Investment Strategies for Taxable Clients

Vladimir de Vassal, CFA

Director of Quantitative Research & Portfolio Manager
Glenmede Investment Management, LP

This presentation reflects the opinions of its authors and not necessarily the opinion of Glenmede Investment Management, LP.

The views presented should not be construed as investment advice and are not intended to be applicable to any one particular portfolio.

The applicability of any topic or view contained in this presentation to a particular portfolio should be discussed with an adviser.

Table of Contents

- **Asset Allocation for Taxable Clients**
  - Establishing Goals for Tax Efficiency
    - Focus on After-Tax Returns and Wealth
  - Strategies for Tax Efficiency
    - Attractive versus unattractive assets
      - Taxable and tax-deferred accounts
    - Efficient Frontier Analysis with Tax-Adjusted Returns
  - High Net Worth Example
- **Tax Sensitive Strategies for Equity Portfolios**
  - Case for active management
  - Tax loss harvesting analysis

Establishing Goals for Tax Efficiency

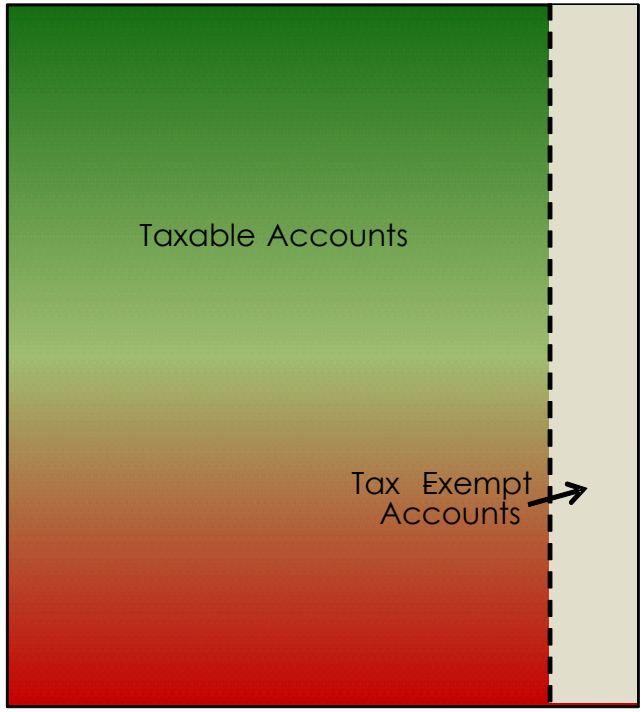
- After-tax returns vs. expected tax costs:
  - Taxable clients should place a primary emphasis on after-tax returns, properly comparing the offsetting benefits of return opportunities and expected tax costs.
  - Minimizing expected tax costs should be a secondary goal, even though it may be the more apparent and more easily observed goal.

Asset Location: Getting the most from tax efficient investments

1. **Highest efficiency (tax exempt): near-0% tax rate**
   - Municipal Fixed Income
2. **High Efficiency (tax advantaged): taxed at long-term rates, can harvest short-term capital losses or significantly defer capital gain recognition**
   - Some Equity SMAs (Tax-Managed)
   - Some Equity Mutual Funds (Tax-Managed)
   - Most Equity ETFs and Equity Index funds (low turnover)
   - Most Private Equity
3. **Medium Tax Efficiency (tax aware): taxed at close to the long-term rate, deferral of gains is modest**
   - Most Equity SMAs (Tax-Managed or low turnover)
   - Tax-aware Equity Mutual Funds
4. **Low Tax Efficiency: taxed at better than mix of 50% long-term & 50% short-term/ordinary income rates**
   - Equity mutual funds and SMAs that are not tax-aware (higher turnover)
   - Futures and options-based strategies (commodities, secured options)
   - Balanced or global asset strategies that include some bonds
   - Some hedge funds
5. **Lowest Tax Efficiency: taxed at worse than mix of 50% long-term & 50% short-term/ordinary income rates**
   - Taxable Fixed Income, High Yield Bonds, Global Bonds
   - Most Hedge Funds
   - Strategies employing swaps instead of futures/options

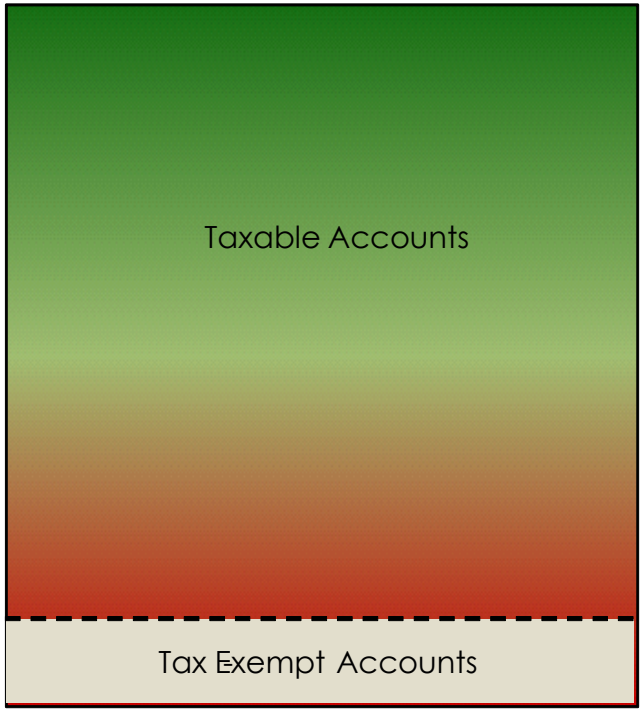
Asset Location: Getting the most from tax efficient investments

Typical Approach



Both types of accounts allocate similarly

Tax-Efficient Approach



Tax inefficient assets placed in tax-exempt Accounts (IRA, Roth IRA, etc.)

Asset Allocation Example

CAPITAL MARKETS ASSUMPTIONS

EXPECTED RETURN AND RISK ASSUMPTIONS

Asset Class	Expected Return (20-Year)	After-Tax Return	Historical Return	Standard Deviation
Inflation	2.5%	2.5%	4.2%	3.0%
Cash Reserves	2.0%	2.0%	5.3%	3.6%
TIPS	3.0%	2.0%	5.9%	6.2%
Municipals	2.5%	2.5%	5.3%	3.4%
Taxable Bonds	3.5%	2.3%	7.9%	6.9%
High Yield	6.5%	4.2%	8.7%	14.4%
Global Bonds	4.0%	2.6%	7.7%	7.8%
Domestic Large Cap Equity	7.5%	6.4%	10.5%	17.4%
Domestic Small Cap Equity	7.0%	6.0%	12.0%	20.1%
International Equity	9.0%	7.7%	9.3%	22.6%
Absolute Return	7.0%	4.6%	7.6%	9.2%
Private Equity	11.5%	10.1%	12.9%	28.2%
Real Estate	7.5%	5.8%	10.3%	23.3%
Commodities	6.0%	3.9%	0.7%	17.8%

DEVELOPING OUR CAPITAL MARKETS ASSUMPTIONS

Glenmede develops capital markets assumptions based on historical risks and returns to different assets, current market conditions and the input and expertise of its portfolio managers, product specialists and investment strategists. Specifically, we develop two sets of assumptions. First we estimate the returns for each asset class needed to bring current valuation measures back to longer term average levels within a ten year time period. This estimate reflects where different assets are in the current market cycle.

Second, we estimate an appropriate long term risk premium over inflation for each asset class based primarily on its historical return and risks. We then take a weighted average of these two sets of assumptions applying a 50% weight to the first measure and a 50% weight to the second. Risks or standard deviations are estimated using historical annual index returns since 1970, or the longest data series available.

Asset Allocation Example

GROWTH WITH INCOME ALLOCATION - TAXABLE AND TAX DEFERRED ASSETS

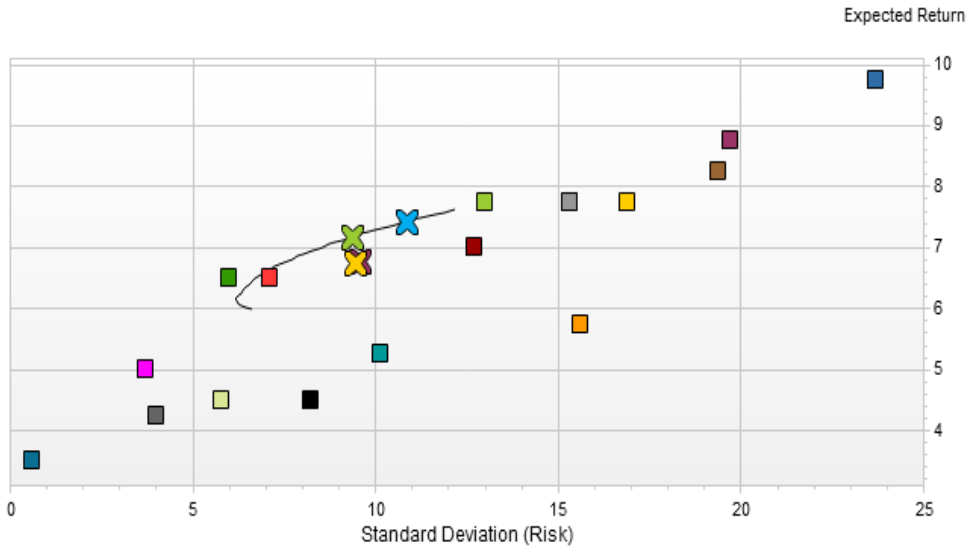
ASSET ALLOCATION BY CLASS

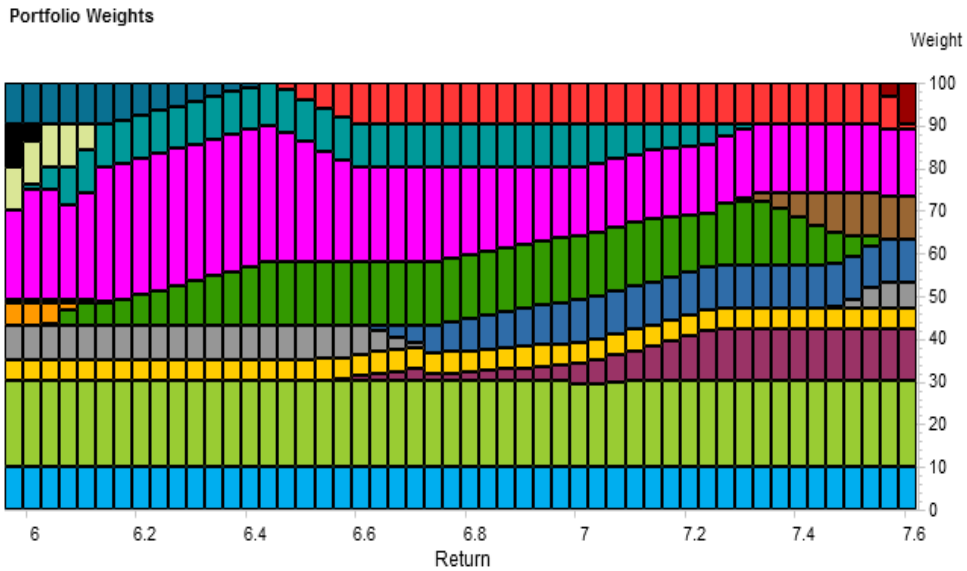
Asset Class	Taxable Allocation		Tax Deferred Allocation		Total Allocation	
	%	Amount	%	Amount	%	Amount
Cash	5%	500,000			5%	500,000
Fixed Income	16%	1,600,000	14%	1,400,000	30%	3,000,000
Governments						
TIPS			6%	600,000	6%	600,000
Municipals	16%	1,600,000			16%	1,600,000
Taxable Bonds						
High Yield			3%	300,000	3%	300,000
Global Bonds			5%	500,000	5%	500,000
Equity	50%	5,000,000			50%	5,000,000
Large Cap	31%	3,100,000			31%	3,100,000
Small Cap	6%	600,000			6%	600,000
International	13%	1,300,000			13%	1,300,000
Other Equity						
Alternative Assets	9%	900,000	6%	600,000	15%	1,500,000
Absolute Return			4%	400,000	4%	400,000
Private Equity	4%	400,000			4%	400,000
Real Estate	5%	500,000			5%	500,000
Commodities			2%	200,000	2%	200,000
TOTAL	80%	8,000,000	20%	2,000,000	100%	10,000,000
Expected Tax-Adjusted Returns						
Tax-Efficient Approach	5.67%		4.88%		5.51%	
Typical Approach					5.38%	

FactSet Frontier Analysis: Projected Nominal Returns

Asset Class	Return (%)	Risk (%)	Min (%)	Max (%)	Optimal (%)	IPC Policy ...	60/40 Ben...
Total					**100.00**	**100.00**	**100.00**
Equity			43.00	63.00	53.58	53.00	60.00
US Large Cap	7.75	15.30	10.00	44.00	10.00	34.00	37.00
US High Quality	7.75	13.00	0.00	20.00	20.00	0.00	0.00
US Small Cap	8.75	19.70	0.00	12.00	8.58	6.00	8.00
International Developed	7.75	16.90	5.00	20.00	5.00	10.00	11.00
International Developed (loc)	7.75	15.30	0.00	10.00	0.00	0.00	0.00
International Emerging	9.75	23.70	0.00	10.00	10.00	3.00	4.00
Alternatives			0.00	31.00	14.83	10.00	0.00
Absolute Return	6.50	6.00	0.00	15.00	14.83	3.00	0.00
Real Estate	8.25	19.40	0.00	10.00	0.00	5.00	0.00
Commodities	5.75	15.60	0.00	6.00	0.00	2.00	0.00
Fixed Income			22.00	42.00	31.59	32.00	35.00
Municipals	4.25	4.00	0.00	1.00	0.00	0.00	0.00
Core Fixed Income	5.00	3.70	16.00	36.00	16.00	26.00	35.00
Long Bonds	5.25	10.14	0.00	10.00	5.59	0.00	0.00
TIPS	4.50	5.80	0.00	10.00	0.00	0.00	0.00
International Bonds	4.50	8.24	0.00	10.00	0.00	3.00	0.00
High Yield (BB)	6.50	7.10	0.00	10.00	10.00	3.00	0.00
EM Debt (USD)	7.00	12.70	0.00	10.00	0.00	0.00	0.00
Cash	3.50	0.62	0.00	10.00	0.00	5.00	5.00

FactSet Frontier Analysis: Projected Nominal Returns





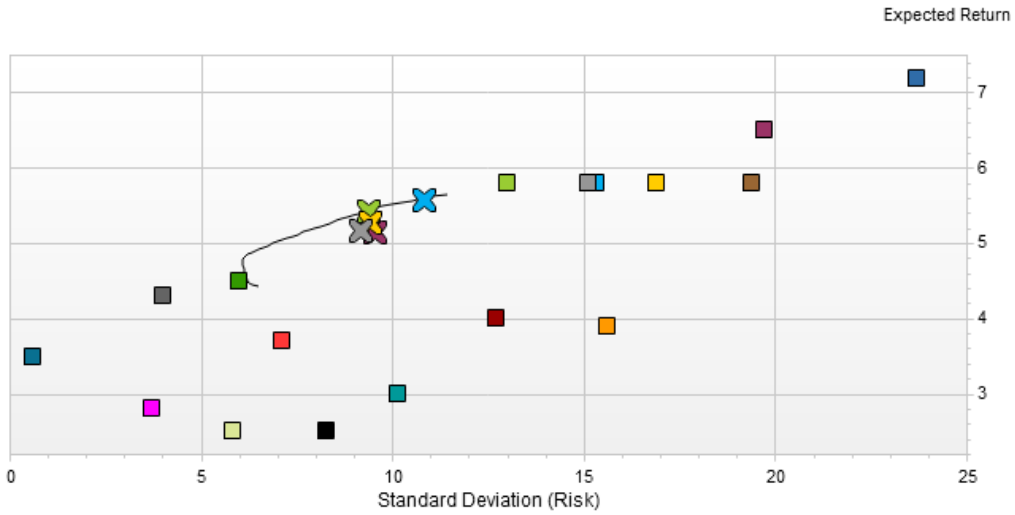
Portfolios	Return (%)	Risk (%)
Current	7.42	10.88
Optimal	7.15	9.40
IPC Policy	6.75	9.62
60/40 Bench	6.74	9.49

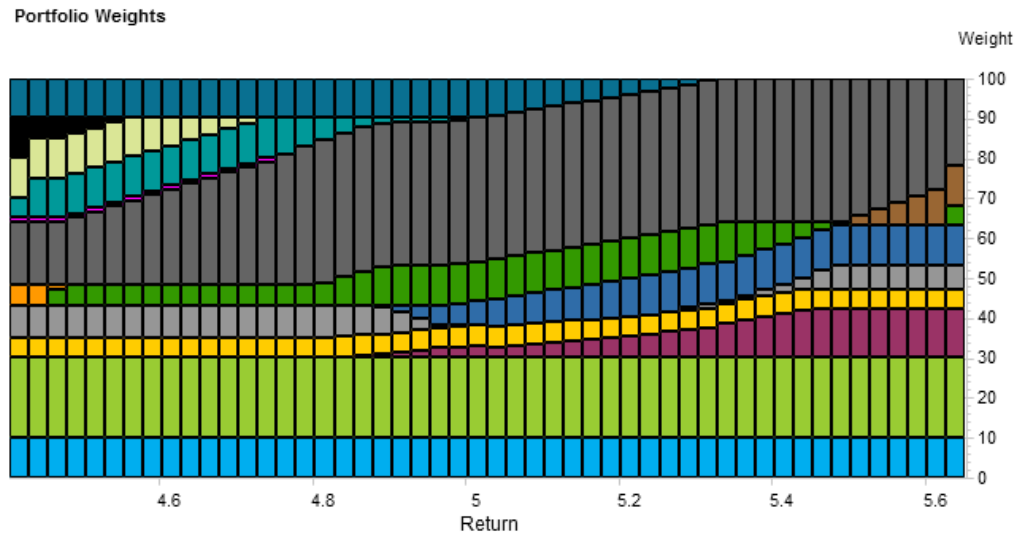
Asset Classes	Return (%)	Risk (%)
US Large Cap	7.75	15.30
US High Quality	7.75	13.00
US Small Cap	8.75	19.70
International Developed	7.75	16.90
International Developed...	7.75	15.30
International Emerging	9.75	23.70
Absolute Return	6.50	6.00
Real Estate	8.25	19.40
Commodities	5.75	15.60
Municipals	4.25	4.00
Core Fixed Income	5.00	3.70
Long Bonds	5.25	10.14
TIPS	4.50	5.80
International Bonds	4.50	8.24
High Yield (BB)	6.50	7.10
EM Debt (USD)	7.00	12.70
Cash	3.50	0.62

FactSet Frontier Analysis: Projected After-Tax Returns

Asset Class	Return (%)	Risk (%)	Min (%)	Max (%)	Optimal (%)	IPC Policy ...	60/40 Ben...
Total					**100.00**	**100.00**	**100.00**
Equity			43.00	63.00	59.47	53.00	60.00
US Large Cap	5.80	15.30	10.00	44.00	10.00	34.00	37.00
US High Quality	5.80	13.00	0.00	20.00	20.00	0.00	0.00
US Small Cap	6.50	19.70	0.00	12.00	11.64	6.00	8.00
International Developed	5.80	16.90	5.00	20.00	5.00	10.00	11.00
International Developed (loc)	5.80	15.11	0.00	10.00	2.84	0.00	0.00
International Emerging	7.20	23.70	0.00	10.00	10.00	3.00	4.00
Alternatives			0.00	26.00	4.53	10.00	0.00
Absolute Return	4.50	6.00	0.00	10.00	4.53	3.00	0.00
Real Estate	5.80	19.40	0.00	10.00	0.00	5.00	0.00
Commodities	3.90	15.60	0.00	6.00	0.00	2.00	0.00
Fixed Income			22.00	42.00	36.00	32.00	35.00
Municipals	4.30	4.00	16.00	36.00	36.00	26.00	35.00
Core Fixed Income	2.80	3.70	0.00	1.00	0.00	0.00	0.00
Long Bonds	3.00	10.15	0.00	10.00	0.00	0.00	0.00
TIPS	2.50	5.81	0.00	10.00	0.00	0.00	0.00
International Bonds	2.50	8.25	0.00	10.00	0.00	3.00	0.00
High Yield (BB)	3.70	7.10	0.00	10.00	0.00	3.00	0.00
EM Debt (USD)	4.00	12.70	0.00	10.00	0.00	0.00	0.00
Cash	3.50	0.62	0.00	10.00	0.00	5.00	5.00

FactSet Frontier Analysis: Projected After-Tax Returns





Portfolios	Return (%)	Risk (%)
Current	5.58	10.84
Optimal	5.42	9.40
IPC Policy	5.14	9.57
60/40 Bench	5.27	9.45
60/40 Simple	5.16	9.19

Asset Classes	Return (%)	Risk (%)
US Large Cap	5.80	15.30
US High Quality	5.80	13.00
US Small Cap	6.50	19.70
International Developed	5.80	16.90
International Developed...	5.80	15.11
International Emerging	7.20	23.70
Absolute Return	4.50	6.00
Real Estate	5.80	19.40
Commodities	3.90	15.60
Municipals	4.30	4.00
Core Fixed Income	2.80	3.70
Long Bonds	3.00	10.15
TIPS	2.50	5.81
International Bonds	2.50	8.25
High Yield (BB)	3.70	7.10
EM Debt (USD)	4.00	12.70
Cash	3.50	0.62

FactSet Frontier Analysis: Asset Class Correlations

Correlation Table (Heat Map) with Neg. Values	US Large Cap	US High Quality	US Small Cap	Int'l Developed	Int'l Emerging	Absolute Return	Real Estate	Commodities	Municipals	Core Fixed Income	Long Bonds	TIPS	International Bonds (Dev)	High Yield (BB)	EM Debt (USD)	Cash
US Large Cap	1.00	0.96	0.82	0.85	0.76	0.76	0.72	0.33	-0.07	-0.03	-0.25	0.02	0.17	0.57	0.58	-0.02
US High Quality	0.96	1.00	0.75	0.79	0.70	0.71	0.63	0.28	-0.05	0.00	-0.20	0.03	0.16	0.53	0.55	-0.01
US Small Cap	0.82	0.75	1.00	0.77	0.74	0.83	0.72	0.34	-0.08	-0.07	-0.27	0.00	0.16	0.58	0.56	-0.05
Int'l Developed	0.85	0.79	0.77	1.00	0.83	0.80	0.79	0.46	-0.05	0.01	-0.24	0.09	0.39	0.59	0.60	-0.03
Int'l Emerging	0.76	0.70	0.74	0.83	1.00	0.84	0.75	0.48	-0.07	-0.02	-0.24	0.13	0.25	0.58	0.71	-0.06
Absolute Return	0.76	0.71	0.83	0.80	0.84	1.00	0.66	0.48	-0.02	-0.01	-0.24	0.10	0.18	0.58	0.65	0.07
Real Estate	0.72	0.63	0.72	0.79	0.75	0.66	1.00	0.42	0.12	0.16	-0.10	0.26	0.38	0.64	0.65	-0.06
Commodities	0.33	0.28	0.34	0.46	0.48	0.48	0.42	1.00	-0.07	0.07	-0.11	0.29	0.38	0.35	0.33	0.03
Municipals	-0.07	-0.05	-0.08	-0.05	-0.07	-0.02	0.12	-0.07	1.00	0.76	0.59	0.59	0.37	0.28	0.23	0.05
Core Fixed Income	-0.03	0.00	-0.07	0.01	-0.02	-0.01	0.16	0.07	0.76	1.00	0.84	0.75	0.52	0.29	0.32	0.10
Long Bonds	-0.25	-0.20	-0.27	-0.24	-0.24	-0.24	-0.10	-0.11	0.59	0.84	1.00	0.61	0.33	-0.04	0.10	0.03
TIPS	0.02	0.03	0.00	0.09	0.13	0.10	0.26	0.29	0.59	0.75	0.61	1.00	0.53	0.35	0.39	0.02
International Bonds (D	0.17	0.16	0.16	0.39	0.25	0.18	0.38	0.38	0.37	0.52	0.33	0.53	1.00	0.26	0.26	-0.04
High Yield (BB)	0.57	0.53	0.58	0.59	0.58	0.58	0.64	0.35	0.28	0.29	-0.04	0.35	0.26	1.00	0.64	-0.10
EM Debt (USD)	0.58	0.55	0.56	0.60	0.71	0.65	0.65	0.33	0.23	0.32	0.10	0.39	0.26	0.64	1.00	-0.04
Cash	-0.02	-0.01	-0.05	-0.03	-0.06	0.07	-0.06	0.03	0.05	0.10	0.03	0.02	-0.04	-0.10	-0.04	1.00

Correlation Table (Heat Map) without Neg. Values	US Large Cap	US High Quality	US Small Cap	Int'l Developed	Int'l Emerging	Absolute Return	Real Estate	Commodities	Municipals	Core Fixed Income	Long Bonds	TIPS	International Bonds (Dev)	High Yield (BB)	EM Debt (USD)	Cash
US Large Cap	1.00	0.96	0.82	0.85	0.76	0.76	0.72	0.33	0.00	0.00	0.00	0.02	0.17	0.57	0.58	0.00
US High Quality	0.96	1.00	0.75	0.79	0.70	0.71	0.63	0.28	0.00	0.00	0.00	0.03	0.16	0.53	0.55	0.00
US Small Cap	0.82	0.75	1.00	0.77	0.74	0.83	0.72	0.34	0.00	0.00	0.00	0.00	0.16	0.58	0.56	0.00
Int'l Developed	0.85	0.79	0.77	1.00	0.83	0.80	0.79	0.46	0.00	0.01	0.00	0.09	0.39	0.59	0.60	0.00
Int'l Emerging	0.76	0.70	0.74	0.83	1.00	0.84	0.75	0.48	0.00	0.00	0.00	0.13	0.25	0.58	0.71	0.00
Absolute Return	0.76	0.71	0.83	0.80	0.84	1.00	0.66	0.48	0.00	0.00	0.00	0.10	0.18	0.58	0.65	0.07
Real Estate	0.72	0.63	0.72	0.79	0.75	0.66	1.00	0.42	0.12	0.16	0.00	0.26	0.38	0.64	0.65	0.00
Commodities	0.33	0.28	0.34	0.46	0.48	0.48	0.42	1.00	0.00	0.07	0.00	0.29	0.38	0.35	0.33	0.03
Municipals	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	1.00	0.76	0.59	0.59	0.37	0.28	0.23	0.05
Core Fixed Income	0.00	0.00	0.00	0.01	0.00	0.00	0.16	0.07	0.76	1.00	0.84	0.75	0.52	0.29	0.32	0.10
Long Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.84	1.00	0.61	0.33	0.00	0.10	0.03
TIPS	0.02	0.03	0.00	0.09	0.13	0.10	0.26	0.29	0.59	0.75	0.61	1.00	0.53	0.35	0.39	0.02
International Bonds (D	0.17	0.16	0.16	0.39	0.25	0.18	0.38	0.38	0.37	0.52	0.33	0.53	1.00	0.26	0.26	0.00
High Yield (BB)	0.57	0.53	0.58	0.59	0.58	0.58	0.64	0.35	0.28	0.29	0.00	0.35	0.26	1.00	0.64	0.00
EM Debt (USD)	0.58	0.55	0.56	0.60	0.71	0.65	0.65	0.33	0.23	0.32	0.10	0.39	0.26	0.64	1.00	0.00
Cash	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.03	0.05	0.10	0.03	0.02	0.00	0.00	0.00	1.00

Tax-Efficient Management of Taxable Accounts

Within a taxable account, tax effects can be further managed in two ways:

-Minimize the use of tax-inefficient investments & strategies

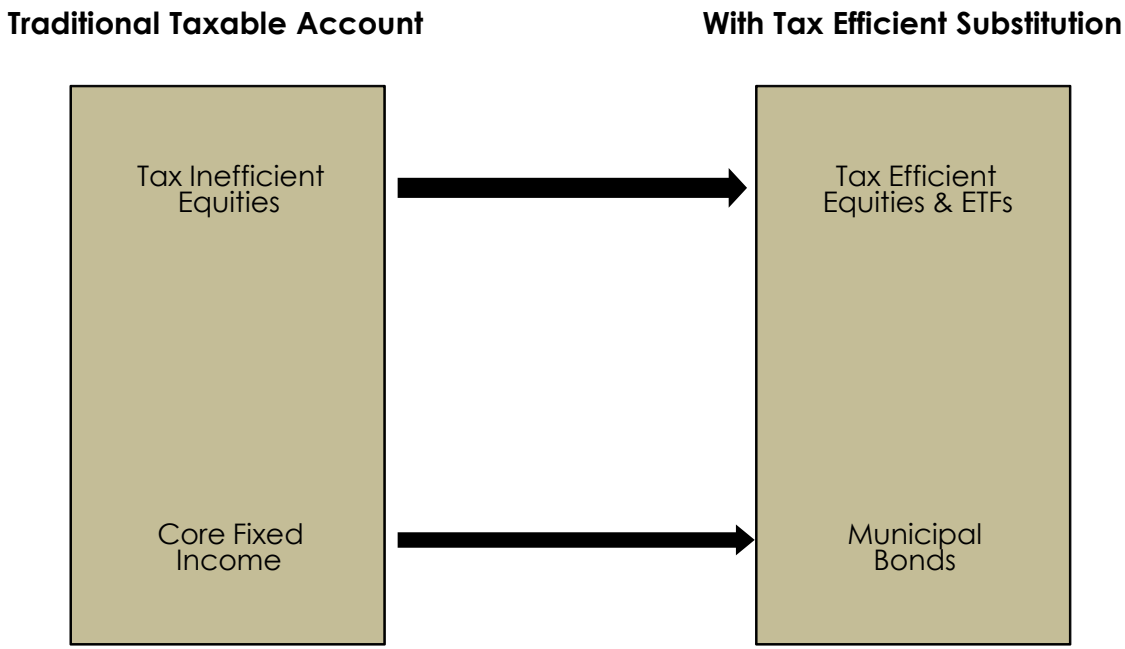
-Harvest capital losses to offset the tax effect from less tax-advantaged strategies

Tax-Efficient Substitution: Minimizing the use of tax-inefficient strategies

Where possible and when all else is equal, tax-efficient assets should be substituted for less tax efficient assets within taxable accounts. Standard examples of this include:

Tax-Efficient Management of Taxable Accounts

- Municipal bonds instead of core fixed income.
- Tax-aware equity management instead of less-tax efficient management.
- Equity ETFs instead of Equity mutual funds.
- Minimize exposure to hedge funds that generate ST gains and ordinary income
- Minimize use of swaps-based strategies in favor of option and futures-based strategies.



Tax-Efficient Management of Taxable Accounts

Tax-Loss Harvesting and Tax-Managed Core

Tax-Managed Core:

- **Large Core Allocation: a separately managed account (SMA) or portfolio of individual stocks that occupies a central allocation in a client's portfolio.**
- **Tax-Loss Harvesting: short-term losses within the portfolio would be proactively and tactically harvested and shared with the total portfolio.**

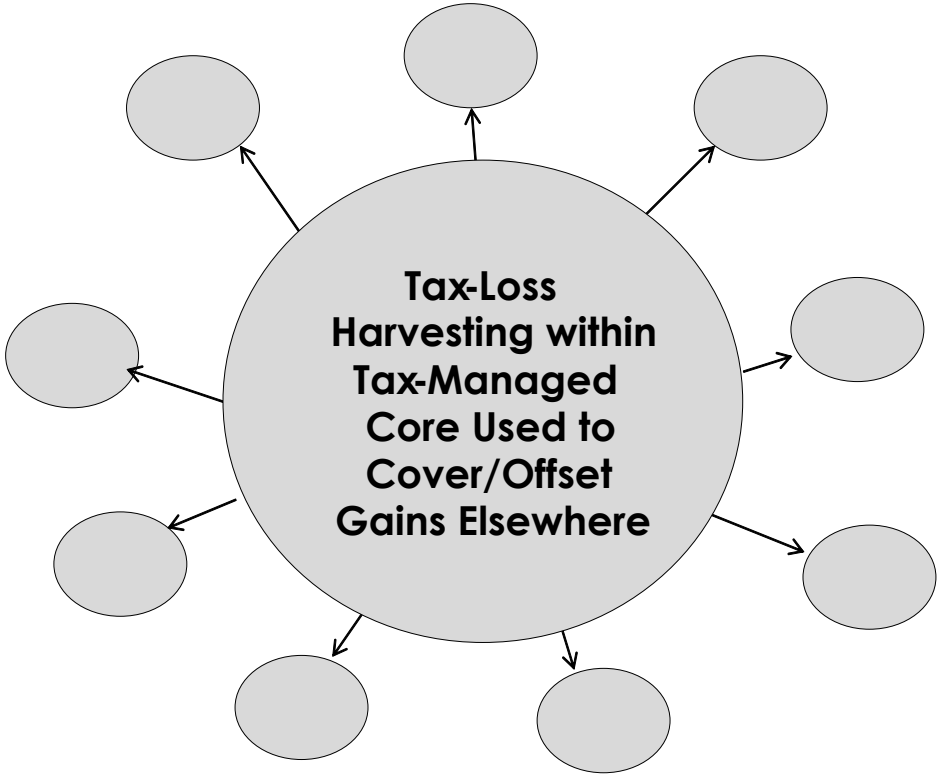
An additional means for improving tax efficiency for many clients is an active harvesting of capital losses to offset gains elsewhere in the portfolio. One of the most efficient ways to accomplish this is through the use of a tax-managed core.

Capital losses harvested by this or other means can then be used to offset short-term gains elsewhere within a client's total allocation such as those from hedge-fund investments, permitting a greater flexibility for incorporation of less tax-advantaged strategies within a portfolio that may provide enhanced return or diversification benefits.

A note on tax-loss harvesting strategies: When employing a tax-loss harvesting strategy, it is arguable that some gains realization is more optimal than none. The realization of gains resets the cost basis for an investment, increasing the chances of a future opportunity of short-term loss harvesting. A good tax-management strategy should balance short-term loss realization with long-term gain realization so as to constantly reset the portfolio for future potential loss realization opportunities.

Tax-Efficient Management of Taxable Accounts

Tax-Loss Harvesting and Tax-Managed Core



Putting It All Together

Bottom Line: Benefits of Tax-Efficient Substitution and Tax-Managed Core

While each of the above strategies independently seems to have a modest impact on overall tax-related savings, combining the results can add up to something more material. Below is an illustration of the tax efficiency opportunity that exists in a $10 million Growth-with-Income relationship with $9 million in a taxable account and $1 million in a tax-exempt account. The end result of the combined strategies is a savings of $59,000 or 0.59% before sale and $43,000 or 0.43% after sale.

Incremental Savings on a $10 mil portfolio

	Before Sale	After Sale
Asset Location	$9,103	$6,845
Tax-Efficient Substitution	$23,376	$16,063
Tax-Loss Harvesting/Tax Managed Core	$12,217	$5,691
Associated Fee Reduction*	$14,030	$14,030
Total Savings	**$58,726**	**$42,629**
% of portfolio	**0.59%**	**0.43%**

*Fee reduction due to greater use of ETFs

High Net Worth Example

High Net Worth Example

- Retired Married Couple
- Current Portfolio Value of $12 Million (All Taxable)
- Minimum Annual After-Tax Payout Assumption ("Annuity") of $250,000 (Inflation-adjusted)
- In 25 Years want an Ending Target Value of $5 Million (Inflation-Adjusted) for Retirement Home
- Discretionary Annual Payout Assumption
    - Percentage of Future Portfolio Values Less Safety Stock (Remaining Annuity + Ending Target Value)
    - 0% to 50% (10% increments)
- Starting Age Assumption of 65

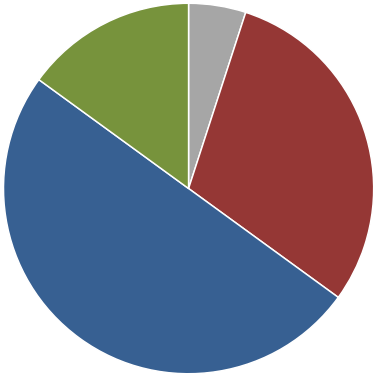
High Net Worth Example

Growth With Income Asset Allocation

Initial Portfolio Value: $12.0 Million

Total Portfolio Allocation

Cash	5%
Fixed Income	30%
Equity	50%
Alternatives	15%



Return/Risk Profile

Expected Return		
Pre-Tax		6.8%
After-Tax		5.9%
Expected Income		
Estimated ($)	$	239,916
Estimated (%)		2.0%
Risk Factors		
Standard Deviation		10.6%
Negative Return Frequency:		
12-Month Period		25.9%
60-Month Period		7.4%

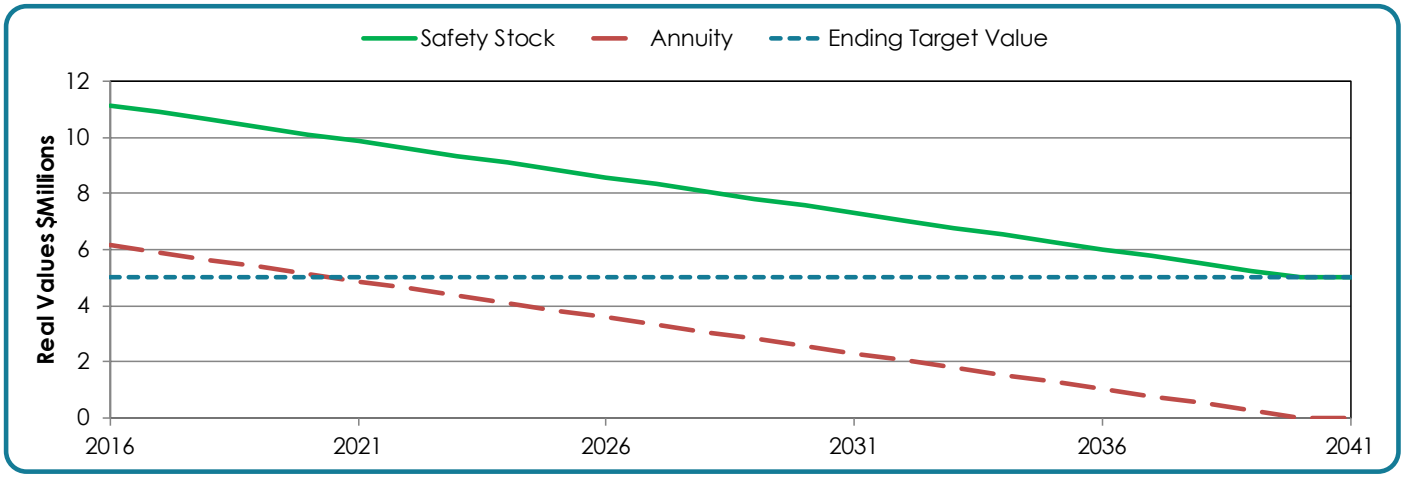
High Net Worth Example

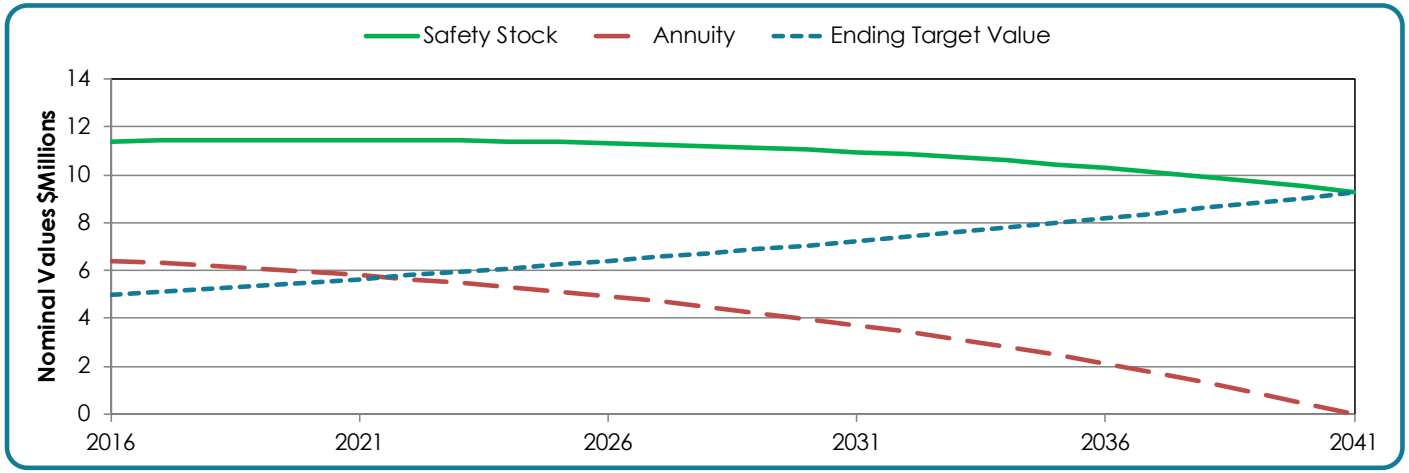
- Monte Carlo Analysis (1000 Simulations)
- Initial Portfolio Value of $12 Million
- Expected After-Tax Portfolio Return Assumption of 5.9% (Current federal tax rates)
- Projected Standard Deviation of 10.6%
- Simulations Assume Annual Portfolio Rebalancing
- Distributions of Real and Nominal Portfolio Values
    - 10 Years Forward
    - 25 Years forward
- Annual Portfolio Values and Payouts

High Net Worth Example

Projected Safety Stock and Annuity - Real and Nominal Values

Initial Portfolio Value: $12,000,000





Sources: Glenmede Investment Research

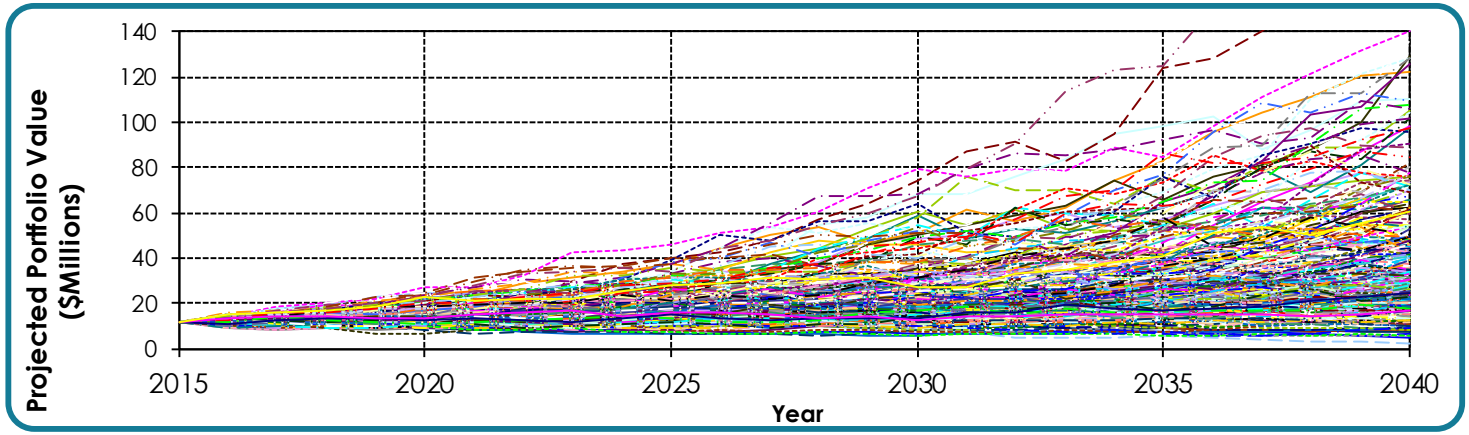
High Net Worth Example

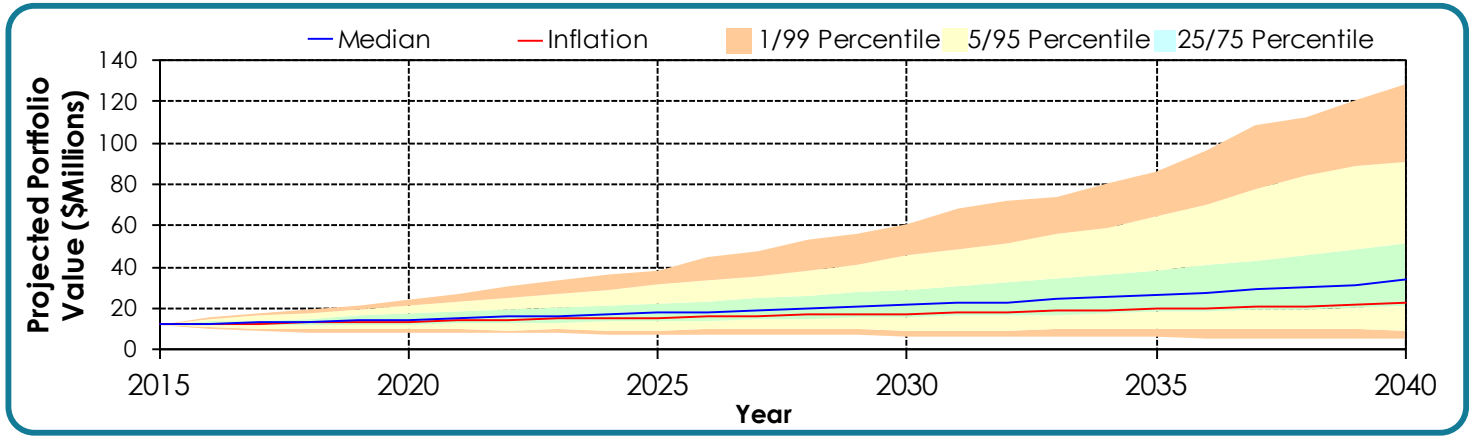
Asset Allocation Monte Carlo Simulation - Expected Return of 5.9%

Annual Real Payout of $300,000 with No Discretionary Payout

Projected Portfolio Values - Net of Additions/Payouts

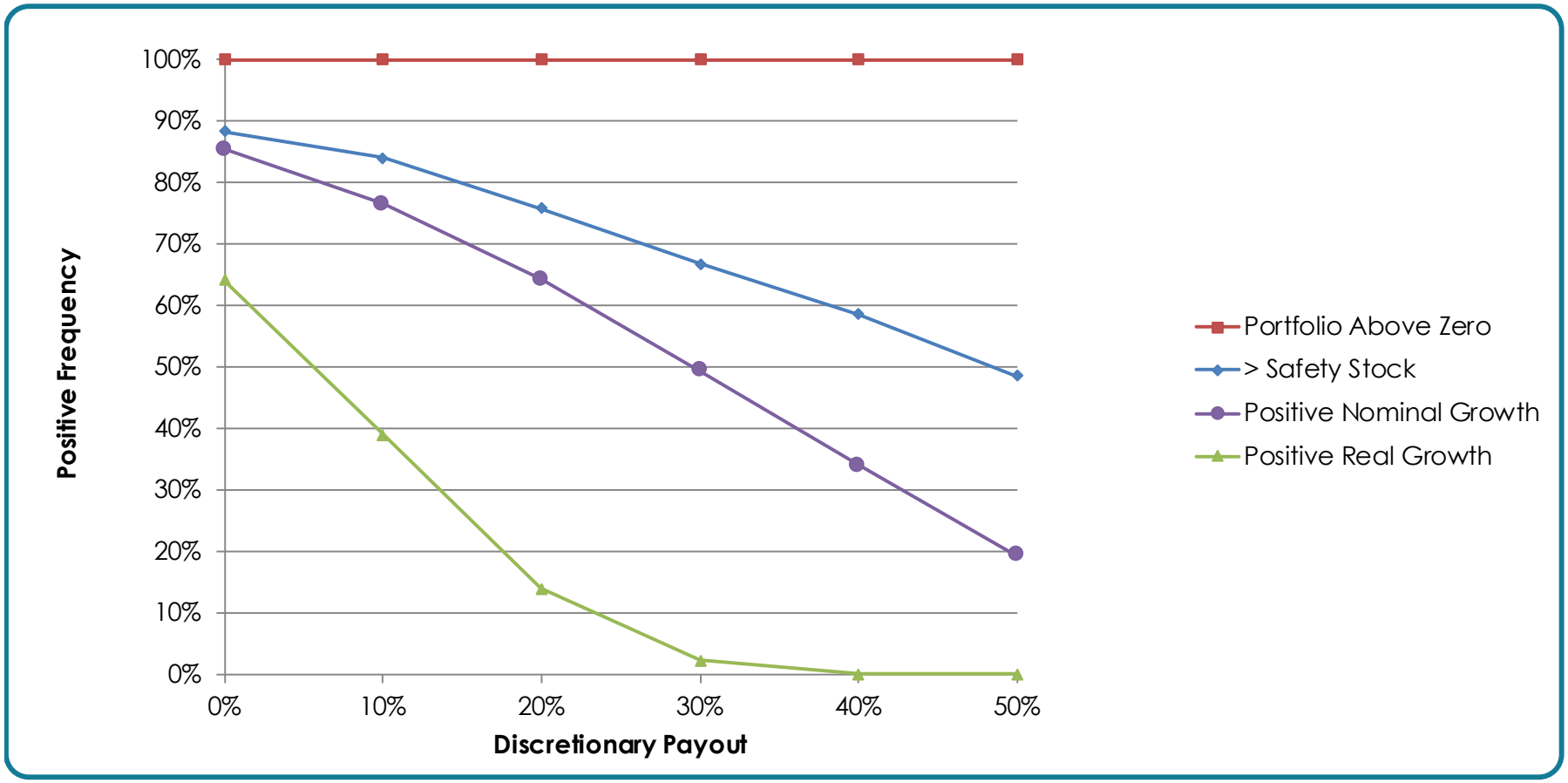
Initial Portfolio Value ($Millions): $12.00





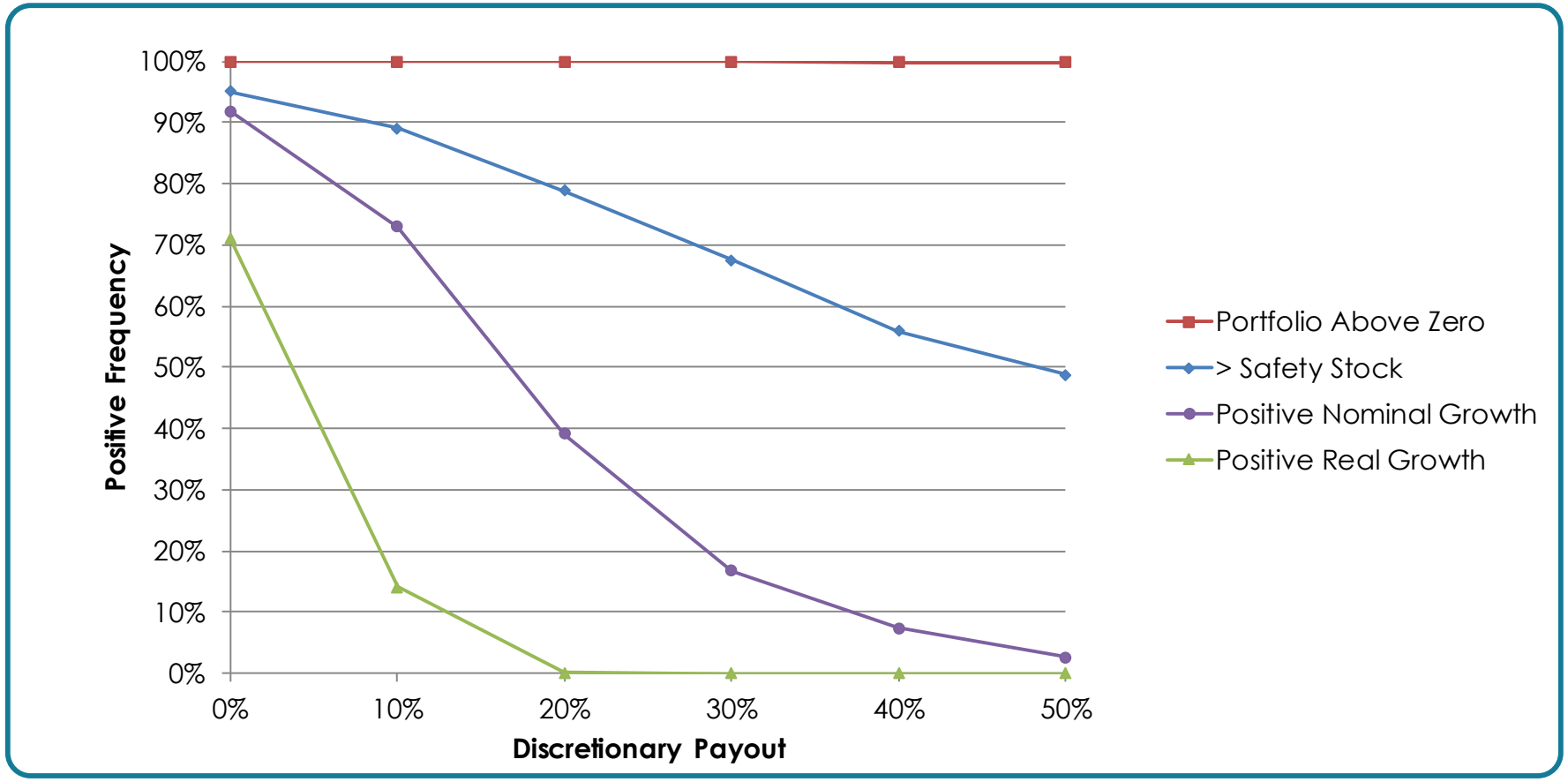
Source: Glenmede Investment Research(Monte Carlo results based on 1000 simulations)

High Net Worth Example



Sources: Glenmede Investment Research

High Net Worth Example



Sources: Glenmede Investment Research

High Net Worth Example

Annual Real Payout of $800,000 with 20% Discretionary Payout

Initial Portfolio Value: $12,000,000

Year	Safety Stock+ Annuity	Projected Real Portfolio Values ($Millions) Percentile 1	5	25	Median	75	95	99
2014	11.2	9.3	10.2	11.3	11.9	12.6	13.7	14.3
2015	10.9	8.4	9.5	10.9	11.7	12.5	13.9	14.9
2016	10.6	7.8	9.2	10.6	11.6	12.6	14.0	15.0
2017	10.4	7.6	8.7	10.3	11.4	12.6	14.1	15.3
2018	10.1	6.9	8.2	10.0	11.2	12.4	14.5	15.6
2019	9.9	6.6	7.9	9.8	11.0	12.2	14.3	15.9
2020	9.6	6.4	7.5	9.7	10.8	12.1	14.1	15.9
2021	9.4	6.1	7.4	9.4	10.6	11.7	13.7	15.6
2022	9.1	5.6	7.1	9.1	10.3	11.5	13.5	15.0
2023	8.8	5.4	6.8	8.9	10.0	11.2	13.2	15.0
2024	8.6	5.0	6.6	8.6	9.7	10.9	12.8	14.5
2025	8.3	4.9	6.5	8.4	9.6	10.6	12.5	14.3
2026	8.1	4.8	6.2	8.2	9.2	10.4	12.3	14.2
2027	7.8	4.5	5.9	7.9	9.0	10.0	12.0	13.4
2028	7.6	4.1	5.6	7.6	8.7	9.7	11.6	12.9
2029	7.3	3.9	5.4	7.4	8.3	9.4	11.1	12.7
2030	7.1	3.5	5.3	7.1	8.0	9.1	10.7	12.1
2031	6.8	3.2	5.0	6.8	7.8	8.8	10.5	11.6
2032	6.5	3.1	4.8	6.6	7.6	8.5	10.0	11.4
2033	6.3	3.0	4.7	6.3	7.3	8.2	9.8	11.1
2034	6.0	2.8	4.5	6.1	7.1	8.0	9.5	10.7
2035	5.8	2.7	4.2	5.9	6.7	7.6	9.3	10.3
2036	5.5	2.4	4.1	5.7	6.5	7.3	8.8	10.2
2037	5.3	2.2	3.6	5.3	6.2	6.9	8.4	9.7
2038	5.0	2.2	3.5	5.2	6.1	7.1	8.7	10.3

Year	Safety Stock+ Annuity	Projected Nominal Portfolio Values ($Millions) Percentile 1	5	25	Median	75	95	99
2014	11.4	9.6	10.5	11.5	12.2	12.9	14.0	14.6
2015	11.4	8.9	10.0	11.5	12.3	13.2	14.6	15.6
2016	11.5	8.4	9.9	11.4	12.5	13.5	15.1	16.2
2017	11.5	8.4	9.6	11.3	12.6	13.9	15.6	16.9
2018	11.5	7.8	9.3	11.4	12.6	14.0	16.4	17.6
2019	11.4	7.6	9.2	11.4	12.8	14.2	16.5	18.4
2020	11.4	7.6	8.9	11.5	12.8	14.3	16.8	18.9
2021	11.4	7.4	9.0	11.5	12.9	14.3	16.7	19.0
2022	11.4	7.0	8.9	11.3	12.8	14.3	16.9	18.7
2023	11.3	6.9	8.7	11.4	12.8	14.3	17.0	19.3
2024	11.3	6.6	8.7	11.3	12.7	14.3	16.8	19.1
2025	11.2	6.6	8.8	11.3	12.8	14.3	16.8	19.3
2026	11.1	6.6	8.6	11.3	12.7	14.3	16.9	19.5
2027	11.0	6.3	8.3	11.2	12.7	14.2	16.9	19.0
2028	11.0	6.0	8.1	10.9	12.6	14.0	16.7	18.7
2029	10.8	5.8	8.0	10.9	12.4	14.0	16.5	18.8
2030	10.7	5.4	8.1	10.9	12.2	13.8	16.2	18.4
2031	10.6	5.0	7.9	10.7	12.2	13.8	16.3	18.1
2032	10.5	4.9	7.7	10.6	12.1	13.6	16.0	18.3
2033	10.3	5.0	7.7	10.4	11.9	13.5	16.0	18.1
2034	10.1	4.7	7.5	10.2	11.8	13.4	15.9	18.0
2035	9.9	4.7	7.2	10.1	11.6	13.1	16.1	17.8
2036	9.7	4.3	7.2	10.0	11.4	13.0	15.6	17.9
2037	9.5	3.9	6.6	9.6	11.2	12.5	15.1	17.6
2038	9.3	4.0	6.4	9.6	11.3	13.1	16.1	19.1

High Net Worth Example

Annual Real Payout of $800,000 with 20% Discretionary Payout

Initial Portfolio Value: $12,000,000

Projected Real Annual Payouts ($Thousands)

Year	Percentile 1	5	25	Median	75	95	99
2014	250	250	346	507	678	948	1,095
2015	250	250	321	527	729	1,067	1,313
2016	250	250	298	554	793	1,152	1,413
2017	250	250	287	565	870	1,241	1,537
2018	250	250	292	575	885	1,406	1,670
2019	250	250	305	603	898	1,408	1,813
2020	250	250	333	607	923	1,437	1,872
2021	250	250	330	612	899	1,396	1,858
2022	250	250	295	595	897	1,416	1,781
2023	250	250	314	589	895	1,405	1,855
2024	250	250	307	581	882	1,361	1,788
2025	250	250	322	606	870	1,339	1,800
2026	250	250	324	579	878	1,354	1,821
2027	250	250	322	587	853	1,334	1,703
2028	250	250	294	578	830	1,297	1,642
2029	250	250	307	551	822	1,248	1,631
2030	250	250	318	542	796	1,195	1,549
2031	250	250	304	555	800	1,212	1,495
2032	250	250	307	554	790	1,162	1,513
2033	250	250	297	534	780	1,166	1,481
2034	250	250	296	543	771	1,154	1,466
2035	250	250	314	530	749	1,174	1,425
2036	250	250	326	525	741	1,111	1,448
2037	250	250	301	517	701	1,057	1,395

Projected Nominal Annual Payouts ($Thousands)

Year	Percentile 1	5	25	Median	75	95	99
2014	256	256	355	519	694	972	1,123
2015	263	263	337	554	766	1,121	1,380
2016	269	269	321	597	854	1,241	1,522
2017	276	276	317	623	960	1,370	1,696
2018	283	283	330	650	1,001	1,591	1,890
2019	290	290	354	699	1,041	1,633	2,103
2020	297	297	396	721	1,097	1,708	2,225
2021	305	305	403	746	1,095	1,700	2,264
2022	312	312	369	742	1,120	1,768	2,225
2023	320	320	402	754	1,146	1,799	2,374
2024	328	328	402	762	1,157	1,786	2,346
2025	336	336	433	814	1,170	1,801	2,421
2026	345	345	447	799	1,211	1,867	2,511
2027	353	353	455	830	1,205	1,886	2,407
2028	362	362	426	837	1,203	1,878	2,377
2029	371	371	456	818	1,221	1,852	2,421
2030	380	380	483	824	1,211	1,819	2,357
2031	390	390	475	866	1,247	1,890	2,332
2032	400	400	491	886	1,262	1,858	2,418
2033	410	410	487	875	1,278	1,911	2,427
2034	420	420	496	912	1,296	1,939	2,462
2035	430	430	541	913	1,289	2,021	2,452
2036	441	441	574	927	1,307	1,961	2,555
2037	452	452	545	934	1,269	1,911	2,523

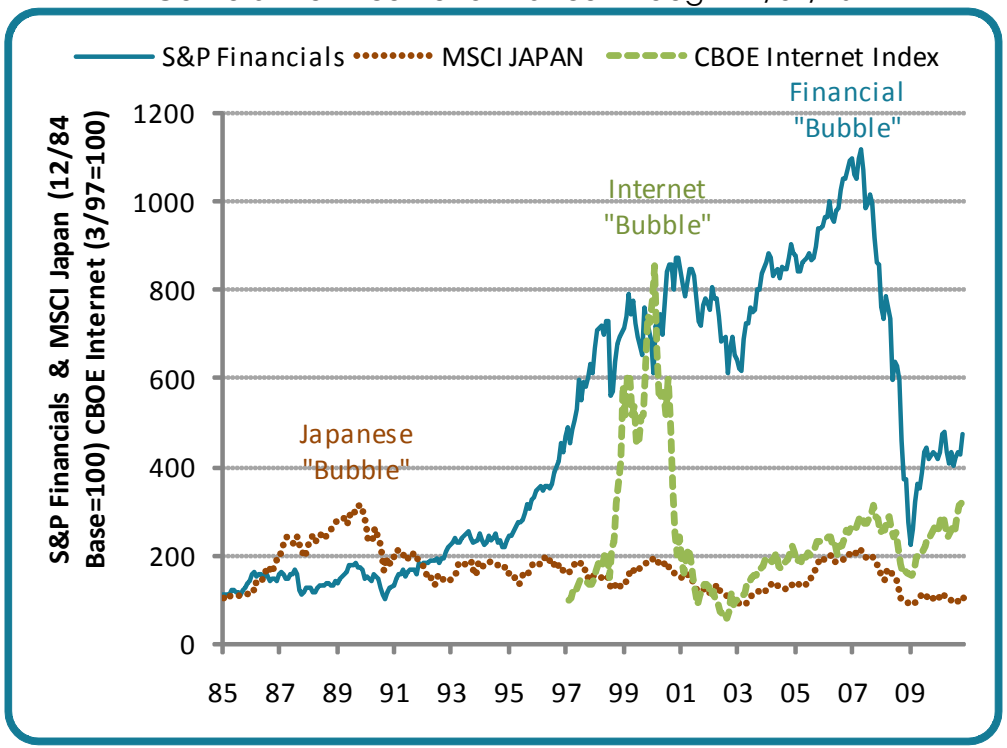
Source: Glenmede Investment Research (Monte Carlo results based on 1000 simulations)

Case for Active Equity Management

Market Indexes can be Subject to "Irrational Exuberance"

S&P Financials, CBOE Internet and MSCI Japan

Cumulative Price Performance Through 12/31/10



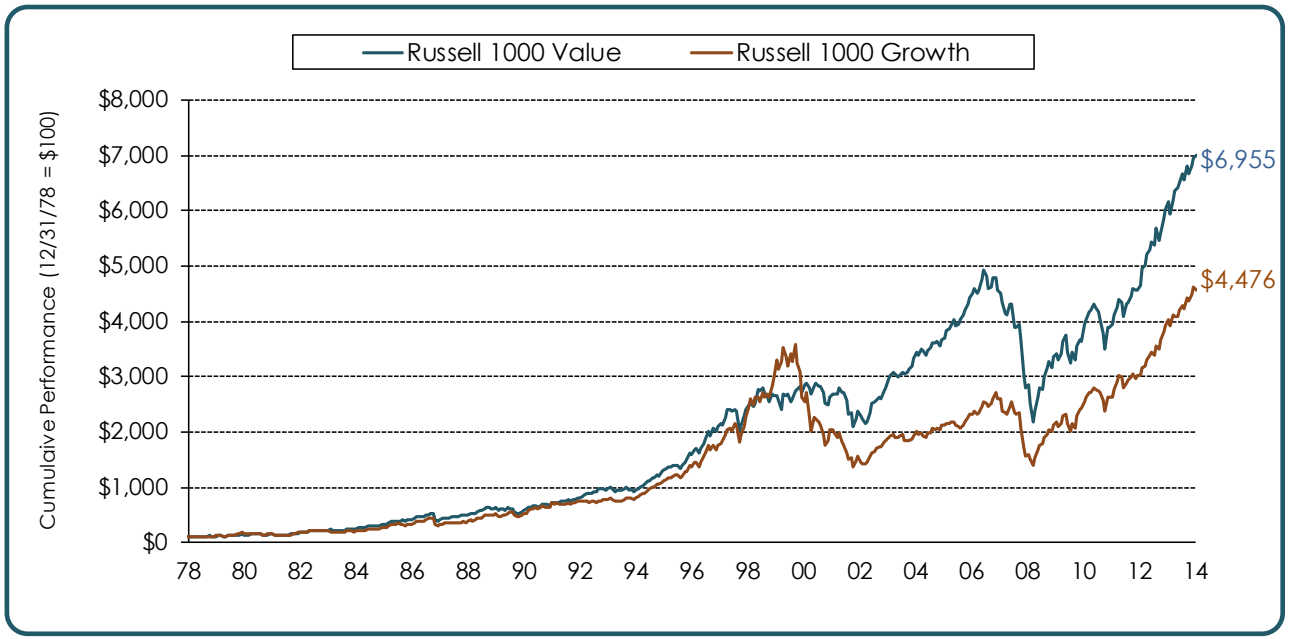
Sources: Glenmede Investment Research and FactSet

Leonard F. Ayres (1929)
"It seems probable that stocks have been passing not so much from the strong to the weak, as from the smart to the dumb."

Value Investing is One Example of a Persistent Inefficiency

Large Cap Value Versus Growth Stocks

December 31, 1978 Through December 31, 2014



Historical 12-Month Returns	Russell 1000 Value	Russell 1000 Growth	Spread
Average Annualized Return	12.5%	11.2%	1.3%
Standard Deviation	16.6%	20.1%	-3.5%
Negative Return Frequency	18.3%	21.6%	-3.3%
Upside Capture to S&P 500	95.3%	107.0%	-10.7%
Downside Capture to S&P 500	90.4%	114.2%	-25.2%

Sources: Glenmede Investment Research and monthly returns per FactSet and Frank Russell

***Important Disclosures on Page 46**

Index Funds Favor Stocks with Largest Market Capitalizations

Ten Largest Constituents of S&P 500 Index

December 1980

1.	IBM	Technology
2.	AT&T	Communication
3.	Exxon	Energy
4.	Amoco	Energy
5.	Schlumberger	Energy
6.	Shell Oil	Energy
7.	Mobil	Energy
8.	Chevron	Energy
9.	ARCO	Energy
10.	GE	Capital Goods

December 1999

1.	Microsoft	Technology
2.	GE	Capital Goods
3.	Cisco	Technology
4.	Wal-Mart	Cons. Cyclicals
5.	Intel	Technology
6.	AT&T	Communication
7.	Lucent	Technology
8.	IBM	Technology
9.	Exxon Mobil	Energy
10.	AOL	Technology

December 2006

1.	Exxon Mobil	Energy
2.	GE	Capital Goods
3.	Citigroup	Financials
4.	Microsoft	Technology
5.	B of A	Financials
6.	P&G	Staples
7.	J&J	Health Care
8.	Pfizer	Health Care
9.	AIG	Financials
10.	Altria	Staples

December 2014

1.	Apple	Technology
2.	Exxon Mobil	Energy
3.	Microsoft	Technology
4.	Google(A&C)	Technology
5.	J&J	Health Care
6.	Berkshire H.	Financials
7.	Wells Fargo	Financials
8.	GE	Capital Goods
9.	P&G	Staples
10.	JPMorgan	Financials

Source: FactSet (Based on year end weights)

Index Funds Favor Stocks with Largest Market Capitalizations

	S&P 500 Annualized Returns (%)		
Decade	Equal-wgt	Cap-wgt	Difference
1958-60	19.3%	12.8%	6.6%
1961-70	9.8%	5.1%	4.7%
1971-80	8.2%	4.0%	4.2%
1981-90	10.1%	9.7%	0.4%
1991-2000	17.7%	17.5%	0.2%
2001-10	6.3%	1.4%	4.8%
2011-14	16.3%	15.6%	0.8%
1958-2014	11.2%	8.2%	3.0%

Sources: Glenmede Investment Research, FactSet (1990-2014) , Leuthold Research (S&P 500:1972-1989, S&P 425:1958-1971)

Historically, Mid Caps Have Outperformed

Russell Mid-Cap, Top 200 and Small Cap Indexes

Relative 12-Month Total Returns

December 31, 1978 Through December 31, 2014

Historical 12-Month Returns	Russell Mid Cap Index	Russell Top 200 Index	Russell 2000 Index	Mid-Cap to Top 200 Spread	Mid-Cap to Russell 2000 Spread
Average Annualized Return	13.8%	11.5%	11.9%	2.3%	1.9%
Standard Deviation	18.7%	17.6%	21.2%	1.1%	-2.5%
Negative Return Frequency	20.4%	19.5%	25.2%	0.9%	-4.8%
Average Negative Return	-12.0%	-14.8%	-12.6%	2.8%	0.6%
Avg Return/St Dev	0.74	0.65	0.56	0.09	0.18
Upside Capture to Top 200	109.4%	100.0%	110.2%	9.4%	-0.8%
Downside Capture to Top 200	100.6%	100.0%	111.8%	0.6%	-11.2%

Sources: FactSet (Mid Cap=Russell Mid Cap Index, Top 200= Russell Top 200 Index, Small Cap=Russell 2000 Index)

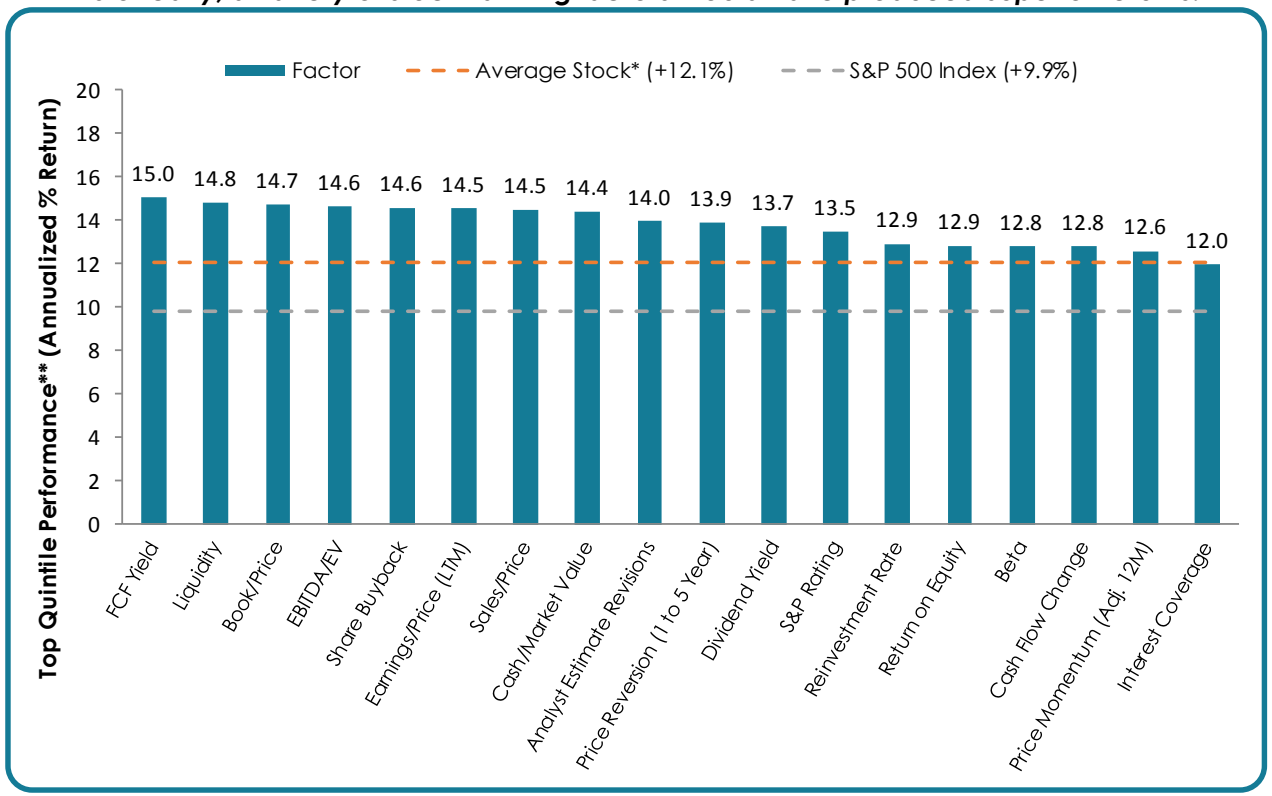
***Important Disclosures on Page 46**

Intuitive, Fundamentally-Based Factors have Outperformed

Stock Ranking Factor Returns

Twenty Years Ending December 31, 2014

Historically, a variety of stock ranking factors would have produced superior returns.



Sources: Glenmede Investment Research, MATLAB and Factset

**Average Stock and top quintile factor returns based on constituents of Russell 1000 Index, rebalanced monthly*

***Top quintile performances for each factor are based on the average return of stocks ranked in top 20% of each sector (assume no transaction costs or management fees).*

Multi-Factor Model Outperforms Average Stock in Most Years

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest	P/E 44.5%	P/E 32.0%	Multifactor 47.1%	S&P 500 28.6%	Momentum 67.4%	P/E 26.1%	P/E 30.5%	Multifactor -1.9%	P/E 50.6%	P/E 29.5%
	Multifactor 43.2%	Multifactor 31.8%	P/E 42.2%	Momentum 27.5%	EPS Est 46.3%	Multifactor 12.6%	ROE 3.7%	ROE -7.9%	EPS Est 48.5%	Multifactor 24.4%
	Momentum 40.0%	EPS Est 28.1%	Momentum 33.9%	Multifactor 19.6%	ROE 23.1%	ROE 10.1%	Avg Stock 0.6%	Momentum -8.9%	Avg Stock 43.9%	ROE 22.6%
	EPS Est 39.9%	ROE 23.6%	S&P 500 33.4%	ROE 17.7%	Multifactor 22.4%	Avg Stock 1.4%	Multifactor -0.8%	P/E -10.9%	Momentum 40.5%	EPS Est 20.3%
	S&P 500 37.6%	S&P 500 23.0%	EPS Est 32.5%	EPS Est 14.7%	S&P 500 21.0%	EPS Est -7.0%	Momentum -11.5%	EPS Est -19.4%	Multifactor 39.8%	Avg Stock 18.5%
	ROE 37.0%	Momentum 20.9%	ROE 28.8%	Avg Stock 9.4%	Avg Stock 20.1%	S&P 500 -9.1%	S&P 500 -11.9%	Avg Stock -20.3%	ROE 36.1%	Momentum 16.2%
Lowest	Avg Stock 34.5%	Avg Stock 19.8%	Avg Stock 28.8%	P/E 0.6%	P/E 3.3%	Momentum -13.0%	EPS Est -19.7%	S&P 500 -22.1%	S&P 500 28.7%	S&P 500 10.9%

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	1995-2014
Highest	Multifactor 22.0%	P/E 16.2%	EPS Est 24.4%	S&P 500 -37.0%	P/E 82.2%	EPS Est 29.3%	S&P 500 2.1%	P/E 21.5%	P/E 50.9%	S&P 500 13.7%	Multifactor 16.2%
	EPS Est 21.2%	S&P 500 15.8%	Momentum 14.4%	Avg Stock -41.7%	Avg Stock 55.9%	Momentum 27.6%	ROE -0.1%	Multifactor 20.0%	Multifactor 44.5%	ROE 11.5%	P/E 15.9%
	Momentum 18.3%	EPS Est 15.7%	Multifactor 13.9%	ROE -43.9%	ROE 51.1%	Multifactor 25.7%	Multifactor -1.1%	Momentum 19.4%	Momentum 44.0%	Multifactor 11.3%	ROE 14.8%
	ROE 14.9%	Avg Stock 15.1%	ROE 13.5%	EPS Est -45.3%	EPS Est 42.1%	Avg Stock 24.9%	EPS Est -1.2%	ROE 19.1%	ROE 40.9%	Avg Stock 11.1%	EPS Est 14.0%
	P/E 14.7%	ROE 14.1%	S&P 500 5.5%	Multifactor -45.6%	Multifactor 26.6%	P/E 21.3%	Avg Stock -1.9%	EPS Est 18.9%	EPS Est 39.6%	EPS Est 11.0%	Momentum 13.0%
	Avg Stock 9.8%	Multifactor 13.1%	Avg Stock 2.7%	Momentum -45.8%	S&P 500 26.5%	ROE 21.0%	Momentum -3.5%	Avg Stock 18.2%	Avg Stock 37.1%	P/E 10.6%	Avg Stock 12.1%
Lowest	S&P 500 4.9%	Momentum 6.7%	P/E -10.4%	P/E -52.4%	Momentum 17.5%	S&P 500 15.1%	P/E -6.5%	S&P 500 16.0%	S&P 500 32.4%	Momentum 6.8%	S&P 500 9.9%

Top Quintile returns are based on equally-weighted total returns of most attractively ranked stocks (top 20%) for each factor every year.

Sources: Glenmede Investment Research, FactSet and MATLAB (Russell 1000 Universe, monthly rebalancing with no transaction costs)

***Important Disclosures on Page 46**

Multi-Factor Model Outperforms Average Stock in Most Years

Factor Definitions

25% P/E (Price/Earnings) – Valuation factor indicating relative cheapness of a stock price to annual earnings estimate
25% ROE (Return on Equity) – Fundamental factor reflecting profitability of a company
25% Momentum – Technical factor based on 12-month change in stock price
25% EPS Est (Earnings Per Share Estimates) – Earnings factor based on estimate revisions of sell-side analysts
100% Multifactor – Weighted average of four factors
Avg Stock – Equal-weighted return of all companies in Russell 1000 index

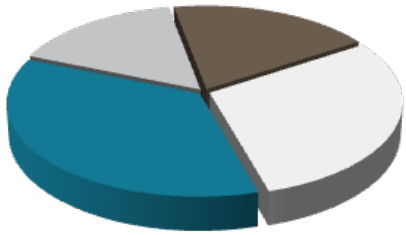
*Important Disclosures on Page 46

Large Cap Stock Selection Model

- **Universe of stocks** is sorted by economic sectors and ranked using proprietary factors

<u>Earnings Catalysts (20%):</u>
- Earnings and Sales Surprise
- Earnings/Revenue Estimate Revisions
- Earnings/Revenue Estimate Diffusions

<u>Market Confirmation (20%)</u>
- Relative Price Momentum
- Trading Volume/Liquidity
- Beta



<u>Business Management (25%)</u>
- Return on Equity
- Earnings Growth Rate
- Margin Related
- Capital Allocation
- Debt Management
- Analyst Estimate Dispersion

<u>Valuation (35%):</u>
- Price/Earnings
- Free Cash Flow Yield
- Price/Sales
- EV - Based
- Price/Book
- Dividend Yield

- **Proprietary Ranking Model: The stocks ranking in the TOP 30% of each sector make up the Glenmede Universe of buy candidates**

Managing Tax-Aware Equity Portfolios

Managing Tax-Aware Equity Portfolios

- **Three Basic Principles**
  - Avoid Realizing Short-Term Capital Gains
  - Take Advantage of Tax Loss Harvesting Opportunities (Bear Markets!)
  - Prioritize Selling of Higher Cost Basis Stocks

Managing Tax-Aware Equity Portfolios

- **Tax Aware Portfolio Management**
  - Recognition of Individual Tax Lots
  - Short-Term versus Long-Term Capital Gains Tax Rates
  - Projected Stock "Alphas" based on 12-Month or Longer Holding Period Backtests
  - Portfolio Customization – Separately Managed Account ($1 Million Minimum)

Managing Tax-Aware Equity Portfolios

Tax Loss Harvesting Simulations

Scenarios

- No Loss Harvesting
- Harvest All Losses
- Harvest All Losses Except 1-Month Losses
- Harvest All Losses Except for Buy Ranked Stocks (Top Three Deciles)

Methodology

- Large Cap Universe - Russell 1000 Index (Source: FactSet)
- 1000 Trials of Randomly Selected 100 Stock Portfolios Over 20 Years
- initial Portfolios reflect stocks with 1% weightings
- Individual Stock Holdings >2% of Portfolio are Trimmed
- Individual Stock Holdings <.1% of Portfolio are Sold
- Stock Rankings Based on Proprietary Multi-Factor Models
- Simulations Performed with MATLAB software

Managing Tax-Aware Equity Portfolios

Simulated Tax Loss Harvesting Strategies*

(20-Years ending 12/31/2014, 1000 Trials of Randomly Selected 100 Stock Portfolios, Monthly Rebalancing)

	Gross Return	Tax Adj. Return	Risk (St Dev)	Net ST	Net LT	Annual Turnover
No Tax Harvesting	11.72	11.11	15.43	0.34	1.77	9
Harvest All Losses	11.61	12.48	15.66	-2.55	1.25	60
Harvest Except 1-Month Loss	11.69	11.95	15.66	-1.29	1.11	31
Harvest Only Stocks Ranked > 30	12.41	12.82	15.52	-1.56	1.21	38

	ST Loss	LT Loss	ST Gain	LT Gain
No Tax Harvesting	-0.08	-0.07	0.42	1.84
Harvest All Losses	-2.83	-0.39	0.28	1.64
Harvest Except 1-Month Loss	-1.59	-0.55	0.30	1.66
Harvest Only Stocks Ranked > 30	-1.82	-0.48	0.26	1.69

*All simulations include trims if individual holding weight >2% or sell if <.1%

Managing Tax-Aware Long/Short Portfolios

Simulated Long/Short Tax Loss Harvesting Strategies*

(20-Years ending September, 2015, 1000 Trials of Randomly Selected 100 Stock Portfolios, Monthly Rebalancing)

Long Portfolio	Gross Return	Tax Adj. Return	Risk (St Dev)	ST Loss	LT Loss	ST Gain	LT Gain	Net ST	Net LT	Annual Turnover
No Tax Harvesting	10.45	9.54	16.72	-0.17	-0.11	0.87	2.49	0.70	2.38	27
Harvest All Losses	10.25	11.48	17.03	-4.40	-0.43	0.63	2.42	-3.77	1.99	67
Harvest Only Stocks Ranked > 30	11.33	11.90	16.62	-2.71	-0.60	0.58	2.20	-2.14	1.60	46

Short Portfolio	Gross Return	Tax Adj. Return	Risk (St Dev)	ST Loss	LT Loss	ST Gain	LT Gain	Net ST	Net LT	Annual Turnover
No Tax Harvesting	-12.02	-11.27	16.71	-0.83	-2.46	0.16	0.11	-0.67	-2.35	27
Harvest All Losses	-10.99	-3.80	20.78	-18.59	-0.95	0.07	0.16	-18.52	-0.78	273
Harvest Only Rank < 50	-9.76	-6.30	19.58	-6.50	-4.93	0.08	0.18	-6.41	-4.75	98

Long/Short (Market Neutral)**	Gross Return	Tax Adj. Return	Risk (St Dev)	ST Loss	LT Loss	ST Gain	LT Gain	Net ST	Net LT	Annual Turnover
No Tax Harvesting	2.04	1.00	5.55	-1.01	-2.57	1.03	2.60	0.02	0.03	54
Harvest All Losses	3.55	11.69	9.14	-22.98	-1.37	0.69	2.58	-22.29	1.21	340
Harvest Longs>30 and Shorts<50	5.90	8.61	7.63	-9.21	-5.53	0.66	2.38	-8.55	-3.15	144

** All simulations include trims if individual holding weight >2% (reduce to 1%) or sell if <.1% (no transaction costs)*

*** Long/Short Portfolio assumes a cash return of Treasury Bill less 50 basis spoints for shorting costs*

Simulations are based on randomly selected stocks from historical constituents of Russell 3000 Index

Multi-Asset Portfolio Example – Fixed Income Plus

- **Objectives**
  - Enhanced Return in Low Interest Rate Environment
  - Diversification Benefits from Four Different Strategies

Monthly Return Correlations

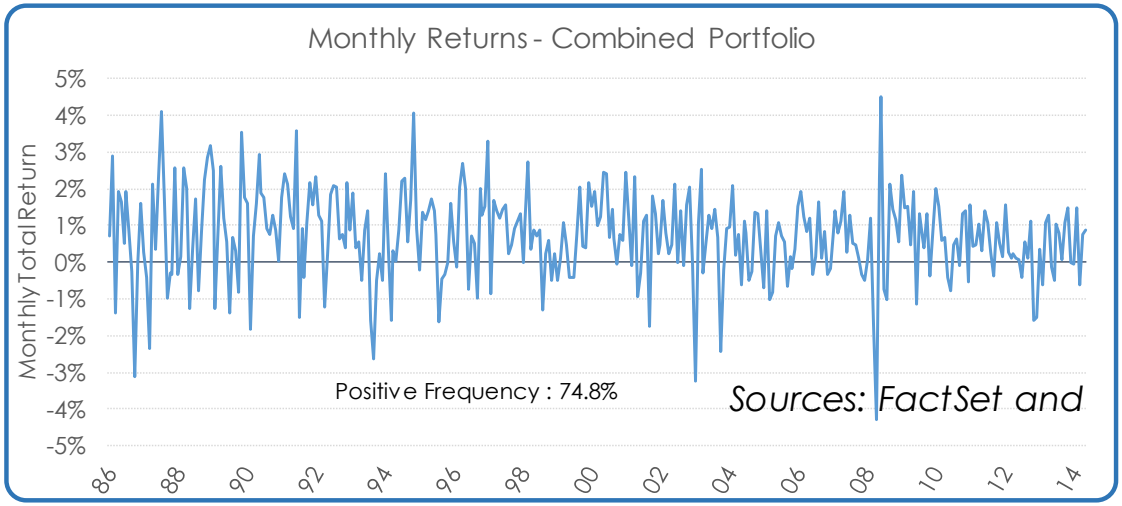
	Core Fixed	PutWrite	Commodities	Long/Short
Barclays Agg	1.00	0.06	-0.06	0.08
PutWrite	0.06	1.00	-0.07	-0.01
Commodities	-0.06	-0.07	1.00	0.03
Long/Short	0.08	-0.01	0.03	1.00

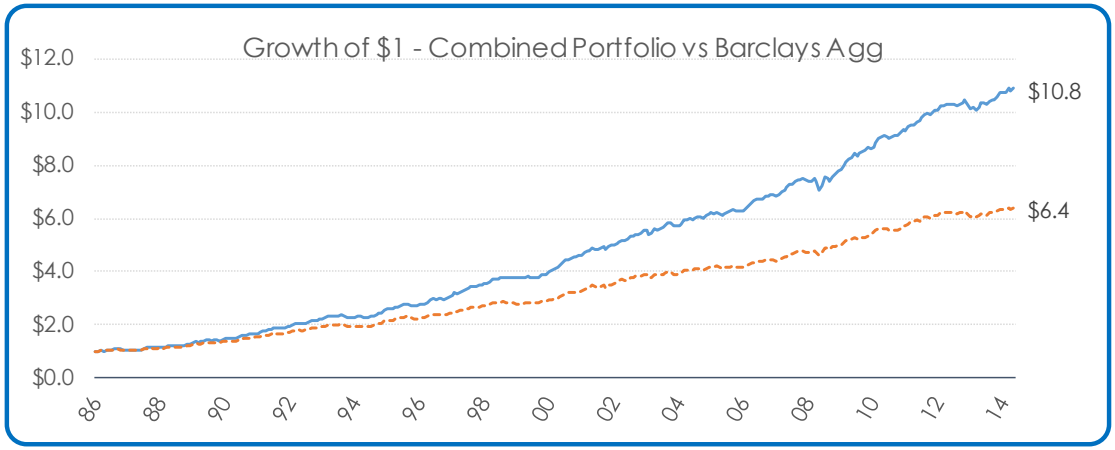
Sources: FactSet and Bloomberg (7/1986 to 11/2014, Commodities since 1991))

  - Tax Loss Harvesting from Long/Short Portfolio

Multi-Asset Portfolio Example – Fixed Income Plus

Portfolio Backtest Results - Fixed Income Plus Strategy





Portfolio Composition

	Weight
Barclays Agg	100%
PutWrite	10%
Commodities	10%
Long/Short	10%
Gross Exposure:	130%

Commodities Beta	0%
Long/Short Beta	0%

Summary Statistics

	Combined	Brcly Agg
Return	8.80%	6.79%
Risk	4.15%	3.89%
Exc. Ret.	2.01%	
T.E.	1.20%	
Sharpe	1.40	0.97
Pos. Freq.	53.1%	
Info Ratio	1.67	
Min 12M Rel Return	-2.6%	

Sources: FactSet and Bloomberg (7/1986 to 11/2014, Commodities since 1991)

Multi-Asset Portfolio Example – Fixed Income Plus

- **Tax Sensitivity**
  - Core Fixed Income – Taxed as ordinary income
    - Municipals – No Federal Tax on Interest
  - Put Write Strategy – Taxed at 60% Long-term and 40% Short-term Capital Gains Tax Rates
  - Commodities – Actively Managed (Beta Neutral), primarily taxed as short-term gains
  - Long/Short Equity – Market neutral strategy to take advantage of tax loss harvesting opportunities from long and/or short positions

Suggested Readings

- Jeffrey, R. and R. Arnott. "Is Your Alpha Big Enough to Cover Its Taxes?" The Journal of Portfolio Management, Vol. 19, No.3, 1993, pp. 15-25.
- Arnott, R., A. Berkin, and P. Bouchey. "Is Your Alpha Big Enough to Cover Its Taxes? Revisited." Investments and Wealth Monitor, January/February 2011, pp. 6-10.
- Arnott, R., A. Berkin, and J.Ye. "The Management and Mismanagement of Taxable Assets." Journal of Investing, Vol. 10, No. 1, 2001, pp. 15-21.
- Stein, D. and P. Narasimhan. "Of Passive and Active Equity Portfolios in the Presence of Taxes." Journal of Wealth Management, Vol. 2, No.2, 1999, pp. 55-63.
- Chincarini, L. and D. Kim. "The Advantages of Tax-Managed Investing." The Journal of Portfolio Management, Vol. 28, No. 1, 2001, pp. 56-72.
- Bergstresser, D. and J. Pontiff. "Investment Taxation and Portfolio Performance." Working paper, Harvard Business School, 2010. Available at SSRN: http://ssrn.com/abstract=891488.
- Israel, R. and T. Moskowitz. "How Tax Efficient are Equity Sales?" Chicago Booth Research Paper No. 12-20, 2011. Available at SSRN: http://ssrn.com/abstract=2089459.
- David Stein, Paul Bouchey and Hemambara Vadlamudi, "Tax-Efficient Equity Investing, A Primer from Parametric," 2013.
- Patrick Geddes, Lisa R. Goldberg and Stephen W. Bianchi, "What Would Yale Do if It Were Taxable?" Financial Analysts Journal July/August 2015, pages 10-23.

Vladimir de Vassal, CFA

Director of Quantitative Research

Glenmede Investment Management LP

Vladimir de Vassal, CFA, is Director of Quantitative Research for Glenmede Investment Management LP. He provides proprietary research and analytical support to domestic institutional funds, The Pew Charitable Trusts and high net worth clients of the parent company, The Glenmede Trust Company, N.A. (GTC). Mr. de Vassal and his team manage several quantitatively oriented equity portfolios, including six mutual funds and long / short strategies.

Mr. de Vassal joined GTC in 1998 after serving as vice president and director of quantitative analysis at CoreStates Investment Advisors. Previously, he was vice president of interest rate risk reporting/analysis, at CoreStates Financial Corp.

Graduating with highest honors from Drexel University in 1982, Mr. de Vassal received a B.S. with dual majors in Finance and Accounting. At that time, he was given the Outstanding Student in Accounting and Finance Award. He received an M.B.A. from Drexel University in 1987, majoring in Investment Management. In 1992, he earned the Chartered Financial Analyst designation.

He was a three-time winner of the Philadelphia Prize awarded by the Financial Analysts of Philadelphia for articles addressing investment insight. In addition, Mr. de Vassal has been published in periodicals such as Barron's, The Journal of Wealth Management, The Journal of Portfolio Management, Worth and The Journal of Fixed Income. He has been a speaker at investment conferences and universities, including the Wharton School at the University of Pennsylvania, Princeton, Penn State and Drexel.

Mr. de Vassal is a member of the CFA Institute (formerly AIMR, the Association for Investment Management and Research).

IMPORTANT DISCLOSURES:

This presentation is intended for investment professionals only. This should not be disseminated to your clients. This document contains certain opinions of Glenmede's Director of Quantitative Research, who also is lead Portfolio Manager for the Large Cap Core and Large Cap Growth strategies. It reflects certain business practices of Glenmede at the time of publication, but which may change at any time in the future without notice to you. This also contains forward-looking statements and opinions. Opinions are based on sources which are presumed to be reliable, but are not independently verified, and such opinions may change without notice to you. Forward-looking statements regarding future prospects of any investment are subject to various risks and uncertainties and actual events may vary materially from what is anticipated herein. Indices are used herein as proxies for the behavior of a particular market. Results reported do not include transaction or management fees, which would reduce return. You cannot invest in an index. All investment involves risk, including loss of principal. Decisions to invest in any strategy or using any method in any given case are subject to applicable facts and circumstances and should not be based solely on this summary of Glenmede's portfolio manager's opinion alone. This presentation does not represent a solicitation to purchase or sell any security or to provide any service. High Net Worth Examples are provided for illustrative purposes only and do not reflect actual accounts. Past performance is not indicative of future results.