

The New Pension Paradigm

The death of DB Plans or a
Phoenix Fire event

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Agenda

- **Overview**

- The new pension paradigm

- Overview of the model: Green Company case study

- Appendix

Phoenix Fire

- In mythology, the Phoenix is a bird with beautiful gold and red plumage that gives joy to humans. At the end of its life-cycle the phoenix builds a nest that it then ignites; both nest and bird burn fiercely and are reduced to ashes. From the ashes, a new Phoenix arises which is more powerful and beautiful than its predecessor.

The bird is said to be almost immortal and invincible

- Will the new accounting and funding rules cause the death of Defined Benefit (DB) plans?
- We are in a new paradigm in pension management, whether it results in a phoenix fire event and a stronger defined benefit structure, or in the death of DB plans, is dependent on how we manage the plans going forward.

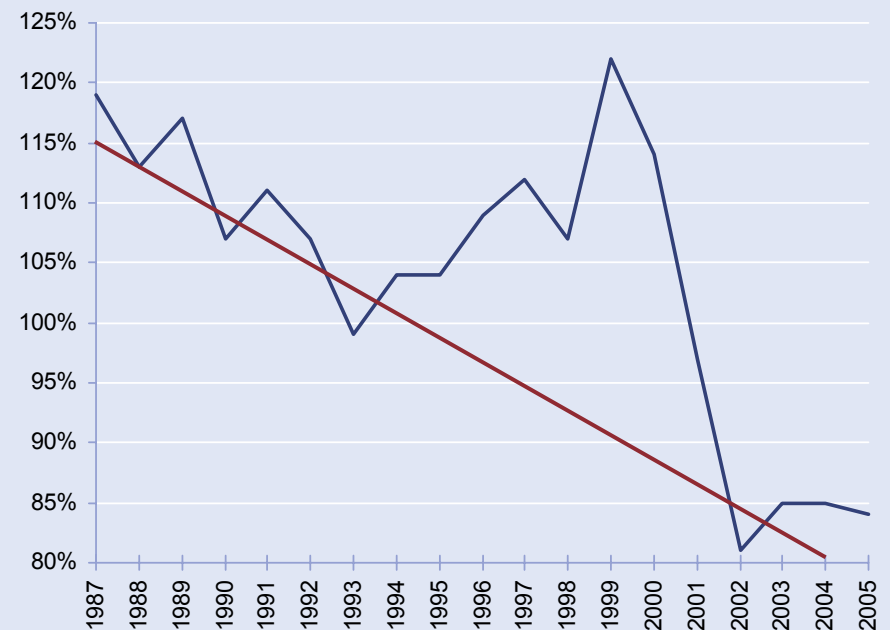
Rules of the road in this new paradigm

- ERISA compliance is paramount
 - The pension plan is a regulated subsidiary of the corporation
- The objective of the asset allocation process should be to improve the financial well being of the plan and to protect shareholder value
- The current approach has been ineffective and has caused an increase in:
 - Freezing of plans
 - Closing of plans
 - Taking over of plans by PBGC
- A new approach is required and helps to:
 - Define and achieve investment goals and risk in the context of the plan
 - Limit the up stream impact of the plan on the corporation

Rule changes driven by declines in corporate defined benefit plans' funded status

PBO funded ratio — Top 200 corporate plans

	Top 20%	Median	Bottom 20%
1987	150%	119%	82%
1993	132	99	76
1999	172	122	95
2002	112	80	59
		↓	
2005	115%	86%	67%

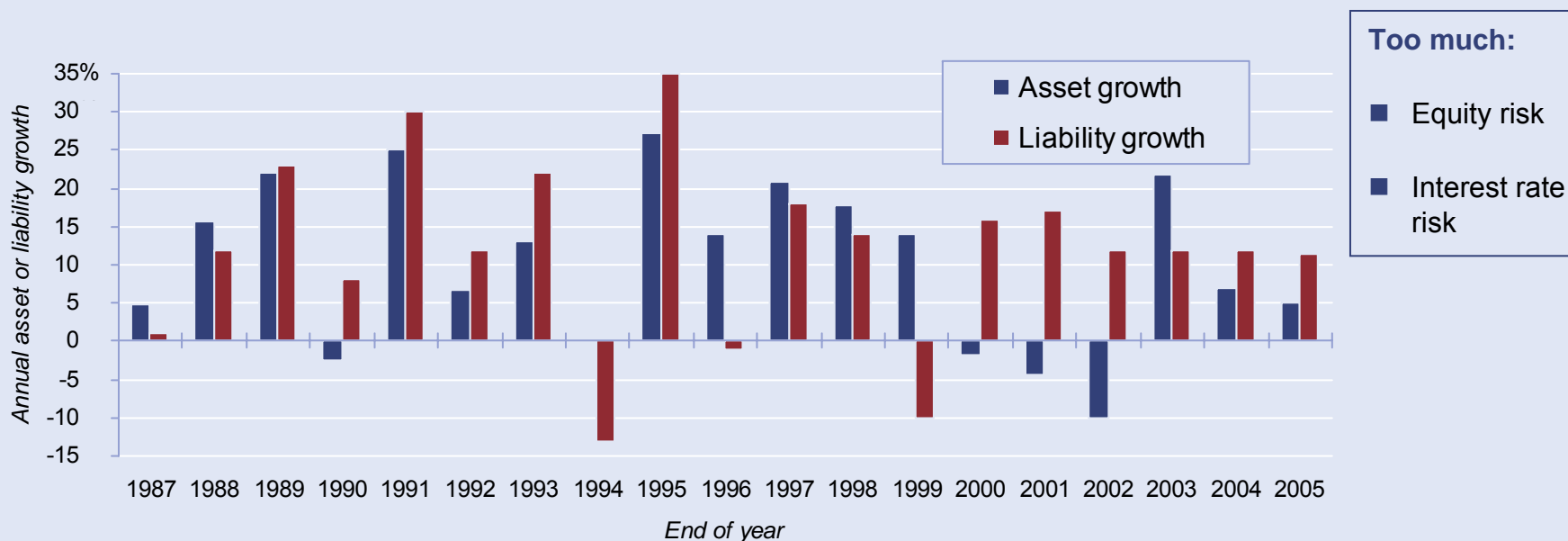


**Deteriorating funded status despite strong equity market performance
(11.6% annualized return for S&P 500)**

Sources: S&P Compustat, JPMorgan Asset Management
Based on data for U.S. plans in Corporate Financial Statements.

How did plans lose so much ground?

Sample annual asset returns and liability growth (Hypothetical plan, pure market effects)



The current approach leads to high risk and sub-optimal solutions

Source: JPMorgan Asset Management.

For illustrative purposes only. Assumes 10-duration liability, 2.5% Service cost. Asset returns reflect a hypothetical portfolio of 65% equity, 35% Lehman Aggregate Bonds. Discount rate derived by the Lehman AA Long Corp. Bond and Moody's AA Long Corp. Bond Yields. Assumes zero contributions. Benefit payouts are not reflected in individual years' annual growth.

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Accounting rule changes are driving paradigm shift

Overview of accounting rule changes

Accounting changes

- SFAS 158: Pension assets and liabilities at *market value* moved from notes to the balance sheet
- 2nd phase: Review of *all aspects* of pension accounting (expected in 2008/09)

Implications

- **Increased volatility on balance sheet and key financial ratios**
- For large pension plans, dramatically **increase the volatility of financial statements**

Investment implications of the paradigm shift on pension fund management

- Balance sheet items
 - Greater focus on managing pension plan risk
- Multiple time frames for investment horizon
 - Focus on balancing long-term (expected outcomes) vs. short-term (downside risk)
- New measures of risk
 - Integration of plan risk into the corporation's risk profile
- Customized asset allocation

First implication of paradigm shift: more direct impact on corporate finances, requiring active risk management

Under SFAS 87

Pension plan off balance sheet

Corporate balance sheet risk exposures

Operational

Financial

Other

Off balance sheet exposures

Pension

Leases

Other

Active management of risks

- Commodities
- FX
- Interest rate

Under SFAS 158

Pension plan moved on balance sheet

Corporate balance sheet risk exposures

Operational

Financial

Pensions

Other

Active management of risks

- Commodities
- FX
- Interest rate
- Pensions

Pension plan risk exposures

Assets

Liabilities

Equity

Interest rate

FX

Other

Interest rate

Other

Active management of risks

- Hedge interest rate risk
- Other
 - Equity- Diversify
 - FX hedge

Goals:

- To achieve target long-term objectives
- To construct efficient portfolios
 - Lower surplus volatility
 - Minimize negative implications to sponsor

Second implication: a focus on multiple time horizons requiring a broader definition of the plan's investible universe

- Hedging of interest rate risk
- Broader range of beta sources
 - private equity
 - hedge funds
 - real estate
 - other (infrastructure, commodities, oil, gas timber, etc.)
- Broader range of alpha sources
 - active management
 - portable alpha
 - absolute return strategies
 - derivatives

It is more likely sponsors will want a broader return base to dampen short term volatility

Third implication: the need for meaningful definitions of pension risk

- Traditional measures
 - surplus volatility
- New measures

SFAS 158

- expected change in shareholder equity
 - \$100M
- worse case scenario
 - (\$600M)
- shareholder equity at risk (SHE@R)
 - \$700M
- impact on ratios

Pension Protection Act (PPA)

- expected cash flow impact
 - \$100M
- worse case scenario
 - \$200M
- corporate cash flow at risk (CF@R)
 - \$100M (for 7 years)

FASB 87 and Phase two


- expected impact on earnings
 - \$50M
- worse case scenario
 - \$150M
- corporate earnings at risk (E@R)
 - \$100M (for 7 years)
- impact on ratios

Integration of plan risk into the corporate risk profile...

Asset allocation aligned with corporate risk profile

Fourth implication: The need for customized asset allocations

A broadly diversified investment portfolio approach

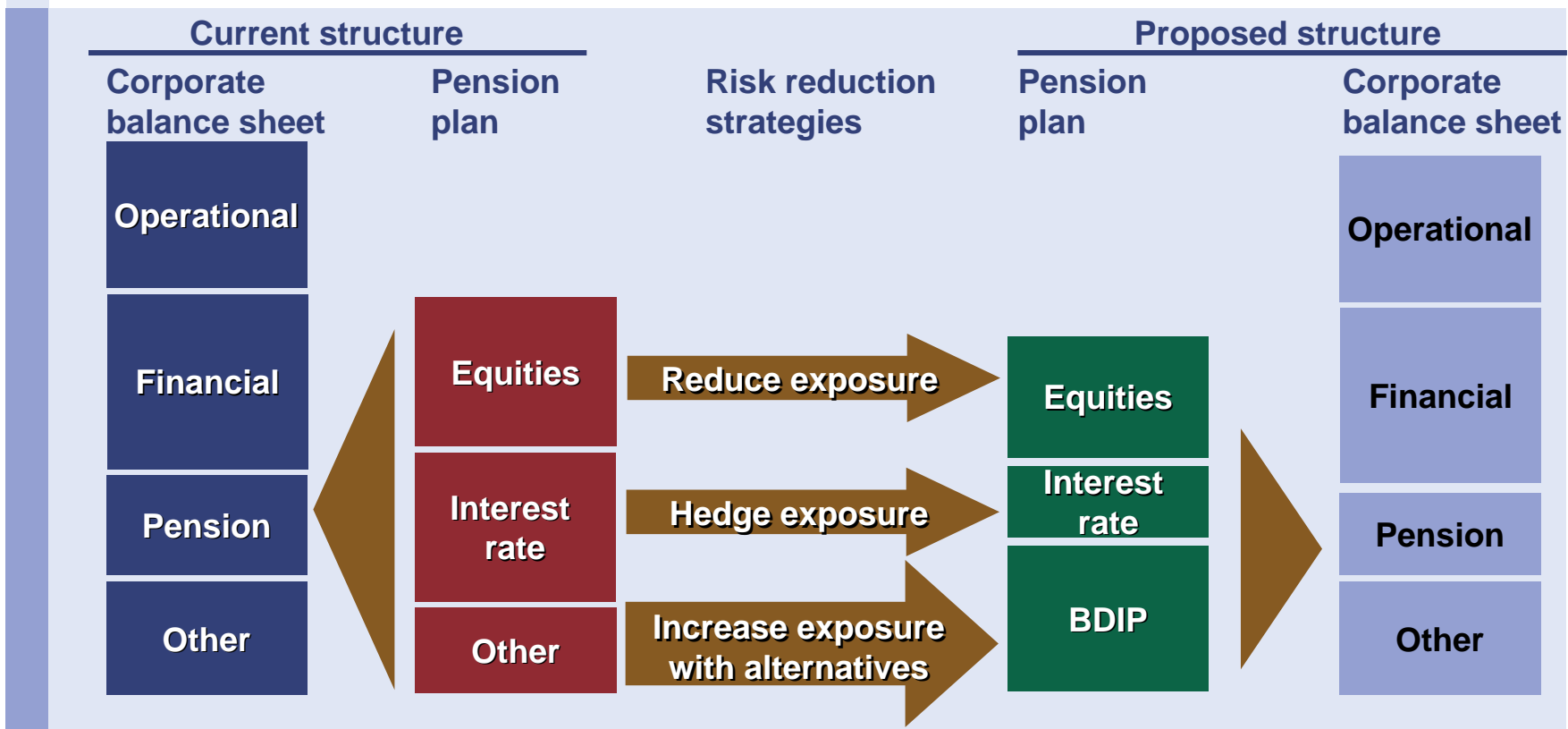
- Traditional asset/liability studies
 - not plan specific
 - similar asset allocation
 - Corporate finance based asset allocation
 - define risk in plan and corporate terms
 - holistic approach
 - focus on:
 - corporate factors
 - plan factors
- } Customized solutions
- 
- hedge undesired risk exposures (interest rate risk)
 - broadly diversify beta and alpha sources to reduce equity concentration risk (BDIPs)
 - proactively manage other exposures
 - align plan's risk profile (asset allocation) with the corporation's ability for absorbing risk (SHE@R/CF@R/E@R)
 - structure efficient portfolios with desired risk/return characteristics

The goals of asset allocation

- Ensure long-term stability and improved financial health of the plan and the corporation
 - Identify and eliminate undesired risks
 - Structure efficient portfolios; from a plan perspective and a sponsor perspective
- The proposed framework is a customized solution, not a one size fits all

BDIPs, holistic approach to risk management... a customized lower risk asset allocation

- Eliminate / minimize undesired risks
- Reduce risk concentrations
- Seek opportunities, when appropriate, for creating offsetting risk exposures



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Green Company: Corporate overview

- Assets: \$30BN
- Liabilities:
 - Long-term debt: \$10BN
 - other: \$10BN
 - shareholder equity: \$10BN
- Forecasted sales: \$25BN
- Forecasted net income: \$1.4BN
- Forecasted CF from operations: \$2.4BN
- Tax rate: 35%
- Shares outstanding: 1BN

Green Company: Pension plan overview and risk

Assets: \$14BN

- Asset allocation
 - Equities: 65%
 - Fixed income: 30% (Lehman Aggregate)
 - Other: 5%
- Expected return on assets: 7.0%
- Volatility: 10.2%
- Duration: 1.3 years

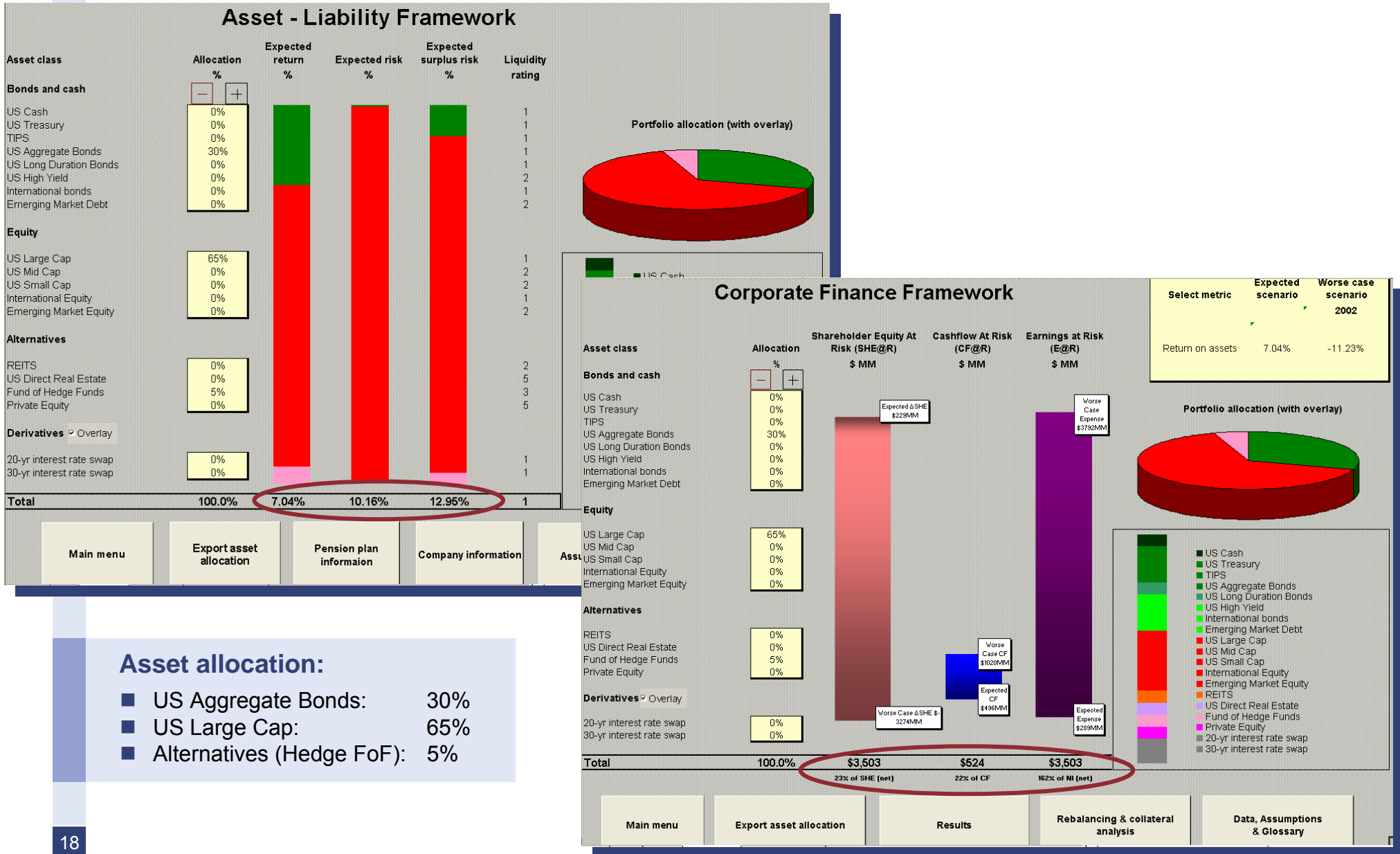
Liabilities: \$15BN

- Discount rate: 5.5%
 - Service cost: 2.5%
 - Duration: 13 years
- } 8.0% Growth rate

Pension plan risk

- Interest rate risk
 - duration of assets, 1.3 years, vs. duration of liabilities, 13 years
- Equity/concentration risk
 - 65% allocation to equities
- 8.0% base case of liability growth

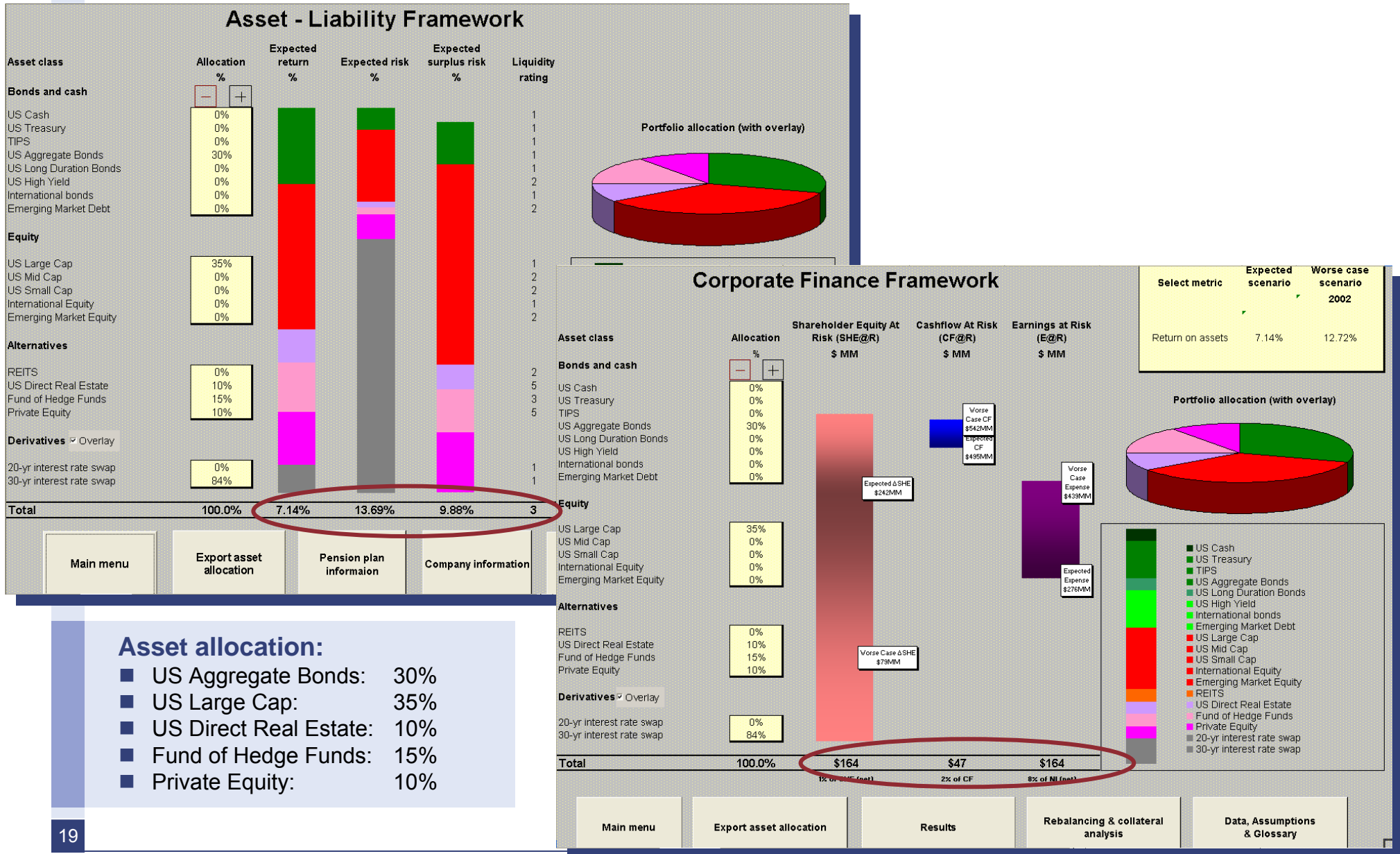
Current allocation



Asset allocation:

- US Aggregate Bonds: 30%
- US Large Cap: 65%
- Alternatives (Hedge FoF): 5%

Proposed allocation



Summary results

Corporate finance framework

Summary of portfolio results

JPMorgan Asset Management

Results | Asset allocation

	Current Allocation	Proposed Allocation
Shareholder Equity at Risk	\$3503MM (23%)	\$164MM (1%)
Expected scenario	229	242
Worse case scenario	-3274	79
Cash Flow at Risk	\$524MM (22%)	\$47MM (2%)
Expected scenario	496	495
Worse case scenario	1020	542
Earnings at Risk	\$3503MM (162%)	\$164MM (8%)
Expected scenario	289	276
Worse case scenario	3792	439

Reset Exit

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Corporate finance framework for modeling pension plan risk

- Our corporate finance framework for modeling pension plans allows a more holistic risk assessment of pension risk than traditional asset-liability models
- While most traditional models advocate asset allocations based solely on plan specific factors, such as demographic profile, our corporate finance framework models the pension plan within the context of the broader company. It is based on the concept that management of the plan should ultimately be for the benefit of all stakeholders, beneficiaries and shareholders.
- The results of our analysis illustrates the expected and potential worse case impact of different asset allocations on key corporate finance measures:
 - Shareholder equity (under SFAS 158)
 - Cash flow (under PPA 2006)
 - Net earnings (under phase 2)
- In addition, the framework captures the potential impact on key financial ratios:
 - Debt ratio
 - Debt-to-equity ratio
 - Net profit margin
 - Return on investments
- The objectives of the corporate finance framework are to:
 - Improve the financial health and well being of the plan and corporation
 - Provide a better assessment of how the risk profile of the pension plan fits into the risk profile of the company
 - Provide a more comprehensive perspective that leads to better asset allocation decisions

Modeling assumptions

- Expected scenarios are based on JPMorgan's long-term capital market assumptions
- Worse case scenarios are based on actual events over 2002 or percentile events from JPMorgan's stochastic projection models
- Changes to funded status are assumed to impact shareholder equity according to SFAS 158 with a corresponding impact on the company's long-term debt
- Changes in contribution requirements are assumed to impact cash flow from operations and changes to pension expense are assumed to impact net earnings
- Contributions are calculated as per PPA 2006 assuming full implementation
- Earnings impacts is determined as per anticipated phase two rules
- Information on the company is derived from publicly available information or information provided by the client

JPMorgan Asset Management long-term capital market return assumptions

As of November 30, 2006

Expected 10-15
year annualized
compound returns Rationale

U.S. Economic Indicators		
U.S. Inflation	2.50%	Central Bank discipline to keep inflation well-contained. Headline and core to converge over the long term.
U.S. Real GDP	3.00%	Productivity growth to stay firm but below rate of the past decade. Ageing population and potential shift towards economic populism to limit labor force growth.
Fixed Income		
U.S. Cash	4.50%	Tough inflation stance by policymakers to result in higher short-term interest rates.
U.S. 10-yr Treasury TR	4.75%	Lower inflation volatility to keep yield curve structurally flatter than in the past. 10-yr yields assumed to rise towards 5.25% equilibrium level, causing short term capital loss.
U.S. Aggregate TR	5.25%	Spreads currently slightly tight to fair value. Moderate yield increase to 5.5% equilibrium to trim total return value.
U.S. Long Duration Govt./Corp TR	5.25%	Yields to rise from current levels but associated capital losses and flat curve to result in no advantage over aggregate bonds.
U.S. TIPS (nominal) TR	4.75%	Current breakeven rates broadly in line with long-term inflation forecast. Low, stable inflation to keep total returns in line with Treasuries.
U.S. High Yield TR	6.75%	Structurally lower spreads than long-term historical average, but some widening assumed from current levels. Haircut to returns from expected defaults.
Non-U.S. World Govt. Bond Index (local) TR	3.00%	Yields to rise globally from current levels leading to near-term capital losses, while relatively flat curves limit coupon return.
Non-U.S. World Govt. Bond Index (USD) TR	4.75%	Dollar depreciation against the major constituent currencies of the WGBI expected to boost returns to U.S. investors.
Emerging Market Debt TR	7.00%	Improved creditworthiness justifies tighter spreads than in the past, though some widening assumed from current levels. Historically low yields constrain overall returns.
U.S. Municipal TR	4.00%	Less refunding supply to result in average equilibrium yield multiple of 0.80x equivalent maturity Treasury.
Equity		
U.S. Large Cap TR	7.50%	Sum of below building blocks (EPS Growth + Dividend Yield + P/E return impact).
U.S. Large Cap EPS Growth	5.50%	EPS to grow in line with nominal GDP as corporate cost cutting keeps margins firm on average.
U.S. Large Cap Dividend Yield	2.25%	Dividend payout ratios expected to rise over time.
U.S. Large Cap P/E Return Impact	-0.25%	Multiples to contract only marginally from levels prevailing today.
U.S. Mid Cap TR	7.75%	Moderate premium to large cap assumed. Small cap stocks relatively expensive by historical comparison and not expected to deliver material return advantage over mid cap.
U.S. Small Cap TR	7.75%	
U.S. Large Cap Growth TR	7.25%	Value expected to outperform growth over time.
U.S. Large Cap Value TR	7.75%	
EAFE (local) TR	7.75%	Corporate restructuring globally and further economic normalization in Japan to boost return on equity.
EAFE (USD) TR	9.00%	Dollar depreciation against the major constituent currencies of the EAFE index to boost returns to U.S. investors.
Emerging Market Equity (USD) TR	9.00%	Improving economic fundamentals and capital discipline as well as appreciating local currencies to support dollar returns over time.
Alternative Assets*		
Private Equity TR [^]	8.75%	Slight return premium to public equity assumed on average. Sizeable divergence expected across private investments (see below). [^]
U.S. Direct Real Estate (unlevered) TR	6.75%	Expected returns between equity and fixed income.
U.S. Opportunistic Real Estate (unlevered) TR	8.00%	125 bps return premium assumed for opportunistic real estate.
U.S. REITs TR	7.00%	REIT return marginally below public equity but long term advantage over direct real estate assumed given leveraged capital appreciation.
Hedge Fund - Arbitrage (non-directional) TR [^]	6.00%	Hedge funds expected to deliver only moderate returns but with relatively low risk. Sizeable divergence between managers expected (see below). [^] Fund of funds return is an equal weighted average of directional and non-directional.
Hedge Fund - Directional TR [^]	7.50%	
Hedge Fund - Fund of Funds TR [^]	6.75%	

Note: Given the complex risk-reward tradeoffs involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations to all the above asset classes. 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 as a promise of future performance. Note that these asset class assumptions are passive only — they do not consider the impact of active management. Return estimates are on a compound or internal rate of return (IRR) basis. Equivalent arithmetic averages, as well as further information, are shown overleaf.

* Private Equity, Hedge Funds and Direct Real Estate are unlike other asset classes shown above in that there is no underlying investible index. Exchange traded funds may be used to gain exposure to REITs.

[^] The return estimates shown for these assets are our estimates of industry medians — the dispersion of returns among managers in these asset classes is typically far wider than in traditional assets.

JPMorgan Asset Management long-term capital market return assumptions

As of November 30, 2006

Correlation Matrix

	Expected Annual Volatility	Expected Annualized Compound USD Return	Expected Annualized Mean USD Return	U.S. Inflation	U.S. Cash	U.S. Treasury	U.S. TIPS	U.S. Aggregate	U.S. Municipal	U.S. Long Duration Govt./Corp	U.S. High Yield	Non-U.S. World Govt. (hedged)	Non-U.S. World Govt. (unhedged)	Emerging Market Debt	U.S. Large Cap	U.S. Large Cap Value	U.S. Large Cap Growth	U.S. Mid Cap	U.S. Small Cap	EAFE (unhedged)	EAFE (hedged)	Emerging Market Equity	REITs	U.S. Direct Real Estate	U.S. Opportunistic Real Estate	Hedge Fund of Funds	Hedge Fund (non-directional)	Hedge Fund (directional)	Private Equity			
Fixed Income	U.S. Inflation	1.02%	2.50%	2.50%	1.00																											
	U.S. Cash	0.50%	4.50%	4.50%	0.02	1.00																										
	U.S. Treasury	4.58%	4.75%	4.85%	-0.08	0.12	1.00																									
	U.S. TIPS	4.89%	4.75%	4.86%	0.06	-0.05	0.79	1.00																								
	U.S. Aggregate	3.63%	5.25%	5.31%	-0.09	0.13	0.97	0.76	1.00																							
	U.S. Municipal	3.30%	4.00%	4.05%	-0.08	0.08	0.87	0.73	0.88	1.00																						
	U.S. Long Duration Govt./Corp.	7.95%	5.25%	5.55%	-0.15	0.04	0.94	0.78	0.95	0.87	1.00																					
	U.S. High Yield	7.21%	6.75%	6.99%	-0.11	-0.12	-0.01	0.05	0.14	0.14	0.22	1.00																				
	Non-U.S. World Govt. (hedged)	2.53%	4.75%	4.78%	-0.08	0.26	0.76	0.57	0.76	0.69	0.74	0.04	1.00																			
	Non-U.S. World Govt. (unhedged)	8.26%	4.75%	5.07%	0.01	-0.17	0.44	0.44	0.43	0.40	0.38	0.01	0.35	1.00																		
Equities	Emerging Market Debt	13.81%	7.00%	7.87%	0.01	-0.05	0.07	0.18	0.18	0.17	0.19	0.49	0.08	0.06	1.00																	
	U.S. Large Cap	15.51%	7.50%	8.59%	-0.11	0.04	-0.19	-0.17	-0.08	-0.11	-0.04	0.50	-0.10	-0.03	0.56	1.00																
	U.S. Large Cap Value	14.43%	7.75%	8.70%	-0.09	0.04	-0.19	-0.11	-0.07	-0.10	-0.05	0.46	-0.05	0.01	0.56	0.90	1.00															
	U.S. Large Cap Growth	19.43%	7.25%	8.94%	-0.11	0.02	-0.19	-0.18	-0.08	-0.12	-0.05	0.47	-0.14	-0.06	0.49	0.94	0.71	1.00														
	U.S. Mid Cap	17.46%	7.75%	9.12%	-0.12	0.01	-0.20	-0.12	-0.10	-0.11	-0.06	0.49	-0.18	0.02	0.59	0.86	0.82	0.82	1.00													
	U.S. Small Cap	20.07%	7.75%	9.54%	-0.11	-0.05	-0.23	-0.16	-0.13	-0.13	-0.08	0.55	-0.19	0.00	0.55	0.71	0.61	0.74	0.88	1.00												
	EAFE (unhedged)	15.05%	9.00%	10.02%	-0.05	-0.10	-0.23	-0.14	-0.13	-0.12	-0.10	0.47	-0.18	0.21	0.53	0.79	0.71	0.74	0.75	0.71	1.00											
	EAFE (hedged)	14.85%	9.00%	9.99%	-0.06	0.03	-0.35	-0.29	-0.24	-0.23	-0.18	0.48	-0.22	-0.25	0.53	0.81	0.71	0.77	0.73	0.70	0.88	1.00										
	Emerging Market Equity	24.20%	9.00%	11.54%	-0.04	-0.19	-0.28	-0.11	-0.18	-0.15	-0.14	0.52	-0.21	-0.01	0.68	0.70	0.65	0.67	0.74	0.73	0.76	0.75	1.00									
	REITs	13.99%	7.00%	7.90%	-0.03	-0.08	-0.01	0.12	0.05	0.09	0.07	0.31	0.07	0.13	0.38	0.29	0.42	0.19	0.41	0.47	0.30	0.25	0.37	1.00								
Other	U.S. Direct Real Estate	7.50%	6.75%	7.01%	-0.05	0.15	0.25	0.22	0.29	0.26	0.28	0.19	0.25	0.14	0.26	0.25	0.28	0.20	0.26	0.23	0.18	0.15	0.17	0.40	1.00							
	U.S. Opportunistic Real Estate	9.75%	8.00%	8.44%	-0.05	0.15	0.25	0.22	0.28	0.26	0.28	0.17	0.24	0.14	0.23	0.17	0.20	0.14	0.23	0.25	0.14	0.11	0.14	0.40	0.27	1.00						
	Hedge Fund of Funds	4.50%	6.75%	6.84%	0.01	0.01	-0.12	-0.06	-0.04	0.01	-0.01	0.41	-0.09	-0.08	0.53	0.50	0.40	0.52	0.59	0.67	0.57	0.61	0.68	0.25	0.15	0.16	1.00					
	Hedge Fund (non-directional)	3.50%	6.00%	6.06%	0.00	-0.03	-0.11	-0.04	-0.04	0.02	-0.01	0.40	-0.10	-0.12	0.42	0.37	0.28	0.40	0.45	0.54	0.47	0.52	0.59	0.19	0.10	0.12	0.94	1.00				
	Hedge Fund (directional)	7.00%	7.50%	7.73%	-0.06	0.03	-0.05	-0.01	0.04	0.07	0.07	0.52	-0.01	0.05	0.56	0.63	0.52	0.65	0.74	0.82	0.67	0.65	0.72	0.33	0.23	0.24	0.90	0.79	1.00			
	Private Equity	23.47%	8.75%	11.15%	-0.07	-0.11	-0.22	-0.13	-0.11	-0.09	-0.06	0.56	-0.18	0.00	0.49	0.59	0.44	0.67	0.74	0.92	0.62	0.60	0.69	0.35	0.17	0.19	0.72	0.62	0.84	1.00		

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Expected returns employ proprietary projections of the "equilibrium" returns of each asset class (as well as equilibrium estimates of their future volatility). We estimate the "equilibrium" performance of an asset class or strategy by analyzing current economic and market conditions and historical market trends. Equilibrium estimates represent our projection of the central tendency (going out over a very long time period) around which market returns may fluctuate, because they reflect what we believe is the value inherent in each market. It is possible that actual returns will vary considerably from this equilibrium, even for a number of years. References to future returns for either asset allocation strategies or asset classes are not promises or even estimates of actual returns a client portfolio may achieve.

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Glossary

■ Shareholder Equity at Risk (SHE@R)

- Shareholder Equity at Risk (SHE@R) is defined as the difference between the expected charge in Shareholder Equity over a given year and the potential change in Shareholder Equity under a worse case scenario. SHE@R can be defined in dollar terms or as a percentage of initial shareholder equity.

■ Cash Flow at Risk (CF@R)

- Cash Flow at Risk (CF@R) is defined as the difference between the expected contribution over a year and the potential contribution under a worse case scenario. The 2006 Pension Protection Act stipulates a maximum amortization period of seven years over which gains and losses can be spread (with certain exceptions). In addition, there are restrictions on the use of credit balances and smoothing of assets and liabilities.

■ Earnings at Risk (E@R)

- Earnings at Risk (E@R) is defined as the difference between the expected pension expense over a given year and the pension expense under a worse case scenario. We assume calculation of pension expense as per the “Statement of Financial Accounting Standards 87”.

Biographies

William McHugh, CPA - Managing Director

William J. McHugh, managing director, is head of the firm's Strategic Investment Advisory Group ("SIAG"). Based out of New York, SIAG serves as one of JPMorgan Asset Management's centers for thought leadership in the area of pension finance. The Group offers advisory services, including asset liability analysis, portfolio optimization work and risk budgeting analysis, to the firm's institutional client base. In the industry since 1979, William first started in the asset management business as a practitioner of pension finance. Prior to this, he worked for the firm's Treasurer's Department, where he served as the chief investment officer of the Benefit Plans for JPMorgan Chase & Co. An employee since 2000, he has also led the firm's fiduciary services practice and served as chairperson of the practice's investment committee as well as a principal portfolio manager. Prior to joining the firm, he was vice president and treasurer for Novartis Corporation. William has also previously worked for Pricewaterhouse Coopers and MCO Holdings. He holds a B.A. from the University of Notre Dame and is a CPA.

JPMorgan Asset Management

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