Investment Levers in a Challenging World

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The Pension Equation: getting more challenging

Getting smaller:
- lower growth & lower yields
- reduced return expectations
- ‘6% is the new 8%’

Getting bigger:
- people are living longer
- hardening guarantees or expectations

Contributions + Investment returns = Benefit payouts + Expenses

The data/charts/graphs throughout this presentation are FOR ILLUSTRATIVE AND DISCUSSION PURPOSES ONLY. Source: J.P. Morgan Asset Management Inc.
Public Plan Funded Status* and Allocation Update

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* Funded status represents actuarial value basis

Source: J.P. Morgan Asset Management, Center of Retirement Study at Boston College

- **Actual Plan Rolling Returns vs EROA**
  - Actuarial Value Assets
  - Actuarial Accrued Liabilities
  - Funded Status (Actuarial)

  - 71% funded as of 2015 (from 72% at 2014)

- **Actual Plan Rolling Returns vs EROA**
  - EROA
  - Average 5 Yr Return
  - Average 10 Yr Return

  - 12.1% 7.2% 7.7% 7.8% 8.0%
  - 8.0% 7.9% 7.8% 7.7% 7.6% 7.5%

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Source: J.P. Morgan Asset Management, Center of Retirement Study at Boston College
Long-term drivers of U.S. economic growth

Drivers of GDP growth
Average year-over-year percent change

Growth in workers
+ Growth in real output per worker
\[
\text{Growth in real GDP}
\]

Growth in working age population
Percent increase in civilian non-institutional population ages 16-64

The data/charts/graphs throughout this presentation are FOR ILLUSTRATIVE AND DISCUSSION PURPOSES ONLY. Source: Census Bureau, DOJ (left), BLS, BEA (right), J.P. Morgan Asset Management. GDP drivers are calculated as the average annualized growth between 4Q of the first and last year. Future working age population is calculated as the total estimated number of Americans from the Census Bureau and Demographic trends. Data are as of March 31, 2016.
Public Plans are Adjusting

Increase in Employee Contributions (2009-2014)

Higher Age / Service Req. for New Members (2009-2014)

Replaced DB Plans (2009-2014)

Replaced DB Plans (2009-2014)

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Public Plans Have Been Increasing Allocation to Alternatives

2006 Asset Allocation – Public Plans

- Domestic equity: 25%
- International equity: 4%
- Fixed income: 18%
- Private equity: 5%
- Real estate: 2%
- Other: 1%
- Cash: 4%

2015 Asset Allocation – Public Plans

- Domestic equity: 28%
- International equity: 8%
- Fixed income: 21%
- Private equity: 23%
- Real estate: 9%
- Other: 2%
- Cash: 8%

Annual Required Contribution (ARC) as a Percent of Payroll, paid and unpaid

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Source: J.P. Morgan Asset Management, P&I 2015 data (top charts), Center of Retirement Study at Boston College (bottom chart). For illustrative purposes only.
# Getting on the right-track

Six real-world pension strategies to potentially increase pension returns in a low return world

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use leverage to add return potential to high</td>
<td>• Without leverage investors need to overweight on equity-like investments</td>
</tr>
<tr>
<td>Sharpe ratio assets and lower overall risk</td>
<td>to achieve returns close to 7%</td>
</tr>
<tr>
<td>2. Expand your investment set and allocate to</td>
<td>• Add return streams with low correlations to traditional market factors</td>
</tr>
<tr>
<td>alternatives</td>
<td></td>
</tr>
<tr>
<td>3. Have a long term view and invest in illiquid</td>
<td>• Public plans are not using their liquidity budget efficiently</td>
</tr>
<tr>
<td>assets</td>
<td>and are leaving some illiquidity premium on the table</td>
</tr>
<tr>
<td>4. Invest opportunistically or find managers that</td>
<td>• Periods of market dislocation offer opportunity for excess returns</td>
</tr>
<tr>
<td>can be nimble for you</td>
<td></td>
</tr>
<tr>
<td>5. If you can find true alpha, use it. But if you</td>
<td>• Successful active management can uncover well-hidden investments but</td>
</tr>
<tr>
<td>don’t, make sure you’re not paying for it.</td>
<td>plans must be cost conscious</td>
</tr>
<tr>
<td>6. Add tactical overlay</td>
<td>• Business cycle changes offers opportunities</td>
</tr>
</tbody>
</table>

Refer to ‘Pensions in a Low Return World’ for a complete description of the strategies.
Authors: Michael Cembalest & Tony Gould
Prudent Leverage in Use

- While leverage on a single asset class adds volatility, it may also reduce concentration on equity-specific risks.
- As illustrated below, through a cautious and strategic approach, leverage can achieve same returns while reducing portfolio volatility.
- The leveraged portfolio is more balanced, benefitting from enhanced diversification across multiple asset classes.

Use of Leverage to Achieve Return Goals while Lowering Volatility

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### Institutional investors and long-term investing

#### Long-term institutional investors

- Differ from ordinary investors in their willingness to tolerate greater volatility over a longer period until a greater absolute return materializes

#### Advantages of taking the long view

- Potential higher payoffs from waiting for the development of fundamental themes
- Benefiting from *mispricing* resulting from errors in evaluation or elevated risk aversion
- Acquiring attractive assets at distressed prices during market dislocations
- Being compensated for absorbing liquidity risk inherent in unlisted and illiquid assets

#### Available long-term non-public asset classes

- Value-Added real estate
- Infrastructure
- Private Equity
- Private Debt

*By using such assets, long-term investing can generate long-term returns in excess of what the current investment environment provides*
Long-term investments can decisively boost a portfolio’s risk adjusted returns

- Including alternative asset classes enhance a portfolio risk/return potential

![Projected Portfolio Return vs. Portfolio Volatility](chart.png)

Access to a wider set of opportunities and extended J-Curves

The private equity universe is 25 times the size of its public counterpart

**Implications:**
- Private firms stay private longer
  - Extended valleys: Delayed investors’ payoff
  - Higher peaks: Higher fraction of the value being generated while private (Amazon vs. Facebook)

**Implications:**
- New regulations
  - Pushing banks to reduce their loan books
  - Creating distortions and opportunities in the corporate lending market - especially in Europe

**Average age of enterprise and average market valuation at IPO, 2000-2014**

Source: NVCA Yearbook 2014.
3 Years Rolling Excess Returns

US OE Large Blend (3Yr Rolling Excess Return)

US OE Allocation – 50% to 70% Equity (3Yr Rolling Excess Return)

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Long-term Capital Market Return Assumptions

Long-term expected returns have come down


Long-term returns

- A 60/40 portfolio is expected to generate a long-term return of 6.3%.
- In 2006 a 60/40 portfolio was expected to generate a return of 7.3%.
- Returns assume zero alpha return
- If nominal growth rates and bond yield are lower than our assessment, then so will expected returns

¹Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.
²2016: 60/40 portfolio compositions: 60% AC World Equity, 40% U.S. Aggregate Bonds.
³2006: 60/40 portfolio compositions: 27.6% US Equity/27.9% EAFE Equity/4.5% EM Equity, 40% U.S. Aggregate Bonds based on 2006 ACWI Breakout and availability of Capital Markets Assumptions
⁴Annualized from 2006-2016; Benchmarks used are as follows: S&P 500 index (US Large Cap), Russell Mid Cap (US Mid Cap), MSCI EAFE (EAFE Equity), MSCI Emerging Markets (Emerging Markets Equity), MSCI AC World (AC World Equity), Barclays US HY 2% Issuer Cap (US High Yield Bonds), Barclays US Aggregate Bond Index (US Aggregate Bonds), Citigroup 3 Month Treasury Bill (US Cash). Direct real estate is unlike other asset categories shown above in that there is no underlying investible index. The return estimates shown for US Direct Real Estate is our estimate of industry medians—the dispersion of returns among managers in this asset class is typically far wider than for traditional asset classes.
## 2016 Long-term Capital Market Return Assumptions

Note: All estimates on this page are in U.S. dollar terms. Given the complex risk-reward trade-offs involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations to all the above asset classes and strategies. Please note that all information shown is based on qualitative analysis. Exclusive reliance on the above is not advised. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. Note that these asset class and strategy assumptions are passive only—they do not consider the impact of active management. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for, accounting, legal or tax advice.

**Annualized Assumptions**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Geometric</th>
<th>Arithmetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equities</td>
<td>5.0%</td>
<td>7.4%</td>
</tr>
<tr>
<td>U.S. Bonds</td>
<td>6.0%</td>
<td>4.4%</td>
</tr>
<tr>
<td>U.S. Small Cap</td>
<td>5.7%</td>
<td>7.0%</td>
</tr>
<tr>
<td>U.S. Large Cap Value</td>
<td>4.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>U.S. Large Cap Growth</td>
<td>4.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td>5.5%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Japan Equity</td>
<td>3.2%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Japan Smaller Equity</td>
<td>3.2%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Asia Ex Japan Equity</td>
<td>3.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>EAFE Equity</td>
<td>2.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>EAFE Ex China Equity</td>
<td>2.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Emerging Markets Equity</td>
<td>2.8%</td>
<td>4.5%</td>
</tr>
<tr>
<td>U.S. High Yield</td>
<td>4.6%</td>
<td>7.6%</td>
</tr>
<tr>
<td>U.S. Intermediate</td>
<td>5.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>U.S. Short Term</td>
<td>3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>U.S. Real Estate</td>
<td>5.4%</td>
<td>7.7%</td>
</tr>
<tr>
<td>U.S. Private Equity</td>
<td>6.0%</td>
<td>9.9%</td>
</tr>
<tr>
<td>U.S. Hedge Funds</td>
<td>3.5%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

**Factors Affecting Capital Markets**

- **Inflation**: 2.5%
- **U.S. Cash**: 2.5%
- **U.S. Intermediate Term**: 3.0%
- **U.S. Long Term**: 3.5%
- **Emerging Markets**: 4.0%
- **Property**: 3.5%
- **Private Equity**: 5.0%
- **Hedge Funds**: 3.5%

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Source: J.P. Morgan Asset Management. Data as of September 30, 2015, except hedge funds (diversified, event driven, long bias, and relative value) as of June 30, 2015 and hedge fund (macro), as of May 31, 2015. Private equity, hedge funds, real estate, infrastructure, and commodities are unlike other asset categories shown above in that there is no underlying investible index. Hedge fund returns are shown net of manager fees. The return estimates shown for these alternative asset classes and strategies are our estimates of industry medians—the dispersion of returns among managers in these asset classes and strategies is typically far wider than for traditional asset classes.
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