-cashless) world, important social issues are coming into focus:

WHAT ABOUT THE VULNERABLE? The poor, elderly and disabled depend disproportionately on the use of cash and may not have the bank accounts or smartphones needed for electronic purchases. Already, some stores and restaurants are turning down cash, which critics argue further stigmatizes disadvantaged groups. A counterargument is that new services can reach these groups, and that in less-developed markets, mobile payment is actually benefiting many who previously could not access banks at all.

IS PRIVACY OUT THE WINDOW? Most of us have already acquiesced to constant monitoring via web searches, cell phones, discount programs and credit card purchases. Expansion of electronic payment is just continuing down the same road, albeit with increased specificity. For the deeply concerned, there are time-consuming ways to limit information-sharing. Potentially more impactful is the growing interest in regulating privacy overall, which could eventually result in more stringent safeguards for users.

WHAT ABOUT SECURITY? Making digital commerce secure is a constant struggle, and one that's not limited to mobile apps or text-based systems. Late last year, Marriott announced that 500 million customers' data had been compromised, and this followed other notorious examples like the Equifax breach. In countries where there are more electronic payments, there has also been a commensurate increase in digital fraud. On the upside, the lack of cash tends to reduce vulnerability to ordinary theft. Long story short, this issue won't go away.

IS 'CASHLESS' A NET POSITIVE OR NEGATIVE? The cashless trend should make transactions more efficient, and in many countries is providing value to previously underserved populations. Although replacing bills with electronic signals is probably a neutral in narrow economic terms, it is also facilitating digital commerce, which is a big potential driver of global growth. All told, the market will likely reach equilibrium eventually—if electronic commerce leaves out certain groups or doesn't work in certain contexts, then demand should carve out a portion of the economy where hard currency remains in place.

See disclosures at the end of this publication, which are an important part of this article.

Trust Company Corner

Realizing Your Charitable Vision

Careful strategy and common sense can help ensure that your charitable dollars will be deployed the way you want.

ELIZABETH M. SOMMER — *Chief Fiduciary Officer, Head of Personal Trust, New York, Neuberger Berman Trust Company*

For many individuals, charitable giving is an ongoing part of life. For others, it's a future goal tied to financial success and building a legacy. Approaches to giving vary considerably, as they are aligned with personal values, resources and practical issues. However, what all types of philanthropy can benefit from is a structured approach, thorough due diligence and attention to the process of giving, both to capitalize on tax benefits and to assure that the gifts are used effectively. While many articles dwell on tax savings, we thought it would be beneficial to focus here on some ways to get the most impact from your charitable dollars.

BECOMING COMFORTABLE WITH A CHARITY

Whether for lifetime gifts or bequests at death, via direct or more structured approaches, a key first step in any charitable giving program should be due diligence. Assuming you have a charity in mind, you should look to answer some basic questions: How efficient are its operations? How large a portion of donations go to good works, as opposed to fundraising expenses or overhead? A rule of thumb is that no more than 25% of revenues should be devoted to administration, but this really depends on the type of charity involved. For example, a museum will likely be more costly to run than a soup kitchen. Also, how effective is the charity at investing its own assets? *The Wall Street Journal* recently reported that the average endowment fund actually underperformed Treasuries from 2009 – 2016.[1] Likely it will make you feel better about giving if you know the organization is a successful steward of its assets. Other questions worth addressing concern the makeup of the board, the charity's overall financial condition, and whether it has any history of controversy. Getting this information should be relatively straightforward, through the use of IRS Form 990, which charities above a certain size must file with the federal government, as well as charitable databases. Faith-based organizations don't have the same disclosure requirements, but should be willing to provide ample information if asked. If you have more substantial gifts in mind, that should increase your access to organizations for more detailed vetting. (See Resources for Due Diligence on page 30 for useful websites.)

Even if you are comfortable with the results of your due diligence, it may make sense to take things slowly in terms of financial commitments. You might start with smaller regular gifts, for example contributing to a scholarship fund or other need, monitoring the progress of the organization, and assessing how you feel about the experience over time. If interested, you can look to develop more contacts within the organization, and perhaps become involved on a personal level.

PUTTING CONDITIONS/LIMITATIONS ON YOUR GIFTS

Assuming you have all the information you need and are comfortable with an organization, you can simply make a general donation, or you may be able to specify how you would like the funds to be used. In some cases, an organization (like a university or medical center) might have multiple gifting options: to the general fund, a building fund, scholarships or other needs.

Let's assume, however, that you have very specific interests within the umbrella of the group's mission, which are not covered by the more general categories provided by the fundraising office. What do you do then? Depending on the organization, it may be possible to attach strings to gifts—to direct funds to education of underprivileged youth, to the study of autism or to the construction of low income housing, to name some examples. And although charities typically prefer unconditional gifts, they often enter into giving agreements with some donors outlining the terms. These terms may include the potential use of the funds, performance

[1] Zweig, Jason, "Why Charities Have Been Such Bad Investors," *The Wall Street Journal,* November 28, 2018.

RESOURCES FOR DUE DILIGENCE

The BBB Wise Giving Alliance[2] provides free analysis of national charities, evaluating them against its comprehensive Standards for Charity Accountability.

Charity Navigator[3] rates more than 5,000 nonprofits on financial efficiency.

GuideStar[4] provides access to charities' tax filings as well as information on faith-based nonprofits, foundations and others.

[2] http://www.give.org/about-bbb-wga/more-about-us/.

[3] https://www.charitynavigator.org/.

[4] https://www.guidestar.org/Home.aspx.

milestones and, importantly, what happens if the gift becomes irrelevant. For example, if your donation was made for the creation of a computer science chair at your college, but the project was later abandoned, what happens to your donation? Various court cases have dealt with situations like this, and the best way to avoid any misunderstanding or conflict is to be explicit and specific in your donation documents: for example, calling for the redirection of the money to another specific need, to the general fund, or for a return of the assets to you as the donor. Retaining a lawyer to work with the institution on drafting the documentation makes a lot of sense.

Keep in mind that if you get too specific in your conditions, the charity may choose not to accept the gift, whether because of constraints on flexibility, deviation from its core mission, administrative costs or negative social implications. Also, you need to think about whether you want to hamstring the organization if it faces more pressing needs for your assets than the original designation. Finally, conditions can have a tax impact as well. For example, if the gift can revert back to you in some circumstances, it may not be considered an immediate, charitable gift for which an income tax deduction is available.

TAKING MORE STRUCTURED APPROACHES

In some cases, it may make sense to look beyond direct giving to more structured approaches. For those with substantial assets (upwards of $3 million, $5 million or $10 million, depending on whom you ask), a **private foundation** can serve as an effective vehicle for philanthropic efforts. In the case of donations to a public charity, you may have limited control over how your money is deployed or managed (aside from the agreements noted above). When you establish a private foundation, you define its strategic mission, decide who will work with you (friends, family, staff) and ultimately dictate (subject to self-dealing rules) how money is distributed. Because the foundation is an ongoing concern, you can parcel out funding gradually to favored charities and potentially influence recipients to be more efficient in their operations or savvy about their investments. Moreover, you can assure that the foundation's assets are managed effectively, potentially increasing the resources available for your charitable mission. Additionally, if you prefer, you can name the foundation after your family to help assure recognition for your (and their) continued acts of giving.

Keep in mind, however, that creating and maintaining a private foundation is a major undertaking. The initial costs include legal fees to establish the entity—whether as a not-for-profit corporation or a trust—and filings to achieve tax-exempt status. In addition, you should anticipate a variety of administrative requirements over time. Assuming you create a non-operating foundation (which only makes donations, in contrast to an operating foundation that runs its own programs), it must give away at least 5% of its net investment assets every year to qualifying charities. It also must submit an annual public filing to the IRS that includes fiscal data, board member or trustee names and a list of annual grants. Finally, your income tax-deductible donations to the foundation are capped at a lower percentage of annual income than donations to a public charity (although you are able to carry forward the excess to the next five tax years).

A **donor-advised fund** (DAF) is a simpler, more accessible way to exert some influence over your gifts, albeit with less flexibility than a foundation. In this case, you make an income tax-deductible contribution to the DAF, which creates a managed account on your behalf that is invested based on the options you choose (e.g., conservative, aggressive). You, or those you designate, make grant recommendations to the DAF for distribution to the public charities you wish to support. Once the funds are in place, you can take your time to decide which charities you'd like to support. The catch is that the DAF has final say on whether to honor your grant-making recommendations (though it's rare for DAFs to reject donor choices). Contribution minimums for DAFs are low (similar to those of many mutual funds), as are the minimum grants to charities. DAFs provide a systematic framework for giving over time, which can allow you to consider carefully your choice of grantees and make changes depending on your evolving interests or the performance of the charities you choose.

BUILDING CHARITY INTO BROADER PLANNING

While this article has focused at a high level on due diligence and structuring your charitable efforts, it's crucial to keep in mind the financial benefits of a well-constructed approach. For example, with changes to income tax deduction rules and thresholds, it may make sense for some taxpayers to combine multiple years' gifts into one tax year (something that can be accomplished by donating to a DAF or a private foundation). The use of appreciated public securities as gifts can be a way to avoid taxation on built-in capital gains. Charitable remainder trusts, which we haven't discussed here, are a time-tested vehicle to provide a lifetime (or term of years) payout stream to the donor (or other beneficiary) and a current income tax deduction on the remainder interest deemed to be earmarked for charity upon the creation and funding of the trust. Charitable lead trusts reverse this equation, with annual payments going to the charity and the remainder interest passing back to the donor or to other beneficiaries upon the termination of the trust.[5] In short, the qualitative benefits of philanthropy (social impact, satisfaction and teamwork with family members, to name a few) can be combined with sensible planning techniques to create a winning scenario for you and the charities you seek to benefit.

HYPOTHETICAL

A FOUNDATION FOR CHARITABLE GIVING

Philanthropy can take multiple forms, and ideally will be designed to tightly fit the donor's personal situation and charitable goals. Although approaches vary, a private foundation can be a particularly effective way to structure a long-term giving program. Here is a hypothetical example of how one might work:

Tom is 70, retired and unmarried, with assets sufficient for his personal needs. He has several causes that he feels passionate about and wants to support after death: to help runaways get a new start, enhance inner city school education and encourage the inclusion of the developmentally disabled in the workforce. In all cases, he wants to achieve tangible and repeatable results, as well as effective administration of his gifts.

Over multiple conversations with his wealth advisor, they explore the scope of his interests and the resources he wants to devote to them. Based on their discussions, the wealth advisor arranges a meeting with the client, his estate planning attorney and a trust company firm (such as the Neuberger Berman Trust Company) to consider possible structures for Tom's charitable efforts. Tom decides to create a private foundation, to take effect at his death, and avail him of the estate tax deduction for this gift to charity. The estate planning attorney drafts the documents in consultation with the trust company. Eventually, key participants in running the foundation (structured as a trust) will include the wealth advisor as coordinator, the trust company as trustee and Tom's family members and friends, who will serve as members of the distribution committee for potential grants.

Because portfolio management can also be the responsibility of the trust company as discretionary trustee, Tom can worry less about the investment acumen of the ultimate recipients. With a committee devoted to performing due diligence on charitable recipients and monitoring their progress, the foundation will be able to encourage best practices and have the flexibility to change course should any of the charities prove ineffective or subject to "mission drift." As mandated by tax law, the foundation (a non-operating foundation) will distribute annually at least 5% of its net investment assets to deserving nonprofits.

Note that if Tom felt he would definitely not need the funds in future years, he might choose to establish and fund the private foundation currently. Then, he would be able to take an immediate income tax deduction upon the funding, and participate himself in the work of the foundation. However, with the testamentary transfer, his initial legwork in identifying potential recipients when thinking through the mission statement for his future foundation can provide valuable insights when the charitable program eventually begins upon his death.

[5] CLTs can be structured as grantor or non-grantor trusts. If a grantor trust, the creator receives a charitable income tax deduction upon the funding of the trust but then is responsible for paying all the income taxes on the trust. In a non-grantor trust, the payments to charity are deductible by the trust but the creator of the CLT gets no deduction.

Highlights 1Q19

FROM THE ASSET ALLOCATION COMMITTEE

U.S. EQUITIES: We upgraded small, mid- and large-cap equities from neutral to overweight outlooks over the next 12 months. U.S. economic growth is likely to converge with that of non-U.S. markets, while we believe U.S. earnings growth will slow into the single digits this year. Still, fourth-quarter declines brought U.S. equity valuations to the lower end of their historical range, creating potential for multiple expansion.

U.S. FIXED INCOME: Although maintaining an underweight view of government bonds, we upgraded some investment grade credit and securitized products. In our view, shorter to medium maturities show relative potential, while credit selection has become more important with wider credit spreads. Treasury Inflation Protected Securities (TIPS) remain an overweight given rising wages and upside potential in consumer prices. Overall, we believe the Fed's likely pause in rate hikes should lessen pressure on bond markets.

NON-U.S. EQUITIES: We reaffirmed our bias toward global stocks, moving from neutral to overweight in developed markets and keeping an overweight in emerging markets. Investors are underestimating China's ability to stabilize its growth trajectory and thus support the softening global economy, and monetary policies remain accommodative. We favor emerging markets and Japan, but are somewhat cautious on Europe given political challenges.

NON-U.S. FIXED INCOME: Despite short-term volatility and worries over trade, we believe emerging market debt valuations remain attractive in light of last summer's sell-off. Developed market fixed income remains an underweight as the ECB and Bank of Japan are lagging the U.S. in tightening monetary policy.

ALTERNATIVES: We moved private equity from overweight to neutral in light of extended buyout valuations. However, the asset class remains attractive in our view versus public markets; we particularly favor higher quality businesses in the buyout sector and opportunities in niche areas and private debt markets. Low-volatility and directional hedge funds remain committee overweights.

COMMODITIES: We upgraded commodities to an overweight view in light of OPEC's agreement to curb output while recognizing the risk posed by short-term supply uncertainty, U.S. production and an uncertain global economy. Poor performance in industrial metals appears based on trade-related sentiment rather than a lack of demand; an easing of tensions could prove supportive to these metals and to key agricultural commodities.

All views are over the next 12 months. See disclosures at the end of this publication, which include additional information regarding the Asset Allocation Committee and the views expressed.

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