Pension Plan Investment Fundamentals

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THE BOGDAHN GROUP

simplifying your investment and fiduciary decisions

Pension Plan Investment Fundamentals

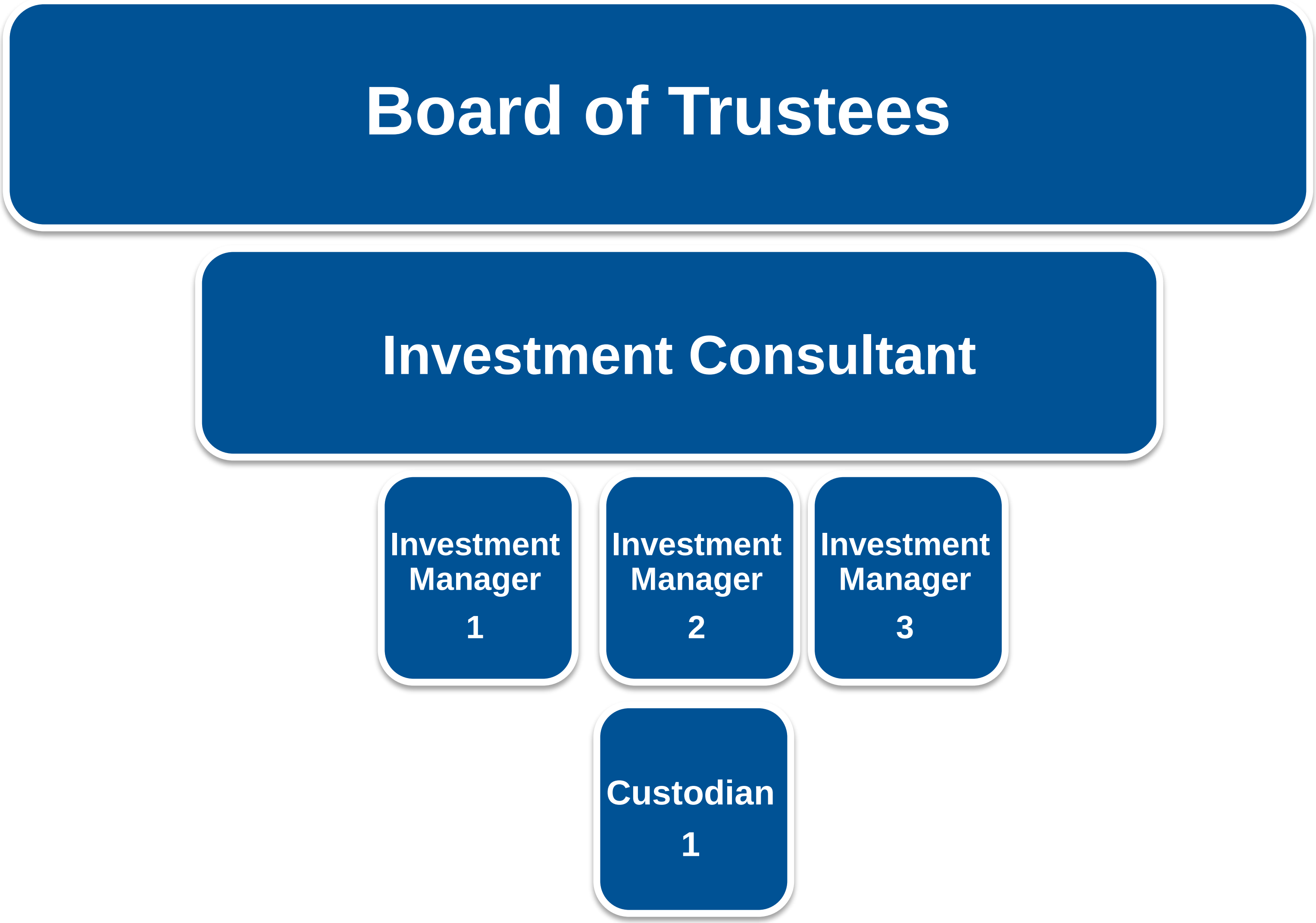
1. Understanding the Investment Program

2. Pension Plan Investment Portfolio Basics

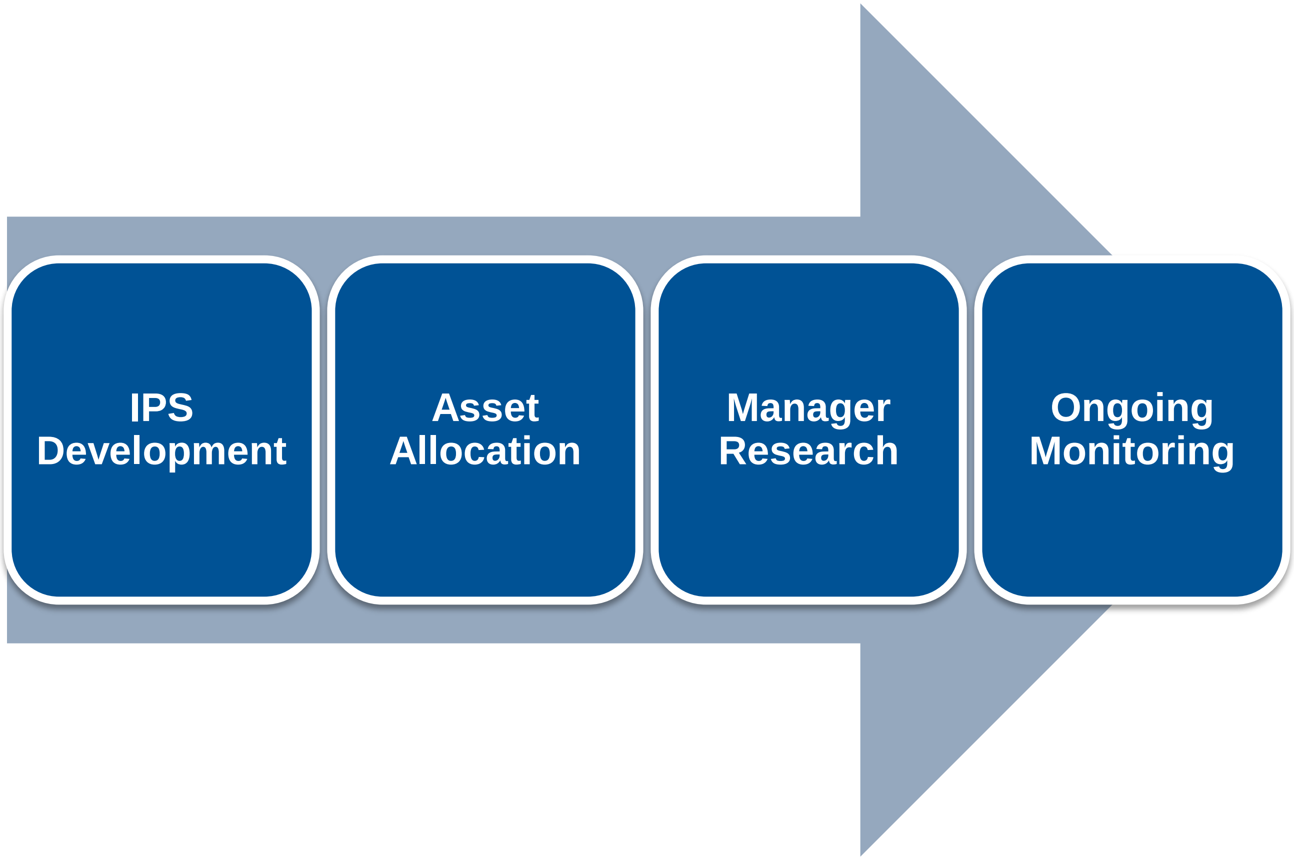
3. Asset Allocation

Understanding the Investment Program

Pension Plan Investment Service Providers



Understanding the Investment Program



Understanding the Investment Program

IPS requirements and Portfolio needs

Fund characteristics & demographics	Liquidity requirements	Time horizon	Investment return objectives

Board education and discussion

Fiduciary responsibilities	Portfolio construction	Asset classes	Governance and monitoring	Consultant and Board sentiment

Develop and implement new IPS

Capital markets expectations	Strategic asset allocation	Rebalancing	Manager monitoring	Vendor and Board expectations

Understanding the Investment Program

Identifying Investment Parameters

State Statutes

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Local Ordinance?

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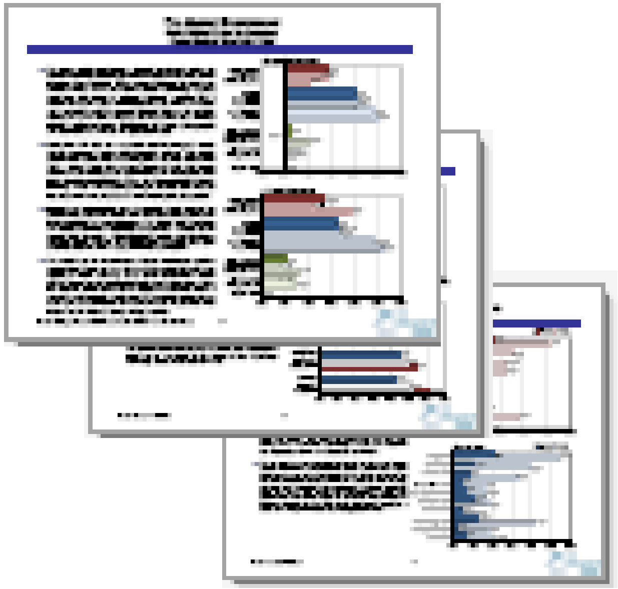
Board Adopted Investment Policy Statement

Performance Reporting

- Factors impacting financial markets
- Independent calculation of performance
- Total fund, asset classes, individual managers
- Investment Policy Compliance



Investment Manager Considerations

- Portfolio fit
  (correlations, approach, style)
- Consistency
- Fee and contract negotiations
- Investment vehicle
  (mutual fund, separate account, etc.)

Understanding the Investment Program

➢ *Passive vs Active Investment Management*

PASSIVE		ACTIVE	
Strengths	***Weaknesses***	***Strengths***	***Weaknesses***
✓ Low Cost ✓ Implementation Efficiency ✓ Consistency of Returns (you "get the market") ✓ Difficult to beat net of fees ✓ "Safe" choice for decision makers and plan sponsors	✓ Aggregate of the market ✓ No potential for excess return ✓ Cap weighted benchmarks are inefficient ✓ Subject to market fads ✓ Net of fees, typically underperform index it is tracking	✓ Potential for above market return ✓ Potentially more efficient portfolio than passive ✓ Opportunity to avoid market fads ✓ Can be critical in low-return environments ✓ Compounding positive relative returns can be powerful advantage over the long-term	✓ Higher Cost ✓ Difficult to identify managers who can consistently outperform ✓ Potential for periods of large underperformance ✓ Requires patience and long-term perspective ✓ Requires additional due diligence

Understanding the Investment Program

- Adopt a long-term view: Defined Benefit Plan's have long-term time horizons, but Trustees tend to have short-term perspectives
- Know the roles of your service providers and their fees.
- Strive to have lower manager turnover.
- Spend more time on the asset allocation decision, less on individual managers
- Diversify to reduce volatility and downside risk
- Avoid the human emotion related to making investment decisions—don't chase yesterdays returns
- Rebalance—trim your winners

Pension Plan Investment Portfolio Basics

Pension Plan Investment Portfolio Basics

Defined Benefit Plan:

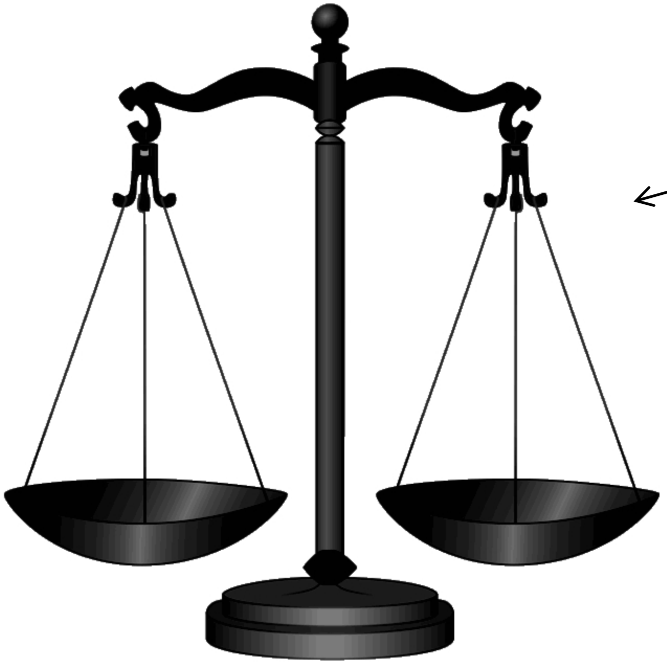
A retirement plan offered by an employer that offers a set amount of income to an employee upon retirement from service.

The amount of income offered to the employee upon retirement is determined based upon non-investment related factors including the employee’s age, salary history, length of service, and benefit formula.

Pension Plan Investment Portfolio Basics

Funding Basics:

Benefits + Expenses = Contributions + Investment Earnings



Investment returns and assumptions directly impact contributions.

Investment of Plan Assets:

Traditional Investments

- Cash and Equivalents – Checking, Savings, and Money Market accounts, Money Market Funds, Certificates of Deposits (CDs)
- Stocks – Represent a percentage of equity ownership in a corporation.
- Bonds – Ownership of a debt instrument typically issued by an organization or government.

Investment of Plan Assets:

Non - Traditional Investments

- **Real Estate** – Direct or indirect investment in real property including commercial, residential, or land. An indirect investment can be made through an entity that invests in property, such as a real estate investment trust (REIT).

- **Hedge Funds** –a private unregulated pool of assets which may invest in a diverse array of investments, from basic stocks and bonds to complex derivatives.

- **Infrastructure** – Investment into operational assets including transportation, communication, sewage, water and electric systems.

- **Other** – Private Equity, Private Debt, Diversified Fixed Income Strategies, Commodities, etc.

Asset Allocation

Asset Allocation

Asset Allocation

Asset Allocation - investment strategy of investing in multiple asset classes with the objective to balance total portfolio risk and returns.

- By developing an efficient combination of assets, an investor can manage risks and return objectives within a total portfolio.
- The basis for asset allocation is to combine low or non-correlated assets to create a well diversified portfolio.
- Should have long -term focus
- Look forward at asset class allocation decisions:
  - Domestic equity versus international
  - Growth versus value or large versus small
  - Equity versus bonds versus other opportunities

Asset Allocation

Goals of Efficient Asset Allocations

- Reduced risk through diversification
- Provide more consistent returns over long-term
- Control of risk tolerance and investment goals

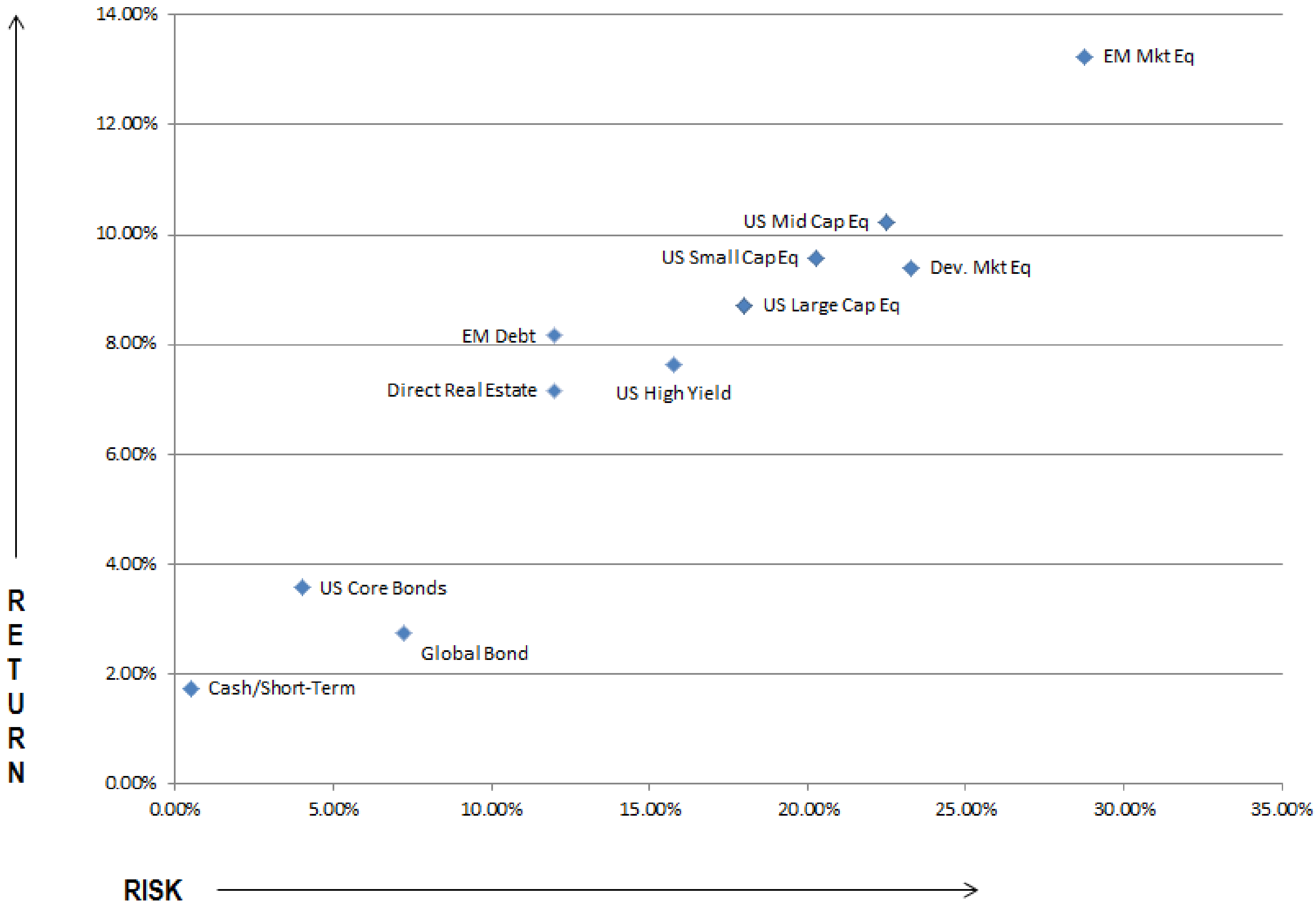
Asset Allocation

Modern Portfolio Theory leads investors to create portfolios structured for their appropriate level of risk.

- Creates a link between the return expectations and inherent risks of a portfolio.
- Led to the development of the efficient frontier of optimal portfolios
- Paved the way for further advancements in investment theory: Behavioral investments, post-modern portfolio theory, etc.

Asset Allocation

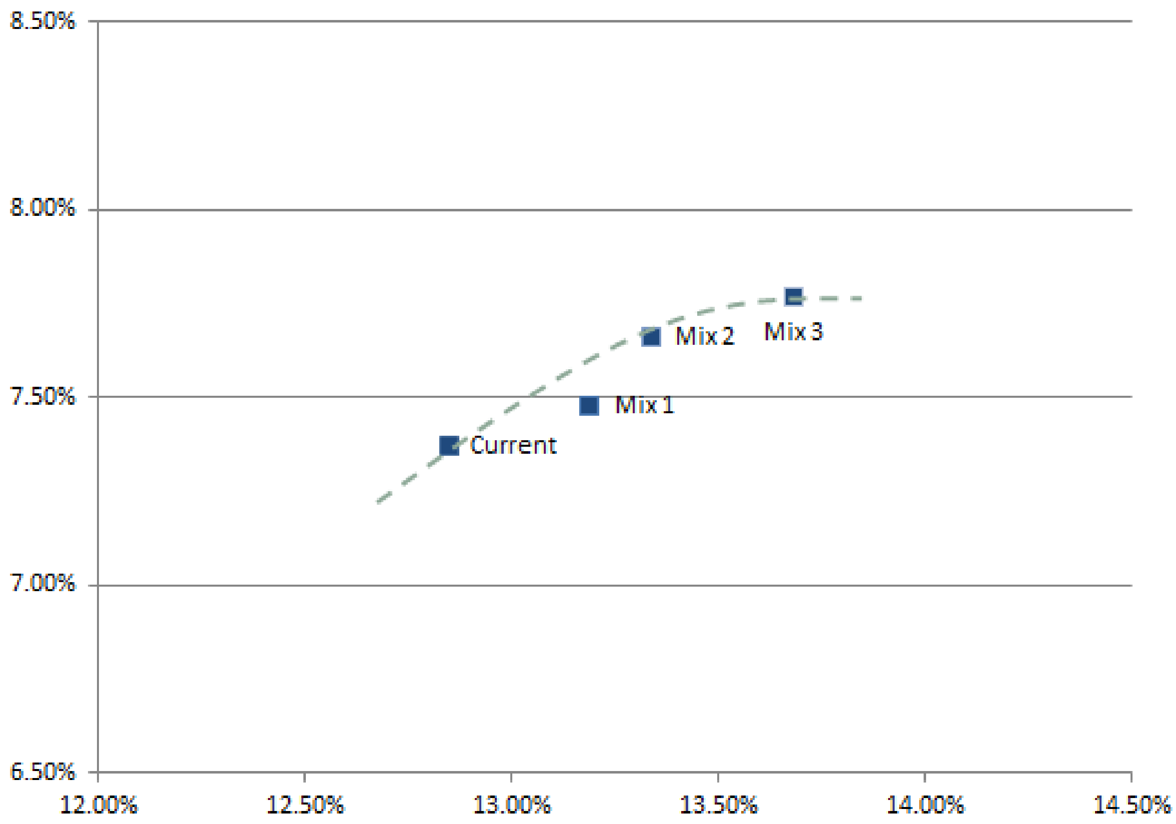
Economic Forecast Models



*Model Forecast Returns are based upon input variables (including expected return, volatility, and correlations) as provided by JP Morgan Asset Management "Long-Term Capital Market Return Assumptions, November 2012".

Asset Allocation

Efficient Frontier – a graphed line that contains the optimized portfolios available when combining separate asset classes that move independently of one another.



Asset Allocation

Risk vs. Return. This is a fundamental trade-off of investing, it is important to understand the correlation between the two when developing an investment portfolio.

Investor risk tolerance is based on understanding the investor's:

- Time Horizon
- Cash Flow Needs
- Risk Comfort Level
- Investment Knowledge and Experience

Asset Allocation

Additional Perspective

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	15 years	20 years	25 years	30 years	35 years
Russell 3000 (DEQ)	-0.49%	8.25%	12.53%	16.71%	13.28%	12.89%	9.91%	5.37%	6.56%	6.92%	4.31%	8.22%	10.16%	10.63%	10.89%
MSCI EAFE (IEQ)	-8.27%	-1.99%	6.08%	8.09%	4.45%	4.32%	4.25%	-0.84%	1.78%	3.44%	3.48%	4.80%	6.02%	8.17%	8.81%
Barclays U.S. Aggregate (FIX)	2.94%	3.45%	1.71%	2.56%	3.10%	3.92%	4.85%	4.70%	4.74%	4.64%	5.30%	5.59%	6.39%	7.03%	8.15%
50% DEQ / 10% IEQ / 40% FIX	0.20%	5.63%	7.88%	10.30%	8.56%	8.69%	8.04%	5.20%	6.03%	6.28%	5.25%	7.39%	8.72%	9.43%	10.05%

Return >7.5% highlighted

Return >7.5% 23 of 35 years (65.71%)
Simple Average 35-Year: 10.64%

	Sep-15	Sep-14	Sep-13	Sep-12	Sep-11	Sep-10	Sep-09	Sep-08	Sep-07	Sep-06	Sep-05	Sep-04	Sep-03	Sep-02	Sep-01	Sep-00	Sep-99	Sep-98
Russell 3000 (DEQ)	-0.49%	17.76%	21.60%	30.20%	0.55%	10.96%	-6.42%	-21.52%	16.52%	10.22%	14.57%	14.26%	25.92%	-18.82%	-27.91%	18.19%	26.32%	4.64%
MSCI EAFE (IEQ)	-8.27%	4.70%	24.29%	14.33%	-8.94%	3.71%	3.80%	-30.13%	25.38%	19.65%	26.32%	22.52%	26.54%	-15.26%	-28.27%	3.43%	31.32%	-8.08%
Barclays U.S. Aggregate (FIX)	2.94%	3.96%	-1.68%	5.16%	5.26%	8.16%	10.56%	3.65%	5.14%	3.67%	2.80%	3.68%	5.41%	8.60%	12.96%	6.99%	-0.37%	11.50%
50% DEQ / 10% IEQ / 40% FIX	0.20%	11.37%	12.52%	17.88%	1.88%	9.32%	4.23%	-12.67%	12.86%	8.53%	10.92%	11.26%	16.91%	-7.31%	-12.31%	12.77%	15.55%	6.09%

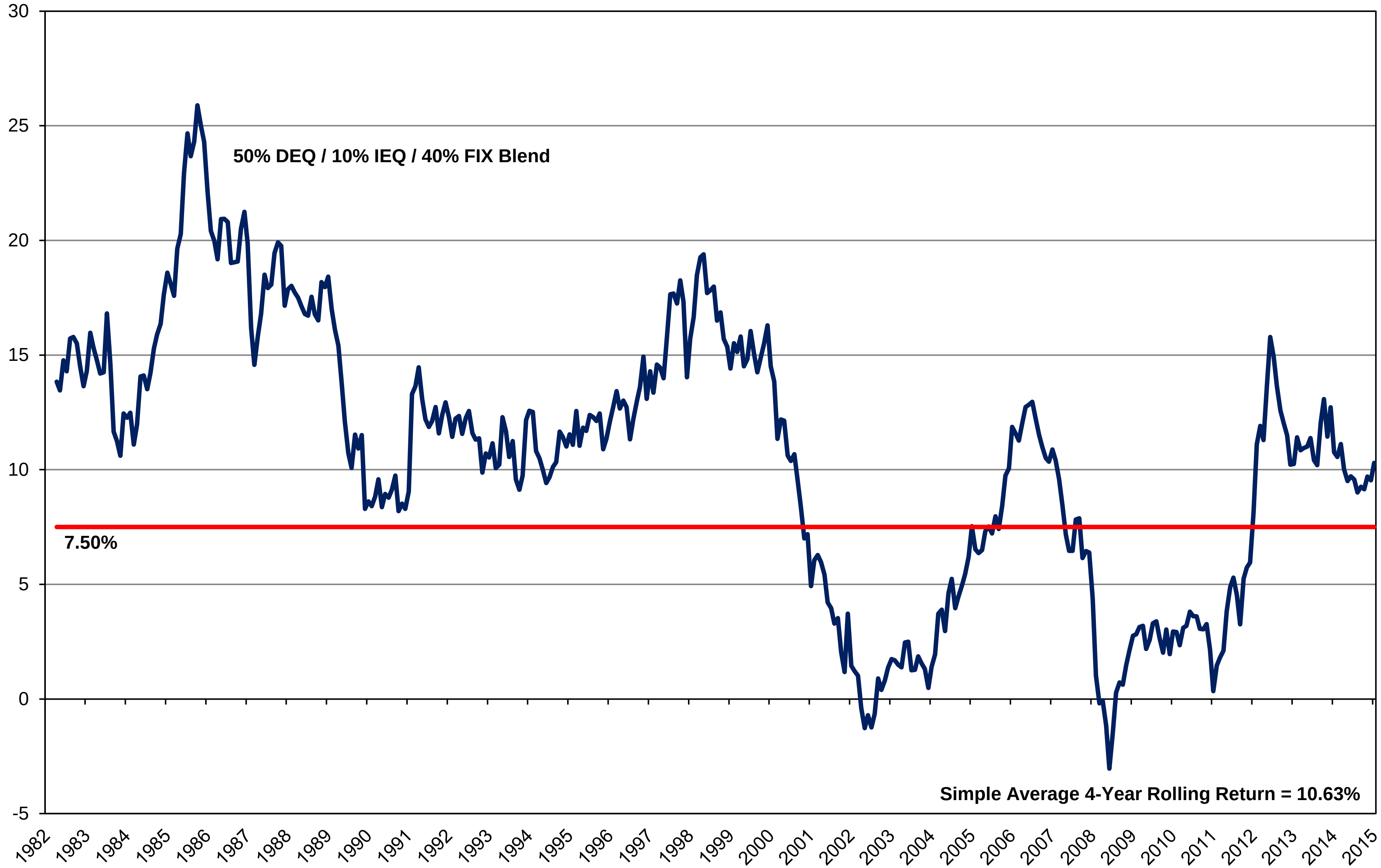
Return target would have to be lowered to 6% to increase the number of annual returns in excess of the 7.5% target return from 23 to 24

	Sep-97	Sep-96	Sep-95	Sep-94	Sep-93	Sep-92	Sep-91	Sep-90	Sep-89	Sep-88	Sep-87	Sep-86	Sep-85	Sep-84	Sep-83	Sep-82	Sep-81
Russell 3000 (DEQ)	38.67%	19.02%	29.31%	2.55%	16.54%	11.43%	34.36%	-12.51%	31.31%	-11.28%	37.77%	31.14%	14.61%	1.00%	47.93%	8.99%	-3.57%
MSCI EAFE (IEQ)	12.49%	8.94%	6.11%	10.11%	26.75%	-6.78%	22.31%	-27.39%	22.60%	-0.59%	45.22%	90.45%	41.27%	9.46%	36.93%	-5.28%	-9.26%
Barclays U.S. Aggregate (FIX)	9.74%	4.88%	14.07%	-3.23%	9.98%	12.56%	15.99%	7.55%	11.26%	13.30%	0.26%	20.28%	22.02%	8.78%	15.59%	35.22%	-2.61%
50% DEQ / 10% IEQ / 40% FIX	24.37%	12.37%	20.90%	0.98%	15.13%	10.16%	25.41%	-6.15%	22.56%	-1.98%	23.45%	32.61%	20.29%	4.85%	32.85%	18.04%	-3.38%

Source: Zephyr StyleADVISOR
Blended return stream rebalanced annually

Asset Allocation

Additional Perspective



Source: Zephyr StyleADVISOR

Asset Allocation

Beyond returns, must also consider RISKS:

- **Investment**—manager makes bad investment decisions
- **Leverage**—amplifies losses
- **Liquidity**—evaporates during period of market stress
- **Operational/business**—inability to run a business
- **Social/Political/Legislative Risk**—playing field changes
- **Valuation**—some assets are difficult to price
- **Headline**—manager makes the headlines of the press
- **Blowup**—manager blows up
- **Systematic/market**—correlations go to “1” (like 2008)
- **Fees**—a true understanding of fees in the investment program

THE BOGDAHN GROUP

Gregory Weaver
Senior Consultant

Greg Weaver is a Senior Consultant at The Bogdahn Group. He currently advises over $15 billion of institutional assets. Greg brings diversity of experience encompassing a dual career path in institutional client consulting and banking. His consulting experience includes work in both strategic and tactical asset allocation strategy, process development and oversight, and policy documentation for public and private pension, operating, and foundation clients.

Greg has over 30 years of financial industry experience. Prior to joining The Bogdahn Group, he was founder and Chairman of Gregory W Group. He was the Principal and Senior Consultant of the Gregory W. Group prior to its acquisition by the Bogdahn Group for over 25 years. Prior to starting his own firm, Greg was a Consultant at Fiduciary Capital Advisors, the President of Bank Investment Management Subsidiary at Fourth Investment Advisors, and the Vice President & Trust Officer at First National Bank of Tulsa. Greg is a frequent conference speaker and has spoken to industry groups on topics such as independence, bias, and conflicts of interest in the consulting industry.

Mr. Weaver has a Bachelor of Arts, Education, from the University of Central Oklahoma. He also studied at the Southwestern Graduate School of Banking at Southern Methodist University.

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Doug Anderson
Senior Consultant

Doug Anderson is a Senior Consultant at The Bogdahn Group. He currently advises over $15 billion of institutional assets. He brings diversity of experience encompassing institutional client consulting, and working as a portfolio management and trader for an investment management firm. His consulting experience encompasses work in both strategic and tactical asset allocation strategy, process development and oversight, and policy documentation for public and private pension, operating, and foundation clients. He offers well-grounded knowledge of practical LDI portfolio construction.

He has 25 years of financial industry experience. Doug has written research papers on a variety of investment topics. His research has focused on opportunistic and non-traditional assets, including core real estate, non-core real estate, high yield fixed income, and energy infrastructure assets such as Master Limited Partnerships. Prior to joining The Bogdahn Group, Doug was President of The Gregory W Group where he was also a Senior Consultant to many of the firm's clients. Doug has a Bachelor of Science Business Administration, Finance, from the University of Tulsa.