International Social Security Conference 2015

Strategies for Providing Lifetime Retirement Security

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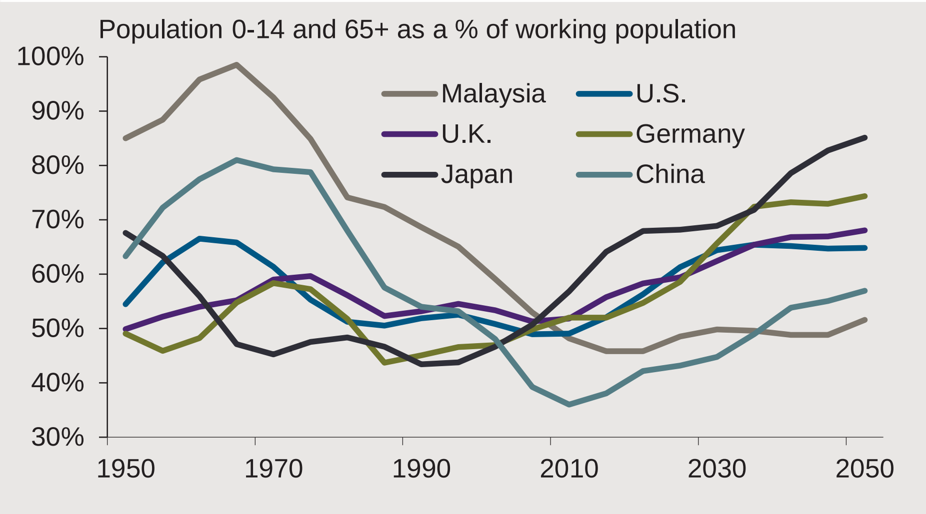
J.P.Morgan Asset Management

Summary

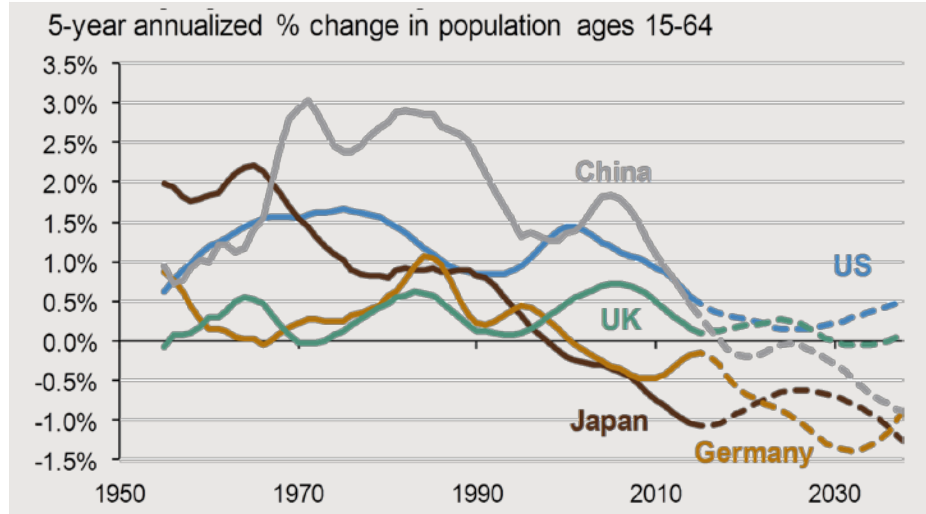
- Lifetime retirement security is increasingly under threat globally due to:
  - The strain from rising dependency rates
  - The rising burden of healthcare costs due to aging populations
- Corporations/Governments are looking to shift some of the retirement burden back to retirees
  - Lump sum offers
  - Shifting from DB to DC or hybrid plans
- What are the implications of transferring responsibilities to individuals?
  - Do they make prudent investment decisions?
  - How much guidance should be provided to retirees?
- How should retirement glidepaths be structured?
  - What is the appropriate objective to aim at ?
  - How do different allocations respond to different market scenarios ?

The Rising Tide of Dependency

Dependency ratio



Working-age population growth



Source: United Nations data and forecasts 2014.

Implications:

- Higher ratio = Higher transfer payments/tax revenues
- Higher tax revenues/household
- More DB pension failures?
- Pressure to reduce transfer payments (lower benefits, higher retirement ages)
- Pressure to increase tax revenues
- Rising income inequality

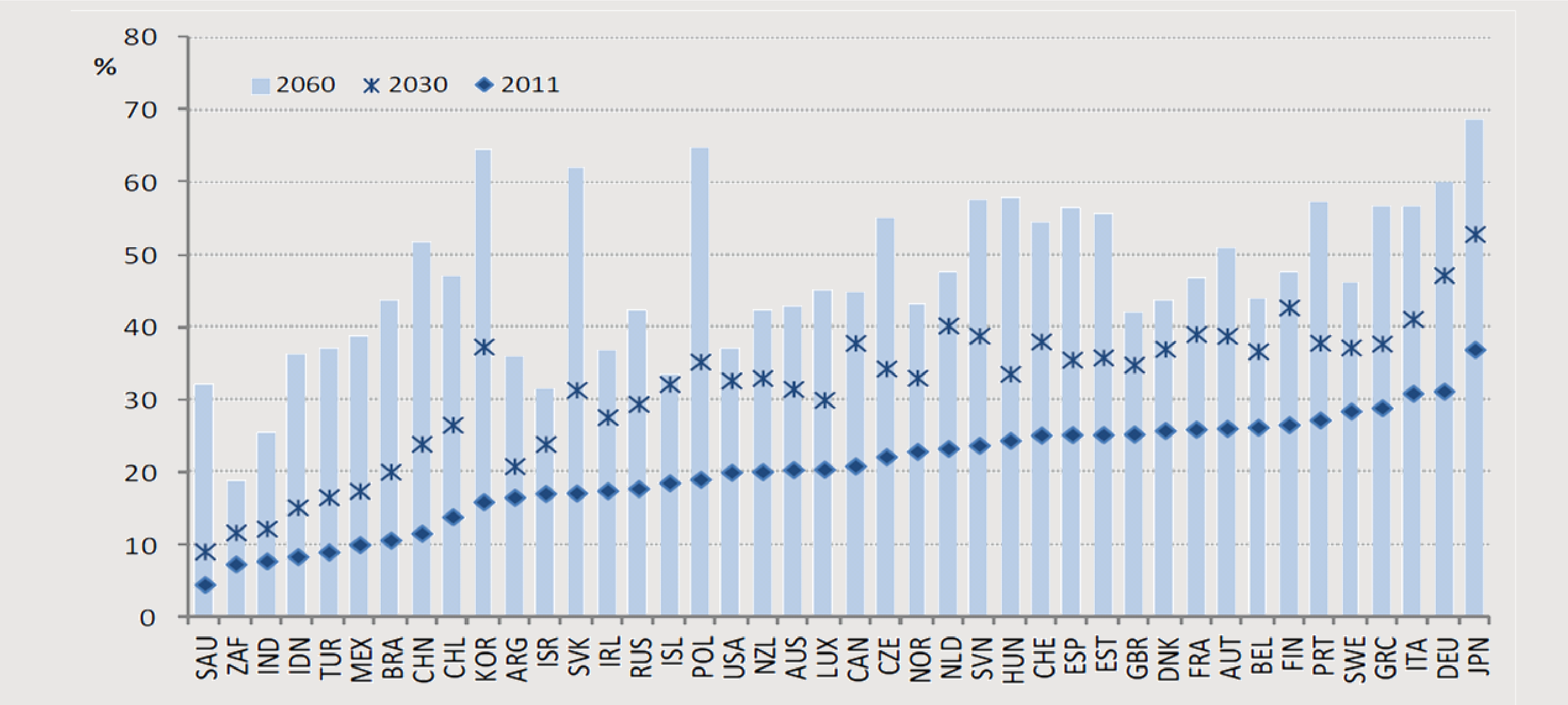
Implications:

- Lower economic growth (directly)
- Lower economic growth (indirectly)
- Lower capital market returns
- More DB pension failures
- More DC pension challenges

Source: J.P. Morgan Asset Management

The Rising Tide of Dependency

The Traditionally-defined Old-age Dependency Ratio Steadily Rises
Per Cent of the Population Older Than 65 as a Share of Population Aged 15-64



Source: J.P. Morgan Asset Management

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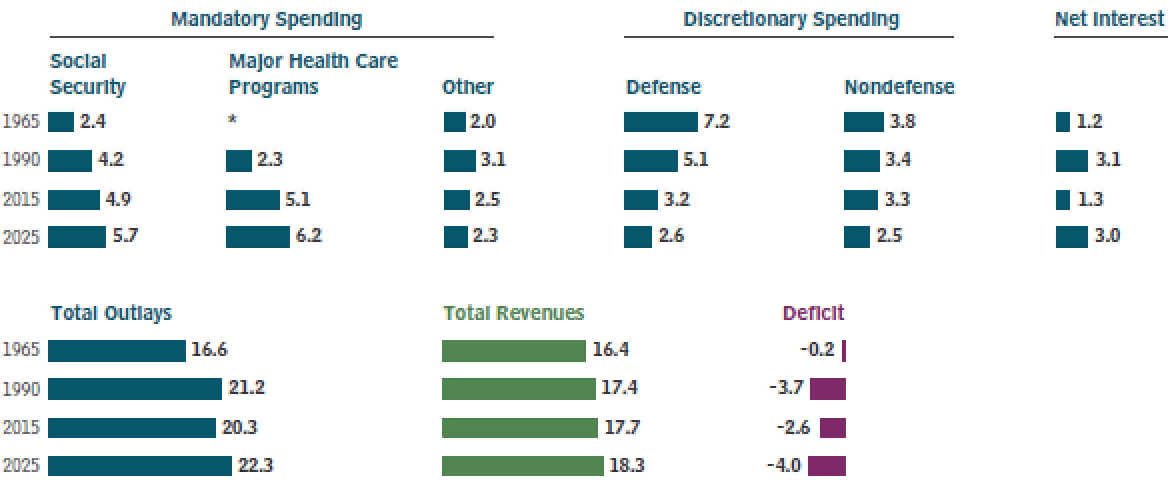
US:
Social Security and Health Outlays Forecast to Consume Growing Share of Outlays

Spending and Revenues Projected in CBO's Baseline, Compared With Levels in 1965 and 1990

Percentage of Gross Domestic Product

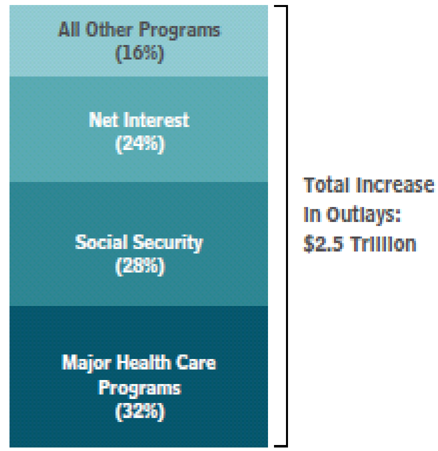


Source: Congressional Budget Office.

Notes: Major health care programs consist of Medicare, Medicaid, the Children's Health Insurance Program, and subsidies for health insurance purchased through exchanges and related spending. (Medicare spending is net of premiums paid by beneficiaries and other offsetting receipts.)

* = between zero and 0.05 percent.

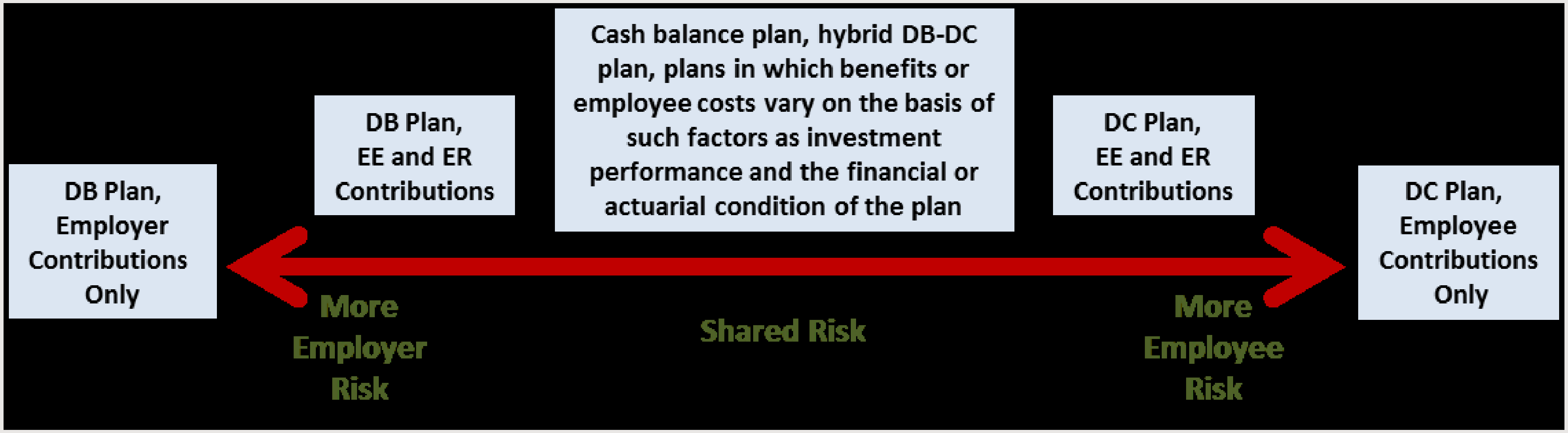
Components of the Total Increase in Outlays in CBO's Baseline Between 2015 and 2025



Source: Congressional Budget Office.

Note: Major health care programs consist of Medicare, Medicaid, the Children's Health Insurance Program, and subsidies for health insurance purchased through exchanges and related spending. (Medicare spending is net of premiums paid by beneficiaries and other offsetting receipts.)

Pension Risk Sharing – A Continuum



Source: NASRA, Shared Risk Brief

Sources of risk:

- Investment risk
- Longevity risk
- Inflation risk

Risk sharing:

- Funded pension solutions:
  - reduce inter-generational risk transference
  - are more sustainable than unfunded alternatives
- Defined Benefit places significant risks on plan sponsor
- Defined contribution places risks on individuals
- Risk transfers? Hybrid plans?

Source: J.P. Morgan Asset Management

The Rise of Hybrid Plans: U.S. Cash Balance Plans

A cash balance plan is a type of defined benefit plan that has many characteristics of a defined contribution plan

- Hypothetical notional accounts for each participant with principal credits (typically a % of pay) and interest credits (typically tied to a market rate)
- At termination or retirement, the account balance is typically paid out as a lump sum (though an annuity option is required)
- Unlike D.C., the employer bears the investment risk and must make up shortfalls

	Traditional Defined Benefit Plans	Cash Balance Plans
Plan Features	Reward loyalty	Good for early leavers
	Harder to communicate value of final benefit to participants	Easy to communicate amount of benefit to participants
	Benefits expressed as an annuity	Benefit expressed as a account balance
	Benefits accumulate as a percentage of future average salary	Benefits accumulate as a percentage of current salary + interest credit
Investment Features	Plan sponsor bears longevity risk	Plan sponsor has minimal longevity risk when annuity elections are low (as is typically the case)
	Easier to hedge	More difficult to hedge

- By 2011, cash balance plans represented 33% of total DB plan assets in the U.S
- Within Fortune 100 companies, hybrid plans are more commonly seen than traditional DB plans*

Source: J.P. Morgan Asset Management., data from 5500 filings, *Towers Watson

The Cash Balance Investment Problem: How to Match The Crediting Rate?

Interest Crediting Rates

Bond Yield References:

- Yields on Treasuries of various maturities
- Consumer Price Index
- PPA or 417(e) Lump Sum segment rates
- Fixed rate not greater than 5.0%

Investment Return References:

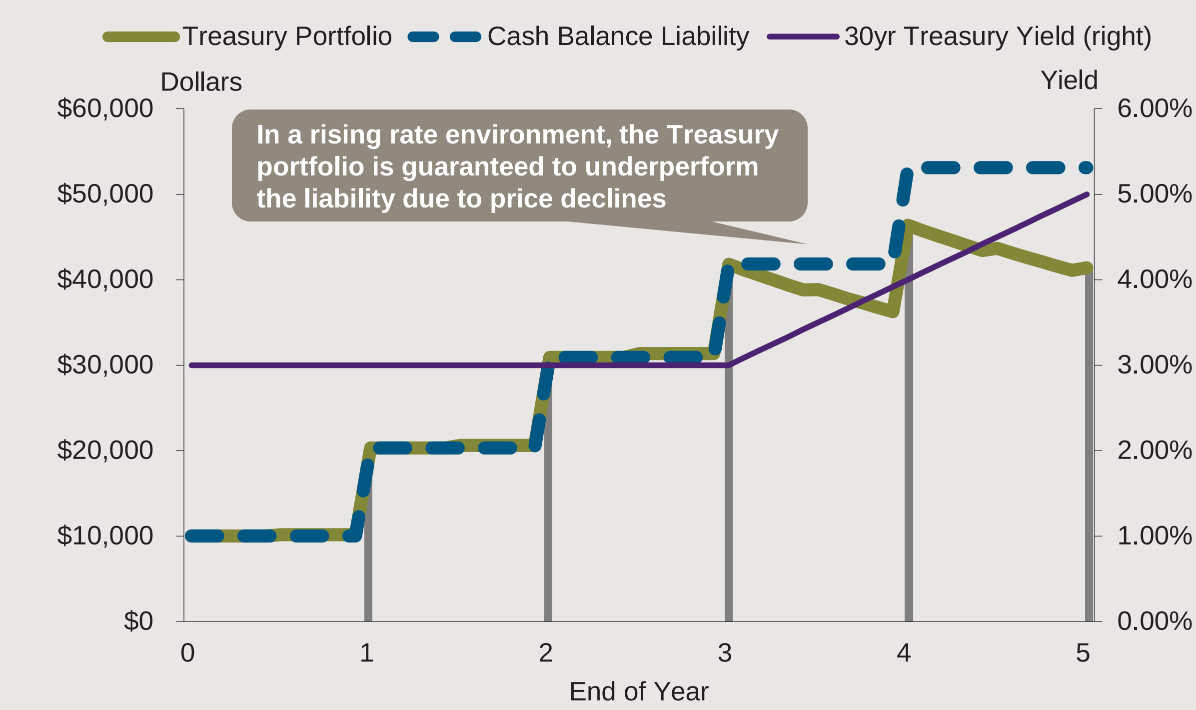
- Actual rate of return on diversified plan assets
- Annuity contract rates
- Broad diversified indices

Crediting Rate	% of Plans
30yr Treasury	41%
1yr Treasury*	19%
Other Treasury	11%
10yr Treasury	9%
Other Rate	7%
Fixed rate	7%
Corporate Bond Rate	2%
Equity-based return	2%
CPI	2%

Source: Towers Watson – Hybrid Pension Plans, 2010

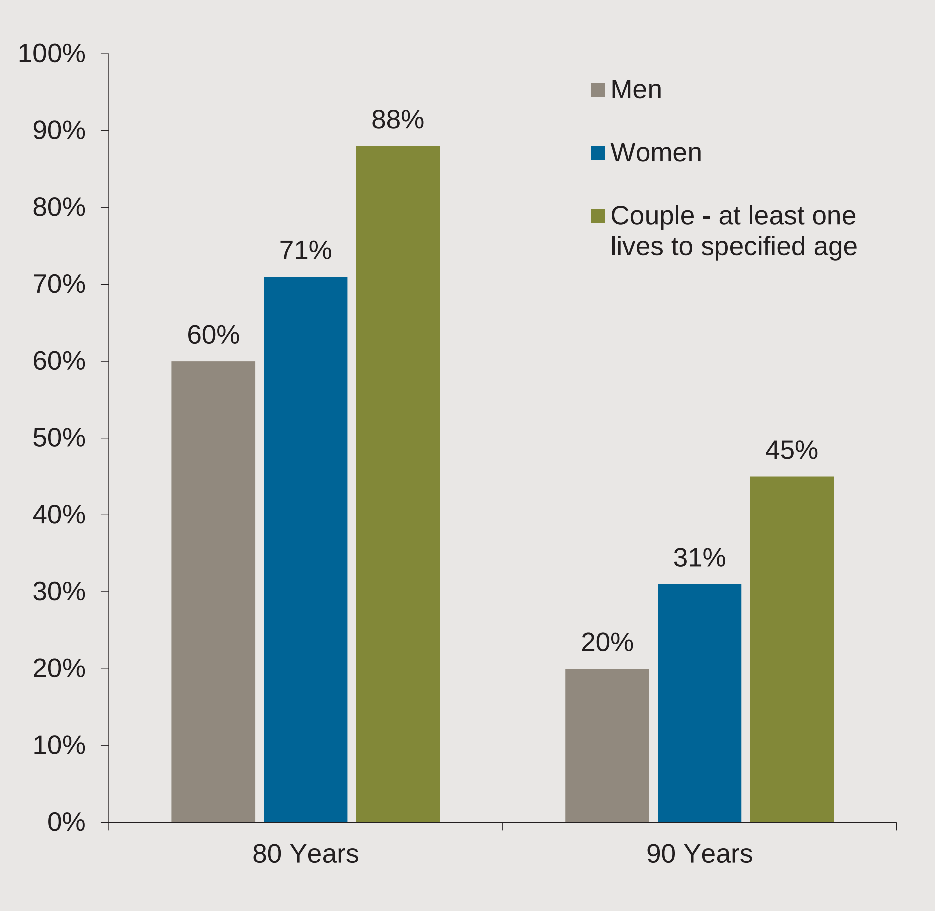
Cash balance example

- We assume a cash balance plan with contributions of $10,000 per year, and a crediting rate of 30yr Treasuries
- We track a portfolio invested in 30yr Treasuries to "match" the cash balance plan , and assume yields rise from 3% to 5% over five years
- The bond portfolio underperforms the cash balance account by 22% ($11,684)

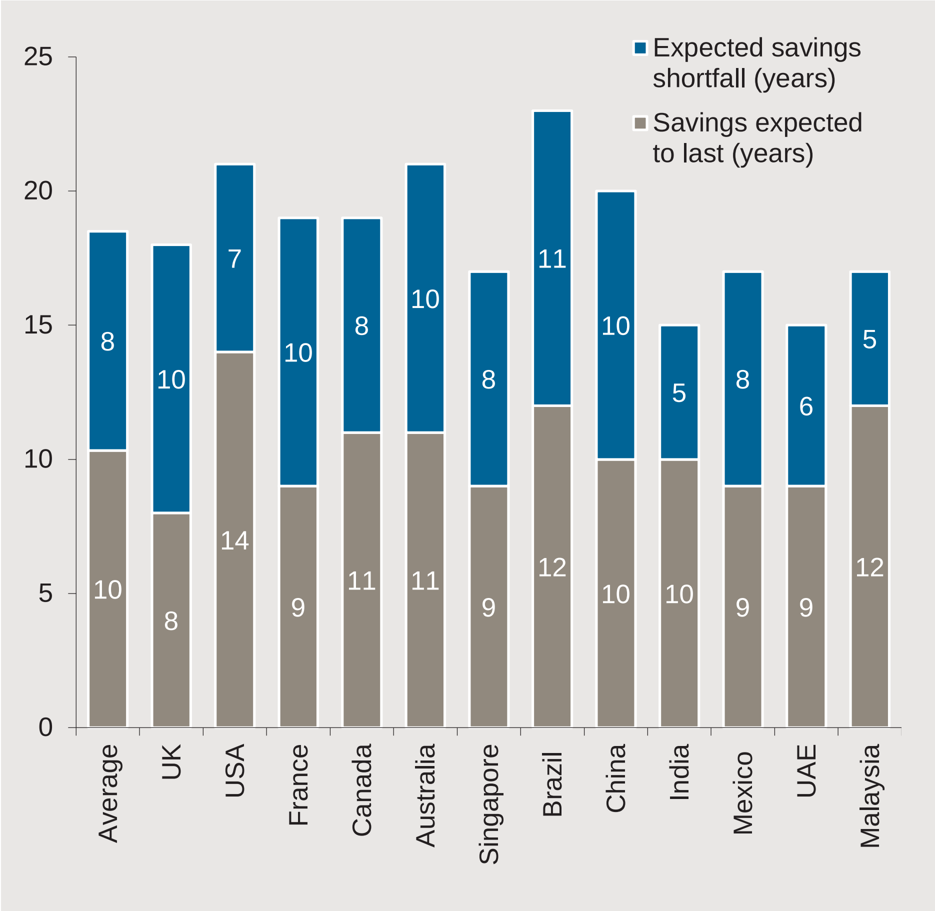


Rising Life Expectancy, Insufficient Retirement Savings

If you're 65 today, the probability of living to a specific age



Perceived retirement shortfall by country



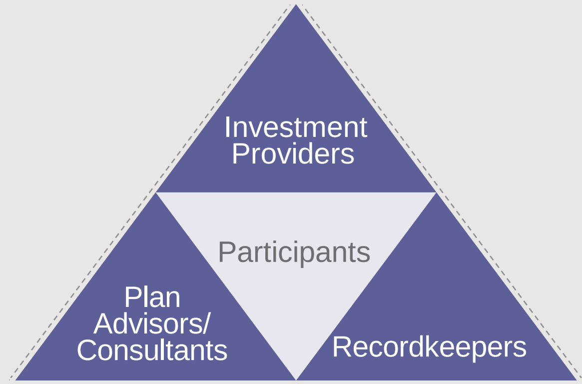
Source: (Left) "Analysis of the 2007 Period Life Table for Social Security Area Population." US Social Security Administration, J.P. Morgan Asset Management. (Right) "The Future of Retirement: A new reality" study by HSBC, J.P. Morgan Asset Management. Figures represent the expected portion of retirement that will not be covered by retirement savings based on survey data. *Guide to the Markets – U.K.* Data as at 30 June 2014.

Evolution of Defined Contribution (DC) and the Shift to a New Way of Thinking

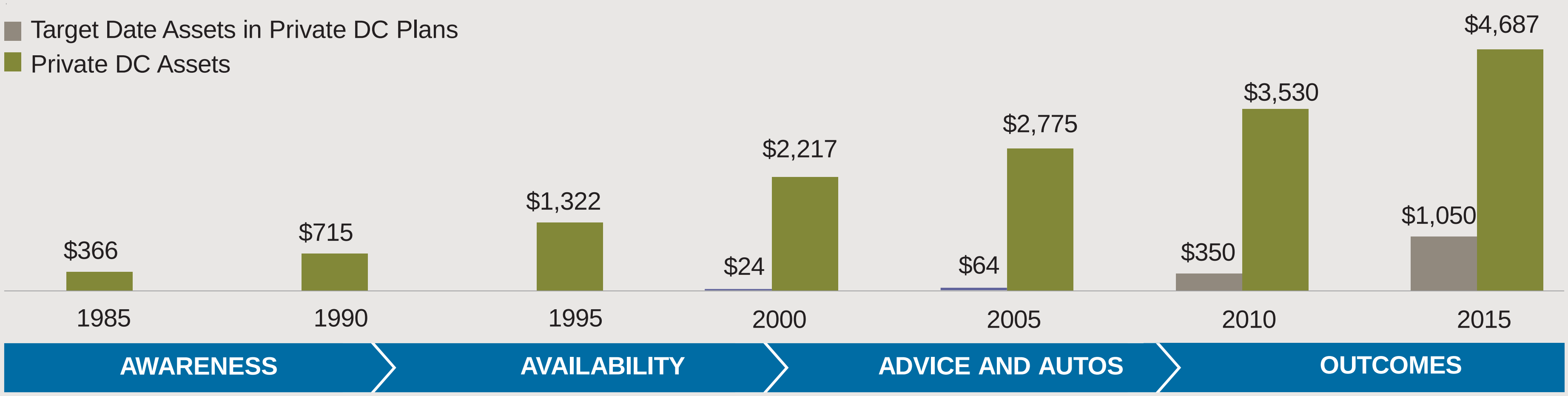
Shifting to A New Mindset

	Traditional Thinking	New Thinking
Plan Design	Incrementally enhanced	Strategically constructed
Plan Implementation	Do it yourself	Do it for me
Investment Menu	Expand choice	Fewer, better choices
Communications	Provide disclosure	Provide guidance
Fiduciary Approach	Adhere to process	Focus on outcomes

DC Ecosystem: Focus on Improving Participant Outcomes



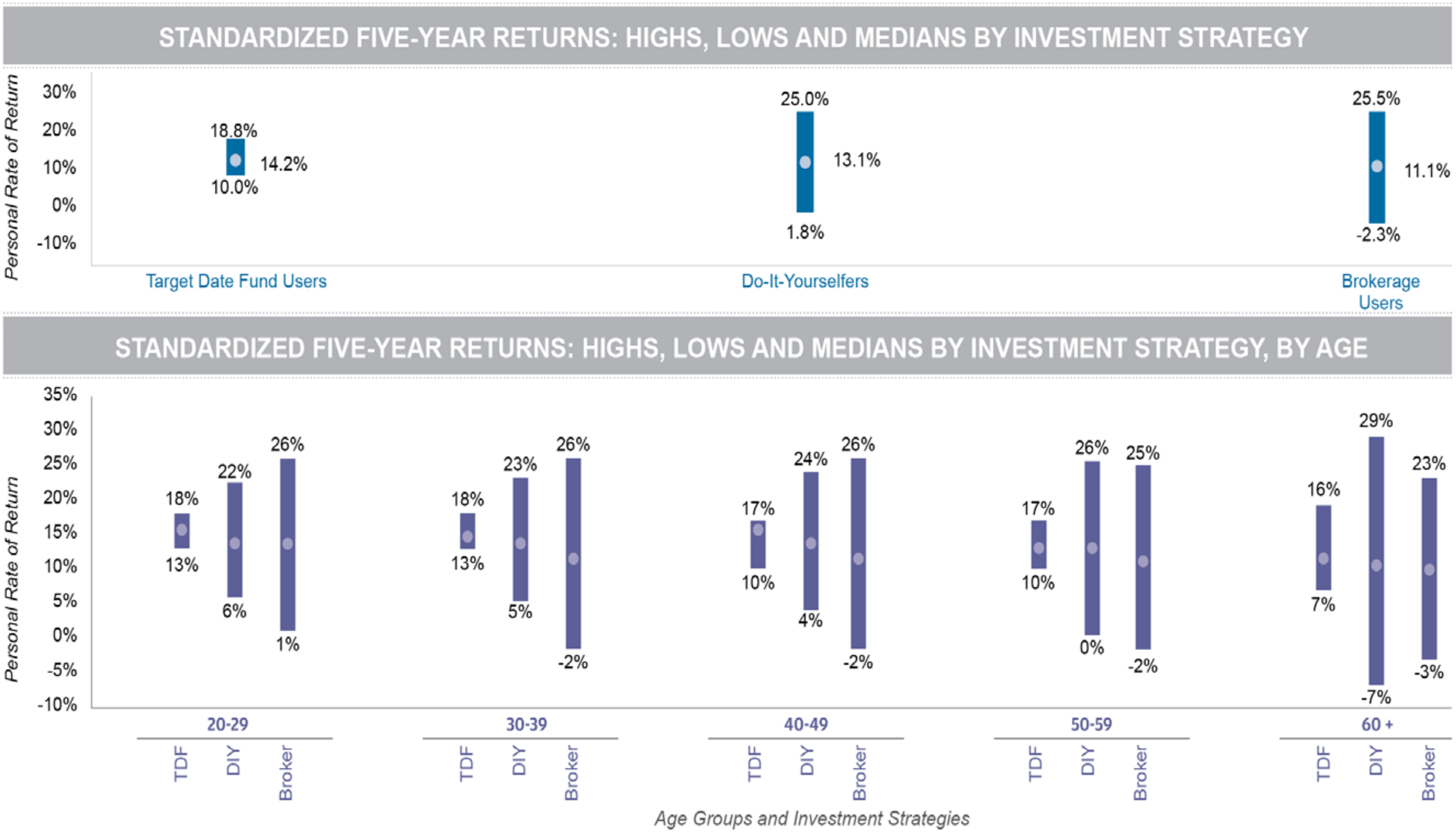
Growth in Private DC Assets ($Bn), 1985–2015[1]



[1]Cerulli, McKinsey, Brightwork Partners, Callan Associates, Sway Research, combined with J.P. Morgan analysis. "Private DC" includes 401(k) plans, money purchase plans, profit-sharing plans, Keoghs, and Taft-Hartley DC Plans, as defined by Cerulli.401(k) target date allocation applied to broader set of private DC assets. Projections from Cerulli.

How does a Participant's Investment Approach Affect Outcomes?

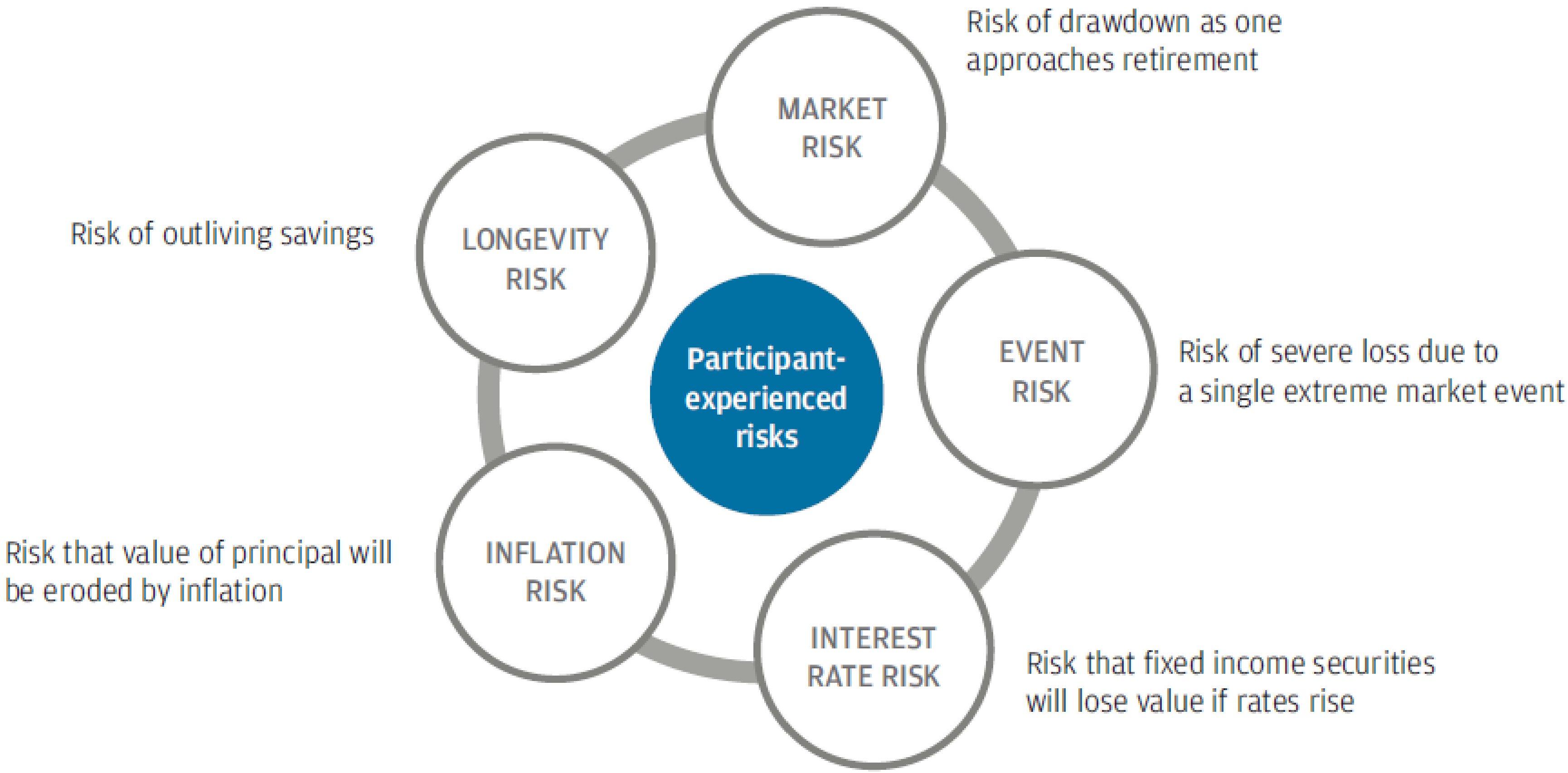
Five-year Personal Rate of Return Varies by Investment Strategy



Source: J.P. Morgan Retirement Research Data. Analysis measurement period is June 30, 2009, through June 30, 2014. The above data represents a sampling of participant data. It does not represent the returns of any individual product or portfolio. Exclusive reliance on the above is not advised. This information is not intended as a recommendation to invest in any particular manner. Rate of return for the measurement period is aggregated by investment strategy.

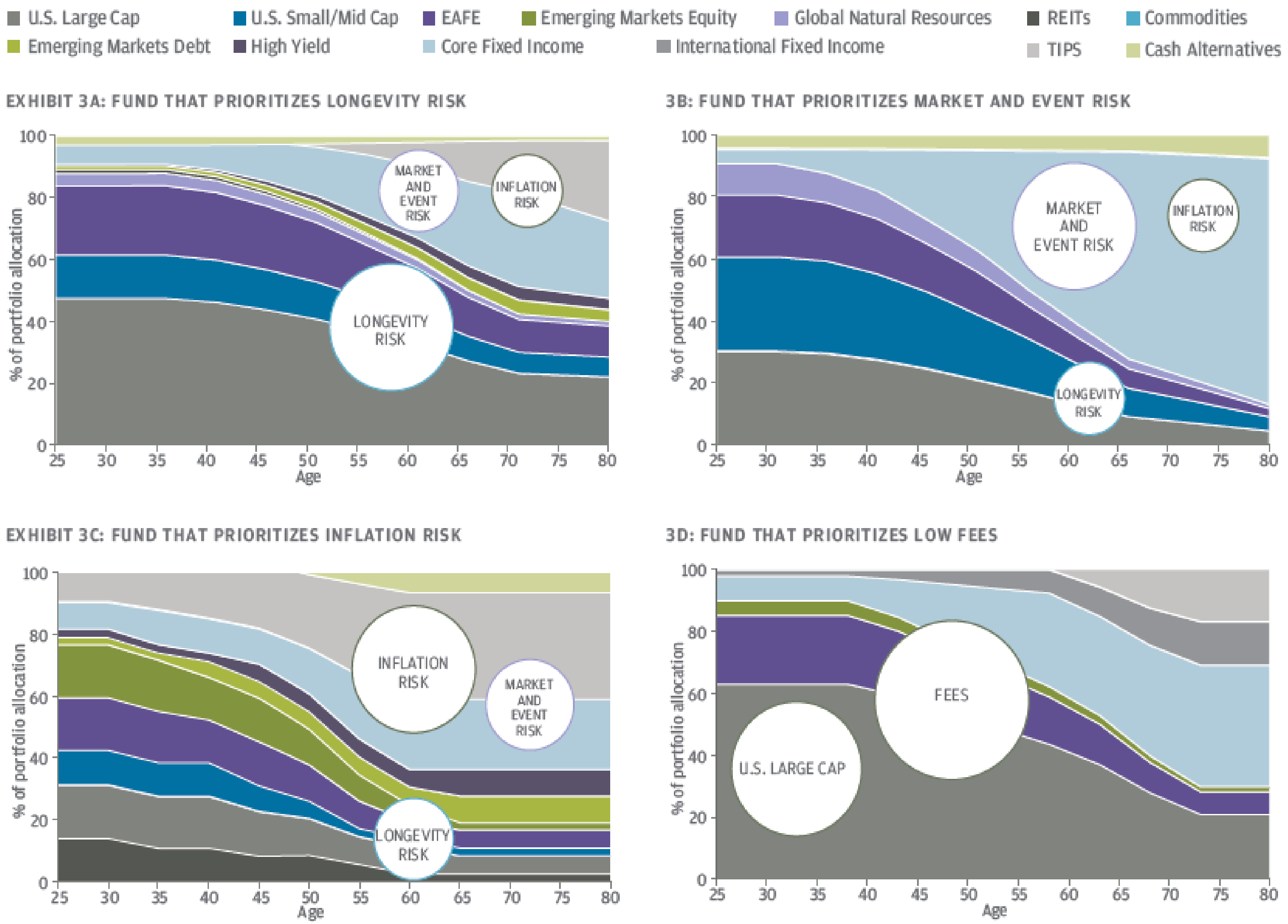
Historical rate of return is not a guarantee of and may not be indicative of future results. Returns are standardized using the Interquartile Methodology. See the following slide, "Important Disclosures for Personal Rate of Return Methodology," for additional information.

Participant-experienced Risks



Source: J.P. Morgan Asset Management. For illustrative purposes only.

Comparing Glide Paths and Their Focus on Risk



Source: J.P. Morgan Asset Management; data as of September 20, 2014. For illustrative purposes only.

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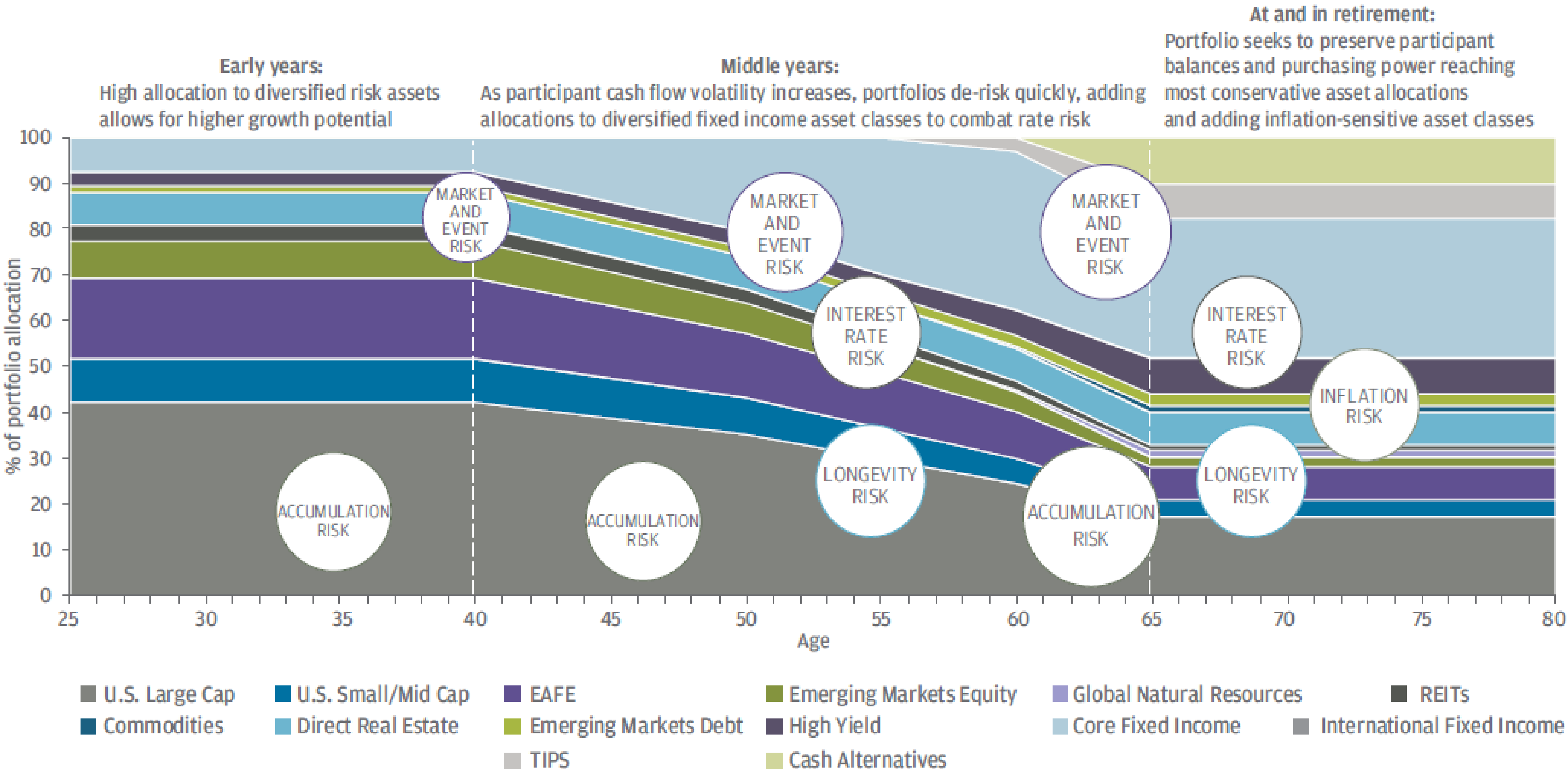
The Importance of Dynamic Risk Management

A Dynamic Glide Path



Source: J.P. Morgan Asset Management; data as of December 31, 2014. For illustrative purposes only.

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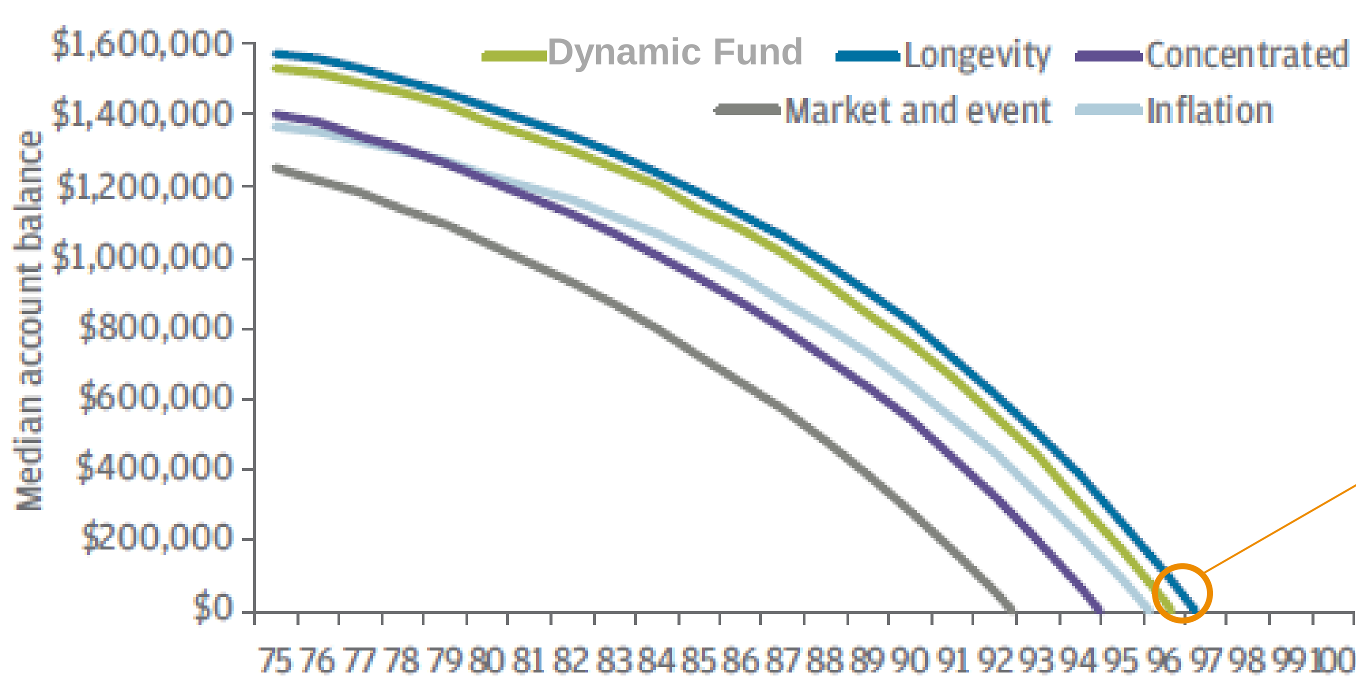
Objective: Longevity Risk

Median Outcomes



Longevity Risk

Reduces risk of asset depletion	Increases market risk	Increases event risk	Increases inflation risk

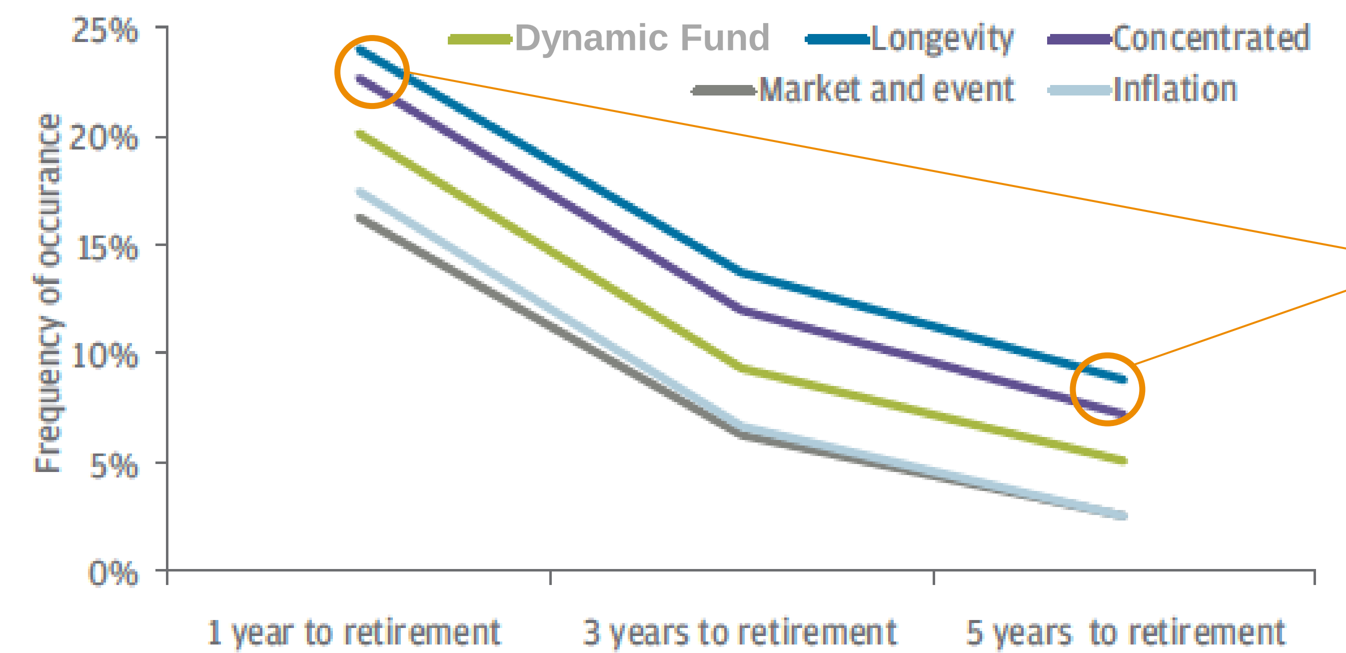
Are there risks associated with selecting a 'to' manager versus a 'through' manager?

- The fund that prioritized longevity risk only provided 6 months of additional income compared to the dynamically managed fund

Source: J.P. Morgan Asset Management and industry prospectuses. The above information are shown for illustrative purposes only. Data based on Monte Carlo simulations used to generate 10,000 different possible portfolio outcomes. Analysis assumed no cash flows prior to retirement and a 10% annual contribution, as well as a constant 6.5% annual withdrawal in retirement.

Objective: Market and Event Risk

Expected probability of loss



Market & Event Risk	Reduces frequency and magnitude of portfolio loss	Increases accumulation risk	Increases interest rate risk	Increases longevity risk
	↓	↑	↑	↑

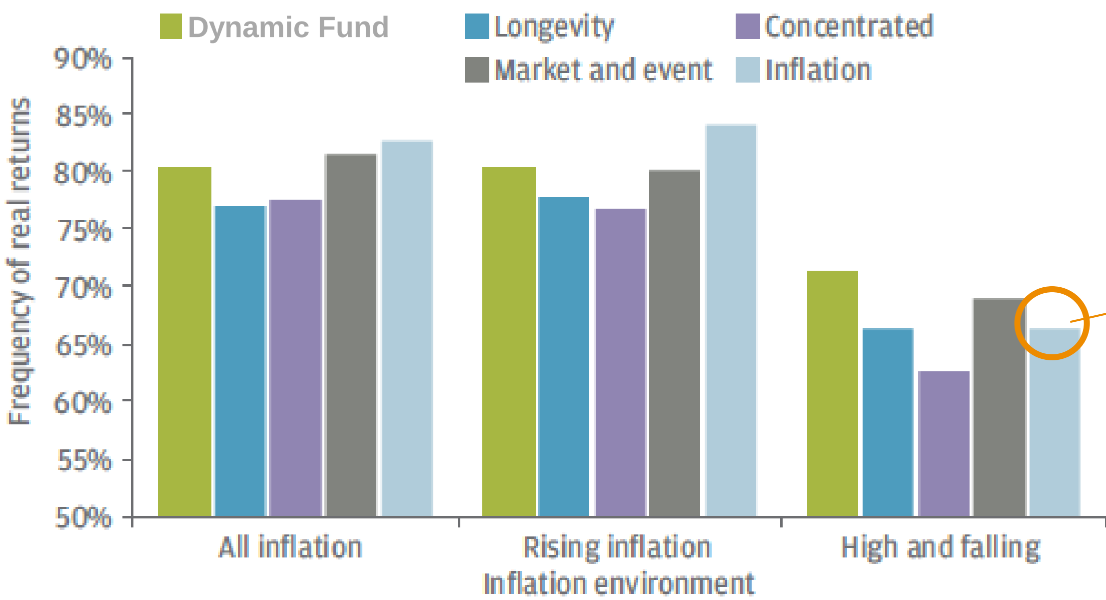
Are low-fee target date funds less risky?

- More concentrated funds and those with a higher allocation to equities were more likely to suffer losses from market events especially in the critical year before retirement

Source: J.P. Morgan Asset Management and industry prospectuses. The above information are shown for illustrative purposes only. The results above take each target date fund allocation as presented in the funds prospectus. The indices below are proxies for the underlying asset classes. The information above is not meant to be representative of performance the was achieved by the funds shown above.
Data is from 1975 through September 2014 based on index returns. Worst historical loss represents calendar year 2008. Sources: NCREIF, Barclay's Capital Aggregate Index, NAREIT Equity Index, MS REIT Index, S&P 500 Total Return, Russell 2000, Barclays Capital US TIPS Index, Dow Jones UBS Commodities Index , United States T-Bills, MSCI Emerging Markets Free Index, JPMorgan EMBI Global Index.

Objective: Inflation Risk

Frequency of real returns



Inflation Risk

Reduces risk when inflation is rising	Less effective when inflation is high and falling	Increases interest rate risk	Increases longevity risk
↓	↑	↑	↑

What are the consequences of focusing on inflation risk?

- The fund that prioritized inflation risk actually underperformed other strategies when inflation was high and falling.

Source: J.P. Morgan Asset Management and industry prospectuses. The above information are shown for illustrative purposes only. The results above take each target date fund allocation as presented in the funds prospectus. The indices below are proxies for the underlying asset classes. The information above is not meant to be representative of performance the was achieved by the funds shown above.
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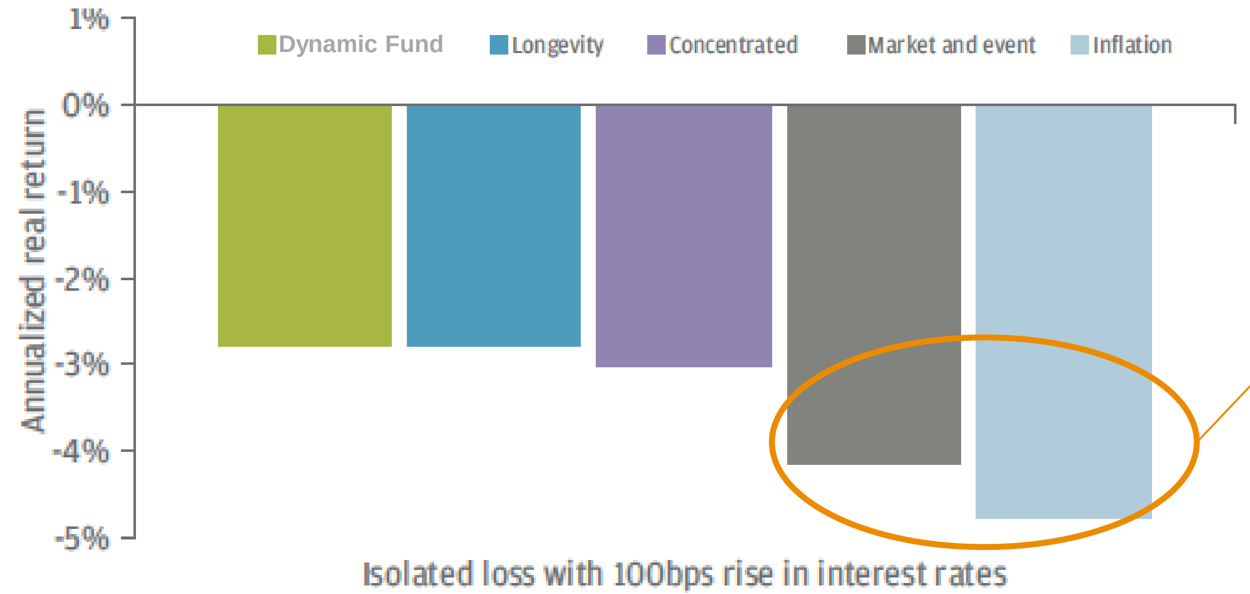
Objective: Interest rate risk

Percentage lost with 1% rise in rates



What happens if rates rise?

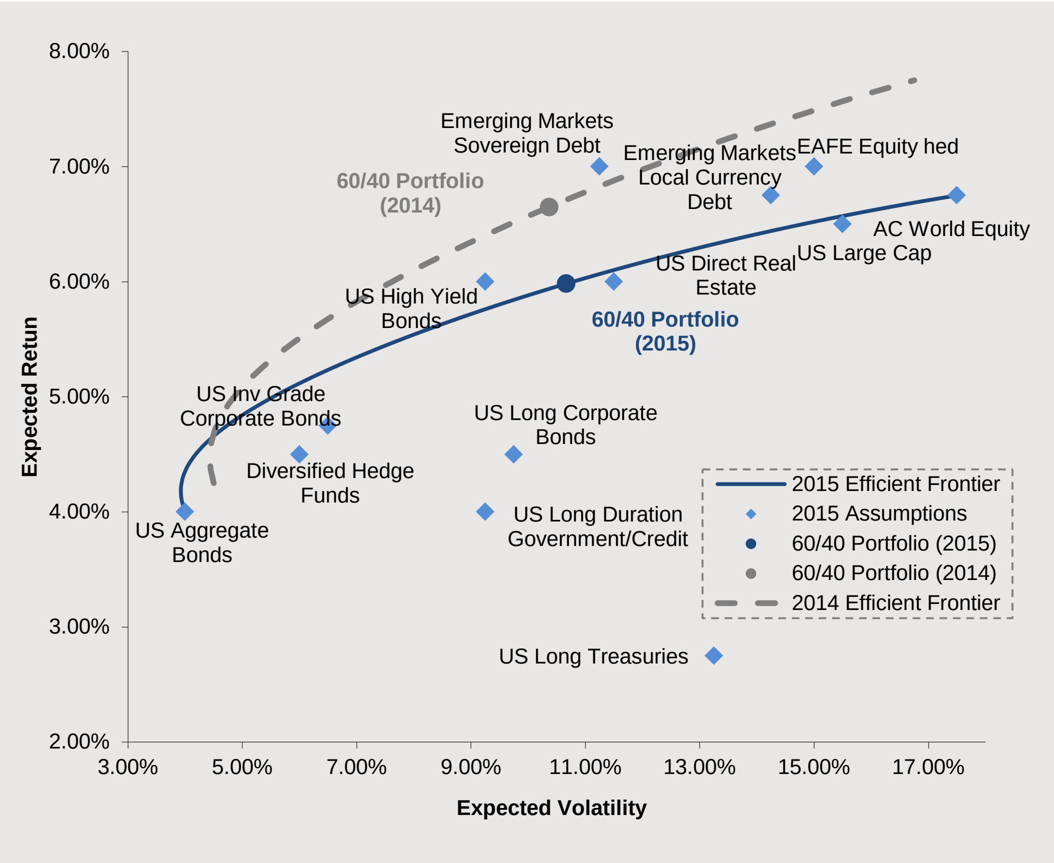
- Funds that prioritized market and event risk and inflation risk might lose more than double compared with other designs when interest rates rise.

Source: J.P. Morgan Asset Management and industry prospectuses. The above information are shown for illustrative purposes only. The results above take each target date fund allocation as presented in the funds prospectus. The indices below are proxies for the underlying asset classes. The information above is not meant to be representative of performance the was achieved by the funds shown above.
Data is from 1975 through September 2014 based on index returns. Sources: NCREIF, Barclay's Capital Aggregate Index, NAREIT Equity Index, MS REIT Index, S&P 500 Total Return, Russell 2000, Barclays Capital US TIPS Index, Dow Jones UBS Commodities Index , United States T-Bills, MSCI Emerging Markets Free Index, JPMorgan EMBI Global Index.

Long-term Capital Market Return Assumptions

The 2015 Long-term Capital Market Return Assumptions (LTCMRA) has shifted the efficient frontier downwards relative to the 2014 LTCMRA

J.P. Morgan's 2015 vs 2014 LTCMRA:
Efficient frontiers and 60/40 portfolios*



Return Levers

1. **Leverage**
   Adjust risk exposures through the prudent use of derivatives
2. **Illiquidity**
   Earn illiquidity premia over the long-term
3. **Opportunistic Investing**
   Capture market dislocations
4. **Asset Allocation Alpha**
   Actively express asset allocation views
5. **Manager Selection**
   Select managers with consistent alpha

Source: J.P. Morgan Asset Management. For illustrative purposes only. Expected risk and returns are based on J.P. Morgan's 2015 Long-term Capital Market Return Assumptions (LTCMRA)
*60/40 portfolio compositions: 60% AC World Equity, 40% US Aggregate Bonds. Efficient frontiers based on portfolio combinations of AC World Equity and US Aggregate Bonds.

Conclusions

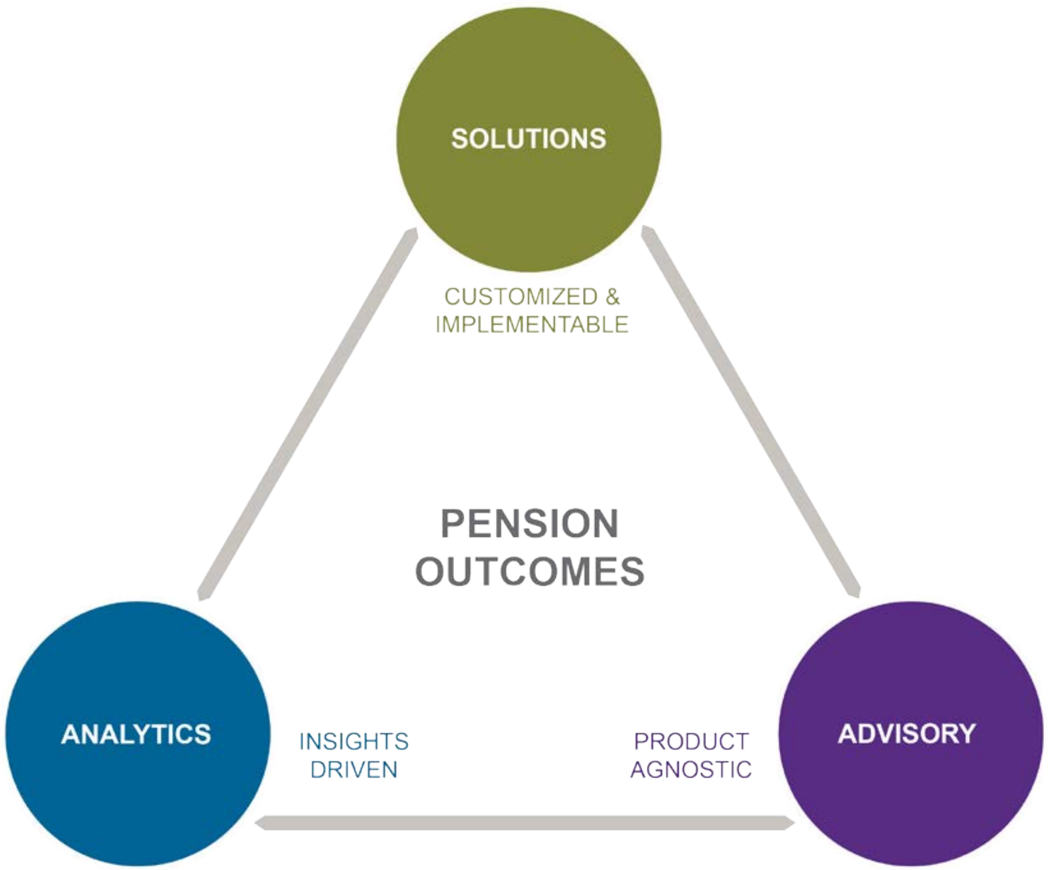
- Rising dependency rates and weakening economic growth are the biggest threats to lifetime retirement security.
- As the burden of retirement security has increased, the shift to DC/hybrid plans has not solved the problem, just transferred part of it to retirees.
- Individuals need assistance not just with investment strategy pre-retirement, but with prudent “decumulation” strategy post-retirement.
- Dynamic glide-path strategies can help deliver better outcomes for investors.

Appendix I

Supplemental Information

J.P. Morgan Asset Management: Pension Solutions & Advisory

We believe combining **proprietary analytics** and **product-agnostic advice** to develop a **total portfolio solution** will ultimately serve to meet our client's objectives throughout the pension lifecycle



2015 J.P. Morgan's Long-term Capital Market Return Assumptions

		Compound Return 2014 (%)	Compound Return 2015 (%)	Arithmetic Return 2015 (%)	Annualised Volatility	Annualised Volatility: Square Root of 12
FIXED INCOME	Inflation	2.25	2.25	2.26	1.50	1.50
	U.S. Cash	2.00	2.00	2.00	0.50	0.50
	U.S. Intermediate Treasuries	4.25	4.00	4.29	7.75	7.50
	U.S. Long Treasuries	3.25	2.75	3.59	13.25	12.25
	TIPS	4.75	4.25	4.50	7.25	7.00
	U.S. Aggregate Bonds	4.25	4.00	4.08	4.00	3.75
	U.S. Short Duration Government/Credit	2.50	2.75	2.77	2.00	1.75
	U.S. Long Duration Government/Credit	4.75	4.00	4.41	9.25	8.75
	U.S. Inv Grade Corporate Bonds	5.00	4.75	4.95	6.50	6.25
	U.S. Long Corporate Bonds	5.00	4.50	4.95	9.75	9.00
	U.S. High Yield Bonds	6.00	6.00	6.40	9.25	8.50
	U.S. Leveraged Loans	4.50	4.50	4.67	6.00	5.75
	World Government Bonds hedged	3.25	2.75	2.80	3.25	3.25
	World Government Bonds	3.25	2.50	2.72	6.75	6.50
	World ex-U.S. Government Bonds hedged	3.25	2.50	2.54	3.00	3.00
	World ex-U.S. Government Bonds	3.25	2.25	2.58	8.25	7.75
	EM Sovereign Debt	6.75	7.00	7.58	11.25	10.50
	EM Local Currency Debt	7.00	6.75	7.68	14.25	13.25
	EM Corporate Bonds	6.25	6.00	6.36	8.75	8.25
	U.S. Muni 1-15 Yr Blend	3.75	3.25	3.33	4.00	3.75
	U.S. Muni High Yield	5.25	5.00	5.25	7.25	6.75
EQUITIES	U.S. Large Cap	7.50	6.50	7.60	15.50	14.00
	U.S. Mid Cap	7.75	6.75	8.34	18.75	16.50
	U.S. Small Cap	7.50	6.75	8.81	21.50	19.00
	U.S. Large Cap Value	7.75	6.75	7.95	16.25	14.75
	U.S. Large Cap Growth	7.25	6.25	7.39	15.75	14.25
	Europe ex-UK Large Cap	7.75	7.25	8.83	18.75	17.25
	Japanese Equity	6.75	5.25	6.47	16.25	15.50
	UK Large Cap	8.00	6.75	8.34	18.75	17.00
	EAFE Equity hedged	7.75	7.00	8.03	15.00	13.75
	EAFE Equity	7.75	6.75	8.10	17.25	16.00
	Emerging Markets Equity	9.00	8.75	11.77	26.50	22.50
	Asia ex-Japan Equity	9.25	9.75	12.48	25.25	21.75
	AC World Equity	7.75	6.75	8.14	17.50	15.75
ALTERNATIVES	Private Equity	8.00	7.75	9.89	22.00	20.00
	U.S. Direct Real Estate	6.00	6.00	6.61	11.50	10.75
	U.S. Value Added Real Estate	7.75	7.75	8.84	15.50	14.25
	European Direct Real Estate	5.75	5.75	6.89	15.75	14.75
	U.S. REITs	6.75	6.50	8.17	19.25	17.75
	Global Infrastructure	7.25	6.75	7.47	12.50	11.75
	Diversified Hedge Funds	5.25	4.50	4.67	6.00	5.75
	Event Driven Hedge Funds	6.00	6.00	6.23	7.00	6.50
	Long Bias Hedge Funds	6.25	5.25	5.82	11.00	10.50
	Relative Value Hedge Funds	4.75	5.00	5.16	5.75	5.50
	Macro Hedge Funds	5.25	4.75	5.22	10.00	9.50
	Commodities	3.75	3.50	5.22	19.25	17.25
	Gold	4.25	4.00	6.11	21.50	18.50

	Inflation	U.S. Cash	U.S. Intermediate Treasuries	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds
Inflation	1.00															
U.S. Cash	0.10	1.00														
U.S. Intermediate Treasuries	-0.22	0.03	1.00													
U.S. Long Treasuries	-0.25	0.00	0.90	1.00												
TIPS	0.01	-0.02	0.68	0.53	1.00											
U.S. Aggregate Bonds	-0.21	0.00	0.86	0.76	0.78	1.00										
U.S. Short Duration Government/Credit	-0.20	0.29	0.64	0.41	0.65	0.74	1.00									
U.S. Long Duration Government/Credit	-0.23	-0.07	0.83	0.86	0.66	0.90	0.51	1.00								
U.S. Inv Grade Corporate Bonds	-0.21	-0.13	0.50	0.45	0.64	0.82	0.60	0.78	1.00							
U.S. Long Corporate Bonds	-0.25	-0.14	0.55	0.58	0.57	0.81	0.47	0.87	0.93	1.00						
U.S. High Yield Bonds	0.00	-0.16	-0.22	-0.29	0.27	0.19	0.11	0.10	0.57	0.46	1.00					
U.S. Leveraged Loans	0.26	-0.10	-0.44	-0.43	0.03	-0.08	-0.15	-0.10	0.28	0.21	0.77	1.00				
World Government Bonds hedged	-0.30	0.05	0.87	0.83	0.55	0.79	0.58	0.78	0.51	0.55	-0.21	-0.44	1.00			
World Government Bonds	-0.06	0.05	0.57	0.43	0.63	0.64	0.62	0.52	0.52	0.48	0.15	-0.21	0.55	1.00		
World ex-U.S. Government Bonds hedged	-0.30	0.02	0.76	0.73	0.45	0.71	0.50	0.71	0.48	0.52	-0.17	-0.38	0.95	0.50	1.00	
World ex-U.S. Government Bonds	-0.02	0.04	0.46	0.31	0.58	0.56	0.56	0.44	0.49	0.44	0.22	-0.14	0.45	0.96	0.42	1.00
EM Sovereign Debt	-0.13	-0.07	0.29	0.17	0.56	0.60	0.43	0.50	0.75	0.67	0.69	0.35	0.29	0.48	0.30	0.49
EM Local Currency Debt	0.01	0.05	0.08	-0.04	0.38	0.34	0.30	0.24	0.50	0.43	0.59	0.24	0.09	0.55	0.11	0.59
EM Corporate Bonds	-0.08	-0.14	0.18	0.05	0.51	0.56	0.45	0.45	0.81	0.71	0.72	0.45	0.17	0.41	0.19	0.43
U.S. Muni 1-15 Yr Blend	-0.12	-0.05	0.52	0.45	0.55	0.66	0.47	0.57	0.60	0.55	0.29	0.12	0.52	0.37	0.49	0.33
U.S. Muni High Yield	0.18	-0.09	-0.01	-0.03	0.30	0.23	0.02	0.19	0.35	0.29	0.47	0.53	0.00	0.03	0.03	0.04
U.S. Large Cap	0.01	-0.06	-0.29	-0.37	0.04	-0.02	-0.05	-0.06	0.26	0.20	0.69	0.48	-0.27	0.16	-0.23	0.24
U.S. Mid Cap	0.04	-0.08	-0.32	-0.39	0.04	-0.04	-0.08	-0.08	0.25	0.19	0.72	0.53	-0.31	0.11	-0.26	0.19
U.S. Small Cap	0.01	-0.07	-0.34	-0.41	-0.05	-0.12	-0.14	-0.15	0.15	0.11	0.65	0.45	-0.32	0.07	-0.27	0.15
U.S. Large Cap Value	0.01	-0.06	-0.29	-0.36	0.01	-0.02	-0.06	-0.06	0.25	0.20	0.67	0.45	-0.25	0.17	-0.20	0.24
U.S. Large Cap Growth	0.02	-0.08	-0.31	-0.40	0.06	-0.04	-0.06	-0.09	0.23	0.18	0.70	0.52	-0.31	0.13	-0.27	0.20
Europe ex-UK Large Cap	0.03	0.04	-0.24	-0.33	0.11	0.05	0.08	-0.01	0.33	0.26	0.69	0.44	-0.21	0.35	-0.17	0.43
Japanese Equity	0.01	-0.02	-0.18	-0.21	0.11	0.08	0.05	0.06	0.34	0.29	0.53	0.39	-0.15	0.21	-0.11	0.26
UK Large Cap	0.07	0.00	-0.31	-0.39	0.08	0.02	0.01	-0.03	0.34	0.27	0.71	0.54	-0.29	0.28	-0.25	0.36
EAFE Equity hedged	-0.02	0.02	-0.37	-0.39	-0.06	-0.06	-0.10	-0.06	0.28	0.23	0.68	0.56	-0.30	0.01	-0.23	0.08
EAFE Equity	0.03	0.02	-0.25	-0.33	0.12	0.07	0.07	0.01	0.37	0.30	0.71	0.48	-0.22	0.34	-0.18	0.42
Emerging Markets Equity	0.03	0.08	-0.22	-0.30	0.17	0.07	0.08	0.01	0.35	0.28	0.69	0.47	-0.21	0.27	-0.17	0.34
Asia ex-Japan Equity	-0.03	0.06	-0.20	-0.28	0.16	0.10	0.10	0.05	0.40	0.33	0.70	0.47	-0.17	0.26	-0.13	0.33
AC World Equity	0.03	0.00	-0.28	-0.37	0.10	0.03	0.02	-0.03	0.33	0.27	0.74	0.50	-0.26	0.27	-0.21	0.35
Private Equity	0.05	-0.11	-0.39	-0.44	-0.03	-0.13	-0.13	-0.16	0.18	0.12	0.69	0.53	-0.36	0.06	-0.30	0.14
U.S. Direct Real Estate	0.00	-0.01	-0.03	-0.06	0.04	0.05	0.00	0.03	0.11	0.10	0.25	0.14	-0.02	0.09	-0.01	0.11
U.S. Value Added Real Estate	0.00	-0.01	-0.03	-0.06	0.04	0.05	0.00	0.03	0.11	0.10	0.25	0.14	-0.02	0.09	-0.01	0.11
European Direct Real Estate	-0.04	0.00	-0.03	-0.04	0.03	0.06	0.02	0.06	0.15	0.14	0.20	0.13	0.03	0.05	0.06	0.07
U.S. REITs	-0.03	-0.04	-0.04	-0.11	0.14	0.17	0.03	0.14	0.35	0.31	0.64	0.35	-0.02	0.26	0.00	0.30
Global Infrastructure	0.10	-0.01	-0.11	-0.14	0.01	-0.03	-0.04	-0.04	0.06	0.04	0.21	0.17	-0.11	0.04	-0.10	0.07
Diversified Hedge Funds	0.16	0.10	-0.41	-0.43	0.03	-0.14	-0.12	-0.15	0.17	0.11	0.58	0.54	-0.39	0.02	-0.34	0.10
Event Driven Hedge Funds	0.14	0.00	-0.46	-0.51	0.01	-0.14	-0.12	-0.18	0.23	0.14	0.73	0.62	-0.42	0.07	-0.35	0.15
Long Bias Hedge Funds	0.10	0.02	-0.42	-0.49	0.04	-0.11	-0.06	-0.16	0.24	0.16	0.72	0.57	-0.41	0.11	-0.35	0.20
Relative Value Hedge Funds	0.17	-0.03	-0.40	-0.45	0.11	-0.02	-0.03	-0.08	0.37	0.26	0.81	0.76	-0.38	0.01	-0.32	0.08
Macro Hedge Funds	-0.02	0.20	-0.09	-0.10	0.16	0.01	0.14	0.00	0.13	0.10	0.20	0.03	-0.06	0.33	-0.04	0.37
Commodities	0.22	0.08	-0.15	-0.24	0.23	0.05	0.12	0.00	0.23	0.17	0.41	0.28	-0.22	0.31	-0.22	0.37
Gold	0.08	0.10	0.20	0.08	0.39	0.27	0.31	0.15	0.25	0.17	0.10	-0.10	0.11	0.45	0.07	0.46

	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield	U.S. Large Cap	U.S. Mid Cap	U.S. Small Cap	U.S. Large Cap Value	U.S. Large Cap Growth	Europe ex-UK Large Cap	Japanese Equity	UK Large Cap	EAFE Equity hedged	EAFE Equity	Emerging Markets Equity
EM Sovereign Debt	1.00															
EM Local Currency Debt	0.79	1.00														
EM Corporate Bonds	0.86	0.68	1.00													
U.S. Muni 1-15 Yr Blend	0.53	0.22	0.44	1.00												
U.S. Muni High Yield	0.40	0.21	0.40	0.55	1.00											
U.S. Large Cap	0.50	0.64	0.52	0.00	0.21	1.00										
U.S. Mid Cap	0.50	0.63	0.53	0.01	0.23	0.95	1.00									
U.S. Small Cap	0.41	0.59	0.42	-0.06	0.14	0.92	0.94	1.00								
U.S. Large Cap Value	0.50	0.65	0.52	-0.01	0.20	0.96	0.94	0.91	1.00							
U.S. Large Cap Growth	0.49	0.60	0.51	0.01	0.23	0.96	0.95	0.91	0.93	1.00						
Europe ex-UK Large Cap	0.59	0.75	0.58	0.00	0.19	0.88	0.86	0.80	0.87	0.85	1.00					
Japanese Equity	0.45	0.59	0.47	0.00	0.14	0.66	0.67	0.61	0.66	0.64	0.71	1.00				
UK Large Cap	0.57	0.70	0.59	0.02	0.31	0.86	0.84	0.75	0.85	0.83	0.93	0.69	1.00			
EAFE Equity hedged	0.52	0.61	0.53	-0.03	0.26	0.88	0.89	0.82	0.87	0.86	0.87	0.78	0.87	1.00		
EAFE Equity	0.61	0.78	0.61	0.02	0.22	0.88	0.87	0.81	0.87	0.86	0.96	0.78	0.94	0.90	1.00	
Emerging Markets Equity	0.64	0.80	0.62	0.02	0.25	0.77	0.79	0.72	0.75	0.78	0.85	0.67	0.84	0.81	0.88	1.00
Asia ex-Japan Equity	0.63	0.76	0.63	0.05	0.25	0.76	0.77	0.71	0.74	0.77	0.83	0.64	0.81	0.80	0.86	0.95
AC World Equity	0.59	0.75	0.60	0.01	0.23	0.93	0.93	0.87	0.92	0.92	0.95	0.75	0.93	0.91	0.96	0.89
Private Equity	0.38	0.55	0.44	-0.06	0.24	0.88	0.92	0.93	0.87	0.89	0.77	0.65	0.74	0.80	0.79	0.72
U.S. Direct Real Estate	0.20	0.23	0.16	0.05	0.08	0.30	0.31	0.31	0.32	0.28	0.27	0.21	0.25	0.26	0.27	0.22
U.S. Value Added Real Estate	0.20	0.23	0.16	0.05	0.08	0.30	0.31	0.31	0.32	0.28	0.27	0.21	0.25	0.26	0.27	0.22
European Direct Real Estate	0.21	0.21	0.20	0.06	0.10	0.26	0.25	0.23	0.26	0.24	0.27	0.24	0.25	0.30	0.27	0.24
U.S. REITs	0.54	0.59	0.45	0.15	0.22	0.76	0.77	0.77	0.79	0.71	0.68	0.52	0.62	0.66	0.68	0.56
Global Infrastructure	0.14	0.19	0.15	-0.01	0.08	0.30	0.29	0.28	0.29	0.29	0.27	0.20	0.26	0.26	0.27	0.23
Diversified Hedge Funds	0.34	0.50	0.40	-0.08	0.37	0.65	0.69	0.61	0.62	0.69	0.68	0.62	0.74	0.74	0.73	0.77
Event Driven Hedge Funds	0.43	0.57	0.52	-0.06	0.41	0.80	0.84	0.78	0.78	0.81	0.80	0.64	0.84	0.82	0.83	0.81
Long Bias Hedge Funds	0.49	0.66	0.55	-0.07	0.29	0.85	0.87	0.82	0.82	0.87	0.86	0.71	0.88	0.87	0.89	0.90
Relative Value Hedge Funds	0.50	0.53	0.59	0.08	0.53	0.67	0.71	0.62	0.65	0.69	0.69	0.60	0.77	0.75	0.74	0.75
Macro Hedge Funds	0.20	0.42	0.18	-0.02	0.07	0.27	0.28	0.22	0.25	0.29	0.39	0.37	0.41	0.31	0.43	0.50
Commodities	0.35	0.49	0.39	-0.09	0.14	0.43	0.46	0.36	0.42	0.45	0.53	0.35	0.62	0.41	0.56	0.59
Gold	0.29	0.38	0.29	0.15	0.04	0.04	0.06	0.05	0.05	0.06	0.14	0.09	0.18	-0.02	0.17	0.28

	Asia ex-Japan Equity	AC World Equity	Private Equity	U.S. Direct Real Estate	U.S. Value Added Real Estate	European Direct Real Estate	U.S. REITs	Global Infrastructure	Diversified Hedge Funds	Event Driven Hedge Funds	Long Bias Hedge Funds	Relative Value Hedge Funds	Macro Hedge Funds	Commodities	Gold
Asia ex-Japan Equity	1.00														
AC World Equity	0.87	1.00													
Private Equity	0.70	0.85	1.00												
U.S. Direct Real Estate	0.22	0.29	0.28	1.00											
U.S. Value Added Real Estate	0.22	0.29	0.28	0.16	1.00										
European Direct Real Estate	0.24	0.27	0.22	0.08	0.08	1.00									
U.S. REITs	0.56	0.72	0.70	0.40	0.40	0.21	1.00								
Global Infrastructure	0.22	0.29	0.27	0.09	0.09	0.07	0.22	1.00							
Diversified Hedge Funds	0.72	0.74	0.68	0.14	0.14	0.20	0.35	0.21	1.00						
Event Driven Hedge Funds	0.77	0.85	0.84	0.22	0.22	0.23	0.56	0.25	0.90	1.00					
Long Bias Hedge Funds	0.87	0.91	0.84	0.22	0.22	0.24	0.56	0.26	0.88	0.93	1.00				
Relative Value Hedge Funds	0.73	0.75	0.70	0.19	0.19	0.21	0.47	0.22	0.85	0.89	0.85	1.00			
Macro Hedge Funds	0.45	0.40	0.25	0.04	0.04	0.09	0.11	0.08	0.64	0.46	0.52	0.38	1.00		
Commodities	0.52	0.55	0.38	0.10	0.10	0.10	0.26	0.15	0.58	0.55	0.62	0.54	0.56	1.00	
Gold	0.24	0.15	0.05	0.02	0.02	0.00	0.07	0.02	0.24	0.15	0.24	0.16	0.49	0.50	1.00

As of September 30, 2014*

* Source: J.P. Morgan Asset Management. Data as of 30 September 2014, except hedge funds (diversified, event driven, long bias, and relative value) as of 30 June 2014 and hedge fund (macro) as of 31 May 2014. U.S. Intermediate Treasury returns based on Barclays Capital U.S. Treasury: 7–10 Year Index. TIPS=Treasury Inflation Protected Securities.

Private equity, hedge funds, real estate, infrastructure and commodities are unlike other asset categories shown above in that there is no underlying investable 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.

Important Disclosures for Personal Rate of Return Methodology

- Rate of return for the measurement period is aggregated by investment strategy. Historical rate of return is not a guarantee of and may not be indicative of future results.
- Rate of return is calculated for active participants by investment strategy using the Modified Dietz method and is based upon volatility between the highest rate of return and the lowest rate of return associated with each investment strategy among such participants.
- Services associated with the identified investment strategies were available as of the last day of the measurement period, but may not have been available throughout the measurement period.
- Target Date Fund Users are participants with at least 70% of their account balance invested in target date funds as of the first and last day of the measurement period.
- Do-It-Yourselfers are participants with less than 70% of their account balances invested in one of the other investment strategies as of the first and last day of the measurement period and include participants using online advice services, if applicable.
- Brokerage Users are participants with at least $1 in a brokerage account as of the last day of the measurement period.
- The benchmark for each investment strategy or age group in the standardized returns graphs correlates to the target date fund's glide path for each age group presented.
- The scatter plot and glide path illustrations on the preceding pages represent Do-It-Yourselfers' equity exposure by age (the blue dots) compared to a range of +/-10% of the J.P. Morgan target date funds' equity allocations at each age (the orange lines). The scatter graphs on the pages showing all J.P. Morgan clients use the equity allocation of 3,000 randomly selected participants so that the chart's data points show clearly.

J.P. Morgan Asset Management Index Definitions

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

The **S&P 500 Index** is widely regarded as the best single gauge of the U.S. equities market. This world-renowned index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. Although the S&P 500 Index focuses on the large-cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market. An investor cannot invest directly in an index.

The **S&P 400 Mid Cap Index** is representative of 400 stocks in the mid-range sector of the domestic stock market, representing all major industries.

The **Russell 3000 Index**® measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

The **Russell 1000 Index** ® measures the performance of the 1,000 largest companies in the Russell 3000.

The **Russell 1000 Growth Index** ® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 1000 Value Index** ® measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell Midcap Index** ® measures the performance of the 800 smallest companies in the Russell 1000 Index.

The **Russell Midcap Growth Index** ® measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.

The **Russell Midcap Value Index** ® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.

The **Russell 2000 Index** ® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The **Russell 2000 Growth Index** ® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 2000 Value Index** ® measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell Top 200 Index** ® measures the performance of the largest cap segment of the U.S. equity universe. It includes approximately 200 of the largest securities based on a combination of their market cap and current index membership and represents approximately 68% of the U.S. market.

The **MSCI® EAFE** (Europe, Australia, Far East) Net Index is recognized as the pre-eminent benchmark in the United States to measure international equity performance. It comprises 21 MSCI country indexes, representing the developed markets outside of North America.

The **MSCI Emerging Markets Index**SM is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. As of June 2007, the MSCI Emerging Markets Index consisted of the following 25 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

The **MSCI ACWI (All Country World Index) Index** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. As of June 2009 the **MSCI ACWI** consisted of 45 country indices comprising 23 developed and 22 emerging market country indices.

The **MSCI Small Cap Indices**SM target 40% of the eligible Small Cap universe within each industry group, within each country. MSCI defines the Small Cap universe as all listed securities that have a market capitalization in the range of USD200-1,500 million.

The **MSCI Value and Growth Indices**SM cover the full range of developed, emerging and All Country MSCI Equity indexes. As of the close of May 30, 2003, MSCI implemented an enhanced methodology for the MSCI Global Value and Growth Indices, adopting a two dimensional framework for style segmentation in which value and growth securities are categorized using different attributes - three for value and five for growth including forward-looking variables. The objective of the index design is to divide constituents of an underlying MSCI Standard Country Index into a value index and a growth index, each targeting 50% of the free-float adjusted market capitalization of the underlying country index. Country Value/Growth indices are then aggregated into regional Value/Growth indices. Prior to May 30, 2003, the indices used Price/Book Value (P/BV) ratios to divide the standard MSCI country indices into value and growth indices. All securities were classified as either "value" securities (low P/BV securities) or "growth" securities (high P/BV securities), relative to each MSCI country index.

The following **MSCI Total Return Indices**SM are calculated with gross dividends**:** This series approximates the maximum possible dividend reinvestment. The amount reinvested is the dividend distributed to individuals resident in the country of the company, but does not include tax credits.

The **MSCI Europe Index**SM is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe. As of June 2007, the MSCI Europe Index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The **MSCI Pacific Index**SM is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region. As of June 2007, the MSCI Pacific Index consisted of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

Credit Suisse/Tremont Hedge Fund Index is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

The **NFI-ODCE**, short for NCREIF Fund Index - Open End Diversified Core Equity, is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NFI-ODCE Index is capitalization-weighted and is reported gross of fees. Measurement is time-weighted.

The **NAREIT EQUITY REIT Index** is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.

The **Dow Jones Industrial Average** measures the stock performance of 30 leading blue-chip U.S. companies.

The **Bloomberg Commodity Index** is composed of futures contracts on physical commodities and represents twenty two separate commodities traded on U.S. exchanges, with the exception of aluminum, nickel, and zinc

J.P. Morgan Asset Management - Index Definitions

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

The **S&P GSCI Index** is a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. The returns are calculated on a fully collateralized basis with full reinvestment. Individual components qualify for inclusion in the index on the basis of liquidity and are weighted by their respective world production quantities.

The **Barclays Capital U.S. Aggregate Index** represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indexes that are calculated and reported on a regular basis.

This **U.S. Treasury Index** is a component of the U.S. Government index.

West Texas Intermediate (WTI) is the underlying commodity for the New York Mercantile Exchange's oil futures contracts.

The **Barclays Capital High Yield Index** covers the universe of fixed rate, non-investment grade debt. Pay-in-kind (PIK) bonds, Eurobonds, and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, and 144-As are also included.

The **Barclays Capital 1-3 Month U.S. Treasury Bill Index** includes all publicly issued zero-coupon U.S. Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The **Barclays Capital General Obligation Bond Index** is a component of the **Barclays Capital Municipal Bond Index**. To be included in the index, bonds must be general obligation bonds rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least $7 million and be issued as part of a transaction of at least $75 million. The bonds must be fixed rate, have a dated-date after December 31, 1990, and must be at least one year from their maturity date. Remarketed issues, taxable municipal bonds, bonds with floating rates, and derivatives, are excluded from the benchmark.

The **Barclays Capital Revenue Bond Index** is a component of the **Barclays Capital Municipal Bond Index**. To be included in the index, bonds must be revenue bonds rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least $7 million and be issued as part of a transaction of at least $75 million. The bonds must be fixed rate, have a dated-date after December 31, 1990, and must be at least one year from their maturity date. Remarketed issues, taxable municipal bonds, bonds with floating rates, and derivatives, are excluded from the benchmark.

The **Barclays High Yield Municipal Index** includes bonds rated Ba1 or lower or non-rated bonds using the middle rating of Moody's, S&P and Fitch.

The **Barclays Capital Taxable Municipal Bond Index** is a rules-based, market-value weighted index engineered for the long-term taxable bond market. To be included in the index, bonds must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies if all three rate the bond: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least $7 million and be issued as part of a transaction of at least $75 million. The bonds must be fixed rate and must be at least one year from their maturity date. Remarketed issues (unless converted to fixed rate), bonds with floating rates, and derivatives, are excluded from the benchmark.

Municipal Bond Index: To be included in the index, bonds must be rated investment-grade (Baa3/BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment-grade. They must have an outstanding par value of at least $7 million and be issued as part of a transaction of at least $75 million. The bonds must be fixed rate, have a dated-date after December 31, 1990, and must be at least one year from their maturity date. Remarketed issues, taxable municipal bonds, bonds with floating rates, and derivatives are excluded from the benchmark.

The **Barclays Capital Emerging Markets Index** includes USD-denominated debt from emerging markets in the following regions: Americas, Europe, Middle East, Africa, and Asia. As with other fixed income benchmarks provided by Barclays Capital, the index is rules-based, which allows for an unbiased view of the marketplace and easy replicability.

The Barclays Capital MBS Index covers the mortgage-backed pass-through securities of Ginnie Mae, Fannie Mae, and Freddie Mac. Aggregate components must have a weighted average maturity of at least one year, must have $250 million par amount outstanding, and must be fixed rate mortgages.

The **Barclays Capital Corporate Bond Index** is the Corporate component of the U.S. Credit index.

The **Barclays Capital TIPS Index** consists of Inflation-Protection securities issued by the U.S. Treasury.

The **J.P. Morgan EMBI Global Index** includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The **J.P. Morgan Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The **CS/Tremont Equity Market Neutral Index** takes both long and short positions in stocks with the aim of minimizing exposure to the systematic risk of the market (i.e., a beta of zero).

The **CS/Tremont Multi-Strategy Index** consists of funds that allocate capital based on perceived opportunities among several hedge fund strategies. Strategies adopted in a multi-strategy fund may include, but are not limited to, convertible bond arbitrage, equity long/short, statistical arbitrage and merger arbitrage.

The **Barclays U.S. Dollar Floating Rate Note (FRN) Index** provides a measure of the U.S. dollar denominated floating rate note market.

*Market Neutral returns for November 2008 are estimates by J.P. Morgan Funds Market Strategy, and are based on a December 8, 2008 published estimate for November returns by CS/Tremont in which the Market Neutral returns were estimated to be +0.85% (with 69% of all CS/Tremont constituents having reported return data). Presumed to be excluded from the November return are three funds, which were later marked to $0 by CS/Tremont in connection with the Bernard Madoff scandal. J.P. Morgan Funds believes this distortion is not an accurate representation of returns in the category. CS/Tremont later published a finalized November return of -40.56% for the month, reflecting this mark-down. CS/Tremont assumes no responsibility for these estimates.

J.P. Morgan Asset Management - Index Definitions, Risks and Disclosures

Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise.

The price of **equity** securities may rise, or fall because of changes in the broad market or changes in a company's financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to "stock market risk" meaning that stock prices in general may decline over short or extended periods of time.

Small-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies since smaller companies generally have a higher risk of failure. Historically, smaller companies' stock has experienced a greater degree of market volatility than the average stock.

Mid-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies. Historically, mid-cap companies' stock has experienced a greater degree of market volatility than the average stock.

Real estate investments may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.

International investing involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies outside the U.S. can raise or lower returns. Also, some overseas markets may not be as politically and economically stable as the United States and other nations.

Investments in **emerging markets** can be more volatile. As mentioned above, the normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

Investments in **commodities** may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.

Investing in **alternative assets** involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which can magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.

Derivatives may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.

Price to forward earnings is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. **Price to book value** compares a stock's market value to its book value. **Price to cash flow** is a measure of the market's expectations of a firm's future financial health. **Price to dividends** is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company's potential as an investment.

There is no guarantee that the use of **long and short positions** will succeed in limiting an investor's exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.

The **HFRI Monthly Indices (HFRI)** are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFRI are broken down into 4 main strategies, each with multiple substrategies. All single-manager HFRI Index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2200 funds listed on the internal HFR Database.

Equity Market Neutral Strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

Merger Arbitrage Strategies which employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently engaged in a corporate transaction.

Global Macro Strategies trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.

Relative Value Strategies maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities.

The **Cambridge Associates LLC U.S. Private Equity Index®** is an end-to-end calculation based on data compiled from 1,052 U.S. private equity funds (buyout, growth equity, private equity energy and mezzanine funds), including fully liquidated partnerships, formed between 1986 and 2013.

The **Alerian MLP Index** is a composite of the 50 most prominent energy Master Limited Partnerships (MLPs) that provides investors with an unbiased, comprehensive benchmark for the asset class.

J.P. Morgan Asset Management - Risks and Disclosures

The Market Insights program provides comprehensive data and commentary on global markets without reference to products. Designed as a tool to help clients understand the markets and support investment decision-making, the program explores the implications of current economic data and changing market conditions.

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<u>JPMAM Long Term Capital Market Assumptions:</u> 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. 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. The outputs of the assumptions are provided for illustration/discussion purposes only and are subject to significant limitations. “Expected” or “Alpha” return estimates are subject to uncertainty and error. For example changes in the historical data from which it is estimated will result in different implications for asset class returns. Expected returns for each asset class conditional on an economic scenario; actual returns in the event the scenario comes to pass could be higher or lower, as they have been in the past, so an investor should not expect to achieve returns similar to the outputs shown herein. References to future returns for either asset allocation strategies or asset classes are not promises of actual returns a client portfolio may achieve. Because of the inherent limitations of all models, potential investors should not rely exclusively on the model when making a decision. The model cannot account for the impact that economic, market, and other factors may have on the implementation and ongoing management of an actual investment portfolio. Unlike actual portfolio outcomes, the model outcomes do not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact the future returns. The model assumptions are passive only—they do not consider the impact of active management. A manager’s ability to achieve similar outcomes is subject to risk factors over which the manager may have no or limited control.

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Unless otherwise stated, all data are as of March 31, 2015 or most recently available.

Guide to the Markets – U.S.

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