INVESTMENT POLICY AND ASSET ALLOCATION FOR LOCAL GOVERNMENTS

Alaska Municipal League
Agenda

- Investment Policy Considerations
  - Sample Policy
  - Best Practices

- Asset Allocation
  - Short term operating funds (preservation of capital)
  - Longer term invested assets (balance risk and return)
Sample Investment Policy

- General Objectives
  - Safety, Liquidity, Yield or
  - Maintain purchasing power of the portfolio over time and pay out 4% annually*

- Standard of Care
  - Prudent Person
  - Ethics, Conflicts, Disclosure
  - Delegation of Authority (don’t abdicate!)

- Safekeeping & Custody
  - Separate from the investment function
  - Internal Controls
  - Delivery vs. Payment

*APCM
Sample Investment Policy

- Suitable & Authorized Investment
  - Investment Types
  - Collateralization and Repo Agreements

- Investment Parameters
  - Diversification & Concentration Risk
  - Maximum Maturity Limitations

- Reporting
  - Performance Standards (choose a benchmark)
  - Current Holdings & Transactions at Least Quarterly
Investment Report Including

- An asset listing showing a description of each security including par value, cost and market value
- Average maturity and modified duration of the portfolio
- Maturity distribution of the portfolio
- Average portfolio credit quality and yield vs. Benchmark
- Total rate of return for the portfolio for the prior one month, three months, twelve months, year to date, and since inception compared to the Benchmark Index.
- Distribution by type of investment
Sample Investment Policy

- List of Attachments
  - Authorized Personnel
  - Investment Statutes/Ordinances
  - Repo Agreements
  - Authorized Dealers
  - Credit Analysis of Holdings
  - Safekeeping Agreements
  - Methodology for Calculating Returns
Best Practices

- Repurchase Agreements
  - Counterparty exposure. Custodian. Tri-party Agreement. 102% “haircut.” Acceptable securities. Reverse repos should not be used for leverage (Orange County!). Valuation of collateral on daily basis, or at least weekly.

- Mutual Funds
  - Diversification, liquidity, professional management.

- Dealer Relationships
  - Dealers to acknowledge receipt of government entity’s investment policy. Competitive bidding. Trust but verify.
How can I help you Mrs. Investor?
Best Practices

- Hiring an Advisor

  - Expertise, complements internal resources, access to markets, economies of scale

  - Examine track record – apples to apples comparisons

  - Require a face to face interview

  - Check fees – separate account or commingled fund?
In Ancient Times...

10 Minutes per Trade.
3 Dealers by Phone.
Now Via Electronic Platforms...

Trade in 15 Seconds.
8 Dealers Simultaneously Through the Web.
Electronic Trading (13 Dealers!) = Better Pricing/Faster
APCM Best Practices

- Determine True Liquidity Needs
  - Many LGs own Treasuries/Agencies only
  - A bond is not a person!
  - Price stability or income stability

- Use of Derivatives
  - Futures, Options, and Swaps
Warning: Products can be volatile, illiquid, and highly leveraged.
Yield Curve: June 2007 vs. September 2014

What are you worried about? Income or price stability?
Intermediates Beat T-bills

Data: Barclays Indices as of September 30, 2014
Interest Rates and Inflation Near Historic Lows

Source: FRB of St. Louis. Shaded areas indicate U.S. recessions.

Inflation: +1.5%
PCE Core – Year over Year
10 Year Treasury: 2.49%
as of September 30, 2014

+8.4%: Annualized Total Return on U.S. Aggregate Bonds from 1981 to 2014
## Total Return in a Rising Rate Environment

<table>
<thead>
<tr>
<th>Return Over 1 Year Time Horizon</th>
<th>+100 Basis Points</th>
<th>+200 Basis Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Month T-bill (0.02%)</td>
<td>+0.37%</td>
<td>+0.62%</td>
</tr>
<tr>
<td>1 Year Treasury (0.11%)</td>
<td>+0.11%</td>
<td>+0.11%</td>
</tr>
<tr>
<td>3 Year Treasury (0.77%)</td>
<td>-1.17%</td>
<td>-3.08%</td>
</tr>
<tr>
<td>5 Year Treasury (1.41%)</td>
<td>-2.30%</td>
<td>-5.93%</td>
</tr>
<tr>
<td>10 Year Treasury (2.19%)</td>
<td>-5.43%</td>
<td>-12.65%</td>
</tr>
</tbody>
</table>

Data: Bloomberg as of October 20, 2014
Asset Allocation for Short Term Operating Funds
A Variety of Approaches
- Active management vs. passive buy and hold
- Bullets, barbells, and ladders
- Riding the yield curve
- Yield tilt in credit or optionality

General Fund Pool
- Short term cyclical needs suggest cash matching, SLY

Bond Proceeds
- Cash matching to construction schedule (false precision?)
Asset Allocation: Short Term Operating Funds

- **Reserve Accounts**
  - Debt serve reserve, SLY but invest longer term
  - Operating cushion/surplus funds

- **Permanent Funds**
  - Longer holding period allows for “riskier” assets
  - Are stocks risky? Depends on time horizon!
  - Downside risks decrease with time
Asset Allocation: Short Term Operating Funds

Portfolio Allocations by Time Horizon

- **Liquid Cash**
  - Commercial Paper
  - Bankers Acceptances
  - Certificate of Deposits
  - LGIP’s and MMF’s
  - Repos (Collateralized)
  - U.S. Gov Agencies
  - U.S. Treasuries

- **Enhanced Cash**
  - Corporate Notes
  - Taxable Municipals
  - Certificate of Deposits
  - Repos (Collateralized)
  - U.S. Gov Agencies
  - U.S. Treasuries

- **Short-Term Cash**
  - Asset Backed Securities
  - Mortgage Backed Securities
  - Corporate Notes
  - Taxable Municipals
  - Certificates of Deposit
  - U.S. Gov. Agencies
  - U.S. Treasuries

Common Stock Returns

- As time horizon extends, odds of positive returns go up!
- Time diversification smooths the ride!
- Diversification into other asset classes improves results!

### Rolling Time Periods (U.S. Large Stocks 1926 - 2011)

<table>
<thead>
<tr>
<th>Rolling Period</th>
<th>Lowest Returns</th>
<th>Highest Returns</th>
<th>% Times Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Year Rolling</td>
<td>-43.3%</td>
<td>54.0%</td>
<td>72.1%</td>
</tr>
<tr>
<td>5-Year Rolling</td>
<td>-12.5%</td>
<td>28.6%</td>
<td>85.4%</td>
</tr>
<tr>
<td>10-Year Rolling</td>
<td>-1.4%</td>
<td>20.1%</td>
<td>94.8%</td>
</tr>
<tr>
<td>20-Year Rolling</td>
<td>3.1%</td>
<td>17.9%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Stock Returns by Decade

Average = 9.8%

Data: Ibbotson
Annualized Returns - January 1, 2000 to December 31, 2009
Asset Allocation for Long Term Invested Assets
What is Asset Allocation?

- Asset allocation is the process of determining the optimal allocation among different asset classes such as stocks, bonds, and cash in a portfolio.
Several studies report that asset allocation may account for more than 90% of the return of a portfolio compared to the policy portfolio.*

The initial strategic allocation among asset classes is more important than choosing the actual stocks and bonds that you will own.

* Brinson, Hood, and Beebower (1986) and Brinson, Singer, and Beebower (1991), Ibbotson/Kaplan (2000) offer statistical evidence for the importance of asset allocation.
Many investment committees spend far too much time on activities that often subtract value—such as manager selection and market timing—and not enough time on establishing and adhering to their asset-allocation targets, where their efforts could really add value.

Diversification is Key

- We can improve the risk/reward tradeoff via diversification
- Combining assets that do not move up or down in tandem – that have a low correlation – improves diversification
- Assets that move together have a high correlation and do not improve portfolio diversification
- “Don’t put all your eggs in one basket”
This chart illustrates two different investments which have **negative correlation**. When investment A is up, investment B is down and visa versa. The investor who owns both **evens out investment results**.
## Asset Classes

<table>
<thead>
<tr>
<th>Bonds</th>
<th>Stocks</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Investment Grade</td>
<td>U.S. Large, Medium, &amp; Small Cap</td>
<td>Real Estate</td>
</tr>
<tr>
<td>U.S. TIPS</td>
<td>Foreign Developed</td>
<td>Commodities</td>
</tr>
<tr>
<td>Foreign Government</td>
<td>Foreign Emerging</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emerging Markets†</td>
<td>Foreign Small Cap†</td>
<td>Private Equity*</td>
</tr>
<tr>
<td>High Yield†</td>
<td></td>
<td>Hedge Funds*</td>
</tr>
<tr>
<td>International Corporate†</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* APCM believes PE & HFs are strategies, not asset classes
† Opportunistic asset classes – not in strategic benchmark
The Efficient Frontier and Portfolio Optimization

- Optimization is the process of identifying portfolios that have the highest possible expected return for a given risk level.

- Such a portfolio is considered “efficient,” and the locus of all efficient portfolios is called the efficient frontier.

A portfolio above this curve is impossible

Portfolios below the curve are inefficient

For Illustrative Purposes Only
Assumptions and Efficient Frontier

<table>
<thead>
<tr>
<th>APCM Annualized Return and Risk Assumptions</th>
<th>7 Year Horizon</th>
<th>Return</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Large Cap Equities</td>
<td>8.5%</td>
<td>17.8%</td>
<td></td>
</tr>
<tr>
<td>U.S. Mid Cap Equities</td>
<td>9.2%</td>
<td>20.5%</td>
<td></td>
</tr>
<tr>
<td>U.S. Small Cap Equities</td>
<td>9.4%</td>
<td>23.8%</td>
<td></td>
</tr>
<tr>
<td>Int’l Developed Equities</td>
<td>9.0%</td>
<td>19.1%</td>
<td></td>
</tr>
<tr>
<td>Emerging Market Equities</td>
<td>11.5%</td>
<td>26.8%</td>
<td></td>
</tr>
<tr>
<td>REITs</td>
<td>8.5%</td>
<td>25.1%</td>
<td></td>
</tr>
<tr>
<td>U.S. Fixed Income</td>
<td>2.8%</td>
<td>4.3%</td>
<td></td>
</tr>
<tr>
<td>U.S. TIPS</td>
<td>2.3%</td>
<td>4.2%</td>
<td></td>
</tr>
<tr>
<td>International Bonds</td>
<td>2.6%</td>
<td>3.3%</td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td>5.5%</td>
<td>18.6%</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>2.0%</td>
<td>0.6%</td>
<td></td>
</tr>
</tbody>
</table>

Shaded color in the table above represents the direction of change from APCM’s 2013 assumptions.
Red = Lower, Green = Higher, Gray = Unchanged
Which portfolio would you like?

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>25% Equity</th>
<th>40% Equity</th>
<th>55% Equity</th>
<th>70% Equity</th>
<th>85% Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REITs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Commodities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APCM's Forward Looking Assumptions

<table>
<thead>
<tr>
<th></th>
<th>Return</th>
<th>Risk</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% Equity</td>
<td>4.2%</td>
<td>5.7%</td>
<td>0.74</td>
</tr>
<tr>
<td>40% Equity</td>
<td>5.1%</td>
<td>7.8%</td>
<td>0.66</td>
</tr>
<tr>
<td>55% Equity</td>
<td>6.1%</td>
<td>10.2%</td>
<td>0.59</td>
</tr>
<tr>
<td>70% Equity</td>
<td>6.9%</td>
<td>12.7%</td>
<td>0.55</td>
</tr>
<tr>
<td>85% Equity</td>
<td>8.0%</td>
<td>15.6%</td>
<td>0.51</td>
</tr>
</tbody>
</table>

### Annualized Historical Returns 3/1997 - 12/2013

<table>
<thead>
<tr>
<th></th>
<th>Return</th>
<th>Risk</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% Equity</td>
<td>6.6%</td>
<td>5.0%</td>
<td>1.31</td>
</tr>
<tr>
<td>40% Equity</td>
<td>7.0%</td>
<td>7.1%</td>
<td>0.98</td>
</tr>
<tr>
<td>55% Equity</td>
<td>7.5%</td>
<td>9.6%</td>
<td>0.78</td>
</tr>
<tr>
<td>70% Equity</td>
<td>7.7%</td>
<td>12.0%</td>
<td>0.64</td>
</tr>
<tr>
<td>85% Equity</td>
<td>7.9%</td>
<td>15.0%</td>
<td>0.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Best 12 Month Period</th>
<th>Worst 12 Month Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% Equity</td>
<td>22.9%</td>
<td>-11.7%</td>
</tr>
<tr>
<td>40% Equity</td>
<td>30.2%</td>
<td>-18.9%</td>
</tr>
<tr>
<td>55% Equity</td>
<td>38.7%</td>
<td>-26.6%</td>
</tr>
<tr>
<td>70% Equity</td>
<td>47.7%</td>
<td>-34.2%</td>
</tr>
<tr>
<td>85% Equity</td>
<td>56.7%</td>
<td>-41.1%</td>
</tr>
</tbody>
</table>

Risk and return data from Windham Portfolio Advisor. U.S. Equity includes a blend of large, mid, and small cap stocks. International Equity includes developed and emerging markets. Fixed Income can include U.S. aggregate bonds, U.S. TIPS, international bonds, and cash.
Historical returns can be characterized as arising from **turbulent periods or quiet periods**. The turbulence index identifies turbulent periods and quiet periods from 3/1997 through 12/2013.

This separation allows us to **estimate risk parameters for each regime** and to **stress test the selected portfolios** by substituting the risk parameters from the turbulent regimes. The probability measures below are presented for a normal regime, in which the risk parameters are based on the entire sample of returns, and for a turbulent regime, which uses a turbulent sub-sample of returns.

### Probability of 15% Loss

<table>
<thead>
<tr>
<th></th>
<th>End of 7-Year Horizon</th>
<th>Within 7-Year Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal Period</td>
<td>Turbulent Period</td>
</tr>
<tr>
<td><strong>55% Equity</strong></td>
<td>1.3%</td>
<td>3.7%</td>
</tr>
<tr>
<td><strong>70% Equity</strong></td>
<td>2.7%</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

Data: Windham Portfolio Advisor.
<table>
<thead>
<tr>
<th>Event</th>
<th>70% Equity Allocation</th>
<th>55% Equity Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panic of 2008</td>
<td>-39.8%</td>
<td>-30.7%</td>
</tr>
<tr>
<td>Nov 2007 – Feb 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dot-com Bubble Burst</td>
<td>-16.0%</td>
<td>-11.1%</td>
</tr>
<tr>
<td>Sept 2000 – Sept 2002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian-Russian Crisis</td>
<td>-11.1%</td>
<td>-8.5%</td>
</tr>
</tbody>
</table>
### Portfolio Composition Comparison

<table>
<thead>
<tr>
<th></th>
<th>Alaska Permanent Fund</th>
<th>Public Fund Peers</th>
<th>Corporate Fund Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds/Cash</td>
<td>31.4%</td>
<td>29.1%</td>
<td>43.7%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>10.6%</td>
<td>6.9%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Equities</td>
<td>44.5%</td>
<td>46.9%</td>
<td>38.2%</td>
</tr>
<tr>
<td>Other*</td>
<td>13.5%</td>
<td>17.1%</td>
<td>14.2%</td>
</tr>
</tbody>
</table>

*Other Includes Absolute Return, Hedge Funds, Infrastructure, and Commodities

Alaska Permanent Fund Data as of 12/31/2011 and retrieved from Callan APFC Performance Review dated 2/5/2012.

Public and Corporate Fund Data from T Rowe Price as of 9/30/2011.
Enduring Truths

- Diversify, Diversify, Diversify!
- Costs are certain, returns are not.
- It’s tough to beat benchmarks
- Stay the course
- Embrace and KISS
Asset Allocation Smooths the Ride

Balanced portfolio assumes 70% equity allocation and annual rebalancing.
Costs are certain, returns are not.

2013 Average Expense Ratios

Data: Vanguard and Lipper as of December 31, 2013
It's Tough to Beat Benchmarks

Percentage of Equity Mutual Funds that **Outperformed the Index**

Stay the Course

Resist the allure of the siren song!
More money has been lost... stretching for yield, than at the point of a gun.