The Design of the #1 performing pension plan in the U.S for the eight years (2002-2009)

John C. Lane

December 16, 2015
Introduction

• CIO for eight years at the Company (2002 – 2009)
• Company’s U.S Plan was the top (1st percentile) performing pension plan during the entire eight year period (2002 – 2009)
• This eight year period included a bull equity market (2003 – 2007) and a bear equity market (2008-2009)
• The return for this eight year period was 9.2% vs. the median plan of 4.8% annualized
• The asset allocation was designed to outperform in all markets, with a lower risk profile, while duration matching the Plan’s liabilities
Objectives

• 9% return assumption
• Utilize risk parity principles
• Lower risk profile (volatility)
• Duration match, assets with liabilities, as much as possible
Eight Year Returns (2002 – 2009)

<table>
<thead>
<tr>
<th>Overall Plan Composite</th>
<th>Allocation Index</th>
<th>Total Liquid</th>
<th>Total Illiquid</th>
<th>5th Percentile</th>
<th>25th Percentile</th>
<th>50th Percentile</th>
<th>75th Percentile</th>
<th>95th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.6 3</td>
<td>6.1 33</td>
<td>6.2 12</td>
<td>15.1 1</td>
<td>7.0</td>
<td>5.4</td>
<td>4.7</td>
<td>3.8</td>
<td>2.8</td>
</tr>
<tr>
<td>10.6 2</td>
<td>7.5 32</td>
<td>6.4 6</td>
<td>14.3 1</td>
<td>6.5</td>
<td>7.8</td>
<td>6.6</td>
<td>5.9</td>
<td>4.0</td>
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Total Fund – Universe: Master Trust Funds
Periods ending December 31, 2009

Percentile in Universe (100=highest, 0=lowest)

Company

December 31, 2007

Peer*
17 peer companies**

MTU*
>300 trusts

Company

** Alcatel (Lucent)
   Alcoa
   Altria
   AT&T

Chrysler
DuPont
ExxonMobil
Ford

GE
GM
Honeywell

IBM
3M
Shell

United Tech
US Steel
Verizon

* Peer data is net of fees; Mellon Trust Universe (MTU) data less estimated fees of 0.4%.
Total Return vs. Risk* - 3 Years Ending 12/31/07

* Based on Independent Consultants Cooperative (ICC) universe, in which NEPC is a member and founding firm. As of 12/31/2007 the Total Corporate Funds universe represented 250 funds with $661b in assets.
Company Composite

Median Fund

S&P 500

LB Agg

Annualized Return vs. Risk* - 5 Years Ending 12/31/07

<table>
<thead>
<tr>
<th></th>
<th>Annualized Return</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>18.4</td>
<td>6.7</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>12.8</td>
<td>10.0</td>
</tr>
<tr>
<td>LB Aggregate Index</td>
<td>4.4</td>
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<td>Median Corporate Fund</td>
<td>12.7</td>
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How did we do it?
Combined mean variance optimization with risk parity principles
Create returns (including alpha), risk (volatility) and correlations for each asset class
Perform mean variance optimization
Select all portfolios that have at least 9% return assumption (including alphas) with reasonable risk
Select portfolios that have the best risk balance using risk parity principles
If possible, adjust to 25% of risk in each quadrant. (Example: Needed more rising inflation assets other than commodities, we levered the U.S tips portfolio 2:1)
As a check, had third party Asset Manager perform mean variance optimization on final asset allocation using their assumptions to verify for comparative purposes and reasonableness
RISK EXPOSURE IMBALANCE

Typical Institutional Portfolio* Economic Environment Risk Exposures

Growth  Inflation

Rising

Falling

Balanced Economic Environment Risk Exposures

Growth  Inflation

Rising

Falling

* 60/40 Domestic Equities/Bonds mix
Balanced Risk

GROWTH
- Equities
- Corp/Mortgage Spreads
- EMD Spreads
- Commodities

INFLATION
- Commodities
- IL Bonds

FALLING
- Nominal Bonds
- IL Bonds

RISING
- Equities
- Nominal Bonds
- IL Bonds
Q4 2008 to Q1 2009
The Need For Liquidity

Portables Alpha
Equities

Fixed Income
Hedge Funds
Private Equity
Real Estate

Gated

Cash Calls
Cash Calls
Cash Calls

Forced to Sell Equities at Bottom of Market

Portables Alpha
Equities

US Treasuries
Credit
Hedge Funds
Private Equity
Real Estate

Benefits
July 2008

Target Policy Allocation

- 4% Emerging Mkts Equities
- 4% US Small Cap Equities
- 5% EAFE
- 5% S&P 500
- 15% Zeros
- 10% Commodities
- 5% TIPS/Commodities
- 15% TIPS
- 15% Absolute Return
- 22% Illiquid Investments

Investment made through futures for EAFE, S&P, Zeros, Commodities, TIPS/Commodities and TIPS (5% cash deposit)

Policy with Cash Used and Alpha Strategies

- EAFE
- S&P 500
- Zeros
- Commodities
- TIPS/Commodities
- TIPS
- Absolute Return
- Liquid Investments

Frees up cash (95%) for investment in Alpha Strategies

Hedge Fund Portable Alpha
November 2008

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Policy with Cash Used and Alpha Strategies

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  - Hedge Funds
  - Hedge Funds
  - Zeros
  - Hedge Funds
  - Hedge Funds
- US Small Cap Equities
  - Hedge Funds Portable
- Commodities
  - TIPS/Commodities
- TIPS
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April 2009

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Hedge Fund
Portable Alpha

B'water Poster Alphir
Rogga
Stamfield
Minker
Frontpoint