Webinar | July 20, 2020

Setting Expectations for the Capital Markets in a Post-COVID Environment
Logistics

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- Webinar replay and slides will be posted at https://www.nirsonline.org/events.
Speakers

Dan Doonan
Executive Director
National Institute on Retirement Security

James Callahan
President
Callan

Jay Kloepfer
Executive Vice President
Director of Capital Market Research
Callan
Agenda

● Current market conditions

● Why does Callan create capital market assumptions?

● 2020 assumptions – process and current base case
  – Economic outlook
  – Asset class outlook
    – Equity
    – Fixed income
    – Alternative investments
  – Forecast parameters
    – Returns
    – Risk
    – Correlation

● Where do we go from here? Time horizon and strategic planning versus tactics
Current Market Conditions
Equity Market Sees a V-Shaped Recovery

A ‘Global Hurricane’ in the form of a pandemic

The sharpest and fastest equity market decline ever: 16 trading days to reach bear market; -33% after just 23 days

S&P 500 Index Cumulative Returns
Market Peak-to-Trough for Recent Corrections vs. Current Path of COVID-19 Correction Through 7/10/20

Trading Days From Market Peak

- Day 1
- Day 2
- Day 3
- Day 4
- Day 5
- Day 6
- Day 7
- Day 8
- Day 9
- Day 10
- Day 11
- Day 12
- Day 13
- Day 14
- Day 15
- Day 16
- Day 17
- Day 18
- Day 19
- Day 20
- Day 21
- Day 22
- Day 23
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- Day 46
- Day 47
- Day 48
- Day 49
- Day 50
- Day 51
- Day 52

- Tech Bubble (Sep 00 - Oct 02)
- GFC (Oct 07 - Mar 09)
- COVID-19 (Feb 20 to Current)
Impact on the Financial Markets

Equities

- Over the longer term the S&P 500 has experienced far more dramatic declines
  - The market continues to recover and is now only down 6% from its February 19 record high
  - Fall from the Tech Bubble was -49%
  - Downdraft during the Global Financial Crisis was -57%

- Forward P/E is 22.2
  - Not as high as at the peak of the Tech Bubble but measurably higher than at the beginning of the Global Financial Crisis

Source: Source: Compustat, FactSet, Federal Reserve, Standard & Poor’s, J.P. Morgan Asset Management
Swift Recovery in the Stock Market – Did Investors Get Ahead of Themselves?

Stock market is not the economy

As of July 17 – US stock market recouped its loss year-to-date. How can that be?

● Supreme confidence in efficacy of monetary and fiscal policy
  - Zero interest rates, the array of Fed program support, and fiscal stimulus, both here and around the globe, provide strong support for equity returns
  - Imbalances between performance of growth and value remain
  - Non-U.S. stocks are still down year-to-date
    - Developed markets: -7.1%
    - Emerging markets: -3.0%
    - ACWI ex-US: -6.1%

● Investment grade bonds generated strong performance as rates were slashed
  - Credit took a hit in March, with spreads widening and liquidity drying up
    - Liquidity and confidence returned in April, credit now generating positive year-to-date returns through mid July

● Below-investment grade (high yield) took a bigger hit in March, still down -1.8% year-to-date

● Real estate, private equity data lag
  - Real estate will suffer drop in income, as shuttered companies struggle to pay rent, vacancies rise
  - Exacerbate existing trends driving property type uses – office, retail in particular

● Names and sectors driving the stock market have not seen the revenue declines and layoffs that have decimated transportation, airlines, retail, consumer services and durable goods
  - Apple, Alphabet (Google), Microsoft, Facebook, Amazon are up 35% in Q2, and made up 30% of the S&P 500 return, even though they make up 20% of market cap
Broad Recovery Since March, But Concentrated Performance Year-to-Date

S&P 500 suffered a 34% peak-to-trough drawdown through March 23, but has since rallied 45%, leaving it up 1% for the year.

Growth sectors such as Information Technology have significantly outperformed year-to-date as low interest rates and a scarcity of growth has increased the premium for these stocks. Traditional cyclical sectors such as Financials, Energy and Industrials are lagging.

All sectors have generated sizable returns since the March trough in a broader based market rally.

Top five stock are up 35% y-t-d, rest of the S&P 500 are down about 5%.

Source: Goldman Sachs Investment Strategy Group; Bloomberg
Equity Market Prospects

US Equity

- Stock market appears highly valued even given its forward-looking nature
- Current forward P/E is over 21
  - 5-year average is under 17
  - 10-year average is just over 15
  - Suggests markets are looking at earnings beyond a one-year timeframe

Source: Standard & Poor’s, FactSet Earnings Insight,
# Callan Periodic Table of Investment Returns

<table>
<thead>
<tr>
<th>Annual Returns</th>
<th>Monthly Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014</strong></td>
<td><strong>2015</strong></td>
</tr>
<tr>
<td><strong>Real Estate</strong></td>
<td><strong>Large Cap Equity</strong></td>
</tr>
<tr>
<td>15.02%</td>
<td>1.38%</td>
</tr>
<tr>
<td>Large Cap Equity</td>
<td>U.S. Fixed Income</td>
</tr>
<tr>
<td><strong>13.69%</strong></td>
<td><strong>5.97%</strong></td>
</tr>
<tr>
<td>U.S. Fixed Income</td>
<td>Real Estate</td>
</tr>
<tr>
<td><strong>5.97%</strong></td>
<td><strong>4.89%</strong></td>
</tr>
<tr>
<td>Small Cap Equity</td>
<td>Dev ex-U.S. Equity</td>
</tr>
<tr>
<td><strong>2.45%</strong></td>
<td><strong>2.45%</strong></td>
</tr>
<tr>
<td>High Yield</td>
<td>Small Cap Equity</td>
</tr>
<tr>
<td><strong>-2.19%</strong></td>
<td><strong>-4.47%</strong></td>
</tr>
<tr>
<td>Emerging Market Equity</td>
<td>High Yield</td>
</tr>
<tr>
<td><strong>-3.08%</strong></td>
<td><strong>-6.02%</strong></td>
</tr>
<tr>
<td><strong>-4.32%</strong></td>
<td><strong>-14.92%</strong></td>
</tr>
</tbody>
</table>

Process Overview
Why Make Capital Market Projections?

Guiding objectives and process

Cornerstone of a prudent process is a long-term strategic investment plan

● Capital market projections are key elements — set reasonable return and risk expectations for the appropriate time horizon

● Projections represent our best thinking regarding the long-term (10-year) outlook, recognizing our median projections represent the midpoint of a range, rather than a specific number

● Develop results that are readily defensible both for individual asset classes and for total portfolios

● Be conscious of the level of change suggested in strategic allocations for long-term investors: DB plan sponsors, foundations, endowments, trusts, DC participants, families and individuals

● Reflect common sense and recent market developments, within reason

Callan’s forecasts are informed by current market conditions, but are not built directly from them

● Balance recent, immediate performance and valuation against long-term equilibrium expectations
How are Capital Market Projections Constructed?

Guiding objectives and process

Underlying beliefs guide the development of the projections:

- An initial bias toward long-run averages
- A conservative bias
- An awareness of risk premiums
- A presumption that markets are ultimately clear and rational

Reflect our beliefs that long-term equilibrium relationships between the capital markets and lasting trends in global economic growth are key drivers to setting capital market expectations.

Long-term compensated risk premiums represent “beta”—exposure to each broad market, whether traditional or “exotic,” with limited dependence on successful realization of alpha.

The projection process is built around several key building blocks:

- Advanced modeling at the individual asset class level (e.g., a detailed bond model, an equity model)
- A path for interest rates and inflation
- A cohesive economic outlook
- A framework that encompasses Callan beliefs about the long-term operation and efficiencies of the capital markets
How are Capital Market Projections Constructed?

Projections are 10-year forward-looking, representing a medium to long-term planning horizon:
- Differs from the actuarial assumptions, which tend to reflect longer-term horizons of 30-40 years

Projections consist of return and two measures that contribute to portfolio volatility: standard deviation and correlation

Cover most broad asset classes and inflation
- Broad U.S. equity
  - Large cap
  - Small/mid cap
- Non-U.S. equity
  - Developed markets
  - Emerging markets
- U.S. fixed income
  - Short duration
  - Broad market
  - TIPS
  - High yield
  - Long duration
- Non-U.S. fixed income
- Real estate and other real assets
- Alternative investments
- Cash
- Inflation
How Does the Process Work?

Start in summer, release assumptions at the beginning of the new year

● Data, thesis, and goals
  - Has our thesis changed?
  - Purpose of the assumptions: long-term strategic planning
    - Impact of changes to assumptions on investor behavior
    - What has changed in the capital markets in one year to warrant revision to long-term expectations?

● Agreement on inflation, path to future interest rates, targets for segments of the fixed income market
  - Bond model to test scenarios and develop range of expectations

● Equity: real returns, risk premia, relation to fixed income expectations, change in valuation (if compelling)
  - Model to incorporate income, appreciation, any valuation change

● Set path for 2020 – 2029

● Test and tune assumptions across range of reasonable asset mixes
  - Incorporate volatility to examine potential breadth of outcomes

● Would we change our 10-year assumptions during the course of the year?
Economic Dislocation and the Outlook
The Stock Market is Not the Economy

Economic Growth Seriously Impaired in Q2

- US Purchasing Managers' Index (US PMI) provides a good proxy for future GDP
- Initial decline in PMI mirrored by sharp decline in Q1 GDP; projections for Q2 US GDP at -35% annualized
- PMI has rebounded
  - Still forecasting negative growth but much closer to 0 than the May survey
  - Reflects data through June 23

Source: IHS Markit Flash U.S. Composite PMI™
Market Environment 2Q20: Global Economy

Following a brutal March and April, a handful of key economic measures rebounded in May and June, beating expectations and fueling optimism. However, most have yet to recoup the losses incurred and a high degree of uncertainty remains as to the path over the foreseeable future. Global fiscal and monetary stimulus was swift and massive, helping to bolster confidence and liquidity and fueling an appetite for riskier assets.

U.S.
1Q GDP contracted 5.0%, 2Q is expected to be far worse
- 2Q estimates vary and are fluid, but range from -30% to -40% (annualized)
- Initial 2Q GDP number to be released on July 30th

Some measures rebounded, but have not fully recovered:
- Retail sales grew a record 18% in May (-6% yoy)
- Durable goods orders up 16% in May (-18% yoy)
- Personal spending rose 8% in May (-9% yoy)
- Hotels, restaurants, airlines and many small businesses were among the hardest-hit

Unemployment (11.1% in June) remains elevated
- Jobless claims, around 1.5 million per week, have decelerated

Housing received a boost from relatively low mortgage rates
- Pending home sales up 44% in May (down 5% yoy)

Fed left rates close to 0% and expects to be on hold until at least 2022

Speed and size of stimulus programs unprecedented
- Stimulus programs approach $3 trillion (about 14% of GDP)
- Fed balance sheet roughly $7 trillion
- Fed budget deficit was $2.7 tn in the first 9 mos of FY 2020, $2 tn more than the same period last year (CBO estimates)

Overseas

Euro zone
- 1Q GDP contracted 3.8%, largest quarterly drop on record
- Economic activity showed improvement as Eurozone PMI for June rose to 47.3 (30.5 in May; 13.5 in April)
- European Commission support included €750 bn recovery fund plus €540 bn rescue package
- ECB expanded pandemic emergency purchase program to €1.35 trillion

U.K. GDP sank 20% in April, most ever
- Bank of England expanded its quantitative easing program; negative rates were under “active review”
- Brexit returned to the agenda as the deadline passed for an extension of the transition period, which expires on 12/31/2020

Japan’s economy shrunk 4.4% in April
- Bank of Japan increased its stimulus from $700 billion to $1 trillion in June

China’s GDP fell 6.8% in Q1, first contraction in 28 yrs
- Chinese government unveiled fiscal stimulus of US$506 bn, bringing budget deficit to a record high of 3.6% of GDP
- Growth is expected to be positive in 2Q
- Geopolitical concerns increased as the US moved to end its special treatment of Hong Kong after China announced the imposition of a national security law in Hong Kong
Size and Duration of U.S. economic recessions

Current recession rivals that of the Post-WW II demobilization; worst in half a century

The Great Depression and post-war recessions

Length and severity of recession

Great Depression: 26.7% decline in real GDP

Post WWII demobilization: 12.7% decline in real GDP

Financial Crisis: 4.0% decline in real GDP

Current recession: 12.8% decline* in real GDP

“A recession is a significant decline in economic activity spread across the economy, normally visible in production, employment and other indicators. A recession begins when the economy reaches a peak of economic activity….The committee has determined that a peak in monthly economic activity occurred in the U.S. economy in February 2020.”


Source: BEA, NBER, J.P. Morgan Asset Management.
Bubble size reflects the severity of the recession, which is calculated as the decline in real GDP from the peak quarter to the trough quarter except in the case of the Great Depression, where it is calculated from the peak year (1929) to the trough year (1933), due to a lack of available quarterly data. *Current recession reflects JPMAM estimate of peak to trough decline for the recession beginning after February 2020 according to the NBER.

Unprecedented Spike in Volatility
VIX reaches record high of 82.69

Source: CBOE, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
Drawdowns are calculated as the prior peak to the lowest point.
*Guide to the Markets – U.S. Data are as of June 30, 2020.*
The Treasury yield curve contains an implicit broad economic forecast
- Steeper yield curves (long-term rates higher than short-term rates) suggest stronger anticipated growth

The shape of the Treasury yield curve has varied quickly and substantially since the beginning of 2020
- Curve shifted down dramatically early in crisis
- Current yield curve still low on the short end and upward sloping but not steep

Source: U.S. Department of Treasury
Government Intervention

Monetary Policy

- The Federal Reserve Open Market Committee voted to continue 0% Fed Funds Rate at June meeting
- Median FOMC member forecast expect to continue the zero interest rate policy for years
- Markets do not expect the Fed to raise the rate in the near future

Government Intervention

US Fiscal Policy

● “Phase I” $8 billion
  - Medical treatments and testing

● “Phase II” $104 billion
  - Expanded worker benefits
  - Food assistance

● CARES Act (“Phase III”) $2 Trillion
  - Equates to roughly 10% of GDP
  - Expanded Unemployment Benefits
  - Cash Distributions of up to $1,200
  - Student Loan Relief
  - Federally-Backed Home Loan Forbearance
  - Defined Contribution Plan Liquidity
  - Airline industry relief
  - Small business loans, grants and loan relief

● “Phase IV” $484 billion
  - Additional small business loans
  - Funding for testing and hospitals

● What’s next?
  - State and local government
  - Extend UI benefits? Additional cash?
  - What other industries? Health care?

Our Advice to Investors

It’s early innings: remain true to your investment discipline

- People are still in shock and assessing their situations. The situation is unprecedented.
- Investors are asking: Did we do something wrong?
- This event may serve to be a test of investors’ risk tolerance.

Our counsel to investors: follow your disciplined process

- Reevaluate liquidity. Benefit payments or spending, and capital calls.
- Rebalance
- Look for impairments or unexpected performance in your portfolio
- Watch for opportunities inside your portfolio and across the capital markets
- Conduct scenario analysis and stress testing

Growth of $100mm invested in 60% S&P 500 / 40% Bloomberg Aggregate Portfolio
Market values in millions
January 1, 1989 – April 9, 2020

Source: Callan LLC
Market Timing is Hard

Ultimate goal: Make it out to the other side of this crisis

Finding the right entry point and the tradeoff of staying on the sidelines

Difficulty of Timing the Market: Late Entry Point
- Since it is not realistic to miss the best trading days, which are spread out over many years, consider the opportunity cost of staying on the sidelines following a large downturn.
- Picking the right entry point can be difficult and the early days of a recovery matter a lot.

Source: Standard & Poor’s, Callan LLC
Detailed 2020 Expectations and Resulting Portfolio Returns and Risks
What’s the Impact of the Pandemic Situation on Capital Market Expectations?

Short answer – None at this point

Long answer – remind ourselves of the purpose of capital market expectations

- Long-term strategic assumptions
- Shape portfolios to honor investors’ tolerance for risk
- Create range of scenarios for expected 10-year outcomes – always include at least one recession
- If we alter our assumptions, are we then suggesting changes in portfolio design?
- Specific scenario analysis more useful: shape of recovery

What we’re paying attention to …

- Extent to which this shock becomes a financial crisis, and the shape of global economic recoveries
- The stock market is not the economy, and V-shaped equity recovery may be ahead of itself
- Return of zero interest rate policy and the role of fixed income

How might revisions take shape…

- Can see equity markets finish 2020 down 5% to 10%, bonds up 5-6%, economy moving toward recovery
- At least a year until we regain US and global GDP levels, likely into 2022, same for employment
- Equity returns supportable at 6-7% over 10 years, but that suggests a high premium over a more subdued outlook for fixed income
  - Equity looks rich, but the stimulus efforts are certainly friendlier to future equity returns than to fixed income
What We Are Paying Attention To – Resilience of Individuals

Lack of Financial Backstop Troubling As Economy Struggles to Reopen

Household Spending

- Many Have Insufficient Income Prior to Crisis
  - 45% spend all or more than their income

- Less Than Half Can Draw On Savings
  - 46% have no emergency reserves

Rainy Day Fund

## Callan Scenarios Analysis – Shape of Potential Recovery

<table>
<thead>
<tr>
<th>Description</th>
<th>Baseline</th>
<th>V-Shaped</th>
<th>U-Shaped</th>
<th>L-Shaped</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Callan 2020 – 2029 Capital Market Assumptions (CMAs) established in Fall, 2019 - Callan CMAs implicitly reflect the possibility of recessions</td>
<td>- Global economy is fully re-opened in 2020Q3 - Optimistic scenario - Fiscal and monetary policy is effective - Job recovery is quick</td>
<td>- Global economy is not fully re-opened until 2021Q1 - Scenario that falls between V-Shaped and L-shaped scenarios</td>
<td>- Global economy is not fully re-opened until 2021Q3 - Fiscal and monetary stimulus is unprecedented and low rates remain for a long time - Job destruction takes years to recover, while consumer demand is slow to resume - Low inflationary regime</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time to Open</th>
<th>2 quarters</th>
<th>4 quarters</th>
<th>6 quarters</th>
</tr>
</thead>
</table>

| Equity Year 1 | 7.0% | -20% | -38% | -38% |
| Equity Year 2 | 7.0% | +30% | +9% | -25% |
| Equity Year 3 * | 7.0% | +17% | +27% | +15% |

| 10-Year Annualized | |
| Equities | 7.0% | 7.0% | 3.3% | -1.5% |
| BB Aggregate | 2.8% | 2.1% | 2.0% | 1.8% |
| Long Government | 1.8% | 1.0% | 1.2% | 3.3% |

* 7.0% return per year for each scenario thereafter

Source: Callan LLC
Shape of Future Capital Market Projections

Fixed income is the conundrum

Massive monetary and fiscal intervention will change the landscape:

- New yield environment and the capital markets going forward favor growth
- Purpose of capital market expectations: tailor portfolios to meet investor tolerance for risk across a range of outcomes

Why hold fixed income?

- Diversify equity
- Flight to quality
- Low volatility
- Generate income, and a small positive return
- What can serve as an equity diversifier equal to bonds with the return of zero interest rates? Are we willing to pay for the benefit of fixed income?
Fixed Income Going Forward

Return on the BB Aggregate for the year heading toward 7%

- Pulled return for the next two years forward
- Yield is now 1.2%, current yield is a key driver of future return
- Duration is up to 6.1 years, above long-term average; yield per unit of duration is very low = higher risk

Yields likely to remain low under zero interest rate policy for some time

- If we still believe in the benefit of holding fixed income, may be forced to take a hard look at alternatives to traditional investment-grade fixed income
  - Attendant higher and different risks outside of traditional investment grade – credit, implementation, illiquidity
  - Active management in pursuit if alpha – another set of attendant risks
  - Leverage – magnifies the results, both returns and risks
    - Not magic, no free lunch, and not for everyone
  - TIPS and global linkers – contain an optionality with a floor to deflation
    - May be appealing if we move into a negative rate environment

- Spread between equity and bonds would widen if we lower fixed income returns without lower equity
  - Lower capital market opportunity set a great challenge to many public investment programs
## 2020 Callan Capital Market Assumptions – Base Line

### Risk and return: 2020–2029

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Index</th>
<th>PROJECTED RETURN</th>
<th>PROJECTED RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-Year Arithmetic</td>
<td>10-Year Geometric*</td>
</tr>
<tr>
<td>Equities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad U.S. Equity</td>
<td>Russell 3000</td>
<td>8.55%</td>
<td>7.15%</td>
</tr>
<tr>
<td>Large Cap U.S. Equity</td>
<td>S&amp;P 500</td>
<td>8.35%</td>
<td>7.00%</td>
</tr>
<tr>
<td>Small Cap U.S. Equity</td>
<td>Russell 2500</td>
<td>9.25%</td>
<td>7.25%</td>
</tr>
<tr>
<td>Global ex-U.S. Equity</td>
<td>MSCI ACWI ex USA</td>
<td>9.10%</td>
<td>7.25%</td>
</tr>
<tr>
<td>Developed ex-U.S. Equity</td>
<td>MSCI World ex USA</td>
<td>8.70%</td>
<td>7.00%</td>
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<tr>
<td>Emerging Market Equity</td>
<td>MSCI Emerging Markets</td>
<td>10.25%</td>
<td>7.25%</td>
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<td>Fixed Income</td>
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<tr>
<td>Short Duration Gov't/Credit</td>
<td>Bloomberg Barclays 1-3 Yr G/C</td>
<td>2.70%</td>
<td>2.70%</td>
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<td>Core U.S. Fixed</td>
<td>Bloomberg Barclays Aggregate</td>
<td>2.80%</td>
<td>2.75%</td>
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<td>Long Government</td>
<td>Bloomberg Barclays Long Gov</td>
<td>2.55%</td>
<td>1.80%</td>
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<td>Long Credit</td>
<td>Bloomberg Barclays Long Cred</td>
<td>3.75%</td>
<td>3.25%</td>
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<tr>
<td>Long Government/Credit</td>
<td>Bloomberg Barclays Long G/C</td>
<td>3.25%</td>
<td>2.75%</td>
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<tr>
<td>TIPS</td>
<td>Bloomberg Barclays TIPS</td>
<td>2.50%</td>
<td>2.40%</td>
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<tr>
<td>High Yield</td>
<td>Bloomberg Barclays High Yield</td>
<td>5.10%</td>
<td>4.65%</td>
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<tr>
<td>Global ex-U.S. Fixed</td>
<td>Bloomberg Barclays Gbl Agg xUSD</td>
<td>1.30%</td>
<td>0.90%</td>
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<td>Emerging Market Sovereign Debt</td>
<td>EMBI Global Diversified</td>
<td>4.70%</td>
<td>4.35%</td>
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<tr>
<td>Other</td>
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</tr>
<tr>
<td>Core Real Estate</td>
<td>NCREIF ODCE</td>
<td>7.05%</td>
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<td>Private Equity</td>
<td>Cambridge Private Equity</td>
<td>12.00%</td>
<td>8.50%</td>
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<tr>
<td>Hedge Funds</td>
<td>Callan Hedge FOF Database</td>
<td>5.25%</td>
<td>5.00%</td>
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<tr>
<td>Commodities</td>
<td>Bloomberg Commodity</td>
<td>4.50%</td>
<td>2.75%</td>
</tr>
<tr>
<td>Cash Equivalents</td>
<td>90-day T-bill</td>
<td>2.25%</td>
<td>2.25%</td>
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<tr>
<td>Inflation</td>
<td>CPI-U</td>
<td>2.25%</td>
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</tbody>
</table>

Note that return projections for public markets assume index returns with no premium for active management.

- Geometric returns are derived from arithmetic returns and the associated risk (standard deviation); Projected yields represent the expected 10-year average
- Source: Callan

Source: Callan
2020 Callan Capital Market Assumptions

Correlation: 2020 - 2029

- Relationships between asset classes are as important as standard deviation
- To determine portfolio mixes, Callan employs mean-variance optimization
- Return, standard deviation, and correlation determine the composition of efficient asset mixes

Source: Callan

Callan
Knowledge. Experience. Integrity.
2020 Callan Capital Market Assumptions: Efficient Mixes

Subdued returns even for higher risk portfolios

- A portfolio with approximately 40% fixed income is expected to earn 6.0% over the next 10 years.
- The fixed income allocation has to fall below 20% to earn more than 7%.
- Total alternatives allocations in excess of 15% are common for diversified asset mixes.
- Private equity is constrained to be no more than 25% of the total public equity exposure. The purpose of the constraint is to hold private equity to a relative share of total equity that is appropriate at each place along the efficient frontier. The assumed premium for private equity would cause an unconstrained optimization to allocate a disproportionate amount to private equity that would be neither prudent nor implementable.

<table>
<thead>
<tr>
<th>Asset Classes</th>
<th>Constraints</th>
<th>Optimal Mixes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
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<tr>
<td>Broad U.S. Equity</td>
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<tr>
<td>Global ex-U.S. Equity</td>
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<td>Core U.S. Fixed</td>
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<tr>
<td>Core Real Estate</td>
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<tr>
<td>Private Equity</td>
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<tr>
<td>Totals</td>
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<tr>
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<th>Constraints</th>
<th>Optimal Mixes</th>
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<tr>
<td>Projected Arithmetic Return</td>
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<tr>
<td>Projected Standard Deviation</td>
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<td>8.50</td>
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<td>10 Yr. Geometric Mean Return</td>
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<td>Public Equity</td>
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<td>Public Fixed Income</td>
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<td>Alternatives</td>
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Source: Callan
In 1989, our expectations for cash and broad U.S. fixed income were 6.80% and 9.35%, respectively. Return-seeking assets were not required to earn 7.5%.

15 years later, an investor would have needed half of the portfolio in public equities to achieve 7.5%, nearly tripling the portfolio volatility of 1989.

Today an investor is required to include 96% in return-seeking assets to earn 7.5% at over 5x the volatility compared to 1989.
What is the Appropriate Time Horizon for Setting Return Expectations?

Pre-COVID 19, consensus was that the economic cycle was long in the tooth
● Assets had become richly valued after strong 2019
● Downturn in the capital markets is imminent and inevitable
● Recession call was for 2020, but only a mild decline
● Growing chorus to “do something” – de-risking a common theme across investor types

Should long-term investors respond to short-term market movements and changes in valuation?
● Only when they reach an extreme
● Pessimistic capital market expectations overly reliant on current situation result in unfortunate consequences
  − Excessive risk taking when we may not believe it will be rewarded
  − Pursuit of the bright shiny object regardless of fit or understanding

Market cycles are inevitable and should be expected
● Long-term strategic plans already incorporate expected corrections and recessions
● The path to a long-term return is through shorter-term periods of boom and bust

Time horizon is everything
● Is 10 years sufficient for a long-term investor?
  − Should portfolios differ whether you have a 10-year outlook or are focused on a long-term equilibrium return?
  − How about 5 years?
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