

Investment Committee Agenda

William Green Building

September 25, 2008

Level 2, Room 1

12:00 p.m. – 2:00 p.m.

Call to Order

Bob Smith, Committee Chair

Roll Call

Tom Woodruff, Scribe

Approve Minutes of the August 28, 2008 Meeting

Bob Smith

Discussion Items

1. Mercer Five-Step Decision Making Framework
 - Investment Objectives
Bob Smith and Mercer Team
2. Mercer Investment Topics For Education
 - Diversification
Mercer Team
 - Active vs. Passive Management
Mercer Team
3. Monthly and Fiscal Year to Date Portfolio Value Comparisons
 - August 2008/July 2008
 - August 2008/June 2008
Bruce Dunn
4. CIO Report – August 2008
Bruce Dunn
5. Calendar of Events/Reports
Bob Smith and Bruce Dunn

Adjourn

Next Meeting: October 30, 2008 12:00-2:00 PM, William Green Building, L2 Room 1

For Discussion - a Five Step Decision-Making Framework

1. Establish BWC **enterprise wide objectives**
 - a. In the discount rate paper we enunciated two sensible objectives.
 1. Primary objective: Seek to ensure that adequate reserves are maintained to pay workers compensation claims as these come due.
 2. Secondary objective: Subject to meeting the primary objective, seek to maintain relatively stable premiums.
 - b. We did not discuss other possible objectives, and we have not confirmed that our assumed objectives were or should be your objectives.
 - c. You should make sure you have explicit agreement on your enterprise objectives.
2. Establish a **discount rate** that is consistent with and supports the enterprise objectives
3. Establish **investment objectives** that are consistent with enterprise objectives and the discount rate. Examples:
 - a. Earn the discount rate plus 200 basis points
 - b. Double the existing surplus over a time horizon of X years
 - c. Invest to earn the highest total rate of return consistent with an objective of maintaining surplus at no less than 95% of its current level with 90% certainty.
 - d. Practice some level of asset and liability matching to protect the existing surplus while increasing the certainty of meeting the liability projections.
4. Enumerate alternative investment policies that are consistent with the investment objectives. This is where the **asset allocation** discussion begins.
5. Evaluate alternative investment policies in terms of probabilities and risks of achieving the investment objectives. This is where the **risk tolerance** discussion begins, although it intrudes in 4 above as an inseparable part of the asset allocation discussion.

This framework is sequential and linear. We want to complete Step One before proceeding to Step Two, etc.

There is also the important question of metrics. In order to define enterprise or investment objectives we must know what we want to measure and agree on how to measure it. This requires that we are all in agreement on how to measure assets, liabilities, and surplus, and, perhaps, other variables.

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

The Ohio Bureau of Workers' Compensation



Statement of Investment Policy and Guidelines

Adopted by the BWC Board of Directors: August 29, 2008

Amends Adoption of: February 29, 2008

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

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The Ohio Bureau of Workers' Compensation Statement of Investment Policy and Guidelines

I. INVESTMENT OBJECTIVES

The primary investment objective is to manage the reserve to preserve the ability of Funds to pay all disability benefits and expense obligations when due. Meeting this objective necessitates prudent risk-taking with the Funds' investments. An additional objective is to earn sufficient returns to grow the surplus over time and to keep premium payments as reasonable and predictable as possible for the benefit of the injured workers and employers of Ohio.

II. BACKGROUND

A. Purpose

This document establishes the investment policy (the "Investment Policy") for the Ohio Bureau of Workers' Compensation ("OBWC") State Insurance Fund and Ancillary Funds ("the Funds"). The Workers' Compensation Board of Directors ("Board") adopts this policy in order to assist the Administrator, the Chief Financial Officer, the Chief Investment Officer and the OBWC staff in meeting investment objectives and monitoring the performance of the investment of the surplus and reserves of the Funds as required by Ohio Revised Code Section 4121.12(F).

The Board is required to establish objectives, policies, and criteria for the administration of the investment program that include asset allocation targets and ranges, risk factors, asset class benchmarks, time horizons, total return objectives, and performance evaluation guidelines, and monitor the administrator's progress in implementing the objectives, policies, and criteria on a quarterly basis. (O.R.C. 4121.12(F))

B. Fiduciary Standard

Under Ohio Revised Code Section (O.R.C.) 4123.44, the voting members of the Board, the Administrator of OBWC, and the Chief Investment Officer of the OBWC are trustees of the state insurance fund and fiduciaries of the Funds, which are held for the benefit of the injured workers and employers of Ohio.

All fiduciaries shall discharge their duties with respect to the Funds with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims, and by diversifying the investments of the assets of the funds so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so. (O.R.C. 4123.44)

All investment activities undertaken by, or on behalf of, the OBWC, including any investment activities performed by outside Investment Managers and General Partners, will strictly adhere to the terms of this Investment Policy, the restrictions of the O.R.C. 4123.44 and any other applicable statutory or administrative rules. A copy of the O.R.C. 4123.44, as amended, is attached to this Investment Policy and all aspects of this Investment Policy shall be construed and interpreted in a manner consistent with O.R.C. 4123.44.

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III. ROLES AND RESPONSIBILITIES

A. Board Responsibilities

The Board is the primary body charged with overseeing investment activities relating to the Funds. Its oversight functions include the duties specified below:

- i. Approve the strategic asset allocation and investment policy for the Funds and periodically review such policy in light of any changes in actuarial variables, market conditions, or other evolving facts or situations relevant to the appropriate character of that policy.
- ii. Permit the Administrator to invest in an investment class only after the Board, by majority vote, opens the class in question.
- iii. Close any class of investments when it deems prudent.
- iv. Monitor and review the investment performance of the Funds on a quarterly (February, May, August and November) basis to determine achievement of goals and compliance with this Investment Policy.
- v. Advise and consent to the Administrator's hiring of the CIO.
- vi. Advise and consent to the OBWC's employment of an internal auditor, who shall report directly to the Board on investment matters.
- vii. Approve the selection and termination of all Investment Consultants.
- viii. Approve the criteria and procedures for the selection of the Investment Managers and General Partners.
- ix. Approve the final selection and funding and termination of all Investment Managers and General Partners.
- x. Approve the asset class to be managed, investment style, scope of investment activities and maximum percent of the Fund that may be allocated to each Investment Manager and General Partner.
- xi. Prohibit on a prospective basis any specific investment that the Board finds to be contrary to the Investment Objectives of the Funds. In the event that the Board determines that any activity undertaken or proposed to be undertaken pursuant to this Investment Policy is contrary to the Investment Objectives, the Board shall direct the Administrator to take the appropriate corrective action.
- xii. Submit a report annually on the performance and the value of each investment class to the governor, the president and minority leader of the senate, and the speaker and the minority leader of the house of representatives.
- xiii. Advise the Administrator of the Board's criteria for approving proposed dividends submitted to it pursuant to R.C. 4123.32 and Ohio Admin. Code 4123-17-10.

The Board may appoint members to an Investment Committee for the express purpose of assisting the Board to carry out any of the responsibilities enumerated here.

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B. OBWC Staff Responsibilities

The Chief Investment Officer shall be employed by the Administrator, with the advice and consent of the Board, and shall be a senior member of the OBWC staff with the primary responsibility for implementing the Investment Policy. Subject to the supervision and control of the Administrator, the Chief Investment Officer shall:

- i. Consult with and receive approval from the Board regarding the appropriate strategic asset allocation and investment policy for the Funds and periodically review such policy in light of any changes in actuarial variables, market conditions, or other evolving relevant facts or situations.
- ii. Recommend permissible asset classes for investment to the Board.
- iii. Monitor and review the investment performance of the Funds on a monthly basis to determine achievement of goals and compliance with Investment Policy. Provide a report of monthly market value changes by investment asset class.
- iv. Consult with and receive approval from the Board on the selection and termination of all Investment Consultants.
- v. Consult with and receive approval from the Board on the selection and termination of all Investment Managers and General Partners.
- vi. Consult with and receive approval from the Board on the asset class to be managed, investment style, scope of investment activities and maximum percent of the Fund that may be allocated to each Investment Manager and General Partner.
- vii. Implement the directives of the Board.
- viii. Supervise the management of each Fund's assets in accordance with this Investment Policy and the objectives and guidelines set forth herein.
- ix. Consult with and receive approval from the Board regarding criteria and procedures to be utilized to select Investment Managers and General Partners.
- x. Monitor all managed assets to insure compliance with the guidelines set forth in this Investment Policy and report same to the Board on a monthly basis.
- xi. Inform and receive approval by the Board of any significant change in investment strategy of approved Investment Managers and General Partners.
- xii. Monitor manager trade execution.
- xiii. Promptly vote all proxies and related actions in a manner consistent with the long-term interests and objectives of the Funds set forth herein. The CIO may retain a third party proxy voting service or direct investment managers to vote the proxies related to securities held in their respective portfolios.
- xiv. Maintain detailed records of said voting of proxies and related actions and comply with all regulatory obligations related thereto.
- xv. Report to the Board on at least an annual basis summary trade activity by brokerage firm and communicate any unusual trading activity to the Board in a timely manner, including any discussions with Investment Managers regarding such trading activity.

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- xvi. Consult with the Funds' Investment Managers on at least a quarterly basis to discuss account performance and other material information.
- xvii. Collect and review the current Form ADV of each Investment Manager and Investment Consultant on an annual basis and provide a summary report to the Board.

C. Investments Managers' Responsibilities

Each Investment Manager shall:

- i. Be a bank, insurance company, investment management company, or investment advisor as defined by the Investment Advisors Act of 1940.
- ii. Manage the plan assets under its care, custody and/or control in accordance with the Investment Policy set forth herein and in compliance with applicable Ohio statutory requirements.
- iii. Exercise full investment discretion over the assets in their care within the guidelines set forth herein, their Investment Management Agreement and the specific portfolio guidelines contained therein.
- iv. Subject to any exceptions expressly set forth herein, Investment Managers shall be directly responsible for executing trades related to the portfolios they manage for the Funds. Investment Managers shall be responsible for seeking the best execution of trades. Any Broker used by any Investment Manager must be properly licensed.
- v. Provide monthly performance evaluation reports that comply with the Global Performance Presentation Standards (GPPS) issued by the CFA Institute.
- vi. Provide the CIO with firm's Brokerage, Soft Dollar and Trade Execution Policy on an annual basis.
- vii. Provide the CIO with a report on at least monthly basis on the trading activities of the Funds, including, but not limited to, the volume of trades and related commissions executed by each Broker.
- viii. Provide the CIO with the firm's Ethics Policy and quarterly confirmation of its compliance with said policy.
- ix. Provide the CIO with the firm's most recent Form ADV on an annual basis.
- x. Comply with the Campaign Contribution Policy as set forth in the Ohio Revised Code (O.R.C.) Section 3517 and provide written evidence of such compliance on a quarterly basis.
- xi. Promptly inform the CIO in writing of all changes of a material nature pertaining to the firm's organization and professional staff.
- xii. If directed by the Administrator and/or the Chief Investment Officer, shall promptly vote all proxies and related actions in a manner consistent with the long-term interests and objectives of the Funds. Each manager designated to vote shall provide OBWC with firm's proxy voting policy on an annual basis, keep detailed records of said voting of proxies and related action and comply with all regulatory obligations related thereto.
- xiii. Report to the CIO on at least a quarterly basis on the status of the portfolio and its performance for various time periods and meet with the staff at least semi-annually to report on the economic outlook and compliance with goals and objectives.

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- xiv. Acknowledge and agree in writing to their fiduciary responsibility to fully comply with the entire Investment Policy.

D. General Partners' Responsibilities

Each General Partner shall:

- i. Manage the plan assets under its care, custody and/or control in accordance with the Investment Policy set forth herein and in compliance with applicable Ohio statutory requirements.
- ii. Exercise full investment discretion over the assets in their care within the guidelines set forth herein, their Partnership and/or Subscription Agreement and the specific portfolio guidelines contained therein.
- iii. Provide the CIO with quarterly financial statements and an audited annual financial statement for each partnership or fund to which the Ohio BWC has made a commitment.
- iv. Provide the CIO with an annual Valuation Certification attesting to the value of the Ohio BWC holdings in each partnership or fund.
- v. Provide the CIO with the firm's Ethics Policy and annual confirmation of its compliance with said policy (for agreements entered into after January 1, 2006 only).
- vi. Promptly provide the CIO with a detailed report of all capital calls and/or distributions for each partnership or fund.
- vii. Comply with the Campaign Contribution Policy as set forth in the Ohio Revised Code (O.R.C.) Section 3517 and provide written evidence of such compliance on an annual basis (for agreements entered into after January 1, 2006 only).
- viii. Promptly inform the CIO in writing of all changes of a material nature pertaining to the firm's organization and professional staff.

E. Investment Consultants' Responsibilities

The Investment Consultant shall:

- i. Provide independent and unbiased information to the Board, the Administrator and the CIO.
- ii. Assist in the development and amendment of this Investment Policy.
- iii. Assist in the establishment of strategic asset allocation targets.
- iv. Assist in the development of performance measurement standards.
- v. Report the quarterly investment performance results and quarterly risk characteristics of the Funds to the Board.
- vi. Monitor and evaluate Investment Manager performance on an ongoing basis.
- vii. Conduct due diligence on the Funds' current and prospective Investment Managers.

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- viii. Establish a procedural due diligence search process.
- ix. Assist in the development of criteria and procedures to be utilized for the selection of all Investment Managers.
- x. Provide the CIO with the firm's most recent Form ADV on an annual basis.
- xi. Provide any other advice or services that the Board or the Administrator and Chief Investment Officer determine from time to time is necessary, useful or appropriate to fulfill the objectives of this Investment Policy in accordance with the Investment Consulting Agreement.

IV. INVESTMENT POLICY GUIDELINES

A. Asset Allocation Guidelines

The Funds are part of the Ohio Workers' Compensation System, an exclusive state insurance fund system that is held for the sole benefit of the injured workers and employers of Ohio.

Asset allocation refers to the strategic deployment of assets among the major classes of investments such as fixed income, U.S. equity, non-U.S. equity, alternative investments and cash equivalents. The asset allocation decision reflects the Funds' return requirements as well as the Funds' tolerance for return variability (risk) within the context of the expected liabilities of the Funds. The liability considerations shall include, but not be limited to, current and expected future values of the benefits, premiums and total assets. These factors are important for identifying the investment horizon of the Funds and their cash flow requirements. A formal asset/liability analysis for each Fund will be conducted annually, or more frequently if conditions warrant.

The Board has adopted a long-term asset allocation policy for each Fund that identifies the strategic target weights to each of the major asset classes. These policies are detailed in Section VII.

B. Rebalancing Policy

The asset allocation targets represent a long-term strategy. Short-term market activity will cause the asset mix to drift from the specific allocation targets. A **Rebalancing Policy** is designed to provide a disciplined approach to control the risk exposure of each Fund to the investment categories that have deviated from the established target policy weights. The Board has adopted a policy of range rebalancing. Under range rebalancing, asset rebalancing will be triggered only when actual weightings fall outside of the ranges specified above. The Board expects range rebalancing to produce a superior return/risk tradeoff as compared to time rebalancing because turnover occurs only when necessary.

The Funds' asset allocations are to be monitored quarterly, or more frequently if market conditions warrant. Should the actual asset allocations for a particular class of investments deviate from the indicated range for a particular asset class, the Administrator and Chief Investment Officer will make the necessary adjustments to satisfy the asset allocation guidelines established by this Investment Policy. In order to minimize turnover, Fund cash flows, such as premiums received or benefits paid, will be used to the fullest extent to achieve rebalancing objectives.

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C. General Guidelines

The following represent the general guidelines that will apply to the management of Fund assets. In addition, each Investment Manager will have specific guidelines that are part of their Investment Management Agreement that will document the Funds' performance expectations and the Investment Manager's role in the overall portfolio. The Funds use these guidelines to establish, guide and control the strategy for each Investment Manager.

- i. The following guidelines serve to diversify the organizational risk of Investment Management firms or General Partners providing services to the Funds and to minimize the dependence by the Funds on any one investment firm. The diversification guidelines are as follows:
 - No one investment organization or General Partner, utilizing active investment strategies, should manage more than 15% of the Funds' assets at the time it is hired.
 - An investment organization, utilizing passive investment strategies, may manage up to 100% of the Funds' assets at the time it is hired. This guideline has been established to allow the BWC to take full advantage of the benefits of low fees resulting from the economies of scale that exist with passive management. The Board, Staff and the Consultant will closely monitor this organizational risk to ensure the security of Fund assets. The maximum allocation under this guideline will only be utilized in circumstances where the fee benefit is believed to outweigh the organizational risk to the Funds.
 - The Funds' assets managed by any one firm, utilizing either active or passive investment strategies, or General Partner should not exceed 5% of the total assets managed by the firm or General Partner for all clients in that asset class at the time it is hired. For purposes of this constraint, "asset class" shall be broadly defined to include all styles, sub-sectors, or specialty portfolios managed by a firm within a particular asset class.

ii. Fixed Income Investments

The investment goal of the fixed income investments is to protect the Funds against adverse changes in the value of the Funds' assets relative to their liabilities. The Board has adopted a policy to invest each Fund's fixed income portfolio in a manner that will approximate the duration and yield curve characteristics of its liabilities in order to preserve the reserve, provide for stable premiums and grow the surplus.

Average Weighted Credit Quality

The minimum average weighted quality of the total fixed income portfolio shall be A, as measured by the lower of the Moody's or Standard & Poor's (S&P) rating.

Duration

The duration of the fixed income portfolio in aggregate shall be maintained within a range of +/- 5% of each Fund's fixed income benchmark.

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Diversification

The fixed income portfolio in the aggregate shall be diversified as specified below¹ to minimize the risk of losses:

By Sector:

<u>Sector Allocation</u>	<u>Max. % of Fixed Income</u>
U.S. Governments:	100%
Treasuries	100%
Agencies	100%
Mortgages	40%
Agencies	40%
Non-Agency	10%
Collateralized Mortgage Obligations (CMOs) (must be rated AA or better)	10%
Commercial Mortgage Backed Securities (CMBS) and Project Loans	10%
Floating Rate Mortgages	10%
Investment Grade Credit	70%
Finance	35%
Industrial	35%
Transportation	35%
Utilities	35%
Yankees	15%
Asset Backed Securities (ABS) (must be rated AA or better)	10%
Foreign Governments	5%
Below Investment Grade Credit	7.5%

¹ Percentages represent a maximum allocation and will not sum to 100%

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By Credit Quality:

<u>Credit Quality</u>	<u>Max. % of Fixed Income</u>	<u>Credit Name Max %</u>
Governments/Agencies	100%	N.A.
Aaa/AAA or below	80%	1.00% (AAA only)
Aa/AA or below	65%	1.00% (AA only)
A/A or below	40%	0.75% (A only)
Baa/BBB or below	25%	0.50% (BBB only)
Ba/BB or below	7.5%	0.25% (BB only)
B/B or below	*	0.10% (B only)
CCC	**	0.05% (CCC only)
Below CCC	0%	0.00%

***Maximum of 70% of "Ba/BB or below" securities owned**

****Maximum of 20% of "Ba/BB or below" securities owned**

Individual credit name limits are applicable for actively managed fixed income mandates, and are not applicable for passively managed (index) fixed income mandates. Credit name is defined as unique ticker symbol, such that each distinct credit name has a different ticker symbol as represented on Bloomberg or other such informational source used by the sponsor of the fixed income benchmark index approved.

Maximum percentages refer to market value of each security or credit name owned for the Funds' Fixed Income portfolio in its aggregate. Credit ratings recognized are Moody's, Standard & Poor's and Fitch. Credit rating applicable is the lower of the two ratings if such security is rated by only two of the three rating agencies. Credit rating applicable is the middle rating if such security is rated by all three rating agencies, as consistent with the rules used by the sponsor of the fixed income benchmark index approved. The Chief Investment Officer will report to the Board the details of any guideline violation at the next scheduled Board meeting, or sooner if warranted in the judgment of the Chief Investment Officer. Each Investment Manager will be required to adhere to this Investment Policy in general and will be provided with specific investment security guidelines by the Chief Investment Officer consistent with these Credit Quality and Sector Allocation guidelines in the aggregate.

In the event that downgraded securities result in a violation of these constraints, the Board shall grant an exemption that would allow the Investment Manager to continue to hold the downgraded security or securities, at their discretion, for a period of up to three months. An Investment Manager shall immediately report any guideline violation resulting from a downgraded security in their portfolio to the Chief Investment Officer. The Investment Manager shall also provide an action plan to bring the portfolio back in compliance with the applicable guidelines to the Chief Investment Officer. Such action plan will be reflected in the compliance report of the Chief Investment Officer to be presented at the next scheduled Board meeting.

The Funds may invest in Rule 144A and private placement securities subject to the sector and credit constraints specified above.

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iii. U.S. Equity

The investment goal of the domestic equity investments is to offer the Funds a broad exposure to the return opportunities and investment characteristics associated with the U.S. domestic equity market.

Diversification

The U.S. Equity portfolio shall be diversified as specified below to minimize the risk of losses:

- Investments will be diversified by capitalization size and by style (growth and value) to approximate the overall market as measured by each Fund's U.S. Equity benchmark.
- No single holding shall account for more than 5% of each Fund's total U.S. equity portfolio at market.
- No single holding shall account for more than 5% of the outstanding equity securities of any one corporation

Non-U.S. Equity

The investment goal of the non-U.S. equity investments is to offer the Funds a broad exposure to the return opportunities, diversification effects and investment characteristics associated with the non-U.S. equity market.

Diversification

The Non-U.S. Equity portfolio shall be diversified as specified below to minimize the risk of losses:

- Investments will be diversified by capitalization size and by style (growth and value) to approximate the overall market as measured by each Fund's Non-U.S. Equity benchmark.
- Investments will be diversified by geographic region and sector, so as to optimize the relationship of expected return to expected risk after taking into consideration the asset allocation of each Fund.
- No single holding shall account for more than 5% of each Fund's total Non-U.S. equity portfolio at market.
- No single holding shall account for more than 5% of the outstanding equity securities of any one corporation

iv. Alternative Investments

The State Insurance Fund has allocated a portion of its investment portfolio to private equity securities, limited partnerships and funds of funds subject to all applicable legal requirements and limits set forth in this Investment Policy. The purpose of investing in private equity securities, partnerships or funds is to enhance the overall investment returns of the Funds.

Future investments in Alternative Investments are not presently anticipated.

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v. Cash Equivalents

Cash equivalents may be held to meet each Fund's short term cash flow needs.

vi. Securities Lending

Securities lending shall be engaged by the Funds or their Investment Managers as determined and approved by the Board.

vii. Derivatives

A derivative is broadly defined as a contract whose value is based on the performance of an underlying financial asset, index or other investment. The most common forms of derivatives are futures, options, swaps and forwards.

The use of derivatives by the Funds or their Investment Managers is prohibited unless specifically approved by the Board. Specific approvals include:

1. Permission is granted to passive indexed investment managers to use futures on financial contracts in the management of commingled investment funds. The Board anticipates that this use of financial futures may be initiated by investment managers for specific risk-control purposes such as the facilitation of the investment of a large inflow of new money into the commingled fund.

The Board also recognizes that the language of the policies of some commingled funds permits other financial derivatives such as options and swaps. The Board has a very low tolerance for the use of other financial derivatives in commingled funds. On the infrequent occasions when financial derivatives such as options and swaps are used in commingled funds, the Board will carefully evaluate whether remaining invested in that commingled fund is appropriate.

2. Permission is granted to investment managers to use futures on financial contracts in the management of portfolio transitions. This use of financial futures will be reported to the Board in advance and will typically begin and end in short periods of time.

In every case where financial derivatives are used, the Board requires the investment staff of the BWC to report the use of the derivatives to the Board at the next scheduled meeting after the derivatives position has been initiated so that the Board may judge the appropriateness of the risks of the derivatives position.

3. Other derivatives that are generally approved for use include: collateralized mortgage obligations (CMOs), asset backed securities (ABS), and TBA mortgaged-backed securities in accordance with the restrictions outlined below and in Section IV.C.ii above. Other broad classes of derivatives may be added in the future as deemed necessary and desirable by the Board.

CMOs are mortgage-backed bonds that separate mortgage pools into different maturity classes. Issued by the Federal Home Loan Mortgage Corporation (Freddie Mac) and private issuers, CMOs are usually backed by government-guaranteed or other top-grade mortgages. To qualify for investment by the Funds, CMOs must be rated AA or better and not be levered. Interest-only (IOs) and principal-only (POs) instruments are prohibited.

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ABS are bonds or notes backed by loan paper on accounts receivable originated by banks, credit card companies or other providers of credit and often “enhanced” by a bank letter of credit or by insurance coverage provided by an institution other than the issuer. To qualify for investment by the Funds, ABS must be rated AA or better.

TBA (“to be announced”) pools are mortgage-backed securities in which the specific underlying mortgage pools are not identified at the time of commitment to purchase, but which share defined characteristics such as coupon and term to stated maturity. TBA pools are sometimes either sold before settlement or extended in settlement from original settlement date to a future settlement date that is typically in the next month. To qualify for investment by the Funds, TBA pools must be issued by Freddie Mac, Federal National Mortgage Association (Fannie Mae), or Government National Mortgage Association (Ginnie Mae).

viii. **Commission Recapture / Directed Brokerage**

The Funds shall not engage in commission recapture or directed brokerage programs.

ix. **General Prohibitions**

The following activities or investments are expressly prohibited within the Funds:

- a. Short selling in any form.
- b. The use of all forms of leverage or the purchase of securities with borrowed money is prohibited, except that the Board recognizes that financial futures are generally purchased on margin and this is permitted.
- c. Coins, artwork, horses, jewelry, gems, stamps, antiques, artifacts, collectibles, and memorabilia.
- d. Direct or indirect investments in vehicles that target specified assets, which includes unregulated investments that are not commonly part of an institutional portfolio, that lack liquidity and that lack readily determinable valuation.

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V. PERFORMANCE OBJECTIVES

A. Total Fund

The primary performance objective for each Fund is to achieve an aggregate rate of return that exceeds the return of each Fund's Performance Benchmark on a consistent basis. The Benchmark combines designated market and/or custom indexes for asset classes, weighted by asset-allocation targets. Currently, the indexes are:

<u>Asset Class</u>	<u>Benchmark</u>
<i>Total Fixed Income:</i>	<i>N/A</i>
Intermediate Duration	Lehman Intermediate U.S. Government/Credit Index
Long Duration	Lehman Long U.S. Government/Credit Index
High Yield	Merrill Lynch High Yield Master II
Inflation-Protected Securities	Lehman U.S. TIPS
<i>U.S. Equity</i>	<i>Wilshire 5000</i>
Large Cap	S&P 500
Small/Mid Cap	Wilshire 4500 / Russell 2500
Alternative Investments	Wilshire 5000 + 5%
<i>Non-U.S. Equity</i>	<i>MSCI EAFE</i>
<i>Cash Equivalents</i>	<i>90-Day T-Bill</i>

B. Asset Class Composites

Each asset class shall be measured relative to its designated market and/or custom index. It is expected that any active management of individual asset classes will provide an investment return in excess of the index, net of expenses, on a consistent basis.

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C. Investment Managers

On a timely basis, but not less than four times a year, the Chief Investment Officer will meet with the Investment Consultants to:

- Evaluate the performance of each Investment Manager.
- Review each Investment Manager's adherence to this Investment Policy.
- Analyze any material changes in the Investment Manager's organization, investment strategies or personnel.
- Review each Investment Manager's performance relative to appropriate indices and peer groups.

Each Investment Manager's performance shall be evaluated relative to an appropriate benchmark index and a relative peer group of managers as indicated below. They are expected to (1) rank above median versus their respective peer groups and (2) earn investment returns, net of expenses, that equal or exceed their respective benchmark index.

The performance of each Investment Manager will be monitored on an ongoing basis and the Administrator and the Chief Investment Office shall take any appropriate corrective action, including, subject to approval by the Board, the termination and replacement of an Investment Manager. Factors that may lead to terminating a manager relationship include:

- Performance below median (50th percentile) of their peer group.
- Realization of investment returns, net of expenses, that lag their respective benchmark index.
- Failure to adhere to this Policy or the portfolio's Investment Guidelines.
- Failure to comply with the Ethics Policy of the firm or the Board.
- Violation of any law.
- Style drift.
- Organizational changes including:
 - Change in professional staff
 - Significant loss of clients
 - Significant growth of new business
 - Change in ownership

VI. COMMUNICATIONS

- Each Investment Manager will provide written reports at least monthly, including asset inventories, market commentary or anything else deemed significant at the time of reporting.
- Each Private Equity General Partner will provide written reports at least quarterly, including asset inventories, market commentary or anything else deemed significant at the time of reporting.
- Each Investment Manager will provide all reporting required under Section III. C. of this Policy.
- Each Investment Manager is expected to meet with the Administrator and/or the Chief Investment Officer at least annually at OBWC offices.
- Frequent and regular communication with the OBWC by all Investment Managers is encouraged.

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

VII. TARGET ASSET MIXES AND RANGES

A. State Insurance Fund (SIF)

The State Insurance Fund liabilities consist of the following primary components:

- Indemnity cost: the compensation paid to injured workers for lost wages
- Medical cost: the cost of providing medical coverage to injured workers

These liabilities are long-term in nature, with an approximate duration of 10 years. Premiums are set each year at a level that is expected to cover the cost of future claims. Future claims are estimated based on actuarial methods that measure the expected indemnity and medical costs. These costs are discounted at a rate that is consistent with the guidelines as established by the Government Accounting Standards Board (GASB).

The actual liabilities of the Fund may vary from the expectations at the time premiums are set due to future changes in the discount rate, unanticipated medical inflation, and/or actual claim experience that differs from actuarial expectations. In order to protect the Fund against adverse changes in the Fund's assets relative to its liabilities, the Board has adopted a policy to invest the reserves primarily in a fixed income portfolio that will approximate the duration and yield curve characteristics of the liabilities as measured by the Fund's actuary and Consultant on an annual basis, or more frequently if conditions warrant. A portion of the reserve and surplus may also be invested in equity, inflation-protected, or other securities in order to protect the reserve against unexpected medical inflation and adverse claims experience and/or for the purpose of growing the surplus.

The Board has adopted a long-term asset allocation policy that identifies the strategic target weights to each of the major asset classes.

The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is reflected in the following table.

<u>Asset Class</u>	<u>Policy Target¹</u>	<u>Policy Range</u>	<u>Management Style</u>	
			<u>Passive</u>	<u>Active</u>
<u>Total Fixed Income:</u>	<u>79%</u>	<u>76-82%</u>	<u>47%</u>	<u>32%</u>
Long Duration	54%	51-57%	27%	27%
High Yield	5%	4-6%	0%	5%
Inflation-Protected Securities	20%	17-23%	20%	0%
<u>Cash Equivalents</u>	<u>1%</u>	<u>0-6%</u>	<u>NA</u>	<u>NA</u>
<u>Total Equity</u>	<u>20%</u>	<u>17-23%</u>	<u>12%</u>	<u>8%</u>
U.S. Equity				
Large Cap	12%	9-15%	12%	0%
Small/Mid Cap	3%	2-4%	0%	3%
Alternative Investments	0%	NA	NA	NA
Non-U.S. Equity	5%	4-6%	0%	5%

¹ Alternative Investments includes private equity and the coin fund. This asset class targets will be combined with that of Small/Mid Cap U.S. Equity until a final determination has been made regarding the potential liquidation of these assets

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

B. Coal Workers' Pneumoconiosis Fund (CWPF)

The Coal Workers' Pneumoconiosis Fund ("CWPF") provides benefits for injured workers under the Federal Coal Mine Health and Safety Act of 1969. The CWPF provides voluntary coverage to employers who have employees who are exposed to coal dust, as required by federal law.

These liabilities are long-term in nature, with an approximate duration of 11 years. Premiums are set each year at a level that is expected to cover the cost of future claims. These costs are discounted at a rate that is consistent with the guidelines as established by the GASB.

The actual liabilities of the Fund may vary from the expectations at the time premiums are set due to future changes in the discount rate, unanticipated medical inflation, and/or actual claim experience that differs from actuarial expectations. In order to protect the Fund against adverse changes in the Fund's assets relative to its liabilities, the Board has adopted a policy to invest the reserves primarily in a fixed income portfolio that will approximate the duration and yield curve characteristics of the liabilities as measured by the Fund's actuary and Consultant on an annual basis, or more frequently if conditions warrant. A portion of the reserve and surplus may also be invested in equity, inflation-protected, or other securities in order to protect the reserve against unexpected medical inflation and adverse claims experience and/or for the purpose of growing the surplus.

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The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is reflected in the following table

<u>Asset Class</u>	<u>Policy Target</u>	<u>Policy Range</u>	<u>Management Style</u>	
			<u>Passive</u>	<u>Active</u>
<u>Total Fixed Income:</u>	<u>79%</u>	<u>76-82%</u>	<u>74%</u>	<u>5%</u>
Long Duration	54%	51-57%	54%	0%
High Yield	5%	4-6%	0%	5%
Inflation-Protected Securities	20%	17-23%	20%	0%
<u>Cash Equivalents</u>	<u>1%</u>	<u>0-6%</u>	<u>NA</u>	<u>NA</u>
<u>Total Equity</u>	<u>20%</u>	<u>17-23%</u>	<u>20%</u>	<u>0%</u>
U.S. Equity	20%			
Large Cap	17%	9-15%	17%	0%
Small/Mid Cap	3%	2-4%	3%	0%
Alternative Investments	0%	NA	NA	NA
Non-U.S. Equity	0%	NA	NA	NA

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

C. Marine Industry Fund (MIF)

The Marine Industry Fund ("MIF") provides voluntary coverage to employers who have employees who work on or about navigable waters as required by the Federal Longshoremen and Harbor Workers' Act.

These liabilities are intermediate-term in nature, with an approximate duration of 3-4 years. Premiums are set each year at a level that is expected to cover the cost of future claims. These costs are discounted at a rate that is consistent with the guidelines as established by the GASB.

The actual liabilities of the Fund may vary from the expectations at the time premiums are set due to future changes in the discount rate, unanticipated medical inflation, and/or actual claim experience that differs from actuarial expectations. In order to protect the Fund against adverse changes in the Fund's assets relative to its liabilities, the Board has adopted a policy to invest the reserves primarily in a fixed income portfolio that will approximate the duration and yield curve characteristics of the liabilities² as measured by the Fund's actuary and Consultant on an annual basis, or more frequently if conditions warrant. A portion of the reserve and surplus may also be invested in equity, inflation-protected, or other securities in order to protect the reserve against unexpected medical inflation and adverse claims experience and/or for the purpose of growing the surplus.

The Board has adopted a long-term asset allocation policy that identifies the strategic target weights to each of the major asset classes.

The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is +/- 10% of the policy target weight.

<u>Asset Class</u>	<u>Policy Target</u>
<i>Total Fixed Income:</i>	<i>99%</i>
Intermediate Duration	99% ³
<i>Cash Equivalents</i>	<i>1%</i>
<i>Total Equity</i>	<i>0%</i>

² Expected to be implemented by December 31, 2006

³ Approval to invest the assets of the MIF on an interim basis in the institutional money market fund that is currently utilized for BWC's cash balance assets was passed in the April 26, 2007 Workers' Compensation Oversight Commission meeting.

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

D. Disabled Workers' Relief Fund (DWRF)

The Disabled Workers' Relief Fund ("DWRF") provides supplementary payments to workers whose combined Permanent and Total Disabled plus Social Security disability benefits are lower than the DWRF entitlement amount.

These liabilities are long-term in nature, with an approximate duration of 10 years. Premiums are set each year at a level that is expected to cover the cost of future claims. These costs are discounted at a rate that is consistent with the guidelines as established by the GASB.

The actual liabilities of the Fund may vary from the expectations at the time premiums are set due to future changes in the discount rate, unanticipated medical inflation, and/or actual claim experience that differs from actuarial expectations. In order to protect the Fund against adverse changes in the Fund's assets relative to its liabilities, the Board has adopted a policy to invest the reserves primarily in a fixed income portfolio that will approximate the duration and yield curve characteristics of the liabilities as measured by the Fund's actuary and Consultant on an annual basis, or more frequently if conditions warrant. A portion of the reserve and surplus may also be invested in equity, inflation-protected, or other securities in order to protect the reserve against unexpected medical inflation and adverse claims experience and/or for the purpose of growing the surplus.

The Board has adopted a long-term asset allocation policy that identifies the strategic target weights to each of the major asset classes.

The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is reflected in the following table

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			<u>Passive</u>	<u>Active</u>
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Long Duration	54%	51-57%	27%	27%
High Yield	5%	4-6%	0%	5%
Inflation-Protected Securities	20%	17-23%	20%	0%
<u>Cash Equivalents</u>	<u>1%</u>	<u>0-6%</u>	<u>NA</u>	<u>NA</u>
<u>Total Equity</u>	<u>20%</u>	<u>17-23%</u>	<u>12%</u>	<u>8%</u>
U.S. Equity	15%			
Large Cap	12%	9-15%	12%	0%
Small/Mid Cap	3%	2-4%	0%	3%
Alternative Investments	0%	NA	NA	NA
Non-U.S. Equity	5%	4-6%	0%	5%

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

E. Public Work-Relief Employees' Fund (PWRF)

The Public Work-Relief Employees' Fund ("PWRF") provides benefits for "work-relief employees" who are engaged in any public relief employment and receiving "work-relief" in the form of public funds or goods in exchange for any service or labor rendered in connection with any public relief employment.

These liabilities are intermediate-term in nature, with an approximate duration of 3-4 years. Premiums are set each year at a level that is expected to cover the cost of future claims. These costs are discounted at a rate that is consistent with the guidelines as established by the GASB.

The actual liabilities of the Fund may vary from the expectations at the time premiums are set due to future changes in the discount rate, unanticipated medical inflation, and/or actual claim experience that differs from actuarial expectations. In order to protect the Fund against adverse changes in the Fund's assets relative to its liabilities, the Board has adopted a policy to invest the reserves primarily in a fixed income portfolio that will approximate the duration and yield curve characteristics of the liabilities as measured by the Fund's actuary and Consultant on an annual basis, or more frequently if conditions warrant. A portion of the reserve and surplus may also be invested in equity, inflation-protected, or other securities in order to protect the reserve against unexpected medical inflation and adverse claims experience and/or for the purpose of growing the surplus.

The Board has adopted a long-term asset allocation policy that identifies the strategic target weights to each of the major asset classes.

The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is +/- 10% of the policy target weight.

<u>Asset Class</u>	<u>Policy Target</u>
<u>Total Fixed Income:</u>	<u>99%</u>
Intermediate Duration	99% ¹
<u>Cash Equivalents</u>	<u>1%</u>
<u>Total Equity</u>	<u>0%</u>

¹ Approval to invest the assets of the PWRF on an interim basis in the institutional money market fund that is currently utilized for BWC's cash balance assets was passed in the April 26, 2007 Workers' Compensation Oversight Commission meeting.

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

F. Self Insured Employers Guarantee Fund (SIEGF)

The Self Insured Employers Guarantee Fund (“SIEGF”)/Surety Bond Fund (“SBF”) provides for payment of compensation and benefits to injured workers of bankrupt self-insured employers.

The Board has adopted a long-term asset allocation policy that identifies the strategic target weights to each of the major asset classes.

The table below highlights the general asset classes approved for investment and the strategic target weights. The allowable range for all target weights is +/- 10% of the policy target weight.

<u>Asset Class</u>	<u>Policy Target</u>
<i><u>Total Fixed Income:</u></i>	<u>0%</u>
<i><u>Cash Equivalents</u></i>	<u>100%</u>
<i><u>Total Equity</u></i>	<u>0%</u>

**The Ohio Bureau of Workers' Compensation
Statement of Investment Policy and Guidelines**

VIII. REVIEW PROCEDURES

The Board in conjunction with the Administrator, Chief Investment Officer and Investment Consultant will review this policy statement at least once a year, to determine if revisions are warranted and will publish the policy statement and any changes it adopts and make copies available to all interested parties.

It is not expected that this Investment Policy will change frequently; in particular short-term changes in the financial markets should generally not require an adjustment in this Investment Policy.

IX. FAIR CONSIDERATION / PUBLIC INTEREST POLICY

The Board desires that Staff and the Investment Consultant identify, research and evaluate qualified Ohio managers, minority managers and women-owned managers and that Investment Managers give consideration to such managers and brokers in their efforts to fulfill the Funds' investment objectives, but only in compliance with their respective fiduciary duties to the Funds.

Qualified Ohio Managers - Criteria

As used in this Investment Policy, a qualified Ohio-qualified investment manager or broker is one that meets at least one of the following requirements:

- Has its corporate headquarters or principal place of business in Ohio
- Employs at least 500 individuals in Ohio
- Has a principal place of business in Ohio and employs at least 20 residents of the State

Minority Managers – Criteria

As used in this Investment Policy, a minority manager shall be defined as an investment manager or broker that is U.S. domiciled and is majority-owned by one, or any combination, of the following groups: African American, Native American, Hispanic American and Asian American.

Additionally, Investment Managers who are majority-owned by women are included in this Policy

In addition to the requirements above, any qualified Ohio manager, and any minority or women-owned Investment Manager must be a registered investment advisor under the Investment Advisors Act of 1940. Any Broker must be properly licensed.

It is the Board's intention to give such firms consideration in their efforts to fulfill the Funds' investment objective; however, the Board is not obligated to hire any qualified Ohio manager, minority or women-owned firm on behalf of the Funds if such hiring is inconsistent with its fiduciary duty to the Funds and their stakeholders.



May 28, 2008

Investment Topics

Ohio Bureau of Workers' Compensation (BWC)

Kristin Finney-Cooke
Guy M. Cooper
Kweku Obed

Agenda

- 1. Fixed Income**
- 2. Asset and Liability Matching – Discussion of basic concepts**
- 3. U.S. Equity**
 - Active Management Styles
- 4.. Non U.S. Equity**
 - International and Emerging Markets
- 5. Active vs. Passive Management**
- 6. Diversification – Correlation**

Fixed Income

Important Characteristics of a Bond

- Bonds provide income while stocks provide capital gains.
- The income offered by bonds is the 'bird in the hand' while the capital gains offered by stocks is the 'two in the bush'.
- When you invest in bonds, you expect that most of what you will earn is the promised interest payment. Stocks do pay dividends but they are not 'guaranteed', and dividends are not generally an important part of what you earn when you invest in stocks.
- There are risks to the promised interest income payment of bonds. These include:
 - Credit risk – the risk that interest payments will not be made
 - Inflation risk – the risk that, although interest is paid, it is worth less because prices have gone up
 - Re-investment rate risk – the risk that when interest is received there are not good alternatives for re-investing the interest.
- Bond prices also fluctuate and this presents significant risks.

Terminology

- A bond is a loan from a lender to a borrower.
 - The lender is usually called the investor.
 - The borrower may be called the **issuer**.
- As with any loan, the borrower and lender must agree on:
 - **Maturity**: the length of time of the loan before it must be repaid.
 - **Coupon**: the amount of interest the borrower will pay the lender. Originally bond holders physically presented coupons on the semi-annual payment date to receive the interest due to them.
 - **Interest period**: how often the borrower pays interest to the lender. By convention, this is every six months for the most common bonds.
- **Yield**: the yield of a bond is a calculation of the percentage rate of return of the bond. There are actually many ways to compute a bond's yield depending on one's purpose. Common terms are:
 - **Current yield, book yield, yield-to-maturity and yield-to-worst**

Common Types of Bonds (as classified by type of borrower)

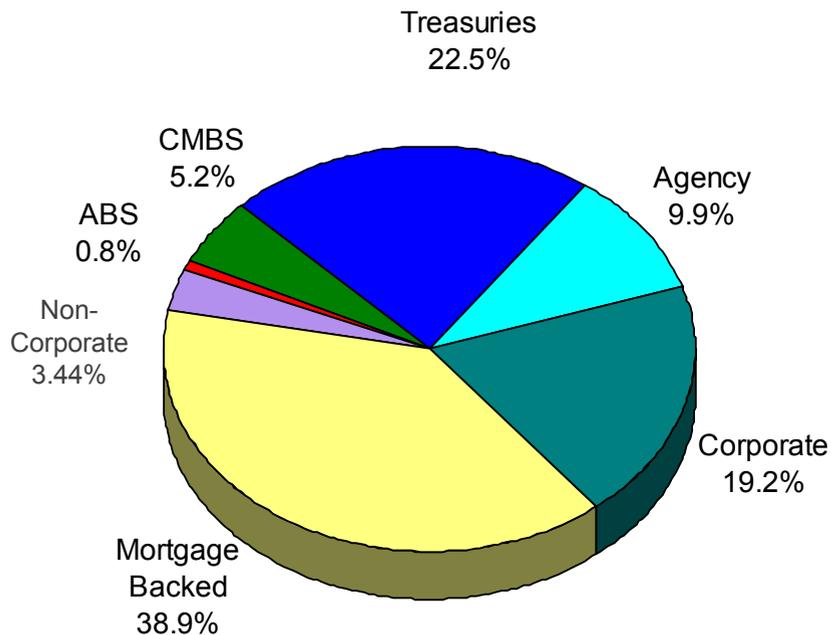
- U.S. Government Bonds
- Corporate Bonds
 - Investment Grade (Typical Credit Quality grades: AAA, AA, A, Baa)
 - Non-Investment Grade (High Yield, Junk, ratings below Baa)
- Mortgages and Mortgage-Backed Securities
- Other Collateralized Instruments
- TIPS
- Yankee Bonds
 - Foreign entities issue bonds payable in US dollars
- Non-Dollar Payees
 - Foreign Governments (Developed and Emerging Countries)
 - Foreign Corporations
- Synthetic Bonds (Futures and Swaps)

Fixed Income

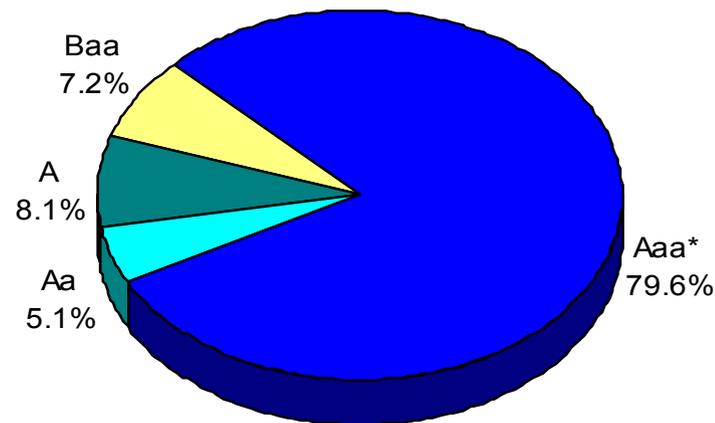
US Investment Grade Fixed Income Market

Lehman Brothers Aggregate Bond Index As of March 31, 2008

**Sector Breakdown
% Market Value**



**Quality Breakdown
% Market Value**



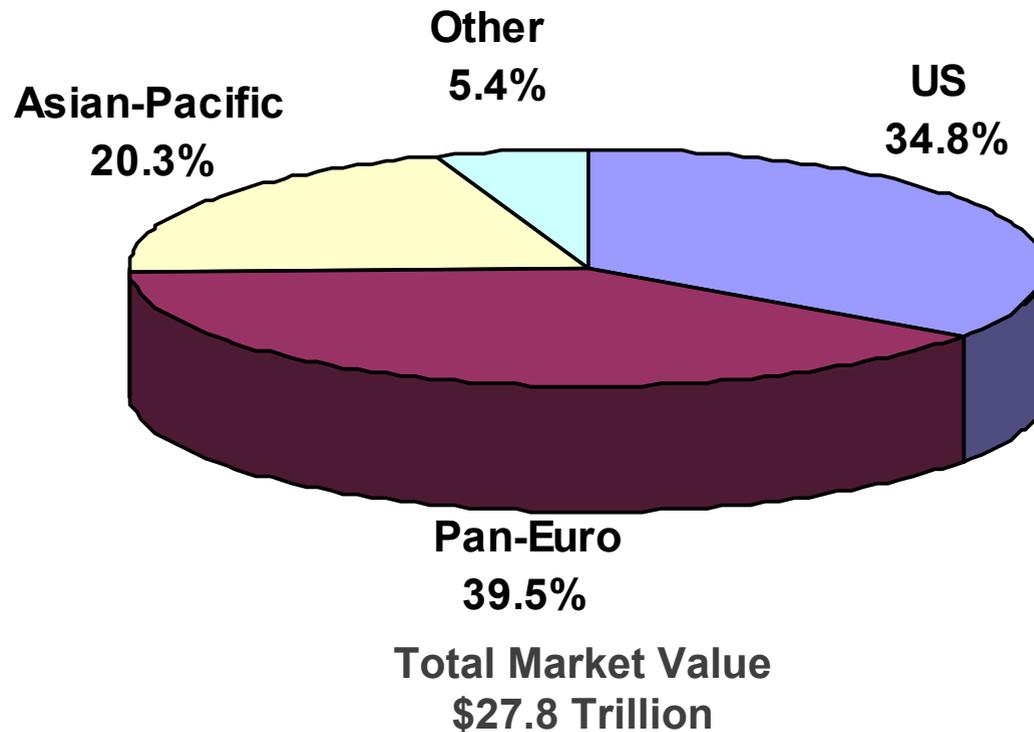
* Aaa includes Treasuries (23.29%), Agency (52.64%) and Credit (3.54%).

Source: Lehman Brothers

Fixed Income

World Bond Market by Sector

As of March 31, 2008



*Other includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and USD investment grade 144A securities.

Source: Lehman Brothers

Common Types of Bonds (as classified by length of borrowing)

- Very short (maturity less than 90 days)
- Short (maturity between 90 days and 1 year)
- Intermediate (maturity between 1 and 10 years)
- Long (maturity between 10 and 30 years)

Any length of bond may be associated with any borrower type.

The Value of a Bond – Example

- Suppose the following offer: The U.S. Government offers to pay you \$500 every year for 5 years and \$10,000 at the end of the 5 years.
- How much would you pay for this?
 - What if the offer was for \$500 every year for the next 15 years with \$10,000 at the end of the 15 years?
 - What if the offer was \$600 every year for 5 years?
 - What if the offer came from a person off the street that you didn't know?

The Value of a Bond – Math

- The price of a bond is determined by a complex mathematical formula.
- Each type of bond may have a different formula, and usually Board members do not need to know the precise formula – computers and spreadsheets suffice for that.
- The formula for determining the price of a bond depends on five quantities:
 1. The coupon paid by the bond
 2. How often the coupon is paid (usually semi-annually)
 3. How long the coupon is going to be paid (i.e. the maturity)
 4. The yield-to-maturity of the bond
 5. Who the issuer is...
- Of these the most important is the yield-to-maturity. It is the only one of the quantities that changes from day to day and after you buy the bond.

Fundamental Theorem of Bond Valuation – Example

- Suppose you buy a 5 year \$50,000 Certificate of Deposit from Bank ABC that is paying 5% interest.
- The next week you notice that Bank ABC is offering a 6% interest rate on 5 year Certificates of Deposit?
- If you had to or wanted to sell it, what is your 5% Certificate of Deposit worth?
- What would your 5% Certificate of Deposit be worth, do you think, if Bank ABC was offering only 4% on new Certificates of Deposit?

Fundamental Theorem of Bond Valuation – Math

- The price of a bond moves in the opposite direction to the bond's yield-to-maturity.
- If the bond's yield-to-maturity goes up, the bond's price goes down.
- If the bond's yield-to-maturity goes down, the bond's price goes up.
- A bond's yield-to-maturity is just the interest rate prevailing in the market that investors are willing to accept for that particular type of bond. As these rates change, which they do every minute, the price of the bond changes.
- Thus the value of a portfolio of bonds fluctuates as interest rates fluctuate, rising when interest rates go down, and falling when interest rates go up.

Duration – Common Sense Definitions

- Duration, like maturity, is a measure of the length of time of a bond. Duration is stated in years. It is almost always less than maturity.
- Duration measures the sensitivity of a bond to interest rate changes. Duration determines how much a bond will change in price when interest rates change.
- Facts about Duration:
 - The higher a bond's duration, the greater its sensitivity to a change in interest rates.
 - The higher a bond's duration, the more the bond will fall in price if interest rates go up.
 - The higher a bond's duration the more the price changes as interest rate changes – a form of risk.
 - The lower the duration, the less impact a change in interest rates will have on the value of your bonds.
 - Low (or short) duration can mean less than 3. High (or long) duration means 8-12.

Duration – Math

- Duration provides a useful formula that relates what happens to the price of a bond when interest rates change:
 - Percentage change in bond price = Percentage Point change in Yield times the Duration of the bond.
- Example: A bond with a duration of 5 years will decrease in value by 5% if interest rates rise 1% and increase in value by 5% if interest rates fall 1%.
- Mathematically, duration is the weighted average maturity of a bond's cash flows. But it is more intuitive to think of duration as the link between changes in interest rates and changes in bond prices.
- Duration is stated in years. It is always less than maturity, except for zero coupon bonds, where maturity and duration are the same.

Value of a \$100 Bond after Interest Rate Changes

Interest Rates Decline by 1%:

Asset Duration	5 yrs	10 yrs
Assets	\$105	\$110

Interest Rates Increase by 1%:

Asset Duration	5 yrs	10 yrs
Assets	\$95	\$90

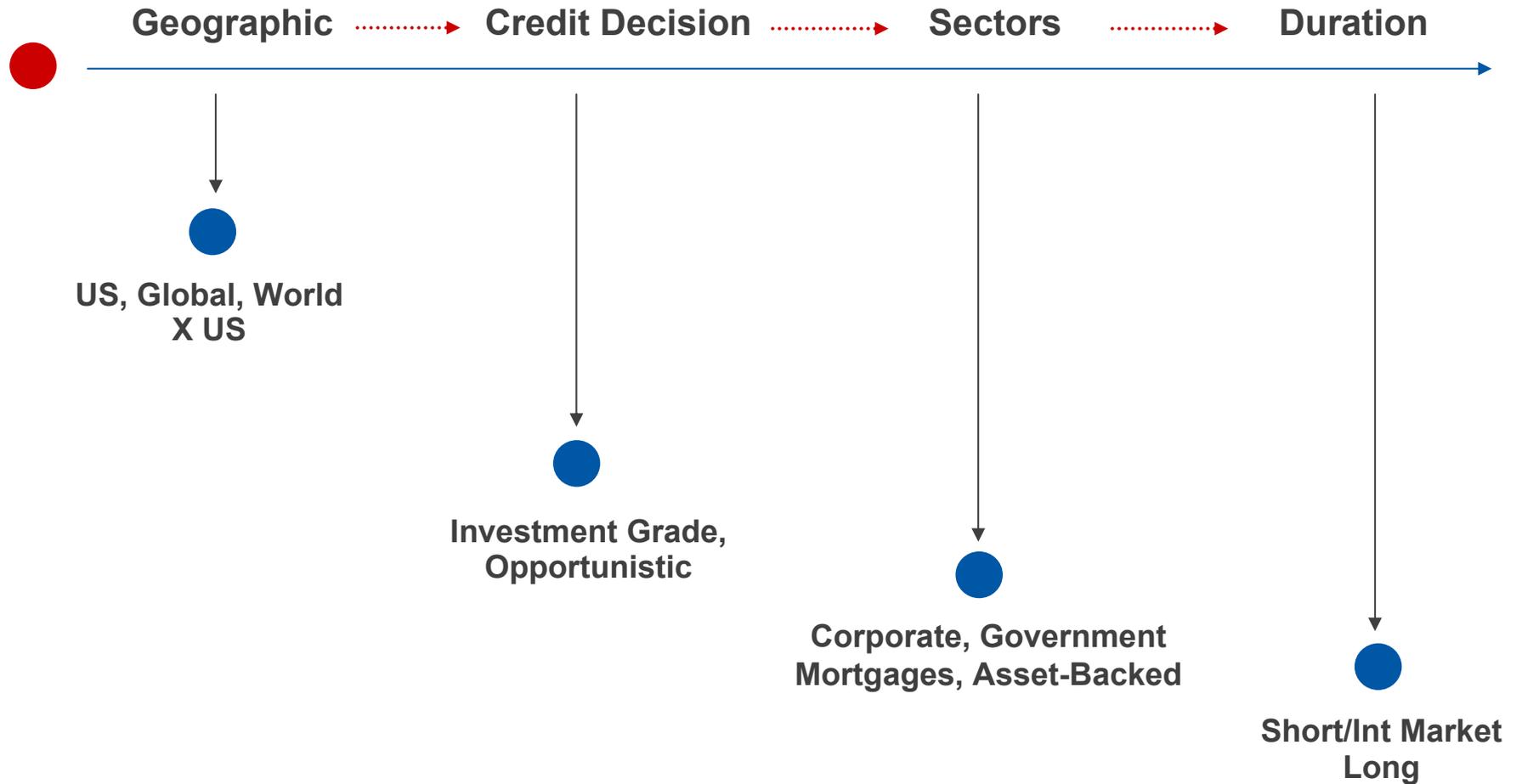
Treasury Inflation Protected Securities (TIPS)

- TIPS can be viewed as a special type of Treasury note or bond that offers protection from inflation.
- Like other Treasuries, these inflation-indexed securities pay interest every six months and pay the principal when the security matures. *The difference is that the coupon payments and underlying principal are automatically increased to compensate for inflation as measured by the consumer price index (CPI).*
- TIPS maintain an investor's real rate of return by guaranteeing their purchasing power.
- TIPS are seen as 'double-safe' investments as they are guaranteed by the US Treasury *and* because they guarantee purchasing power;
- Due to their relative safety, TIPS offer a relatively lower return for investors (in normal market conditions).

Convexity

- Convexity is a term that will be used frequently by investment managers and bond practitioners .
- Convexity refers to a mathematical property of the equation that relates a bond's price to changes interest rates.
- Gives a higher degree of accuracy in the pricing of bonds.
- In the normal course of your duties as a trustee, it is usually not necessary to know what the term convexity means.

Bond Portfolio Management Choices



The Important role of Credit Analysis

- Since a bond derives its value from the promise of the issuer to pay periodic interest, it is critical to determine whether the issuer is likely to actually make the promised interest and principal payments for the life of the bond.
- Only the United States Government is deemed default free and immune from ever failing to pay the interest and principal that is due to investors in its bonds.
- All other issuers are rated by independent rating agencies on various scales indicating their creditworthiness. A typical scale is AAA, AA, A, and BBB, with BB, B, C, and NR reserved for lower credit rated issuers.
- Investment management firms who invest in bonds also typically have significantly sized staffs devoted to analyzing the creditworthiness of the bond issuers they own or might own.
- Some bonds are backed by collateral – assets specifically pledged to provide security for the promised payments. All mortgages are bonds backed by the collateral of the property the mortgage covers.

Common Portfolio Strategies

Core and Core Plus Strategies

Core Strategy

- A Core Bond strategy will seek both current income and the growth of capital through exposure to US government and corporate investment-grade obligations.

Core Plus Strategy

- A Core Plus strategy permits managers to add instruments with greater risk and greater potential return (high-yield, global and emerging market debt, for example) to core portfolios of investment-grade bonds.

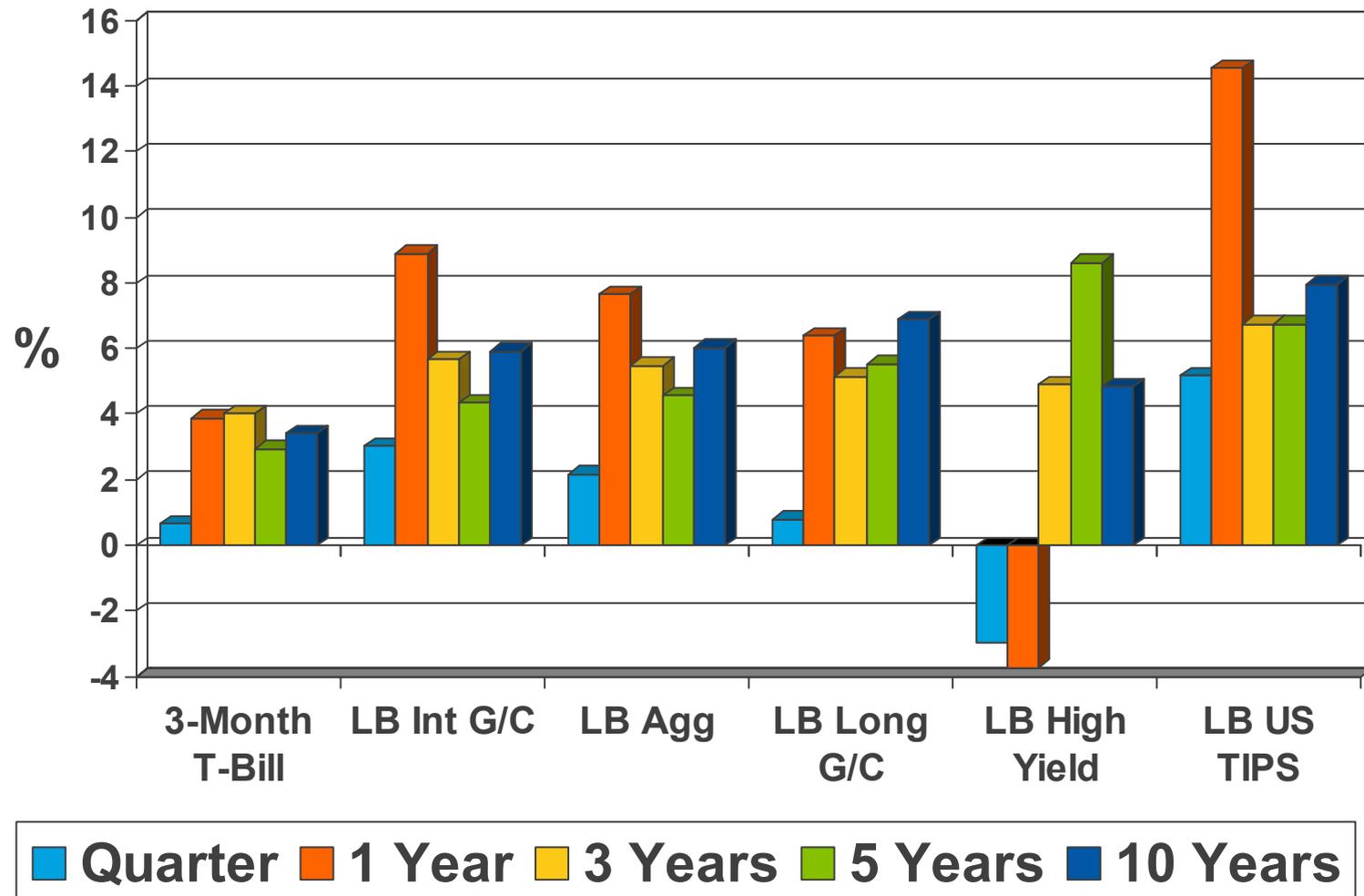
Passive Fixed Income Strategies

- A Passive Fixed Income strategy seeks to replicate the characteristics and performance of one or more generally accepted indices of the overall bond market.

Fixed Income

Annualized Returns by Maturity and Sector

As of March 31, 2008*

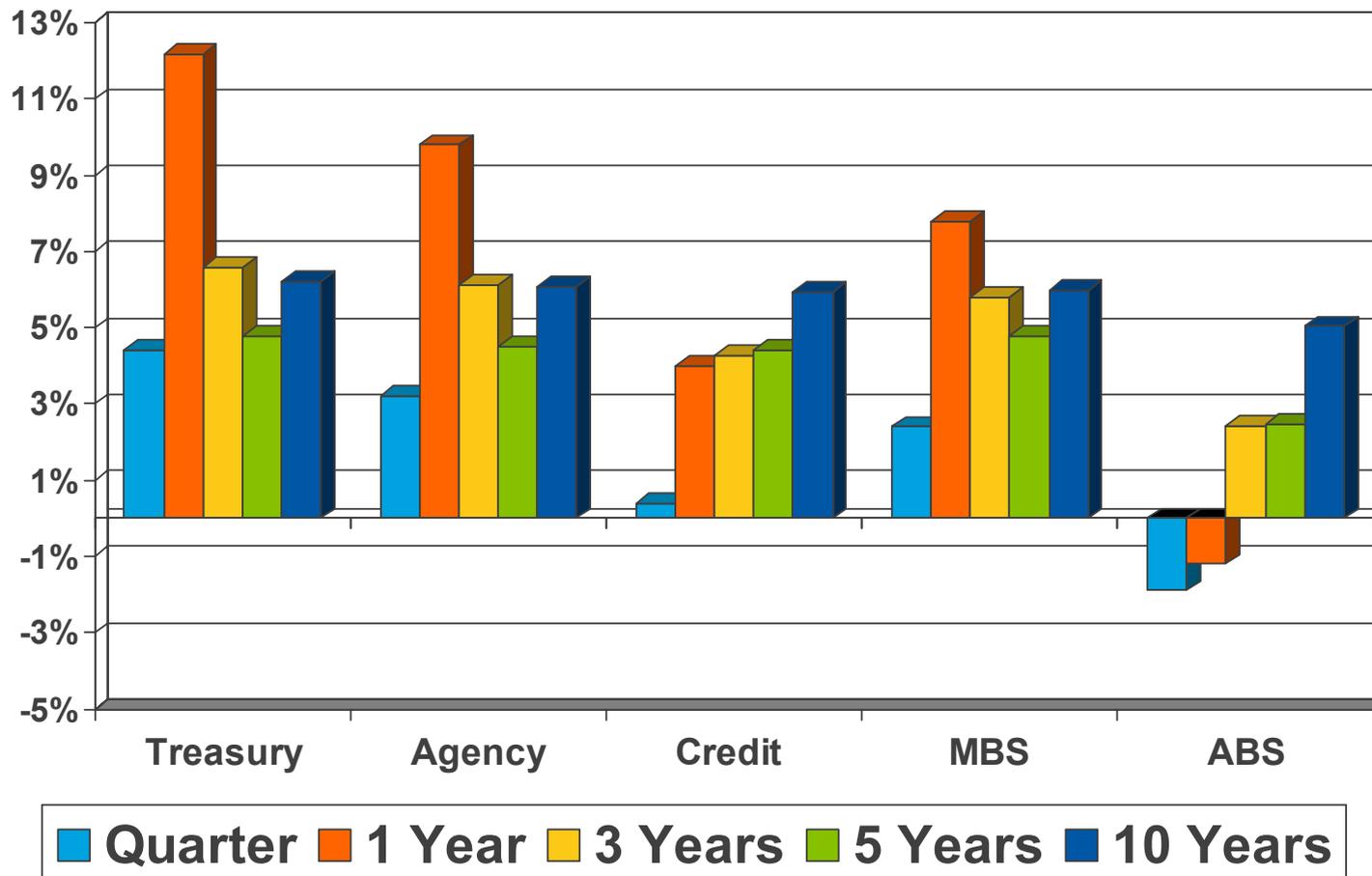


* Performance for one year or longer has been annualized.

Fixed Income

Performance by Issuer

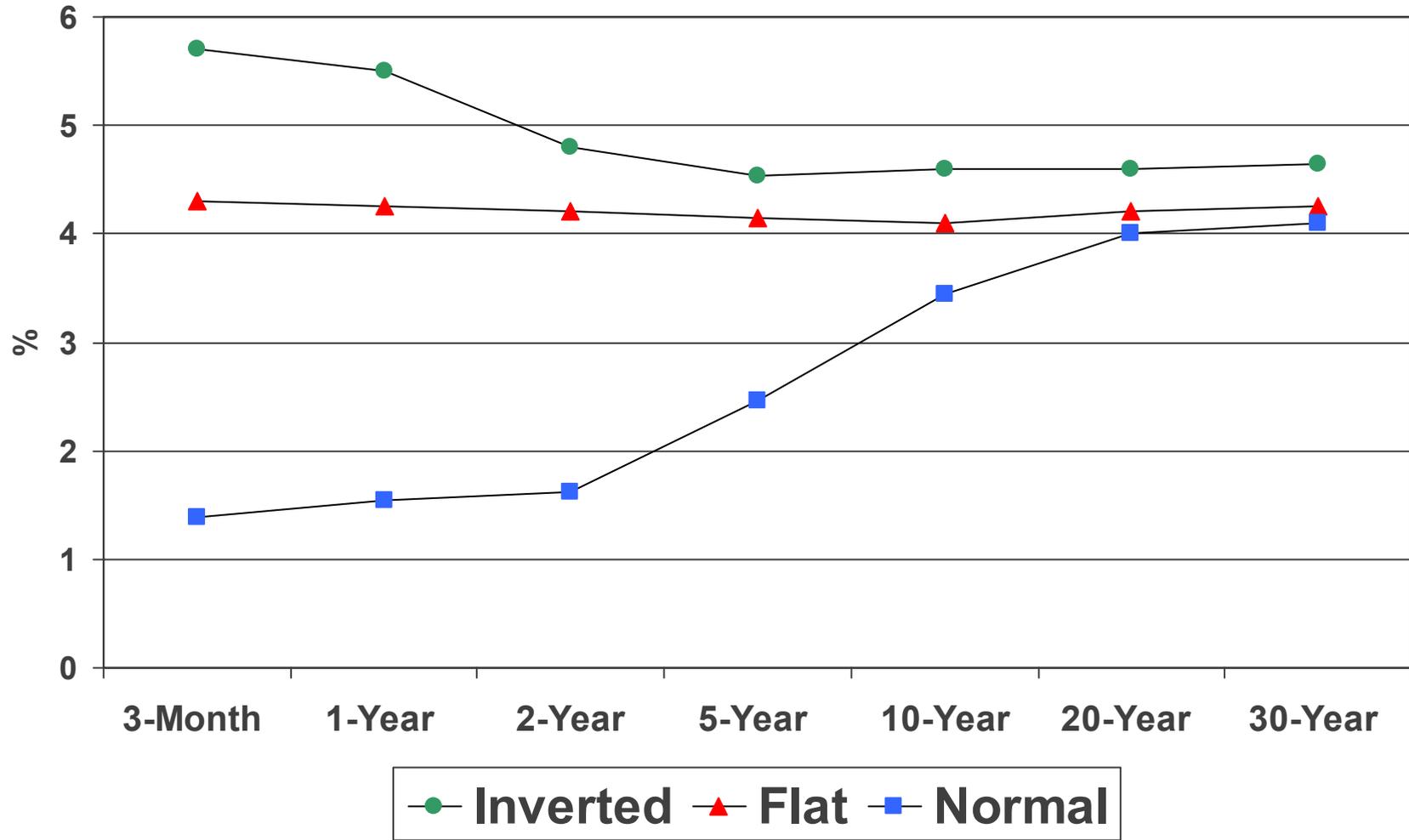
As of March 31, 2008*



Source: Lehman Brothers

* Performance for one year or longer has been annualized.

Fixed Income Yield Curve



Asset and Liability Matching

ALM – Asset and Liability M...

- ALM can mean:
- Asset and Liability **Modeling** – a computer exercise of determining how assets and liabilities behave in the future in various scenarios.
 - Example: What is the likely return over the next 20 years of an investment strategy that is invested 20% in equities and 80% in bonds? What is likely to be the worst that can happen in any one year over the 20 years?
- Asset and Liability **Management** – the general practice of paying attention to how both assets and liabilities behave
- Asset and Liability **Matching** – one of several approaches to matching assets to liabilities in an attempt to manage surplus
- All three of these will be important exercises in steps 3 – 5 of our Five Step Decision Making Framework.
 - 3. Setting Investment Objectives
 - 4. Determining Asset Allocation
 - 5. Establishing acceptable Risk Tolerances

ALM and Surplus Management

- Surplus equals Assets minus Liabilities
- If either Assets or Liabilities change, Surplus changes
- To manage Surplus, both Assets and Liabilities must be managed. It is not enough to just manage the assets.
- ALM in practice means designing an asset portfolio that behaves like the liabilities so that changes in assets are tracked by changes in liabilities.

The Market Value of Liabilities

- If we have to make a payment of \$1,000,000 10 years from now, we would need \$613,913 today to be sure we could pay that payment, if interest rates were 5%.
- If, tomorrow, interest rates were to rise to 6%, we would need less money to meet that ten year obligation. We would only need \$558,395.
- If, tomorrow, interest rates were to fall to 4% we would need more money to meet that ten year obligation. We would need \$675,564.
- In each case, we call the amount of money needed to cover a future liability the market value of the liability. The market value of a liability changes as interest rates change reflecting the fact that the cost of meeting that liability changes.
- Note that the market value of a liability is just the discounted value of a future expected payment.

The Market Value of Assets

- If interest rates were 5%, and we invested \$613,913 in a bond asset with a duration of 10 years, we would be assured of that asset being worth \$1,000,000 in ten years.
- If, tomorrow, interest rates were to rise to 6%, that asset would be worth only \$558,395. But we would still be assured of that asset being worth \$1,000,000 in ten years.
- If, tomorrow, interest rates were to fall to 4%, that asset would be worth only \$675,564. And we would still be assured of that asset being worth \$1,000,000 in ten years.

Summary: Market Value of Asset = Market Value of Liability

- We began, with interest rates at 5%, with the market value of our asset equal to the market value of our liability (\$613,913).
- If interest rates rise to 6%, the market value of our asset still equals to the market value of our liability (\$558,395).
- If interest rates fall to 4%, the market value of our asset still equals to the market value of our liability (\$675,564).

Summary: Market Value of Asset = Market Value of Liability

Four things have happened:

1. Our surplus (assets minus liabilities) began at zero and remains unchanged at zero no matter what happens to interest rates.
2. We are assured of having a million dollars at the end of ten years to meet our liability
3. We are immune and indifferent to changes in the level of interest rates.
4. We are also immune and indifferent to changes in the stock market.

The Fundamental Theorem of Asset and Liability Matching

To achieve a perfect guarantee of meeting a future expected payment:

1. Match the market value of your asset to the market value of your liability
2. Match the duration of your asset to the duration of your liability

ALM in practice

- A number of real world complications arise in achieving the perfect asset and liability match.
- A future liability is not known with certainty. Estimates of what the liability may be might be wildly off, particularly if the future liability is subject to a high degree of uncertainty such as medical inflation.
- Typical coupon bonds do not have durations over 15. To match long liabilities we must use exotic instruments or U.S. Government zero-coupon bonds.
- ALM is expensive. This is because ALM relies on bonds which we expect to earn less than other asset classes, particularly stocks. In effect, ALM purchases safety and certainty at an expensive price.
- The theory of duration-matching makes several assumptions, which may not hold in practice: parallel shifts in yield curves, small changes in yields only, bonds cannot be called and do not contain other optionality.

ALM for the BWC

- Surplus equals Assets minus Liabilities
- The BWC does not mark its liabilities to market as interest rates change (or they do so to a limited degree). This is a consequence of the discount rate that is fixed for a twelve month period and perhaps of the actuarial smoothing of liabilities.
- With liabilities largely fixed, managing surplus at the Bureau is equivalent to managing assets. There is arguably no need or role for an asset strategy that tries to mimic the volatility of the liabilities.
- We have asked Deloitte to consider these questions of surplus management and a final determination of what the role of ALM for the BWC should be awaits their views.

U.S. Equity

U.S. Equity

Characteristics of Equity Market Investing

Common Stock or Equity Securities

- Represents ownership shares in a corporation. Each share of common stock typically entitles its owner to one vote.
- Residual claim and limited liability
- Generate returns from dividends and/or appreciation in the value of the stock price
- Returns are not guaranteed, as a stock investor can lose money if the stock price declines in value below the amount paid

U.S. Equity

Characteristics of Equity Market Investing

How your Portfolio Manager (PM) Invests in the Equity Market

- The portfolio manager invests in the stock market for clients by identifying a basket of securities to purchase.
- The basket of securities referred to as the portfolio will be identified through various types of analysis – in hopes that the portfolio will outperform a stated benchmark.
- The portfolio manager will stay within the guidelines set forth by the client as it relates to capitalization ranges (Large, Midcap or Small) and style (Growth, Value or Core).
- The portfolio will be measured against a stock market index (benchmark), which is defined as a method of measuring the stock market as a whole. The market can be Canadian stocks, American stocks, Bio-tech stocks, small-cap stocks, growth stocks, or any other market of interest.

U.S. Equity

Characteristics of Equity

Types of Stocks

Cyclical

- A cyclical stock is a stock that has a strong correlation with the movement of the general economy (business cycle) i.e. it will appreciate quickly when economic growth is strong and fall rapidly when growth is slowing.
- Automobile stocks are a good example of a cyclical stock; as economic growth slows, consumers have less disposable income to spend on new cars and vice versa.

U.S. Equity

Characteristics of Equity

Types of Stocks

Non-cyclical

- Non-cyclical securities, also called defensive stocks, are anticipated to experience profit regardless of economic conditions as non-cyclical firms produce or distribute essential goods or services that we demand regardless of the business cycle.
- The classic example of a non-cyclical stock is a food or household products stock (P&G) as consumers and businesses need household supplies regardless of the direction of the economy.
- When the economy is growing, non-cyclical stocks tend to lag behind cyclical stocks as they have a low correlation with the business cycle.

U.S. Equity

Characteristics of Equity

Types of Stocks

Standard & Poor's classifies stocks into 10 sectors:

- **Consumer Discretionary**
- **Consumer Staples**
- **Energy**
- **Financials**
- **Health Care**
- **Industrials**
- **Information Technology**
- **Materials**
- **Telecommunication Services**
- **Utilities**

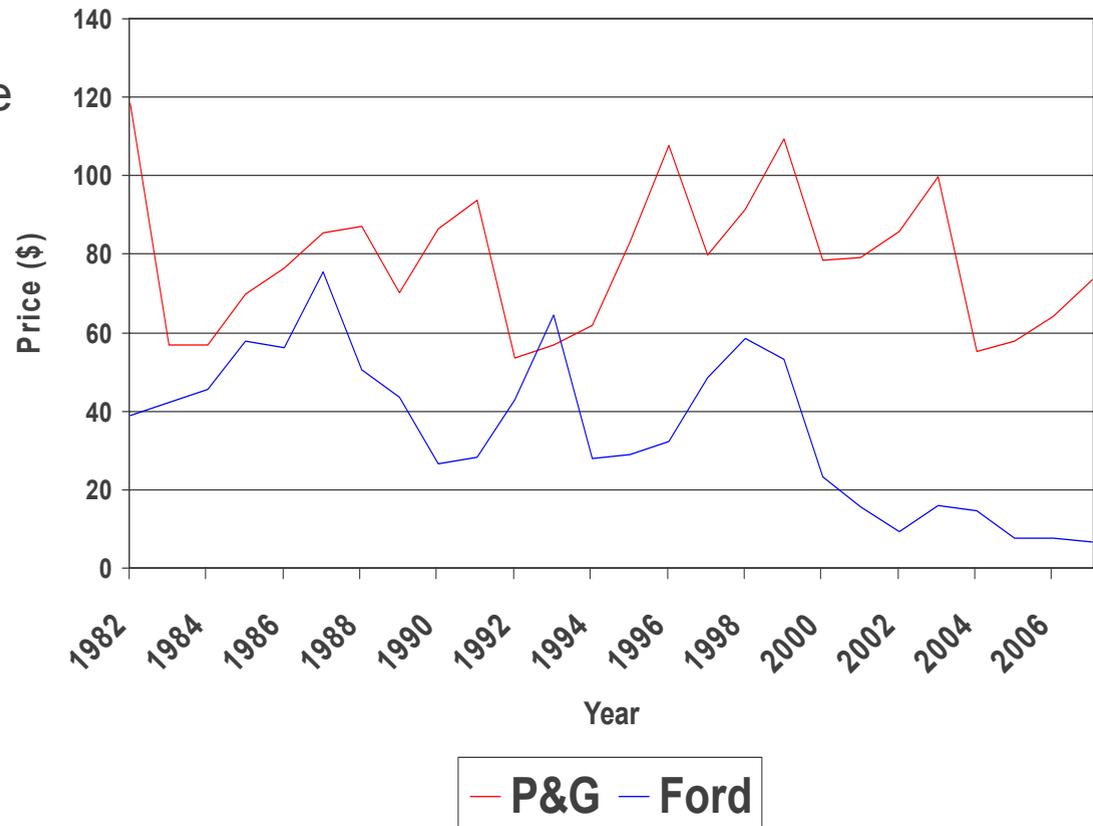
All of the sectors are cyclical with the exception of (3) Consumer Staples, Health Care and Utilities.

U.S. Equity

Characteristics of Equity

Types of Stocks

- The chart shows the performance of a highly cyclical company, the Ford Motor Co. (blue line), and a non-cyclical company, Proctor & Gamble (P&G) (red line).
- This chart clearly demonstrates how each company's share price reacts to downturns in the economy.
- You will see that the downturn in the economy from 2000 to 2002 drastically reduced Ford's share price, whereas P&G share price remained within its normal price range during the slowdown.



Domestic Equity

Market Capitalizations

The total market value of a company's outstanding common stock is calculated by multiplying the market price per share by the number of shares outstanding.

Market Capitalization = (# shares) x (price)

Example: Marsh & McLennan -MMC

\$24.37 billion = 800 million shares x \$30.47

U.S. Equity

Market Capitalization

Broad Market Index (Example: Russell 3000)

- Represents largely entire market, which includes all capitalization ranges (large, mid and small companies)
- Range from \$468B – \$261M with the average market capitalization at \$82.8B
- An example of a broad index is the Russell 3000, which is often used as a proxy for the entire market

As of March 31, 2008

<u>% of Total</u>	<u>Russell 3000</u>
Large Cap	39.9%
Mid/Large Cap	26.8%
Mid Cap	17%
Small/Mid Cap	9.3%
Small Cap	7%

U.S. Equity

Market Capitalization Ranges

Large Cap

- Largest stocks in the broad market
- Range from \$468B – \$2.5B with the average market capitalization at \$90.5B
- An example of a large cap index is the Russell 1000 Index, which is often used as the large cap benchmark that large cap portfolios are compared

Mid Cap

- Stocks that fall in the middle of the capitalization range
- Range from \$18.3B – \$2.5B with the average market capitalization at \$9.1B
- An example of a mid cap index is the Russell Mid Cap Index

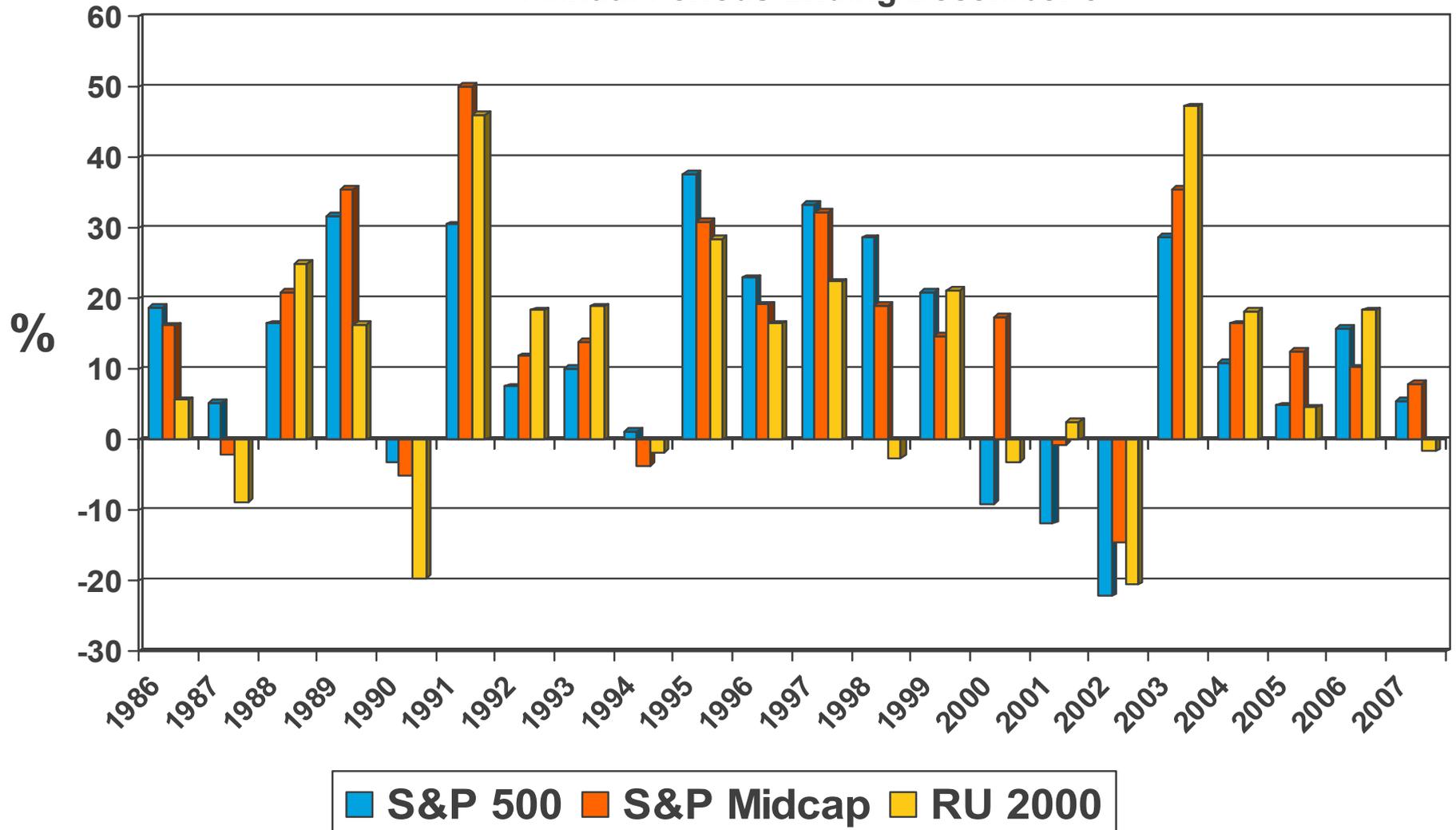
Small Cap

- Smallest stocks in the broad market
- Range from \$2.5B – \$261M with the average market capitalization at \$1.3B
- An example of a small cap index is the Russell 2000 Index

U.S. Equity

Performance by Capitalization

Annual Periods Ending December 31



U.S. Equity

Methods of Investing

Passively Managed Portfolio

- A strategy of holding a well – diversified portfolio of securities without attempting to outperform other investors (defined as the broad market index, hence the benchmark)
- The PM will create a portfolio of securities that holds close to the same weightings of sectors (financials, technology, healthcare, etc.) as their specific benchmark

Active Managed Portfolio

- A strategy of creating a portfolio of securities selected by the “skill” of the portfolio manager with the goal of outperforming the broad market
- The term Alpha is typically used when discussing active management – Alpha is the excess returns generated by a portfolio due to the “skill” of the portfolio manager

U.S. Equity

Active Management Styles

Top-Down Investing

- A active management style that generally begins with an assessment of the economic environment. Typically, as a result of this macroeconomic analysis, specific industrial groups or geographical regions are identified for investment.

Bottom-Up Investing

- A active management style that focuses on the analysis of individual companies, utilizing fundamental, analytical techniques in an attempt to select superior performing issues.

U.S. Equity

Active Management Styles

Quantitative Strategies

- Most quantitative strategies rely heavily on computer simulations. A quantitative strategy must be based on a sound theory about why the strategy has worked in the past and why it should work in the future.

Fundamental Strategies

- Any investment strategy which is not based on quantitative techniques is based on fundamental techniques. A fundamental strategy is based on detailed industry and/or company research. It may be top-down or bottom-up in nature.

Domestic Equity

Active Management Styles

Value focused portfolios include:

- Companies viewed as having market prices which are undervalued. That is, the market has not properly recognized future earnings streams.
- Earnings are generally distributed to equity holders.
- Price to earnings ratio is generally, but not always, lower.
- Examples: Limited Brands and Heinz

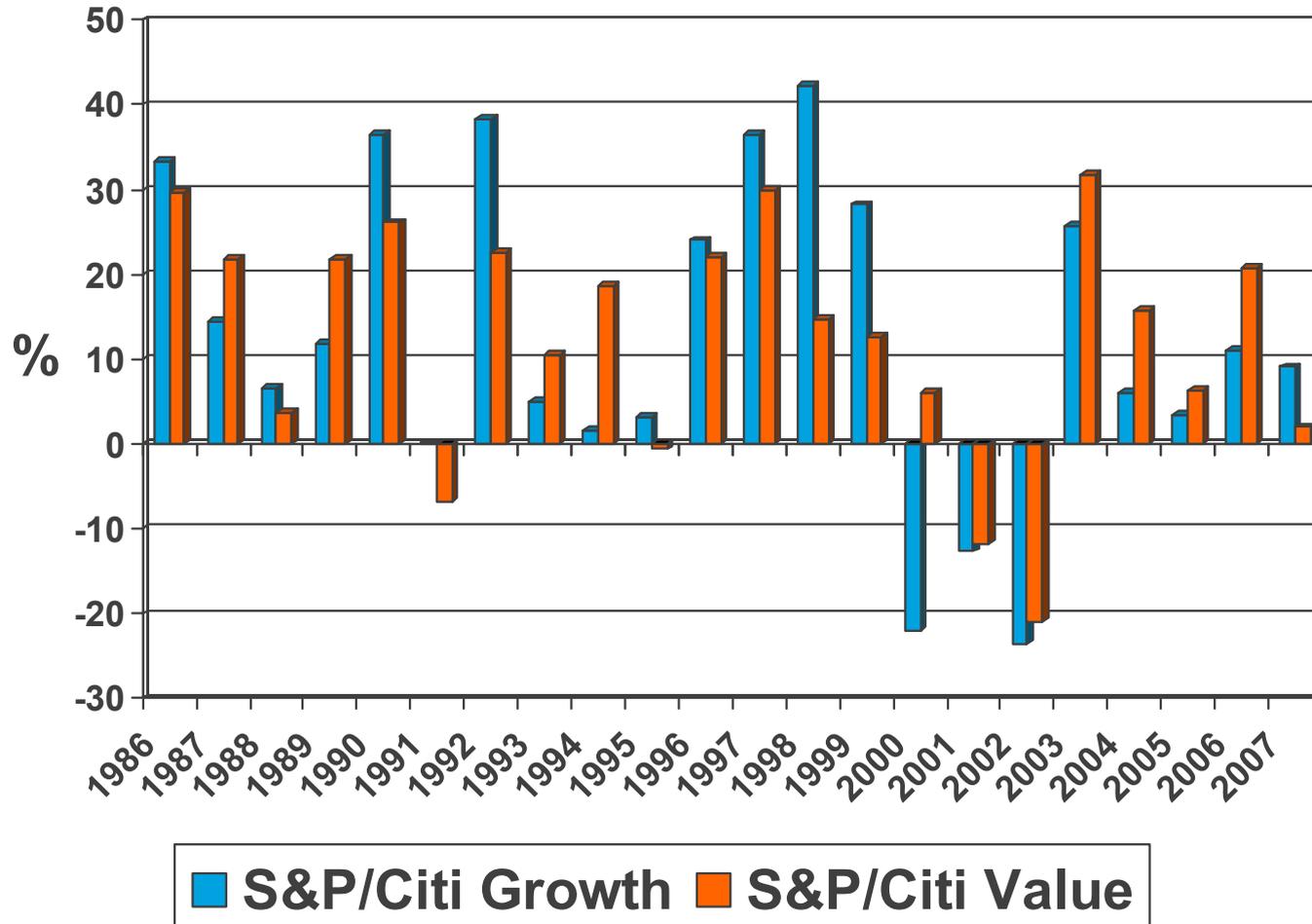
Growth focused portfolios include:

- Companies whose sales and earnings are expanding faster than the general market and/or the industry average.
- Earnings are often plowed back into operations; therefore, dividend yield tends to be lower.
- Often the company maintains a solid position within an expanding part of the market.
- Generally characterized by price volatility as actual earnings are not always in line with expected earnings.
- Example: Google and Intel

U.S. Equity

S&P/ Citi Growth vs. S&P/ Citi Value

Annual Periods Ending December 31



Non U.S. Equity

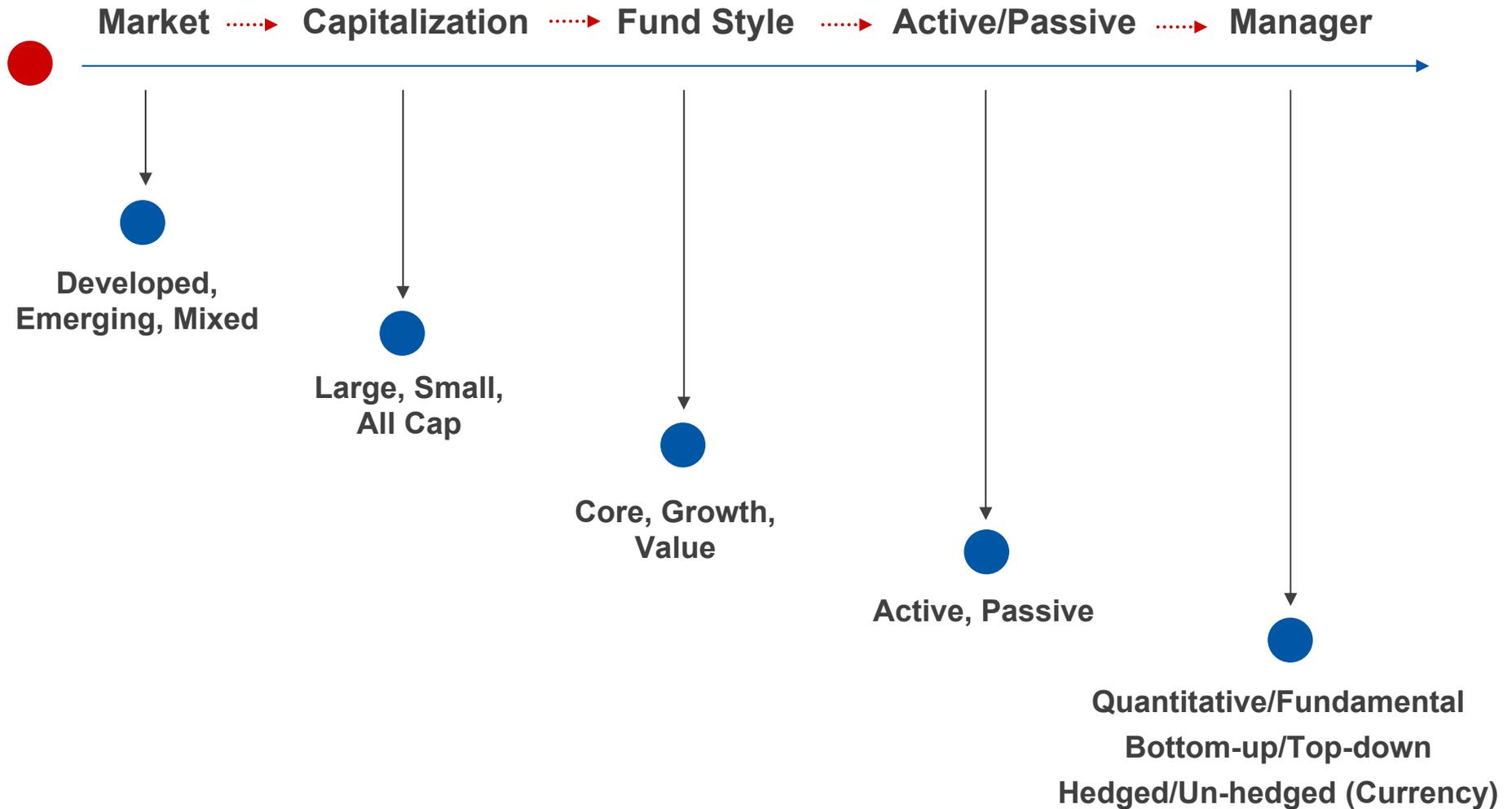
Non U.S. Equity

Economic Landscape

The Global Environment Has Changed Over Time:

- Historically the US dominated the world's economy
- Today more than 50% of the world's economy (stock investing opportunities) is outside of the US
- MSCI ACWI: Index of global stock opportunities, which includes 55 country indices (23 developed and 33 emerging market indices)
- Emerging market economies are playing an increasing role in the global economy

Non U.S. Equity



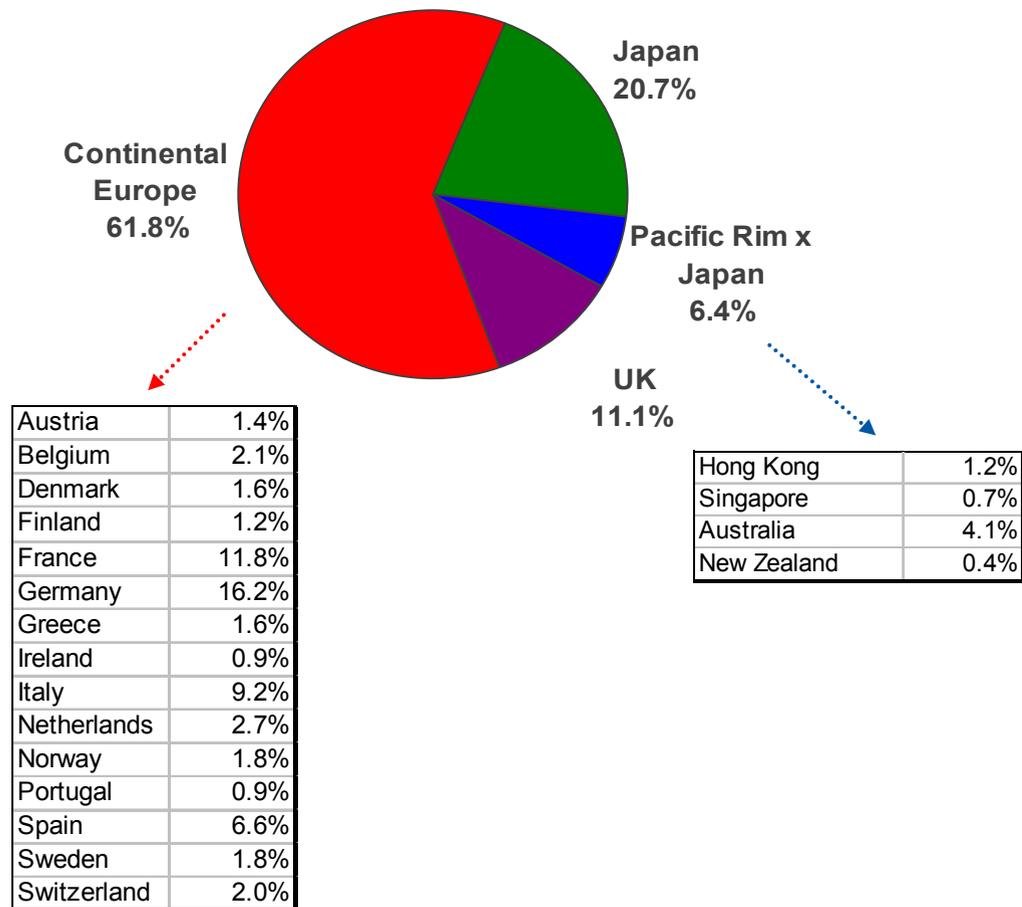
Non U.S. Equity

EAFE Country Allocation (Developed)

Developed Markets

- Large, liquid capital markets.
- Generally politically stable.
- Stable economic growth.
- Governmental departments responsible for investor protection.

MSCI EAFE Index
As of Mar 31, 2008



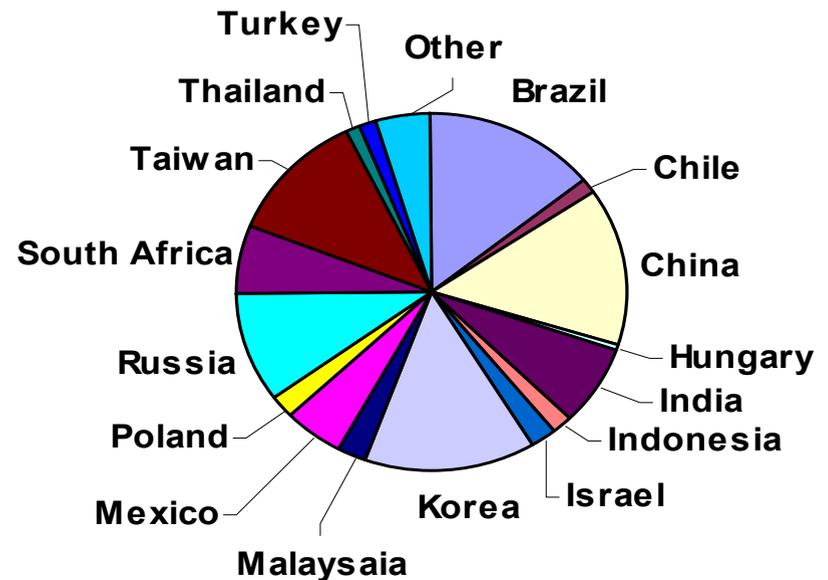
Non U.S. Equity

MSEMF Country Allocation (Emerging)

Emerging Markets

- Smaller, less liquid capital markets.
- Less politically stable and exhibit higher, more volatile economic growth.
- Less market regulation. Weak bankruptcy laws. Generally not as shareholder friendly due to capital controls.
- Higher expected returns over time, mediated by higher political and market risk.
- Not all are equal - some countries are more “developed” than others.

MS Emerging Market Free Index
As of Mar 31, 2008

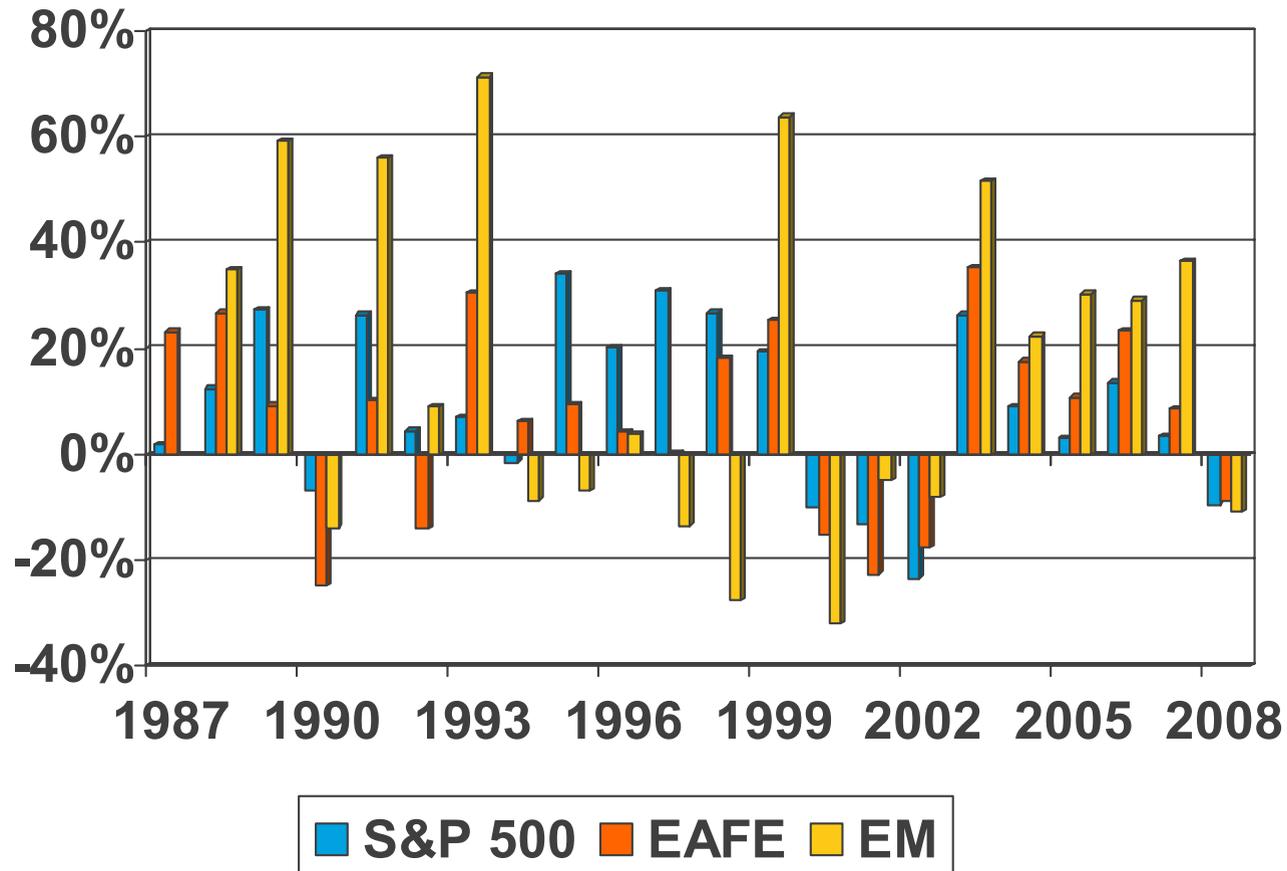


Source: MSCI

Non U.S. Equity

Developed versus Emerging Market returns

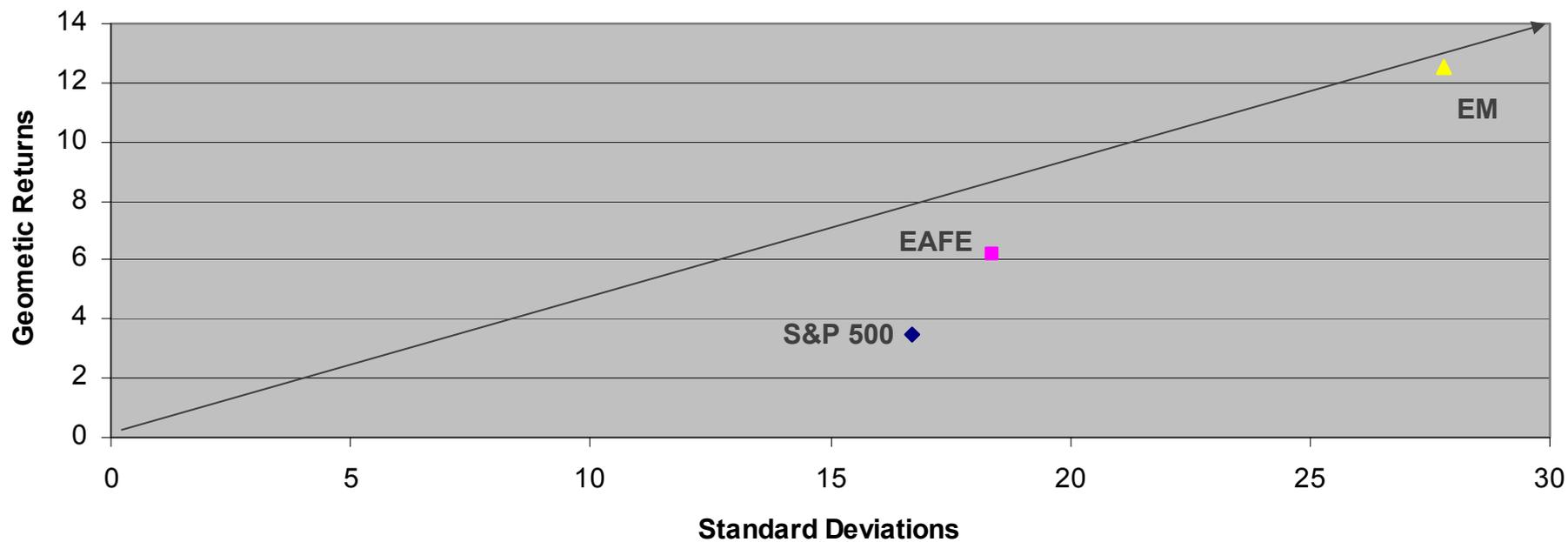
Annual Periods Ending March 31, 2008



Non U.S. Equity

Risk and Return

Risk and Returns as of March 31, 2008



◆ S&P 500 ■ EAFE ▲ EM

Non U.S. Equity

Key Drivers – Emerging Market Equity

Performance of this sub-asset class can be attributed to the following factors, which give it potential to add value in an international portfolio:

- Expectations for global growth
- Developing market consumption
- Movements in commodity cycle
- Global and regional interest rates
- Improvements in EM balance sheet
- Increasing liquidity

Active vs. Passive Management

Active vs. Passive Management

Let us agree on what we are debating, discussing and disagreeing about: active vs. passive management:

Active management is the art of stock picking and market timing. Passive management refers to a buy-and-hold approach to money management. It can be applied to any asset class: big stocks, small stocks, value or growth, foreign or domestic can all be accessed by passive techniques.

Neither label, "active" or "passive," is perfect, and there will not always be a complete dichotomy between them. In any event, this is a debate about both market behavior and investor behavior.

Rex A. Siquefield, October 1995

Active vs. Passive Management

Active Management

- A money management approach that aims to generate alpha i.e. outpace the 'market' as measured by a particular benchmark or index (e.g. the S&P 500, the Russell 1000, the Lehman Aggregate or the Intermediate Lehman Brothers U.S. Government / Credit)
- Prevailing market trends, the economy, political and other current events, and company-specific factors (such as projected earnings growth or interest rates / duration) will influence an active manager's decisions
- Active management includes a wide variety of strategies for identifying portfolio securities that are believed to offer above-average prospects for outperforming:
 - *As an example, some equity managers look for Value, while others search for Growth. Some fixed income providers are Core managers while others are High Yield investors.*
 - *Some managers focus on current and projected Fundamentals while others adopt a model-centric / quantitative approach*
 - *Some managers are Top-Down investors while others view stocks or bond credits from the Bottom-Up*
- Regardless of their individual approach, all active managers share a common thread - they buy and sell securities selectively, based on a forecast of future conditions.

Active vs. Passive Management

Passive Management

- Passive management is more commonly called 'indexing'. Index managers generally believe that it is difficult to beat the market.
- Index managers essentially offer asset class performance that closely matches an index for investors who are unwilling to assume the risks of active management.
- This management style is considered passive because portfolio managers do not make decisions about which securities to buy and sell (they simply replicate or mirror the composition of the index by purchasing or sampling the same securities included in a particular stock or bond market index).

Active vs. Passive Management

Alpha and Tracking Error

- Active management is simply an attempt to “outperform” the market as measured by a particular benchmark or index (e.g. the S&P 500 or the Lehman Aggregate).
- Beating the market is analogous to ‘generating positive alpha’ (e.g. if an active manager generates a 7% return while their appropriate benchmark generates a return of 5%, the manager has an excess return or alpha of 2% or 200 basis points over the index).
- Tracking error (also called active risk) is a measure of how closely a portfolio follows the index to which it is benchmarked.
- An index fund should have a tracking error close to zero.
- All active managers must exhibit some level of tracking error against their target benchmark (if they do not, they would be managing an index fund, thus we would question whether paying active manager fees is appropriate).

Active vs. Passive Management

Beta

Active management exposes a portfolio to beta risk (or market risk) and to alpha risk (deviations from the market that the active manager takes).

By definition beta is a quantitative measure of the volatility of a given portfolio, relative to the overall market. The broad market beta is equal to 1. A beta above 1 is more volatile than the overall market, while a beta below 1 is less volatile so for example if the market returns +/- 5%:

- A portfolio with a beta of 1.5 will return +/- 7.5%
- A portfolio with a beta of 2 will return +/- 10%
- A portfolio with a beta of 0.5 will return +/- 2.5%

An index fund should have a beta of approximately 1 while an actively managed fund should have a beta that is greater or smaller than 1

Active vs. Passive Management

Standard Deviation

A manager's alpha risk or active risk is measured by standard deviation

The standard deviation is often used by investors to measure the risk of a stock. The basic idea is that the standard deviation is a measure of volatility i.e. the more a stock's returns vary from the stock's average return, the more volatile the stock. Consider the following two stock portfolios and their respective returns over the last six months:

Month	Stock A			Stock B		
	Value	Return	Final Value	Value	Return	Final Value
1	1000	0.75%	1008	1000	1.50%	1015
2	1008	1%	1018	1015	5%	1066
3	1018	3%	1048	1066	12%	1194
4	1048	-1.5%	1032	1194	-9%	1086
5	1032	0.50%	1038	1086	-4%	1043
6	1038	2%	1058	1043	1.5%	1058

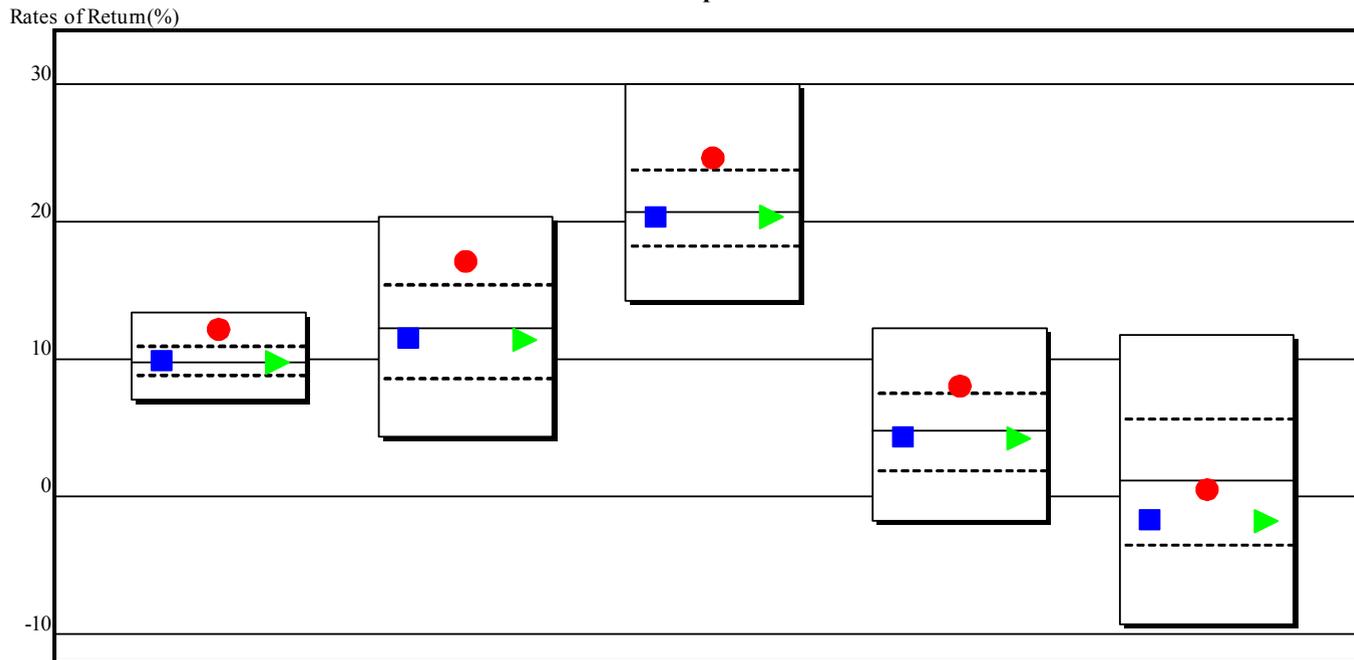
Both stocks end up increasing in value from \$1,000 to \$1,058. However, both stocks differ in volatility. Stock A's monthly returns range from -1.5% to 3% whereas Stock B's range from -9% to 12%.

The standard deviation of the returns is a better measure of volatility than the range of returns because it takes all the values into account. The standard deviation of the six returns for Stock A is 1.52; for Stock B it is 7.24

Equity Active vs. Passive Management

Generally speaking, in strong markets, we would expect an active manager to outperform the benchmark (while the index manager will approximate the benchmark's returns)

Equity Active vs. Passive Comparison with the Mercer US Equity Large Cap Equity Universe Performance before fees for periods ended December 2004

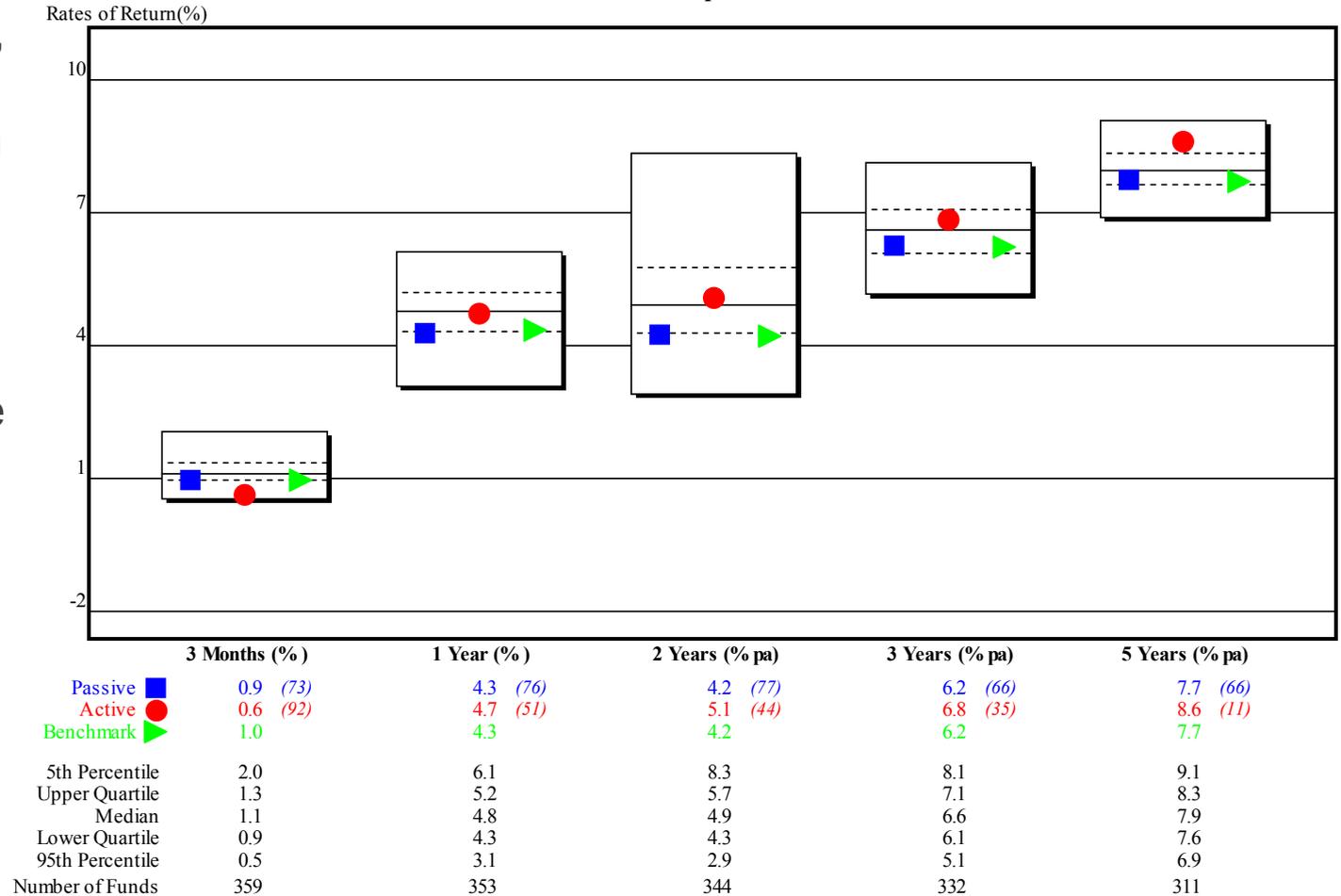


	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	9.8 (49)	11.5 (56)	20.4 (53)	4.4 (54)	-1.7 (66)
Active	12.1 (12)	17.2 (15)	24.6 (20)	8.1 (20)	0.5 (53)
Benchmark	9.8	11.4	20.3	4.3	-1.8
5th Percentile	13.3	20.2	29.9	12.1	11.7
Upper Quartile	10.9	15.4	23.7	7.5	5.6
Median	9.8	12.2	20.7	4.8	1.1
Lower Quartile	8.8	8.6	18.2	1.8	-3.6
95th Percentile	7.0	4.3	14.2	-1.9	-9.4
Number of Funds	1282	1231	1151	1081	903

Fixed Income Active vs. Passive Management

Generally speaking, in strong markets, we would expect an active manager to outperform the benchmark (while the index manager will approximate the benchmark's returns)

Fixed Income Active vs. Passive Comparison with the Mercer US Fixed Core Universe Performance before fees for periods ended December 2004

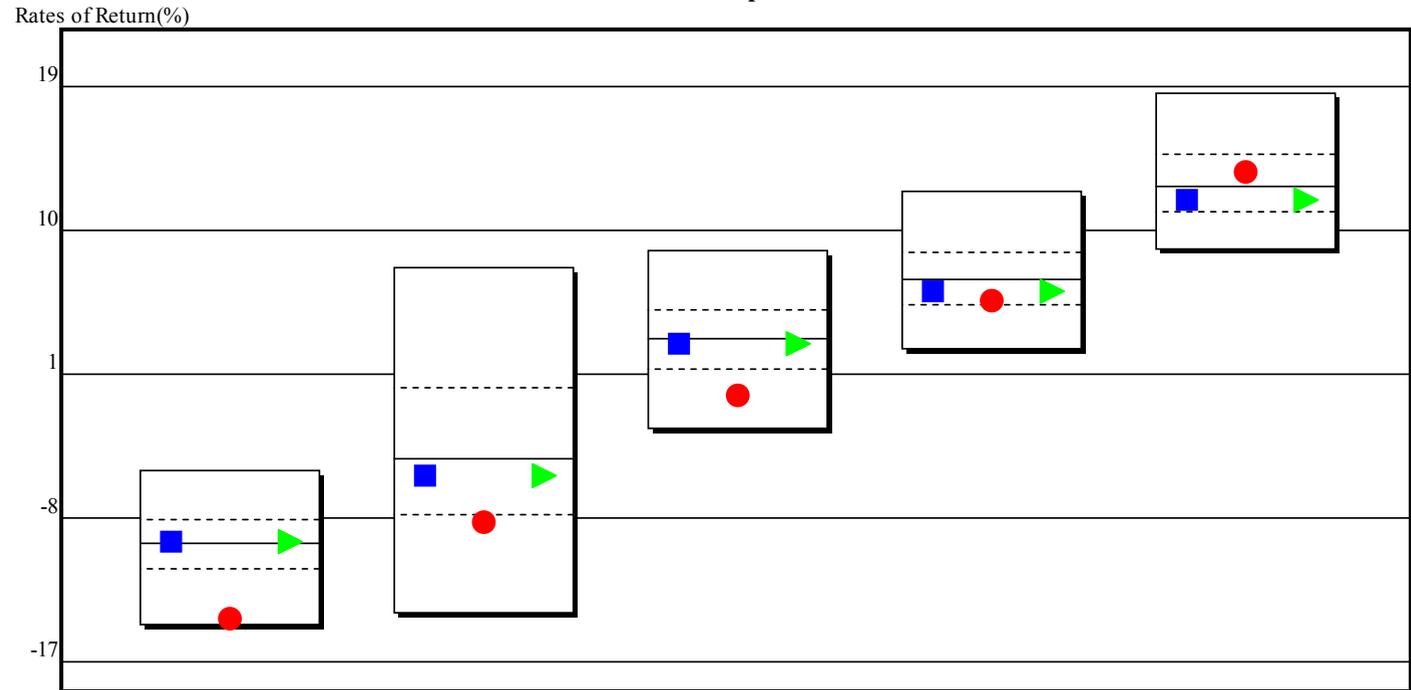


Equity Active vs. Passive Management

Equity Active vs. Passive

Comparison with the Mercer US Equity Large Cap Equity Universe
Performance before fees for periods ended March 2008

In weaker markets, less skillful active managers may fail to outperform the benchmark (while the index manager will approximate the benchmark's returns)

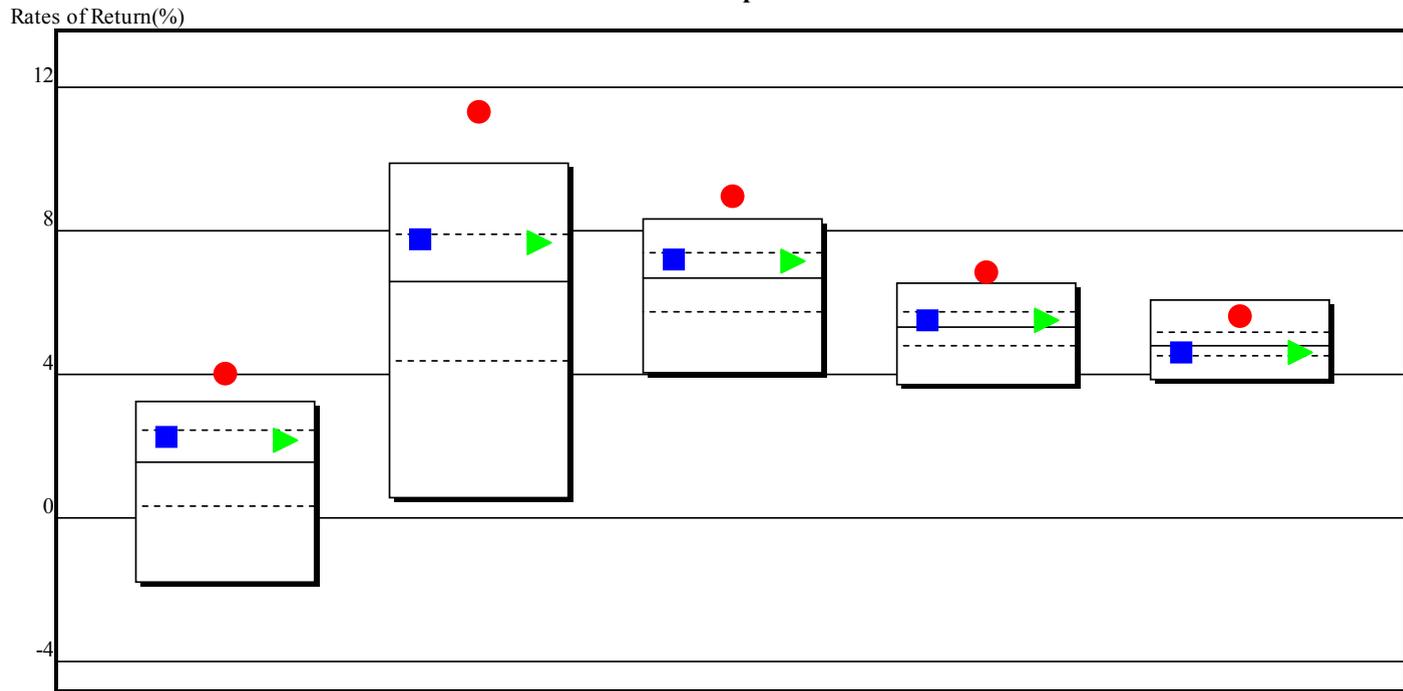


	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	-9.5 (47)	-5.4 (59)	2.9 (54)	6.2 (59)	11.9 (64)
Active	-14.3 (93)	-8.3 (77)	-0.3 (88)	5.7 (70)	13.7 (37)
Benchmark	-9.5	-5.4	2.9	6.2	11.9
5th Percentile	-5.1	7.6	8.7	12.4	18.5
Upper Quartile	-8.2	0.1	5.0	8.5	14.7
Median	-9.6	-4.4	3.2	6.8	12.7
Lower Quartile	-11.3	-7.8	1.3	5.3	11.2
95th Percentile	-14.8	-14.1	-2.5	2.5	8.8
Number of Funds	1136	1091	1021	956	862

Fixed Income Active vs. Passive Management

Fixed Income Active vs. Passive Comparison with the Mercer US Fixed Core Universe Performance before fees for periods ended March 2008

In weaker markets the index manager will approximate the benchmark's returns, while you may see an out-performance of active fixed income managers



	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	2.2 (30)	7.8 (28)	7.2 (32)	5.5 (40)	4.6 (68)
Active	4.0 (3)	11.3 (4)	8.9 (3)	6.9 (4)	5.6 (9)
Benchmark	2.2	7.7	7.1	5.5	4.6
5th Percentile	3.2	9.9	8.3	6.5	6.1
Upper Quartile	2.4	7.9	7.4	5.7	5.1
Median	1.5	6.6	6.7	5.3	4.8
Lower Quartile	0.3	4.3	5.7	4.8	4.5
95th Percentile	-1.8	0.5	4.0	3.7	3.8
Number of Funds	289	275	271	268	254

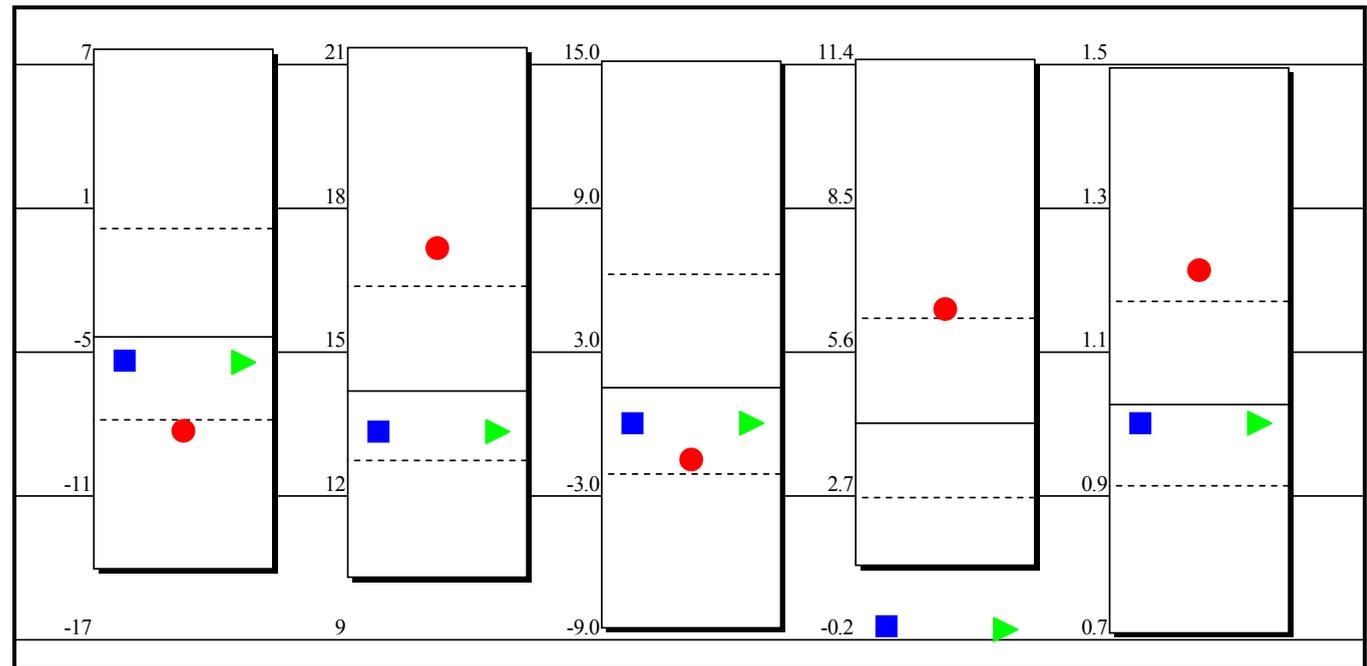
Equity Active vs. Passive Management

Equity Active vs. Passive

Comparison with the Mercer US Equity Large Cap Equity Universe

Risk and Return Characteristics (calculated quarterly) versus Benchmark for the period from Jun 2007 to Mar 2008

As expected the passive manager will have a similar risk and return profile as the benchmark while the active manager will have a more aggressive profile (due to a higher tracking error).



	Return (% pa)	Std Deviation (% pa)	Alpha (% pa)	Tracking Error (% pa)	Beta
Passive	-5.4 (59)	13.3 (64)	0.0 (61)	0.1 (100)	1.0 (57)
Active	-8.3 (77)	17.2 (19)	-1.5 (71)	6.5 (23)	1.2 (20)
Benchmark	-5.4 (59)	13.3 (65)	0.0 (61)	0.0 (100)	1.0 (58)
5th Percentile	7.6	21.3	15.1	11.5	1.5
Upper Quartile	0.1	16.4	6.2	6.3	1.2
Median	-4.4	14.2	1.5	4.1	1.0
Lower Quartile	-7.8	12.7	-2.1	2.6	0.9
95th Percentile	-14.1	10.3	-8.6	1.3	0.7
Number of Funds	1091	1091	1091	1091	1091

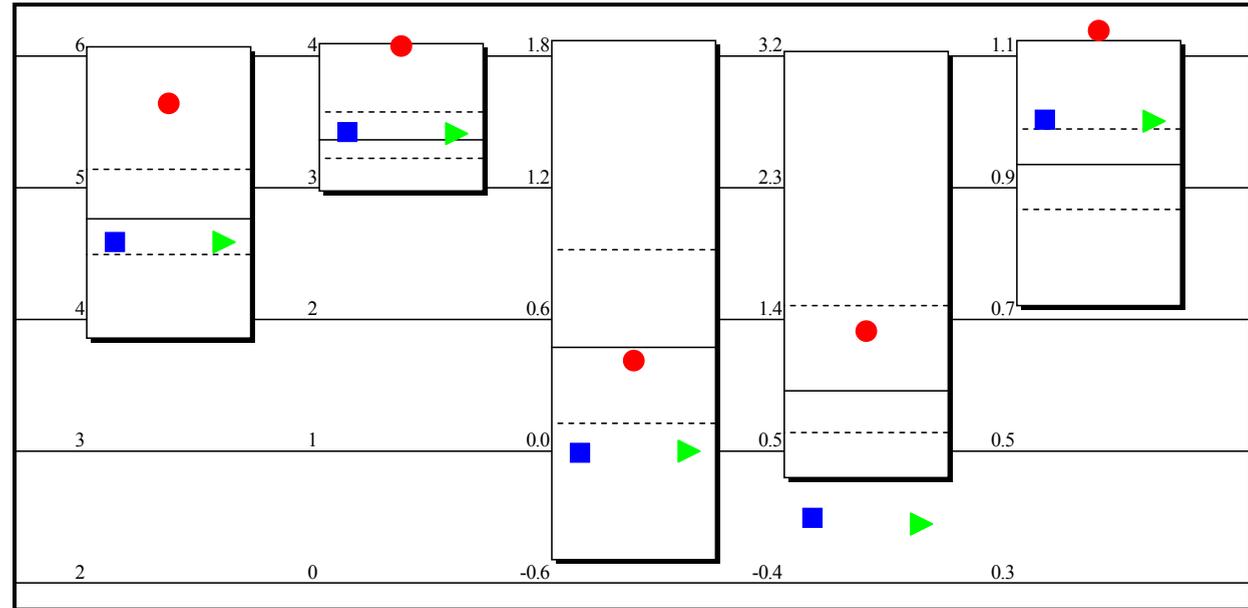
Fixed Income Active vs. Passive Management

Fixed Income Active vs. Passive

Comparison with the Mercer US Fixed Core Universe

Risk and Return Characteristics (calculated quarterly) versus Benchmark for the period from Jun 2003 to Mar 2008

As expected the passive manager will have a similar risk and return profile as the benchmark while the active manager will have a more aggressive profile (due to a higher tracking error).



	Return (% pa)	Std Deviation (% pa)	Alpha (% pa)	Tracking Error (% pa)	Beta
Passive	4.6 (68)	3.4 (39)	0.0 (82)	0.0 (100)	1.0 (21)
Active	5.6 (9)	4.1 (6)	0.4 (57)	1.3 (34)	1.1 (4)
Benchmark	4.6 (68)	3.4 (42)	0.0 (82)	0.0 (100)	1.0 (23)
5th Percentile	6.1	4.1	1.9	3.2	1.1
Upper Quartile	5.1	3.6	0.9	1.5	1.0
Median	4.8	3.4	0.5	0.9	0.9
Lower Quartile	4.5	3.2	0.1	0.6	0.9
95th Percentile	3.8	3.0	-0.5	0.3	0.7
Number of Funds	254	254	254	254	254

Active vs. Passive Management

Active Management (Advantages & Disadvantages)

Advantages

- **Expert analysis** - Seasoned managers make informed decisions based on experience, judgement, and prevailing market trends.
- **Possibility of higher-than-index returns.** Managers aim to beat the performance of the index, which means they strive for higher returns than the index delivers.
- **Defensive measures** - Managers can make changes if they believe the market may take a downturn. As an example, in the fixed income portfolio an active manager can easily adjust their duration whereas a passive manager must imitate the index.

Disadvantages

- **Higher fees and operating expenses.**
- **Mistakes may happen.** There is always the risk that managers may make unwise choices on behalf of investors, which could reduce returns.
- **Style issues may interfere with performance.** At any given time, a manager's style may be in or out of favor with the market, which could reduce returns.

Active vs. Passive Management

Passive Management (Advantages & Disadvantages)

Advantages

- Low operating expenses.
- Market performance - Investors can be assured that index funds will perform on par with the indexes.
- There is no action required by the fund. There is no decision-making required by the manager or the investor as the portfolio closely replicates the characteristics of the index.

Disadvantages

- Performance is dictated by the index. Investors must be satisfied with market returns because that is the best any index fund can and should produce.
- A lack of control - Managers cannot take action. Index fund managers are usually prohibited from using defensive measures, such as moving out of stocks, if the manager thinks stock prices are going to decline.
- Bonds purchased in an indexed portfolio are held through all yield curve changes. So, if the yield curve becomes inverted and 2-Year bonds offer a higher yield than 5-Year bonds, the indexed portfolio cannot take advantage of the more attractive risk/return relationship of the 2-Year bond without exceeding its stated target tracking error target versus the benchmark.

Active vs. Passive Management

Conclusions

There are advantages and disadvantages to using both active and passive strategies. It is important that the debate of active vs. passive management should not be taken out of the context of an investors' goals and objectives. A risk budget analysis should be performed to determine the appropriate utilization of active and passive strategies within their portfolio.

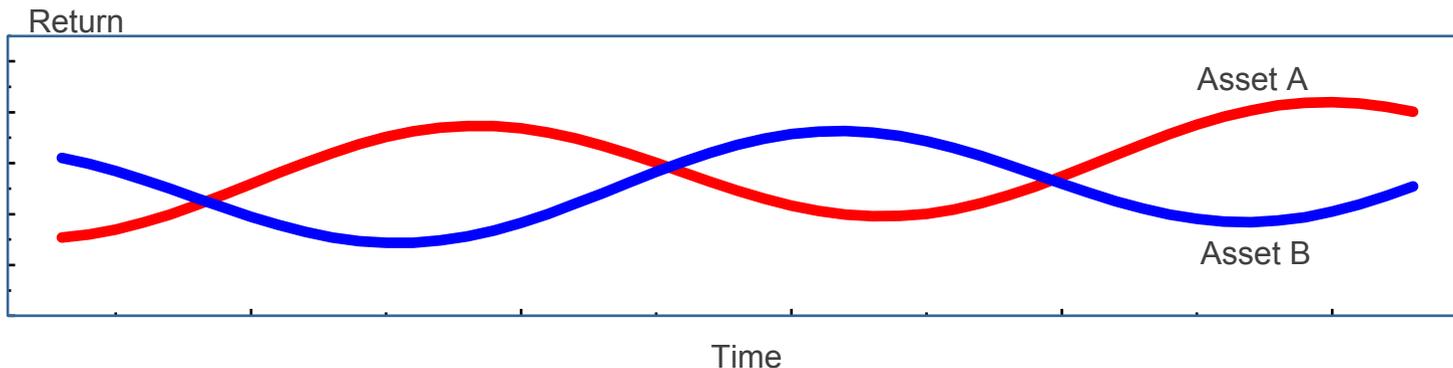
Diversification

General Investment Theory

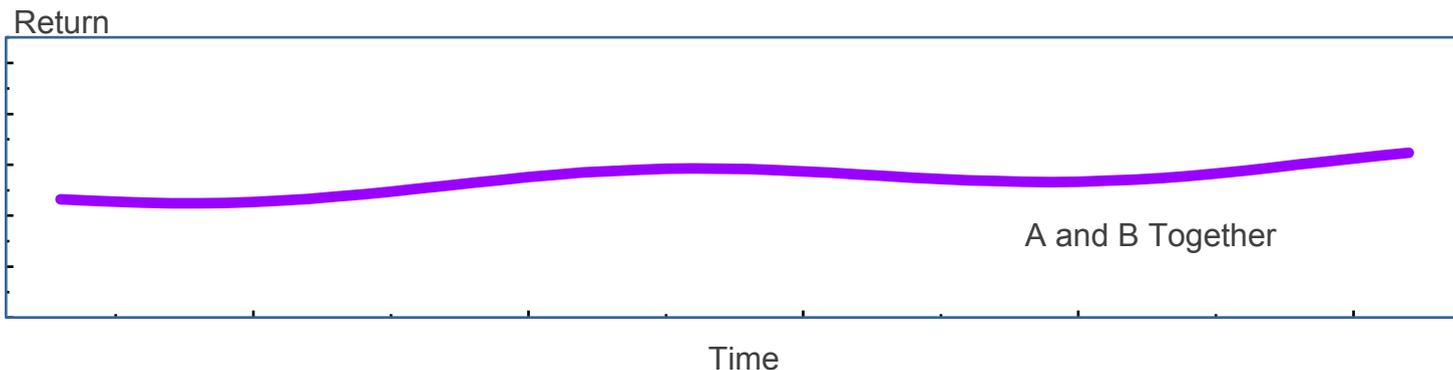
What is Diversification?

Diversification is the practice of holding a large number of assets or asset classes in a portfolio so as to reduce the portfolio's sensitivity to the return of an individual asset (or class of assets). Diversification can produce a more optimal risk/return relationship.

Assets A and B have low correlations



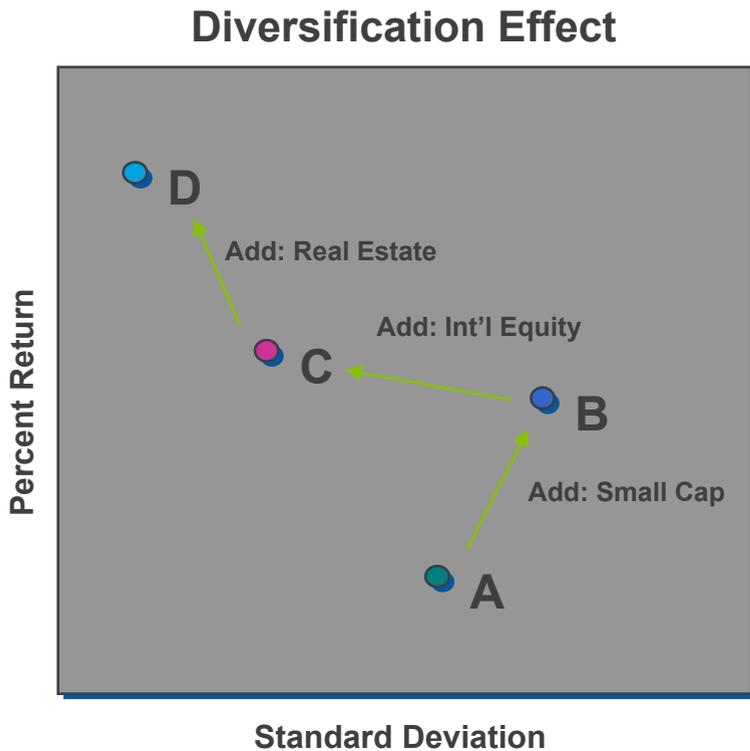
... so investing in both of them together smoothes results



General Investment Theory

Diversification and Risk

The following chart shows the diversification effect of different portfolio asset mixes. Although diversification is usually thought of in terms of risk reduction, it equivalently can be viewed in terms of return enhancement.

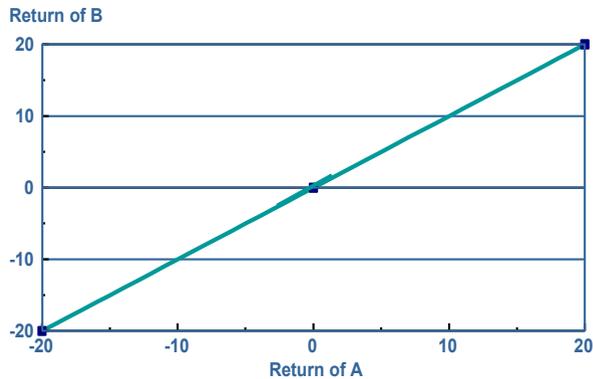


	Diversification			
	Least	—————→		Most
	A	B	C	D
Cash	10%	10%	10%	5%
Bonds	30%	30%	30%	25%
Large Cap Stock	60%	50%	40%	40%
Small Cap Stock		10%	10%	10%
International Stock			10%	10%
Real Estate				10%
	100%	100%	100%	100%

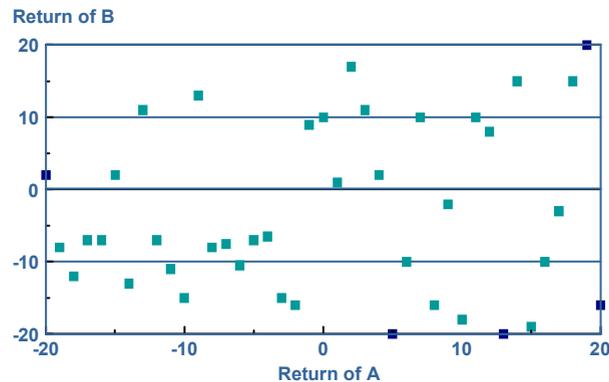
General Investment Theory

Asset Class Correlations

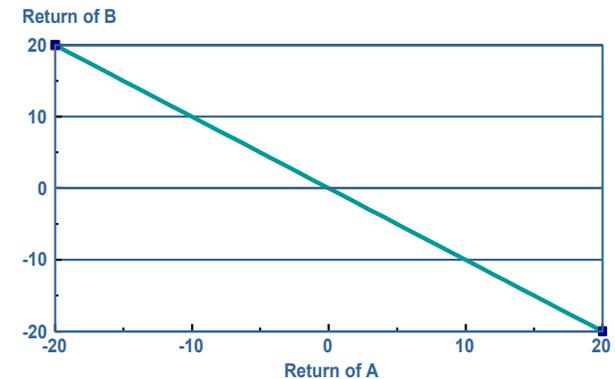
Perfect Correlation = +1.0



None or Random Correlation = 0.0



Perfectly Negative Correlation = -1.0



For statistics in between the extremes, the interpretation is one of degree. For example, a correlation of 0.90 would be strongly positive while a correlation of -0.10 would be closer to random.

Correlation - Statistical measure of the degree to which the movement of two asset classes are related. Correlations of 1 means that assets move together. A correlation of 0 suggests that there is no relationship between assets (Random relationship). And a less than 1.0 correlation indicates a less than perfectly positive relationship, hence the potential for diversification benefits.

General Investment Theory

Nominal Correlations with asset classes

		Domestic Equity-Large Cap	Domestic Equity-Small Cap	International Equity	International Eq-Emerging Mkts	Fixed Income-Aggregate	Fixed Income-Long G/C	Inflation-Indexed Bonds	Cash
		1	2	3	4	5	6	7	8
1	Domestic Equity-Large Cap	1.00							
2	Domestic Equity-Small Cap	0.85	1.00						
3	International Equity	0.75	0.60	1.00					
4	International Eq-Emerging Mkts	0.50	0.45	0.55	1.00				
5	Fixed Income-Aggregate	0.20	0.20	0.10	0.00	1.00			
6	Fixed Income-Long G/C	0.25	0.15	0.15	0.00	0.95	1.00		
7	Inflation-Indexed Bonds	0.15	0.15	0.10	0.10	0.60	0.60	1.00	
8	Cash	0.00	0.00	0.00	0.00	0.10	0.10	0.30	1.00

MERCER



MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN



September 25, 2008

Investment Objectives Investment Committee Meeting Ohio Bureau of Workers' Compensation

Guy M. Cooper

Kristin Finney-Cooke

Current Investment Objective of the Bureau

- *The primary investment objective is to manage the reserve to preserve the ability of Funds to pay all disability benefits and expense obligations when due. Meeting this objective necessitates prudent risk-taking with the Funds' investments. An additional objective is to earn sufficient returns to grow the surplus over time and to keep premium payments as reasonable and predictable as possible for the benefit of the injured workers and employers of Ohio.*



Statement of Investment Policy and Guidelines

Limitations of the Current Investment Objective

- The current statement of the Bureau's investment objective expresses worthy and suitable objectives, but:
 - How would we know if we met this objective?
 - How would it lead us to an actual investment strategy?
 - It suffers from not referring to any numerical goals or time frame.

Candidates for the Bureau's new Investment Objective

- *The primary investment objective is to manage the assets so as to earn a rate of return at least equal to the Bureau's discount rate.*
- *The primary investment objective is to manage the assets so as to earn a rate of return at least equal to the Bureau's discount rate plus some margin (2 percent, for example).*
- *The primary investment objective is to manage the assets so as to earn a rate of return at least equal to the rate of inflation.*
- *The primary investment objective is to manage the assets so as to earn a rate of return at least equal to the rate of inflation plus 2 percent.*

Comments – Discount Rate as an Investment Objective

- **The discount rate itself is a minimum investment objective.**
- **If the assets earned just the discount rate, the Bureau would maintain its current financial strength, provided the future unfolded without nasty surprises.**
 - **But the assets would not grow sufficiently to improve the current financial strength.**
 - **And, while premiums would likely stay stable, there would be no room for premium relief.**
- **The discount rate plus some margin could be a useful investment objective.**
- **The best argument for eliminating the discount rate as the basis for investment strategy is to avoid the temptation to raise it in order simultaneously to:**
 - **improve the surplus**
 - **provide a justification for lower premiums**
 - **and a rationale for a more aggressive investment posture**

Comments – Inflation Rate as an Investment Objective

- Investing to better the inflation rate is suitable in some contexts. Usually this is when you are starting with excess assets and the purpose of the fund is to make payments whose increase is related to the inflation rate.
- The investment objective of many pension funds is to earn a ‘real rate of return’. (Real Rate of Return = Nominal Rate of Return – Inflation Rate.)
- The inflation rate by itself or with some margin added to it is a worthy candidate for a investment objective, but we think we have better ones.

Other Candidates for the Bureau's new Investment Objective

- *The primary investment objective is to make money.*
- *The primary investment objective is earn a rate of return of x%.*
- *The primary investment objective is to manage the assets so as to reduce the probability of the Bureau's net asset declining below \$5,000,000 to 1%.*
- *The primary investment objective is to manage the assets so as to increase the probability of the Bureau's net asset growing to \$5,000,000 to 90%.*

ALM as an Investment Objective

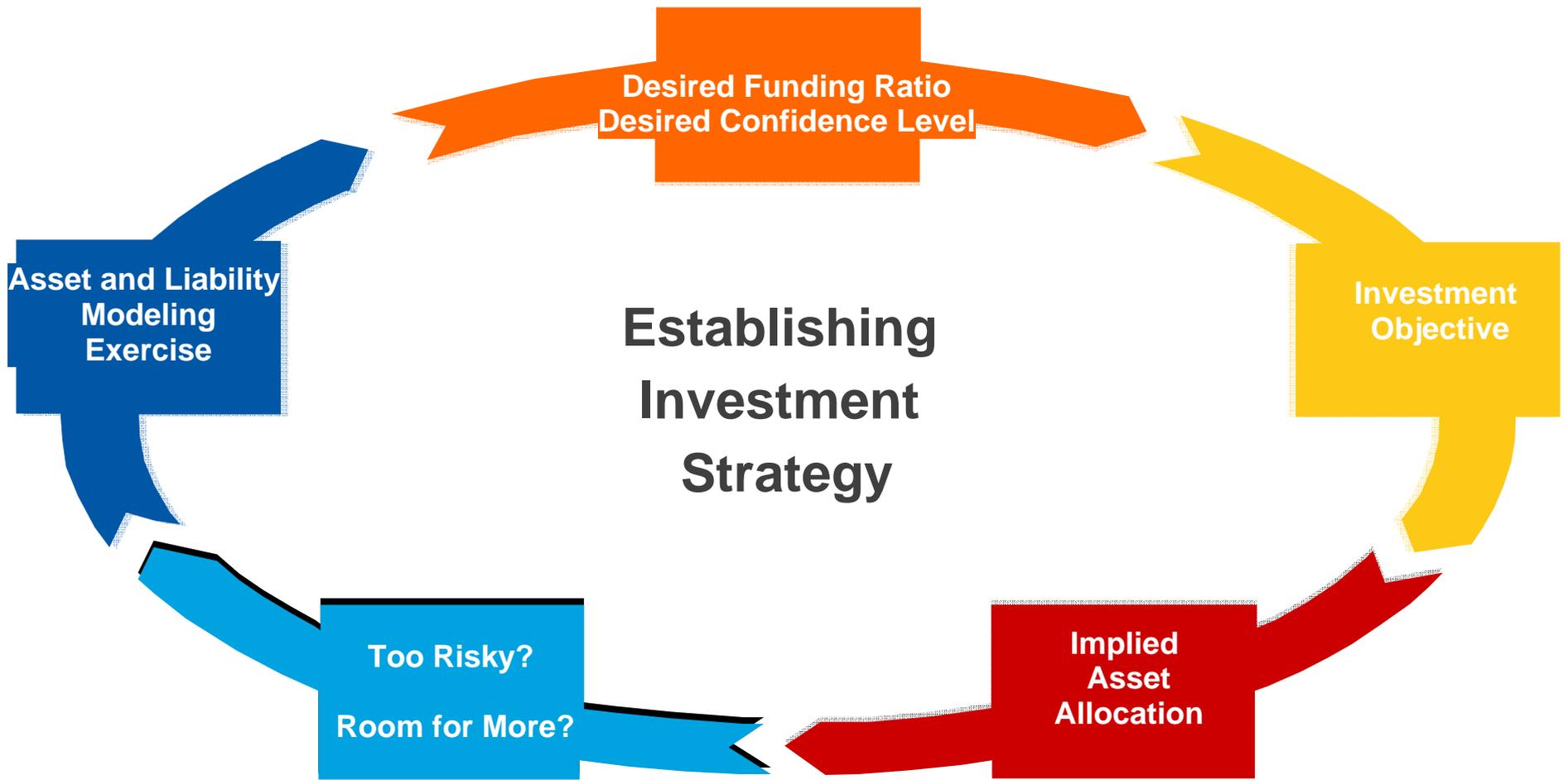
- *The primary investment objective is create a portfolio of assets that tracks the changes in the present value of the Bureau's liabilities.*
- This Asset and Liability Matching has value as it incorporates an explicit consideration of the Bureau's liabilities and the changes that they undergo.
- As an explicit investment objective, this over-emphasizes the maintenance of the current asset/liability balance situation and de-emphasizes the need to improve the current asset/liability balance.

Funded Status as an Investment Objective

- *The primary investment objective is to manage the assets so that the funding ratio of the State Insurance Fund reaches and maintains a level of 1.30 (example) in 5 (example) years at a 95% probability (example).*
- This has all the elements of a proper investment objective:
 - An explicit recognition of the importance of the Bureau's liabilities and the changes that these undergo.
 - As explicit goal for the financial strength of the Bureau.
 - An explicit recognition of the probabilistic nature of the goal, which is another way of saying that the Bureau has made a decision about the risks it is willing to take.
 - The outcome can be measured.

Asset Allocation and Liability Studies

Investment Strategy - Our Process



Deloitte's Observations

- *The primary investment objective is to manage the assets so that the funding ratio of the State Insurance Fund reaches and maintains a level of 1.10 – 1.25 at a 95% probability (no time frame stated).*
- **Funding Ratio = Funded Assets divided by Funded Liabilities**
- **Funded Assets = Cash, investments, and current receivables less deposits and current payables**
- **Funded Liabilities = Reserves for funded unpaid claims and funded claim expenses (HPP and PA/PEC), excluding any risk margin, discounted at a risk free discount rate.**

Key Questions and Observations

- What is the discount rate for the computation of the funding ratio ?
- The funding ratio needs to be easily computable during the year and this may require some simplification of its components.
- We would still want to measure investment performance versus traditional benchmarks.
- Capture the future when it arrives? The funding ratio would cover the relationship between existing assets and 'funded unpaid claims'. This would presumably leave out any forecasting of the future.

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GUY CARPENTER OLIVER WYMAN

12-month Investment Committee Calendar

Date	Month	Notes
3/19/09	March	
	April	
4/29/09	April	
	May	
5/28/09	May	1. Investment Consultant Performance Report 1Q09
	June	
6/18/09	June	
	July	
7/30/09	July	
	August	
8/27/09	August	1. Investment Consultant Performance Report 2Q09

INVESTMENT DIVISION

TO: Marsha Ryan, Administrator
BWC Investment Committee
BWC Board of Directors

FROM: Bruce Dunn, CFA, Chief Investment Officer

DATE: September 16, 2008

SUBJECT: CIO Report August, 2008

Fiscal Year 2009 Goals

The Investment Division has five major goals for the new fiscal year 2009. These goals and brief comments on action plans for each goal follows:

1. Provide support and execute new BWC Investment Policy resulting from Asset-Liability study
2. Achieve full staffing of BWC Investment Division with continued training of developing staff
3. Continued establishment and execution of investment controls and compliance procedures
4. Complete implementation and utilization of resources provided by new investment accounting and performance system
5. Sell remaining miscellaneous investment assets

Strategic Goal One – PORTFOLIO TRANSITION

BWC investment consultant Mercer will be formulating an asset-liability study and related investment strategy recommendations to be presented to the BWC Investment Committee. The BWC Investment Division will provide whatever support is needed by Mercer in terms of background and information necessary for Mercer to complete its asset-liability study of the Bureau and its investment strategy recommendations. Once a new investment strategy is approved by the BWC Investment Committee and Board of Directors, the Investment Division will assist Mercer and the Investment Committee in developing a new or revised Investment Policy Statement reflecting the newly approved investment strategy.

The Investment Division in consultation with Mercer will employ a thorough and complete RFP process for each new outside investment manager search required to execute the new investment strategy. Given the assumption that multiple RFP processes will be necessary to execute the new investment strategy, a prioritization of the timing of RFP issuances will occur with the approval of the Investment Committee. Each RFP process is expected to result in investment manager recommendations to be presented for approval by the respective RFP evaluation committee to the Investment Committee and Board of Directors.

After each new investment manager for each identified investment asset class mandate is selected and approved, the Investment Division will coordinate the transfer of appropriate invested assets from the legacy investment manager to the new investment manager. It is expected that the Bureau will engage with its approved transition managers (Barclays, Russell, State Street) for the execution of each of its asset manager transfer strategies. The Investment Division will oversee the timing and execution of each targeted transition with the goal of achieving such asset transition with efficiency and at a low economic cost.

Strategic Goal Two – INVESTMENT STAFF

The Investment Division began fiscal year 2009 commencing July 1, 2008 with a staff of ten individuals consisting of the CIO, Director of Investments, Investment Administration Manager, one Senior Investment Manager, one Investment Manager, three Assistant Investment Managers and two administrative assistants. The one current remaining vacancy within the Investment Division is for a second Senior Investment Manager. It is the intention to fill this important position before the end of calendar 2008. First stage interviews with selected candidates were recently completed and second round interviews have been scheduled with finalist candidates.

There will be a proper emphasis on the training of staff investment professionals to become more effective managers. Continuous investment education and an appropriate emphasis on CFA (Chartered Financial Analyst) related programs and study will be encouraged and supported. The number of investment professionals on staff who have achieved the CFA accreditation now totals six as Assistant Investment Manager Roy Charles achieved such status upon his passing of the level 3 CFA exam. The cross-training of many duties assigned to respective staff members will occur to broaden skill sets and ensure necessary backup support. Each investment professional on staff is expected to serve the needs of the Bureau and its customers with the highest of integrity, ethics and competence.

Strategic Goal Three – INTERNAL INVESTMENT PROCEDURES

The Investment Division will continue to establish and improve upon internal investment procedures and controls. All such procedures will be written and mapped through the use of the Webmethods schematic process. The BWC Internal Audit Division will be engaged as appropriate in guiding and assisting the Investment Division in the creation and refinement of such internal control procedures.

The Investment Division has focused on the management oversight of the passive style investment managers, performance reporting and other investment activities to support the BWC Investment Policy. Internal procedures will be developed for the monitoring of active style investment managers in advance of the anticipated selection and engagement of such managers as an outcome of any new investment strategy approved. Among new policies and procedures being addressed are brokerage activity, proxy actions, corporate actions, legal class actions and asset allocation rebalancing.

Strategic Goal Four – INVESTMENT ACCOUNTING SYSTEM RESOURCES UTILIZATION

A new investment accounting and reporting system offered by BNY Mellon was selected by the Bureau in 2007 via the RFP process. The Investment Division is focusing on the goal of utilizing this improved investment accounting system for the daily monitoring of investment managers in satisfaction of compliance with the BWC Investment Policy. The investment staff is now well into the process of learning how to utilize many of the compliance and performance measurement tools and resources offered by this accounting system through both formal training sessions and self education.

Strategic Goal Five – MISCELLANEOUS INVESTMENT ASSET SALES

It is a strategy and goal of the Investment Division to sell or liquidate during fiscal year 2009 the remaining miscellaneous investment assets of value owned by the Bureau. Miscellaneous assets are defined to include private equity, coins, stock distributions received from formerly owned private equity partnerships, and illiquid securities inherited and retained from previously terminated outside investment managers. The aggregate carrying value of these miscellaneous assets targeted for disposal was approximately \$12 million on August 31, 2008.

At the end of fiscal year 2008 ending June 30, 2008, a total of 66 private equity partnerships had been sold by BWC since June, 2007 for total proceeds received of \$399.0 million. All such proceeds received from private equity sales were reinvested in the passive indexed Large Cap S&P 500 Equity portfolio currently managed by Northern Trust. There are two remaining private equity fund investments owned by the Bureau, one of which is expected to be sold to an outside buyer and the second of which is anticipated to be liquidated from portfolio asset sales and resulting cash distributions during fiscal year 2009.

A significant distribution of cash totaling approximately \$12.1 million was received by the Bureau in July, 2008 from the coin fund liquidation firm contracted by the State of Ohio to oversee the liquidation of remaining coin fund related assets associated with Tom Noe. As a result of this significant coin fund distribution, the Bureau has now received a total of approximately \$53.5 million, net of coin-related expenses paid directly by the Bureau. Total physical coin-related assets remaining to be liquidated at this time are minimal and will be auctioned for sale over succeeding months.

Compliance

The investment portfolios in the aggregate were in compliance with the BWC Investment Policy at the end of August, 2008. BWC Investment Policy Statement compliance rules have been built into the Mellon compliance monitoring system sufficiently at this time such that the Mellon system is now very useful in monitoring portfolio compliance.

Fannie Mae and Freddie Mac Investment Holdings

The U.S. Treasury Department announced on September 7, 2008 that the federal government was assuming control over the troubled government-sponsored agencies Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corp. (Freddie Mac). The Treasury Department put these two shareholder-owned quasi-government enterprises into conservatorship and suspended all future dividend payments on their preferred stock and common stock outstanding. The large amount of debt and mortgage-backed securities of these two mortgage agencies will now receive more explicit backing of the federal government. This defining announcement caused Fannie Mae and Freddie Mac debt issues to improve in price trading at lower yield spreads to U.S. Treasury yields with the near-term uncertainty as to the federal government support of the debt outstanding of these two agencies being removed for investors. However, the values of the preferred and common stock of Fannie Mae and Freddie Mac predictably declined further after this announcement, continuing the negative price trend of recent months, because the federal government was not providing any support to existing equity holders and its actions significantly dilute their ownership interests with federal government ownership of newly created senior preferred stock.

Standard & Poor's announced on September 9 that it was removing both Fannie Mae and Freddie Mac from the S&P 500 index effective close of trading September 10 as their respective common shares fell below \$1 per share in value. As a result of this decision, Northern Trust as BWC investment manager for the passive managed S&P 500 index fund separate accounts holding common stock of these two entities was required to sell all shares held in each of the three BWC trust accounts owning these securities.

The following table provides unaudited results of the sale last week of all BWC shares owned of the common stock of Fannie Mae and Freddie Mac from the Northern Trust separate account managed S&P 500 index funds.

<u>Account</u> (\$ millions)	<u>Cost</u>	<u>Proceeds</u>	<u>Realized Loss</u>
State Insurance Fund	\$23.96	\$0.34	\$(23.62)
Disabled Workers Fund	1.78	0.02	(1.76)
Coal Workers Fund	0.40	0.01	(0.39)
TOTALS	\$26.14	\$0.37	\$(25.77)

Since the combined market value of the common stock of Fannie Mae and Freddie Mac owned by BWC was \$2.93 million on 8/31/08, the further erosion of market value to BWC of these two holdings at time of sale was \$2.56 million which represents the additional negative impact to the total BWC net asset level position since 8/31/08.

Fannie Mae and Freddie Mac unsecured guaranteed debt represented a market value of 5.0% of the Lehman U.S. Long Government/Credit Index on 8/31/08. This index serves as the Long Duration Fixed Income benchmark index for the Bureau.

The following table provides the aggregate cost, market value and net realized gain of all debt issues BWC owns of Fannie Mae and Freddie Mac as of 8/31/08 and the close of last week (9/12/08). Such figures are

unaudited. These issues are owned in the Long Duration Fixed Income passive-indexed separate account portfolios managed by State Street for each of the three largest trust funds (SIF, DWRF, Coal) and by Barclays for SIF only.

(\$ millions)	<u>Fannie</u>	<u>Freddie</u>	<u>Combined</u>
<u>August 31, 2008</u>			
Cost	\$389.7	\$215.3	\$605.0
Market Value	401.4	217.3	618.7
Unrealized Gain	11.7	2.0	13.7
<u>September 12, 2008</u>			
Cost	\$379.8	\$215.3	\$595.1
Market Value	400.7	222.8	623.5
Unrealized Gain	20.9	7.5	28.4

The market value of fixed income debt owned by BWC in Fannie Mae and Freddie Mac issued bonds represented approximately 2.24% and 1.21%, respectively (3.45% combined), of total net invested assets of the Bureau as of August 31, 2008.

Lehman Brothers Holdings Investment Exposure

Lehman Brothers Holdings, Inc. (“Lehman”), until very recently the nation’s fourth largest investment banking firm, was forced to file for bankruptcy protection on September 15, 2008 after its inability to raise significant additional capital to weather its troubled real estate and illiquid mortgage portfolios. Lehman announced last week further portfolio writedowns of \$7.8 billion that escalated a significant selloff of its debt and equity issues outstanding.

Debt issues of Lehman are represented in the Lehman Long U.S. Government/Credit benchmark index of BWC and its common stock is in the S&P 500 Index as the Large Cap Equity benchmark index of BWC. As a result, four separate debt issues of Lehman are owned in the BWC separate account passive-indexed fixed income portfolios managed by State Street and Barclays. Lehman common stock is owned by BWC in the separate account S&P 500 passive-indexed portfolio managed by Northern Trust. Each of these fixed income and equity issues of Lehman are owned in each of the SIF, DWRF and Coal portfolios.

The following table provides a summary of the aggregate cost, market value and unrealized loss of the three classes of Lehman securities owned by BWC as of 8/31/08. Lehman bonds at market value represented 0.4% of the total Lehman Long U.S. Government/Credit benchmark index on 8/31/08.

(\$ millions)	Market	Unrealized
---------------	---------------	-------------------

<u>August 31, 2008</u>	<u>Cost</u>	<u>Value</u>	<u>Loss</u>
Senior Debt	\$10.1	\$8.8	\$(1.3)
Subordinated Debt	37.3	32.0	(5.3)
Common Stock	10.5	3.1	(7.4)
	<hr/>	<hr/>	<hr/>
Total	\$57.9	\$43.9	\$(14.0)

With the bankruptcy filing of September 15, the value of all three of these classes of Lehman securities held by BWC declined significantly. As of this writing, there is little remaining value in the defaulted subordinated debt and common stock of Lehman. The combined market value of these two classes of Lehman securities owned by BWC is currently quoted at between \$1-2 million. The market value of the Lehman defaulted senior debt owned by BWC is currently quoted at between \$3-4 million.

Since each of these Lehman holdings will be removed from their respective benchmark indices by month-end, the passive index portfolio managers will be required to sell these issues later this month at a significant combined loss currently estimated to exceed \$50 million for BWC.

The BWC Investment Committee and Board of Directors will receive a further update from the BWC Chief Investment Officer regarding the status and disposition of these Lehman owned securities at the September, 2008 Investment Committee meeting.



May 28, 2008

Investment Topics

Ohio Bureau of Workers' Compensation (BWC)

Kristin Finney-Cooke
Guy M. Cooper
Kweku Obed

Agenda

- 1. Fixed Income**
- 2. Asset and Liability Matching – Discussion of basic concepts**
- 3. U.S. Equity**
 - Active Management Styles
- 4.. Non U.S. Equity**
 - International and Emerging Markets
- 5. Active vs. Passive Management**
- 6. Diversification – Correlation**

Fixed Income

Important Characteristics of a Bond

- Bonds provide income while stocks provide capital gains.
- The income offered by bonds is the 'bird in the hand' while the capital gains offered by stocks is the 'two in the bush'.
- When you invest in bonds, you expect that most of what you will earn is the promised interest payment. Stocks do pay dividends but they are not 'guaranteed', and dividends are not generally an important part of what you earn when you invest in stocks.
- There are risks to the promised interest income payment of bonds. These include:
 - Credit risk – the risk that interest payments will not be made
 - Inflation risk – the risk that, although interest is paid, it is worth less because prices have gone up
 - Re-investment rate risk – the risk that when interest is received there are not good alternatives for re-investing the interest.
- Bond prices also fluctuate and this presents significant risks.

Terminology

- A bond is a loan from a lender to a borrower.
 - The lender is usually called the investor.
 - The borrower may be called the **issuer**.
- As with any loan, the borrower and lender must agree on:
 - **Maturity**: the length of time of the loan before it must be repaid.
 - **Coupon**: the amount of interest the borrower will pay the lender. Originally bond holders physically presented coupons on the semi-annual payment date to receive the interest due to them.
 - **Interest period**: how often the borrower pays interest to the lender. By convention, this is every six months for the most common bonds.
- **Yield**: the yield of a bond is a calculation of the percentage rate of return of the bond. There are actually many ways to compute a bond's yield depending on one's purpose. Common terms are:
 - **Current yield, book yield, yield-to-maturity and yield-to-worst**

Common Types of Bonds (as classified by type of borrower)

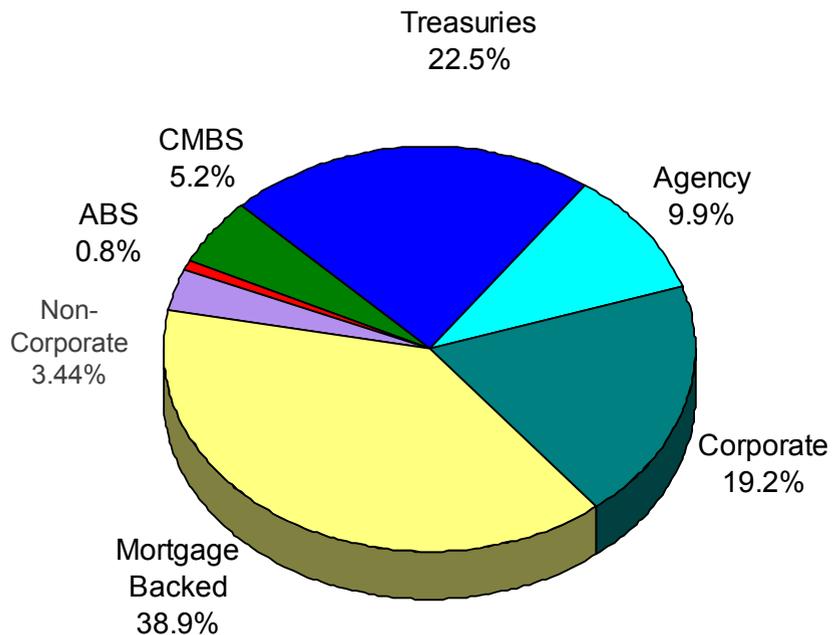
- U.S. Government Bonds
- Corporate Bonds
 - Investment Grade (Typical Credit Quality grades: AAA, AA, A, Baa)
 - Non-Investment Grade (High Yield, Junk, ratings below Baa)
- Mortgages and Mortgage-Backed Securities
- Other Collateralized Instruments
- TIPS
- Yankee Bonds
 - Foreign entities issue bonds payable in US dollars
- Non-Dollar Payees
 - Foreign Governments (Developed and Emerging Countries)
 - Foreign Corporations
- Synthetic Bonds (Futures and Swaps)

Fixed Income

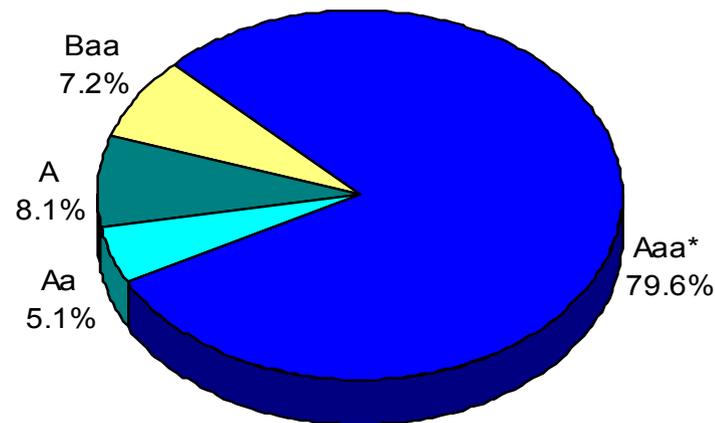
US Investment Grade Fixed Income Market

Lehman Brothers Aggregate Bond Index As of March 31, 2008

**Sector Breakdown
% Market Value**



**Quality Breakdown
% Market Value**



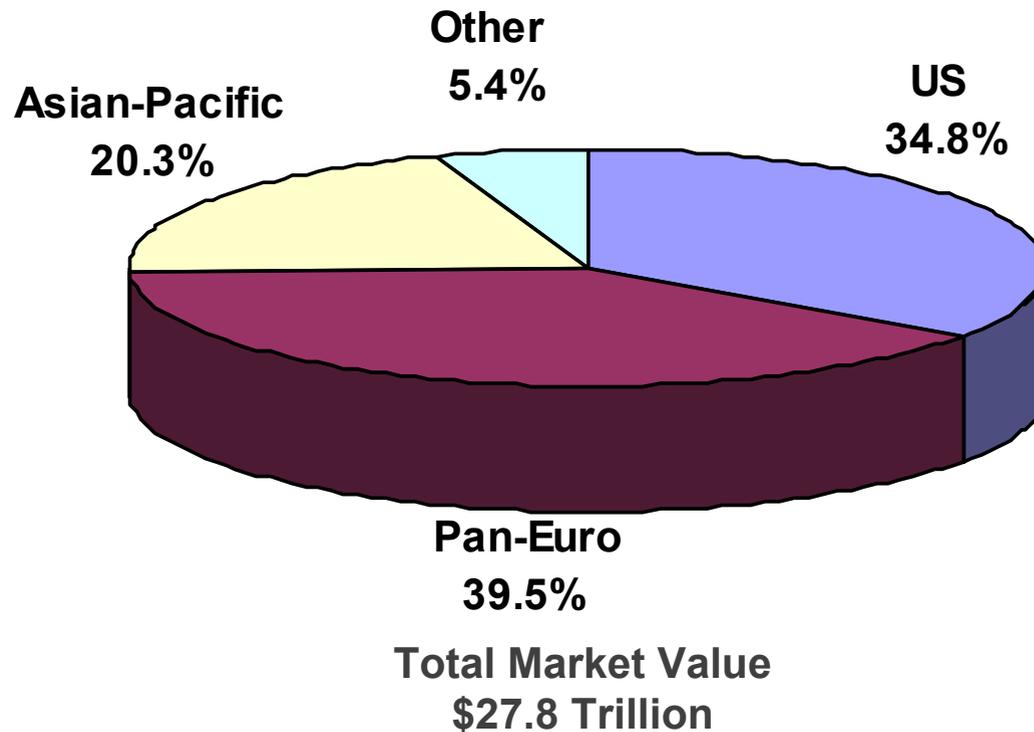
* Aaa includes Treasuries (23.29%), Agency (52.64%) and Credit (3.54%).

Source: Lehman Brothers

Fixed Income

World Bond Market by Sector

As of March 31, 2008



*Other includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and USD investment grade 144A securities.

Source: Lehman Brothers

Common Types of Bonds (as classified by length of borrowing)

- Very short (maturity less than 90 days)
- Short (maturity between 90 days and 1 year)
- Intermediate (maturity between 1 and 10 years)
- Long (maturity between 10 and 30 years)

Any length of bond may be associated with any borrower type.

The Value of a Bond – Example

- Suppose the following offer: The U.S. Government offers to pay you \$500 every year for 5 years and \$10,000 at the end of the 5 years.
- How much would you pay for this?
 - What if the offer was for \$500 every year for the next 15 years with \$10,000 at the end of the 15 years?
 - What if the offer was \$600 every year for 5 years?
 - What if the offer came from a person off the street that you didn't know?

The Value of a Bond – Math

- The price of a bond is determined by a complex mathematical formula.
- Each type of bond may have a different formula, and usually Board members do not need to know the precise formula – computers and spreadsheets suffice for that.
- The formula for determining the price of a bond depends on five quantities:
 1. The coupon paid by the bond
 2. How often the coupon is paid (usually semi-annually)
 3. How long the coupon is going to be paid (i.e. the maturity)
 4. The yield-to-maturity of the bond
 5. Who the issuer is...
- Of these the most important is the yield-to-maturity. It is the only one of the quantities that changes from day to day and after you buy the bond.

Fundamental Theorem of Bond Valuation – Example

- Suppose you buy a 5 year \$50,000 Certificate of Deposit from Bank ABC that is paying 5% interest.
- The next week you notice that Bank ABC is offering a 6% interest rate on 5 year Certificates of Deposit?
- If you had to or wanted to sell it, what is your 5% Certificate of Deposit worth?
- What would your 5% Certificate of Deposit be worth, do you think, if Bank ABC was offering only 4% on new Certificates of Deposit?

Fundamental Theorem of Bond Valuation – Math

- The price of a bond moves in the opposite direction to the bond's yield-to-maturity.
- If the bond's yield-to-maturity goes up, the bond's price goes down.
- If the bond's yield-to-maturity goes down, the bond's price goes up.
- A bond's yield-to-maturity is just the interest rate prevailing in the market that investors are willing to accept for that particular type of bond. As these rates change, which they do every minute, the price of the bond changes.
- Thus the value of a portfolio of bonds fluctuates as interest rates fluctuate, rising when interest rates go down, and falling when interest rates go up.

Duration – Common Sense Definitions

- Duration, like maturity, is a measure of the length of time of a bond. Duration is stated in years. It is almost always less than maturity.
- Duration measures the sensitivity of a bond to interest rate changes. Duration determines how much a bond will change in price when interest rates change.
- Facts about Duration:
 - The higher a bond's duration, the greater its sensitivity to a change in interest rates.
 - The higher a bond's duration, the more the bond will fall in price if interest rates go up.
 - The higher a bond's duration the more the price changes as interest rate changes – a form of risk.
 - The lower the duration, the less impact a change in interest rates will have on the value of your bonds.
 - Low (or short) duration can mean less than 3. High (or long) duration means 8-12.

Duration – Math

- Duration provides a useful formula that relates what happens to the price of a bond when interest rates change:
 - Percentage change in bond price = Percentage Point change in Yield times the Duration of the bond.
- Example: A bond with a duration of 5 years will decrease in value by 5% if interest rates rise 1% and increase in value by 5% if interest rates fall 1%.
- Mathematically, duration is the weighted average maturity of a bond's cash flows. But it is more intuitive to think of duration as the link between changes in interest rates and changes in bond prices.
- Duration is stated in years. It is always less than maturity, except for zero coupon bonds, where maturity and duration are the same.

Value of a \$100 Bond after Interest Rate Changes

Interest Rates Decline by 1%:

Asset Duration	5 yrs	10 yrs
Assets	\$105	\$110

Interest Rates Increase by 1%:

Asset Duration	5 yrs	10 yrs
Assets	\$95	\$90

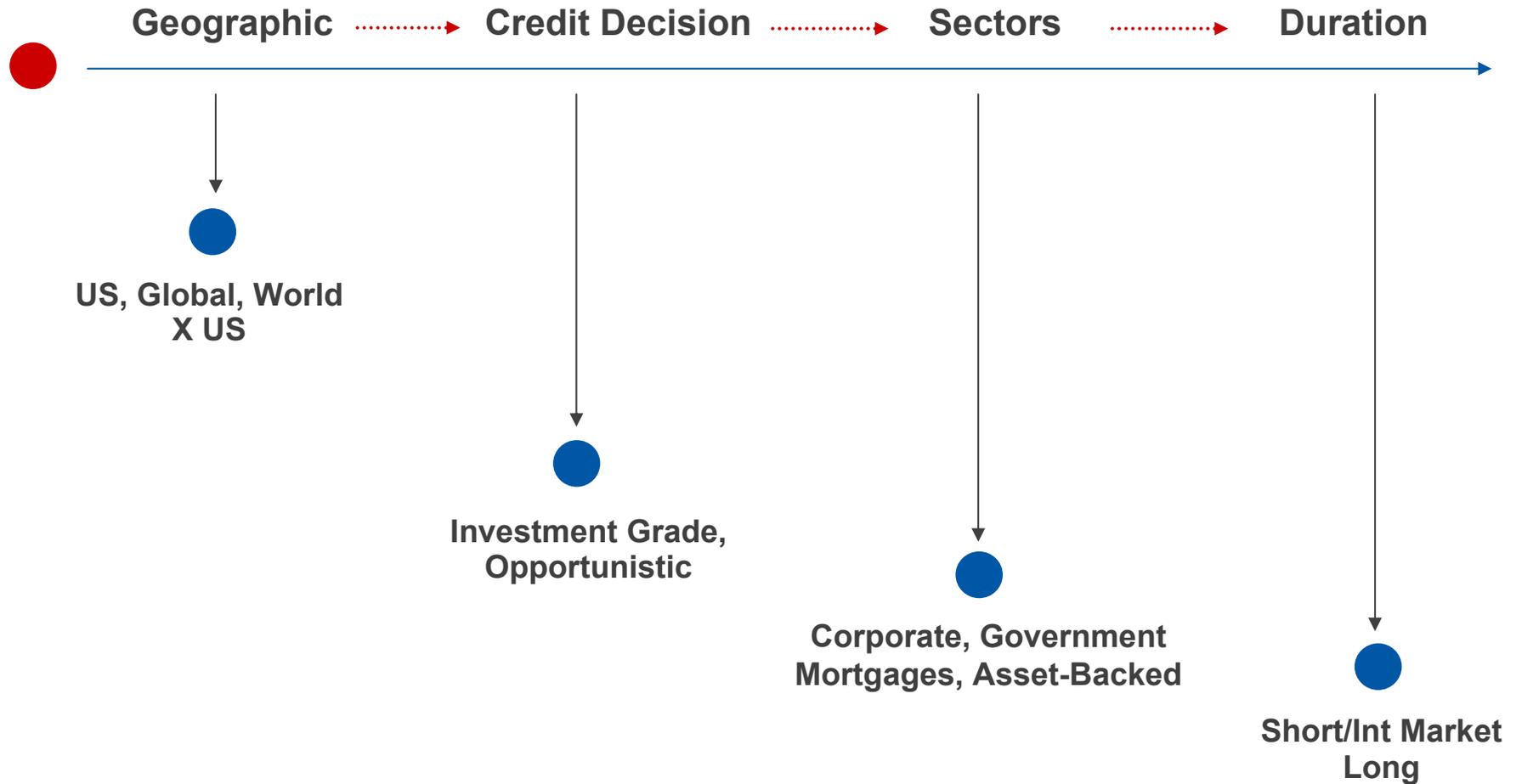
Treasury Inflation Protected Securities (TIPS)

- TIPS can be viewed as a special type of Treasury note or bond that offers protection from inflation.
- Like other Treasuries, these inflation-indexed securities pay interest every six months and pay the principal when the security matures. *The difference is that the coupon payments and underlying principal are automatically increased to compensate for inflation as measured by the consumer price index (CPI).*
- TIPS maintain an investor's real rate of return by guaranteeing their purchasing power.
- TIPS are seen as 'double-safe' investments as they are guaranteed by the US Treasury *and* because they guarantee purchasing power;
- Due to their relative safety, TIPS offer a relatively lower return for investors (in normal market conditions).

Convexity

- Convexity is a term that will be used frequently by investment managers and bond practitioners .
- Convexity refers to a mathematical property of the equation that relates a bond's price to changes interest rates.
- Gives a higher degree of accuracy in the pricing of bonds.
- In the normal course of your duties as a trustee, it is usually not necessary to know what the term convexity means.

Bond Portfolio Management Choices



The Important role of Credit Analysis

- Since a bond derives its value from the promise of the issuer to pay periodic interest, it is critical to determine whether the issuer is likely to actually make the promised interest and principal payments for the life of the bond.
- Only the United States Government is deemed default free and immune from ever failing to pay the interest and principal that is due to investors in its bonds.
- All other issuers are rated by independent rating agencies on various scales indicating their creditworthiness. A typical scale is AAA, AA, A, and BBB, with BB, B, C, and NR reserved for lower credit rated issuers.
- Investment management firms who invest in bonds also typically have significantly sized staffs devoted to analyzing the creditworthiness of the bond issuers they own or might own.
- Some bonds are backed by collateral – assets specifically pledged to provide security for the promised payments. All mortgages are bonds backed by the collateral of the property the mortgage covers.

Common Portfolio Strategies

Core and Core Plus Strategies

Core Strategy

- A Core Bond strategy will seek both current income and the growth of capital through exposure to US government and corporate investment-grade obligations.

Core Plus Strategy

- A Core Plus strategy permits managers to add instruments with greater risk and greater potential return (high-yield, global and emerging market debt, for example) to core portfolios of investment-grade bonds.

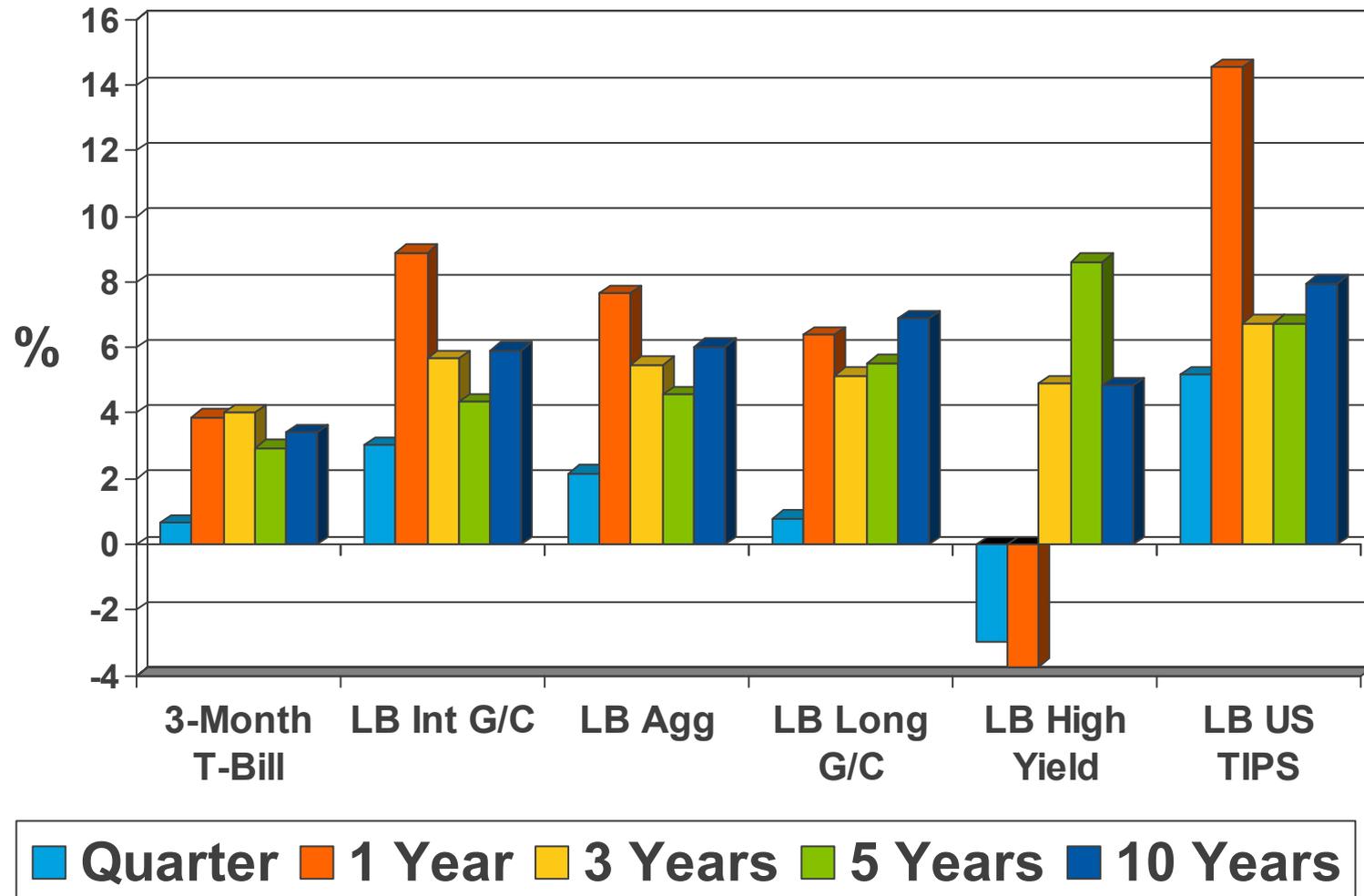
Passive Fixed Income Strategies

- A Passive Fixed Income strategy seeks to replicate the characteristics and performance of one or more generally accepted indices of the overall bond market.

Fixed Income

Annualized Returns by Maturity and Sector

As of March 31, 2008*

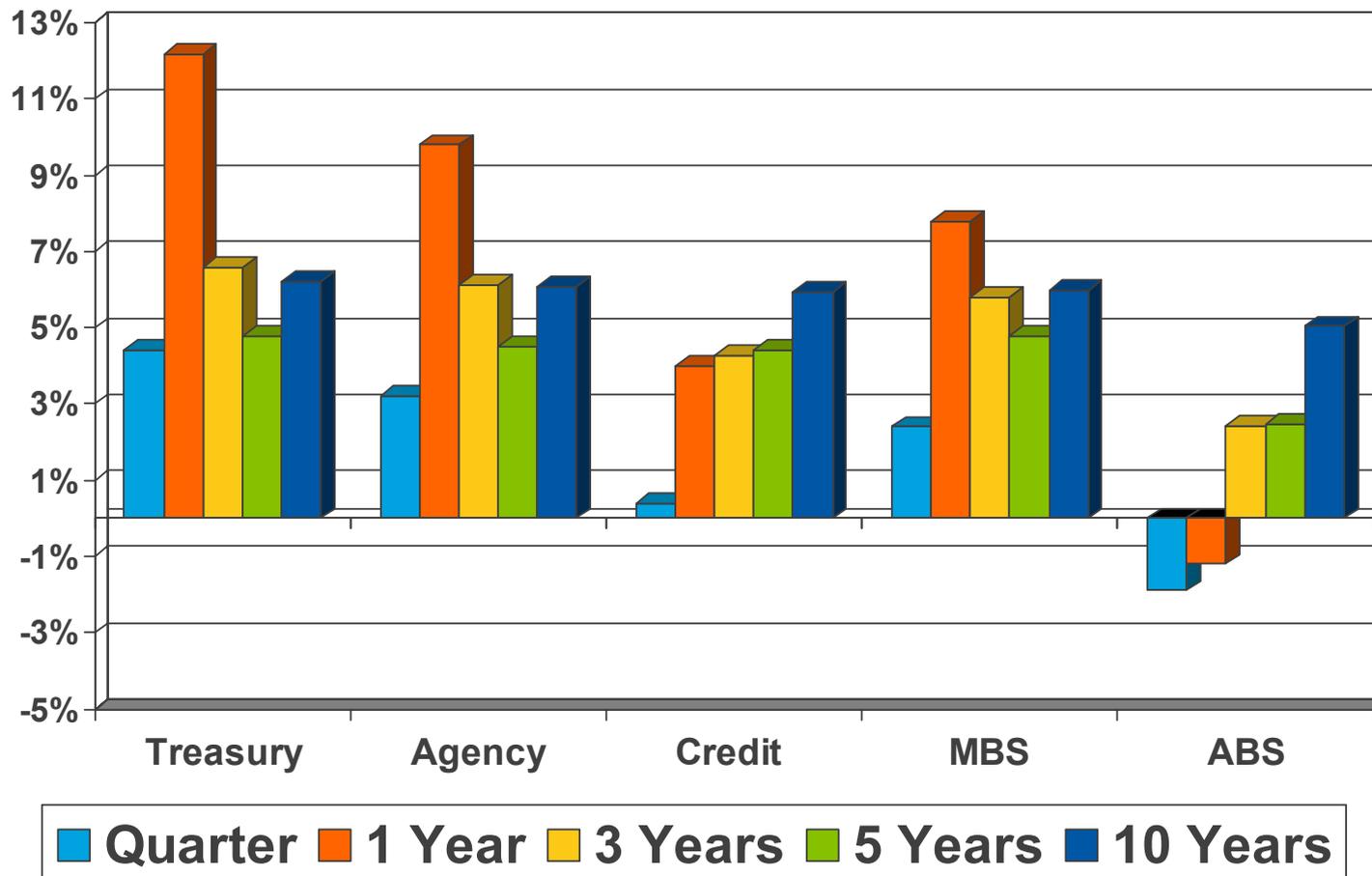


* Performance for one year or longer has been annualized.

Fixed Income

Performance by Issuer

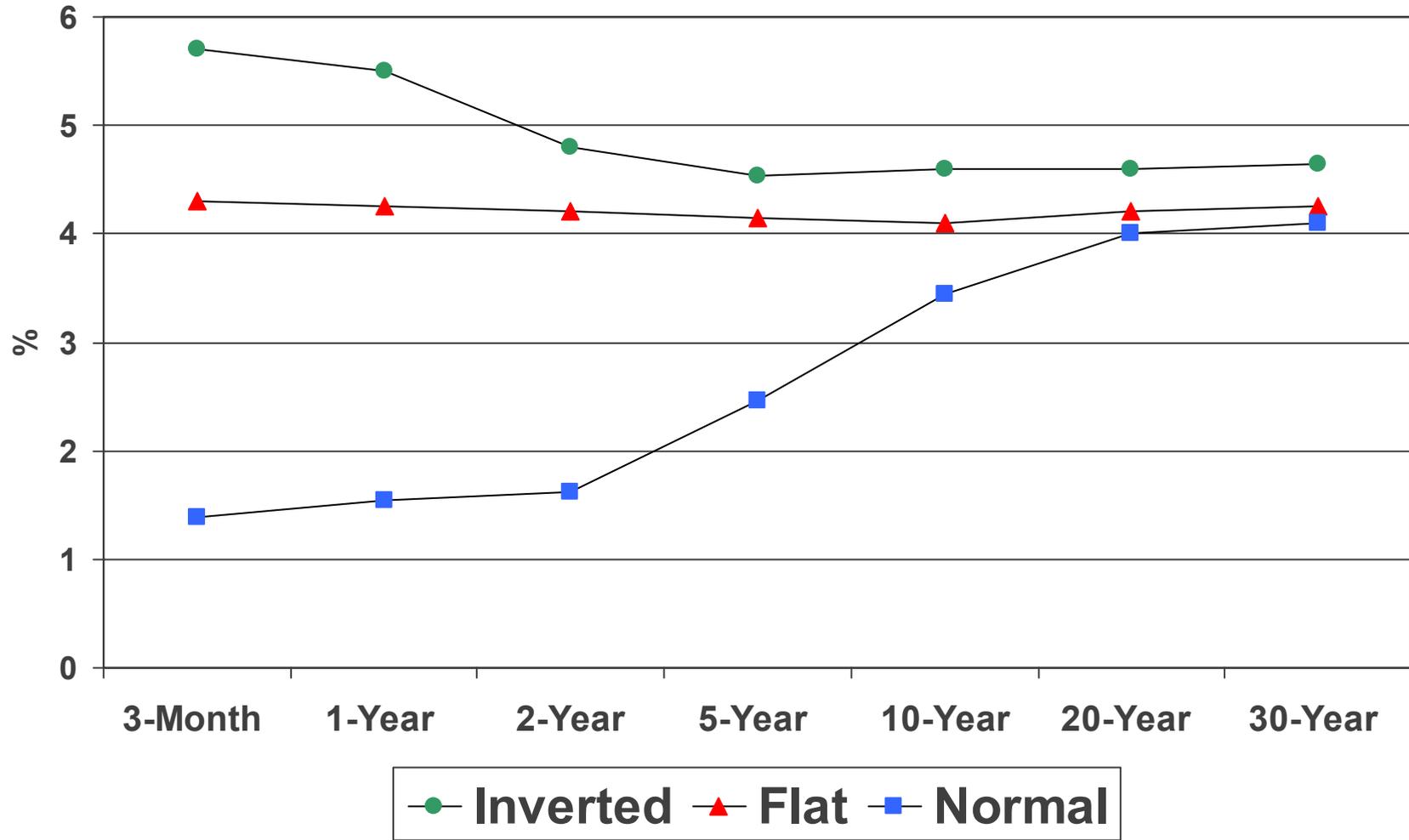
As of March 31, 2008*



Source: Lehman Brothers

* Performance for one year or longer has been annualized.

Fixed Income Yield Curve



Asset and Liability Matching

ALM – Asset and Liability M...

- ALM can mean:
- Asset and Liability **Modeling** – a computer exercise of determining how assets and liabilities behave in the future in various scenarios.
 - Example: What is the likely return over the next 20 years of an investment strategy that is invested 20% in equities and 80% in bonds? What is likely to be the worst that can happen in any one year over the 20 years?
- Asset and Liability **Management** – the general practice of paying attention to how both assets and liabilities behave
- Asset and Liability **Matching** – one of several approaches to matching assets to liabilities in an attempt to manage surplus
- All three of these will be important exercises in steps 3 – 5 of our Five Step Decision Making Framework.
 - 3. Setting Investment Objectives
 - 4. Determining Asset Allocation
 - 5. Establishing acceptable Risk Tolerances

ALM and Surplus Management

- Surplus equals Assets minus Liabilities
- If either Assets or Liabilities change, Surplus changes
- To manage Surplus, both Assets and Liabilities must be managed. It is not enough to just manage the assets.
- ALM in practice means designing an asset portfolio that behaves like the liabilities so that changes in assets are tracked by changes in liabilities.

The Market Value of Liabilities

- If we have to make a payment of \$1,000,000 10 years from now, we would need \$613,913 today to be sure we could pay that payment, if interest rates were 5%.
- If, tomorrow, interest rates were to rise to 6%, we would need less money to meet that ten year obligation. We would only need \$558,395.
- If, tomorrow, interest rates were to fall to 4% we would need more money to meet that ten year obligation. We would need \$675,564.
- In each case, we call the amount of money needed to cover a future liability the market value of the liability. The market value of a liability changes as interest rates change reflecting the fact that the cost of meeting that liability changes.
- Note that the market value of a liability is just the discounted value of a future expected payment.

The Market Value of Assets

- If interest rates were 5%, and we invested \$613,913 in a bond asset with a duration of 10 years, we would be assured of that asset being worth \$1,000,000 in ten years.
- If, tomorrow, interest rates were to rise to 6%, that asset would be worth only \$558,395. But we would still be assured of that asset being worth \$1,000,000 in ten years.
- If, tomorrow, interest rates were to fall to 4%, that asset would be worth only \$675,564. And we would still be assured of that asset being worth \$1,000,000 in ten years.

Summary: Market Value of Asset = Market Value of Liability

- We began, with interest rates at 5%, with the market value of our asset equal to the market value of our liability (\$613,913).
- If interest rates rise to 6%, the market value of our asset still equals to the market value of our liability (\$558,395).
- If interest rates fall to 4%, the market value of our asset still equals to the market value of our liability (\$675,564).

Summary: Market Value of Asset = Market Value of Liability

Four things have happened:

1. Our surplus (assets minus liabilities) began at zero and remains unchanged at zero no matter what happens to interest rates.
2. We are assured of having a million dollars at the end of ten years to meet our liability
3. We are immune and indifferent to changes in the level of interest rates.
4. We are also immune and indifferent to changes in the stock market.

The Fundamental Theorem of Asset and Liability Matching

To achieve a perfect guarantee of meeting a future expected payment:

1. Match the market value of your asset to the market value of your liability
2. Match the duration of your asset to the duration of your liability

ALM in practice

- A number of real world complications arise in achieving the perfect asset and liability match.
- A future liability is not known with certainty. Estimates of what the liability may be might be wildly off, particularly if the future liability is subject to a high degree of uncertainty such as medical inflation.
- Typical coupon bonds do not have durations over 15. To match long liabilities we must use exotic instruments or U.S. Government zero-coupon bonds.
- ALM is expensive. This is because ALM relies on bonds which we expect to earn less than other asset classes, particularly stocks. In effect, ALM purchases safety and certainty at an expensive price.
- The theory of duration-matching makes several assumptions, which may not hold in practice: parallel shifts in yield curves, small changes in yields only, bonds cannot be called and do not contain other optionality.

ALM for the BWC

- Surplus equals Assets minus Liabilities
- The BWC does not mark its liabilities to market as interest rates change (or they do so to a limited degree). This is a consequence of the discount rate that is fixed for a twelve month period and perhaps of the actuarial smoothing of liabilities.
- With liabilities largely fixed, managing surplus at the Bureau is equivalent to managing assets. There is arguably no need or role for an asset strategy that tries to mimic the volatility of the liabilities.
- We have asked Deloitte to consider these questions of surplus management and a final determination of what the role of ALM for the BWC should be awaits their views.

U.S. Equity

U.S. Equity

Characteristics of Equity Market Investing

Common Stock or Equity Securities

- Represents ownership shares in a corporation. Each share of common stock typically entitles its owner to one vote.
- Residual claim and limited liability
- Generate returns from dividends and/or appreciation in the value of the stock price
- Returns are not guaranteed, as a stock investor can lose money if the stock price declines in value below the amount paid

U.S. Equity

Characteristics of Equity Market Investing

How your Portfolio Manager (PM) Invests in the Equity Market

- The portfolio manager invests in the stock market for clients by identifying a basket of securities to purchase.
- The basket of securities referred to as the portfolio will be identified through various types of analysis – in hopes that the portfolio will outperform a stated benchmark.
- The portfolio manager will stay within the guidelines set forth by the client as it relates to capitalization ranges (Large, Midcap or Small) and style (Growth, Value or Core).
- The portfolio will be measured against a stock market index (benchmark), which is defined as a method of measuring the stock market as a whole. The market can be Canadian stocks, American stocks, Bio-tech stocks, small-cap stocks, growth stocks, or any other market of interest.

U.S. Equity

Characteristics of Equity

Types of Stocks

Cyclical

- A cyclical stock is a stock that has a strong correlation with the movement of the general economy (business cycle) i.e. it will appreciate quickly when economic growth is strong and fall rapidly when growth is slowing.
- Automobile stocks are a good example of a cyclical stock; as economic growth slows, consumers have less disposable income to spend on new cars and vice versa.

U.S. Equity

Characteristics of Equity

Types of Stocks

Non-cyclical

- Non-cyclical securities, also called defensive stocks, are anticipated to experience profit regardless of economic conditions as non-cyclical firms produce or distribute essential goods or services that we demand regardless of the business cycle.
- The classic example of a non-cyclical stock is a food or household products stock (P&G) as consumers and businesses need household supplies regardless of the direction of the economy.
- When the economy is growing, non-cyclical stocks tend to lag behind cyclical stocks as they have a low correlation with the business cycle.

U.S. Equity

Characteristics of Equity

Types of Stocks

Standard & Poor's classifies stocks into 10 sectors:

- **Consumer Discretionary**
- **Consumer Staples**
- **Energy**
- **Financials**
- **Health Care**
- **Industrials**
- **Information Technology**
- **Materials**
- **Telecommunication Services**
- **Utilities**

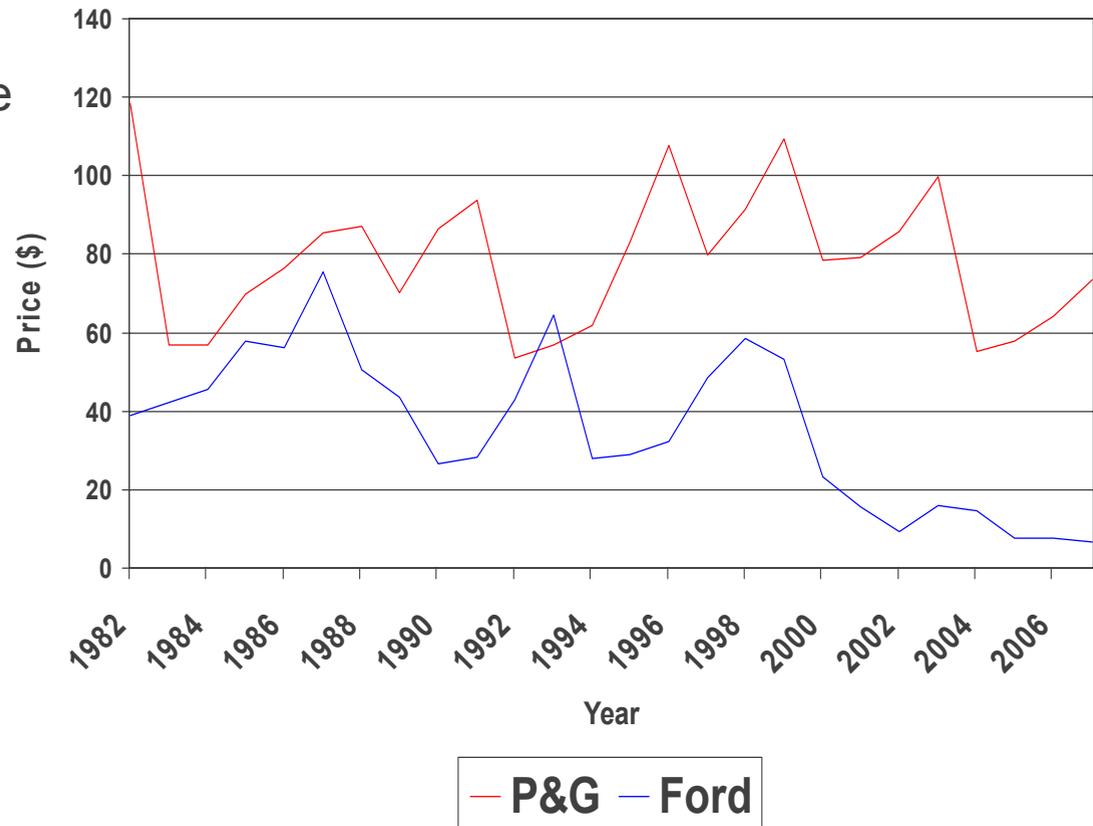
All of the sectors are cyclical with the exception of (3) Consumer Staples, Health Care and Utilities.

U.S. Equity

Characteristics of Equity

Types of Stocks

- The chart shows the performance of a highly cyclical company, the Ford Motor Co. (blue line), and a non-cyclical company, Proctor & Gamble (P&G) (red line).
- This chart clearly demonstrates how each company's share price reacts to downturns in the economy.
- You will see that the downturn in the economy from 2000 to 2002 drastically reduced Ford's share price, whereas P&G share price remained within its normal price range during the slowdown.



Domestic Equity

Market Capitalizations

The total market value of a company's outstanding common stock is calculated by multiplying the market price per share by the number of shares outstanding.

Market Capitalization = (# shares) x (price)

Example: Marsh & McLennan -MMC

\$24.37 billion = 800 million shares x \$30.47

U.S. Equity

Market Capitalization

Broad Market Index (Example: Russell 3000)

- Represents largely entire market, which includes all capitalization ranges (large, mid and small companies)
- Range from \$468B – \$261M with the average market capitalization at \$82.8B
- An example of a broad index is the Russell 3000, which is often used as a proxy for the entire market

As of March 31, 2008

<u>% of Total</u>	<u>Russell 3000</u>
Large Cap	39.9%
Mid/Large Cap	26.8%
Mid Cap	17%
Small/Mid Cap	9.3%
Small Cap	7%

U.S. Equity

Market Capitalization Ranges

Large Cap

- Largest stocks in the broad market
- Range from \$468B – \$2.5B with the average market capitalization at \$90.5B
- An example of a large cap index is the Russell 1000 Index, which is often used as the large cap benchmark that large cap portfolios are compared

Mid Cap

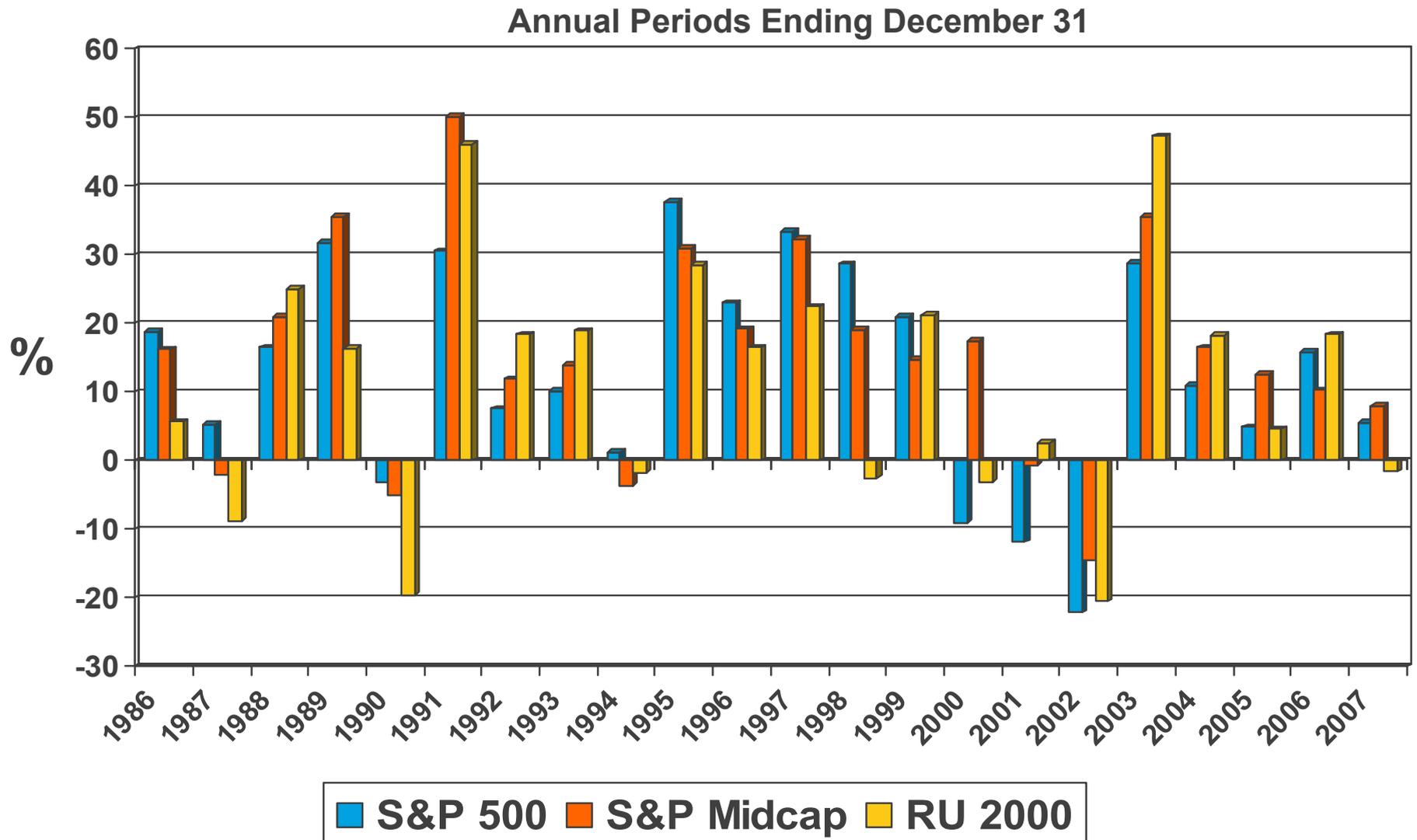
- Stocks that fall in the middle of the capitalization range
- Range from \$18.3B – \$2.5B with the average market capitalization at \$9.1B
- An example of a mid cap index is the Russell Mid Cap Index

Small Cap

- Smallest stocks in the broad market
- Range from \$2.5B – \$261M with the average market capitalization at \$1.3B
- An example of a small cap index is the Russell 2000 Index

U.S. Equity

Performance by Capitalization



U.S. Equity

Methods of Investing

Passively Managed Portfolio

- A strategy of holding a well – diversified portfolio of securities without attempting to outperform other investors (defined as the broad market index, hence the benchmark)
- The PM will create a portfolio of securities that holds close to the same weightings of sectors (financials, technology, healthcare, etc.) as their specific benchmark

Active Managed Portfolio

- A strategy of creating a portfolio of securities selected by the “skill” of the portfolio manager with the goal of outperforming the broad market
- The term Alpha is typically used when discussing active management – Alpha is the excess returns generated by a portfolio due to the “skill” of the portfolio manager

U.S. Equity

Active Management Styles

Top-Down Investing

- A active management style that generally begins with an assessment of the economic environment. Typically, as a result of this macroeconomic analysis, specific industrial groups or geographical regions are identified for investment.

Bottom-Up Investing

- A active management style that focuses on the analysis of individual companies, utilizing fundamental, analytical techniques in an attempt to select superior performing issues.

U.S. Equity

Active Management Styles

Quantitative Strategies

- Most quantitative strategies rely heavily on computer simulations. A quantitative strategy must be based on a sound theory about why the strategy has worked in the past and why it should work in the future.

Fundamental Strategies

- Any investment strategy which is not based on quantitative techniques is based on fundamental techniques. A fundamental strategy is based on detailed industry and/or company research. It may be top-down or bottom-up in nature.

Domestic Equity

Active Management Styles

Value focused portfolios include:

- Companies viewed as having market prices which are undervalued. That is, the market has not properly recognized future earnings streams.
- Earnings are generally distributed to equity holders.
- Price to earnings ratio is generally, but not always, lower.
- Examples: Limited Brands and Heinz

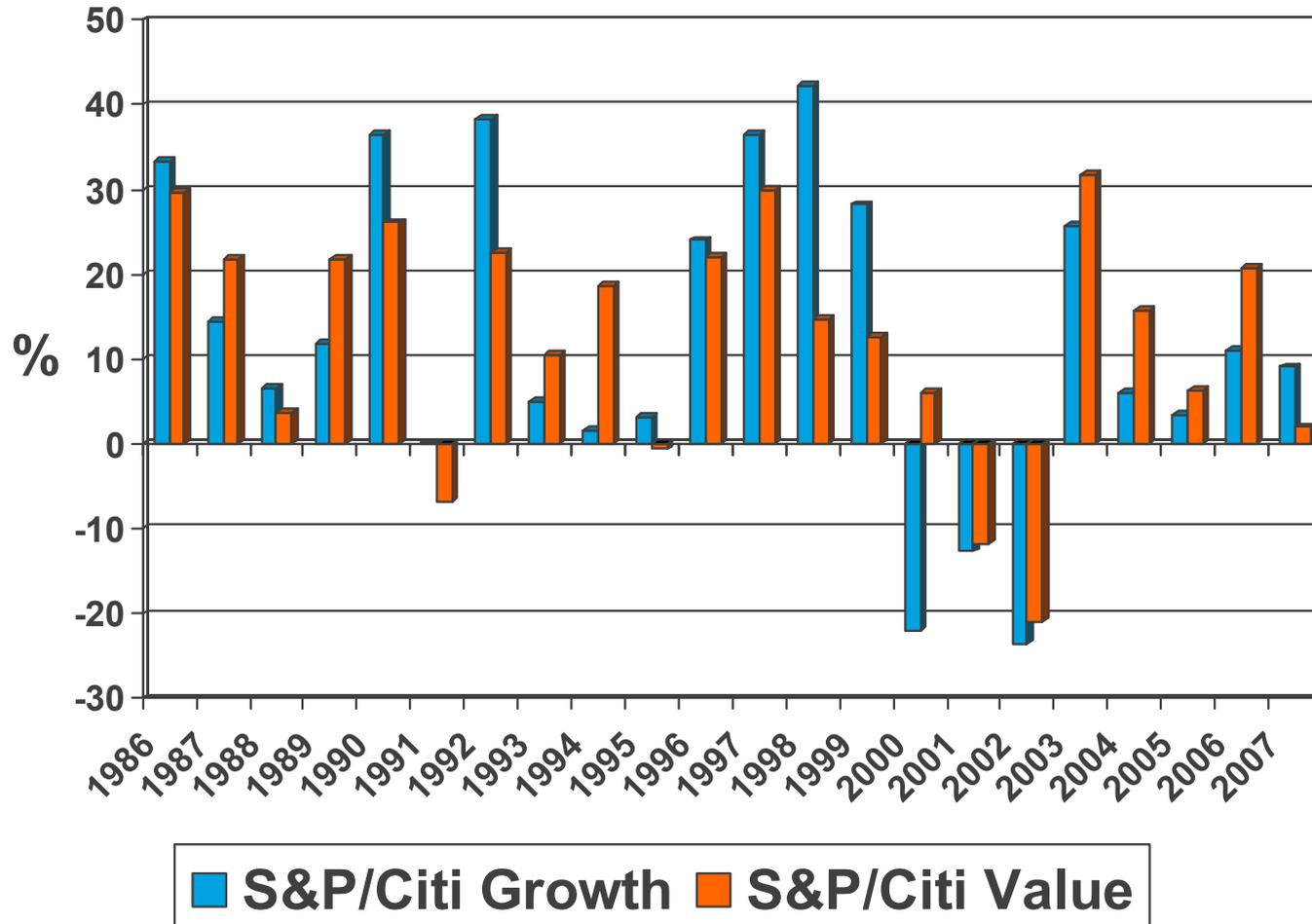
Growth focused portfolios include:

- Companies whose sales and earnings are expanding faster than the general market and/or the industry average.
- Earnings are often plowed back into operations; therefore, dividend yield tends to be lower.
- Often the company maintains a solid position within an expanding part of the market.
- Generally characterized by price volatility as actual earnings are not always in line with expected earnings.
- Example: Google and Intel

U.S. Equity

S&P/ Citi Growth vs. S&P/ Citi Value

Annual Periods Ending December 31



Non U.S. Equity

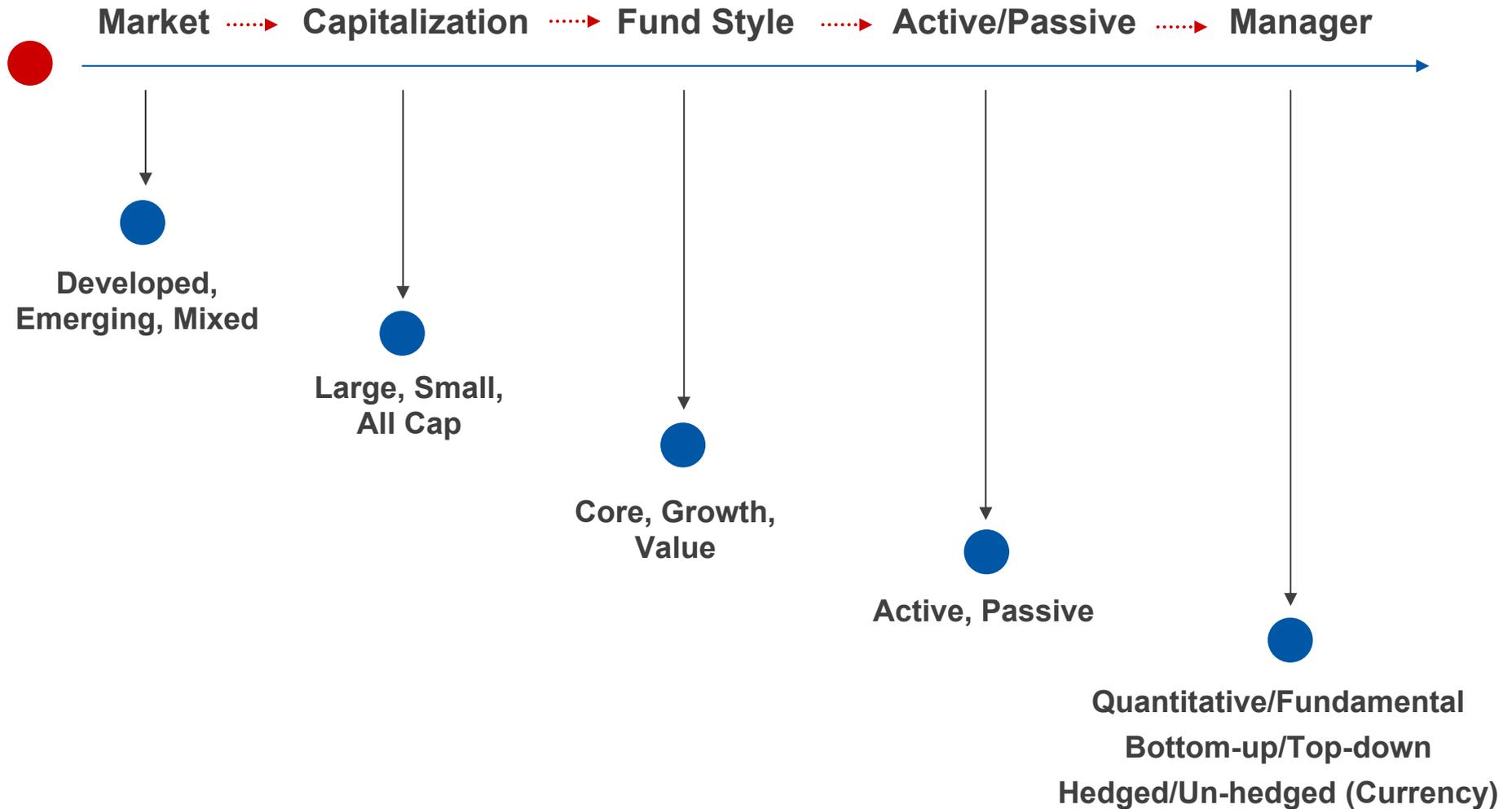
Non U.S. Equity

Economic Landscape

The Global Environment Has Changed Over Time:

- Historically the US dominated the world's economy
- Today more than 50% of the world's economy (stock investing opportunities) is outside of the US
- MSCI ACWI: Index of global stock opportunities, which includes 55 country indices (23 developed and 33 emerging market indices)
- Emerging market economies are playing an increasing role in the global economy

Non U.S. Equity



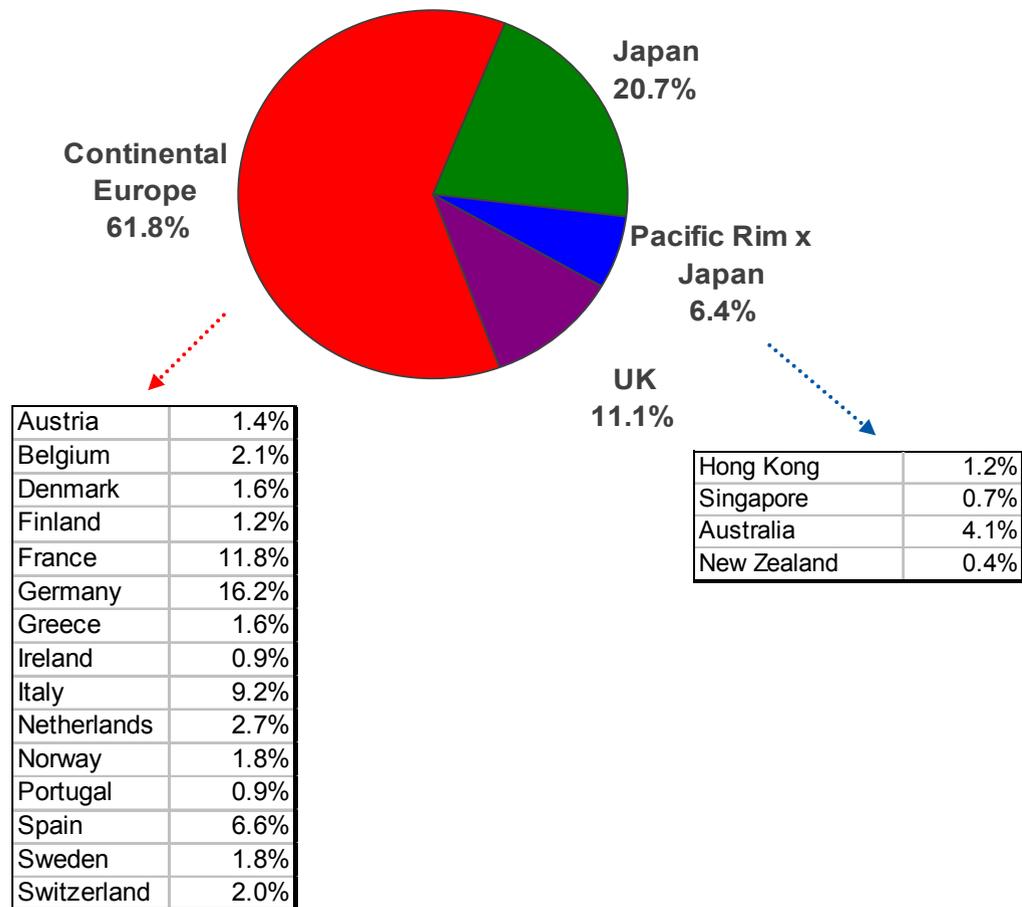
Non U.S. Equity

EAFE Country Allocation (Developed)

Developed Markets

- Large, liquid capital markets.
- Generally politically stable.
- Stable economic growth.
- Governmental departments responsible for investor protection.

MSCI EAFE Index
As of Mar 31, 2008



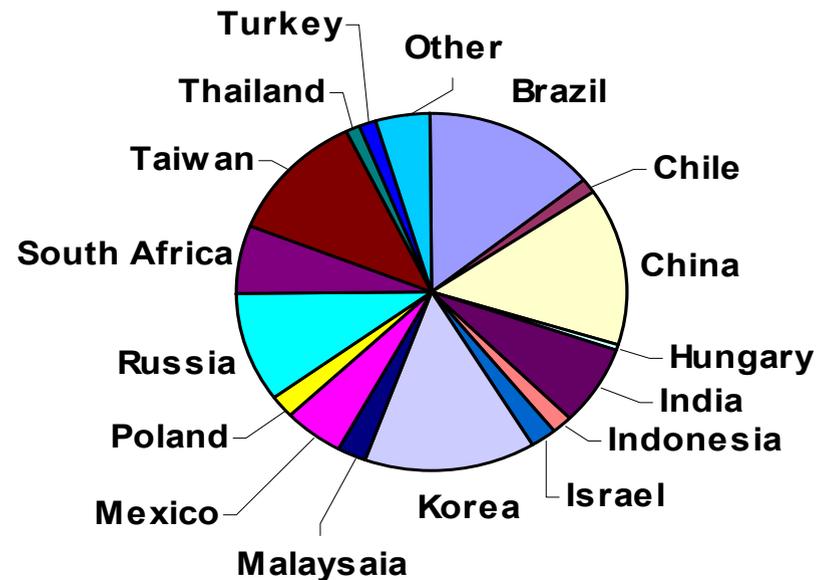
Non U.S. Equity

MSEMF Country Allocation (Emerging)

Emerging Markets

- Smaller, less liquid capital markets.
- Less politically stable and exhibit higher, more volatile economic growth.
- Less market regulation. Weak bankruptcy laws. Generally not as shareholder friendly due to capital controls.
- Higher expected returns over time, mediated by higher political and market risk.
- Not all are equal - some countries are more “developed” than others.

MS Emerging Market Free Index
As of Mar 31, 2008

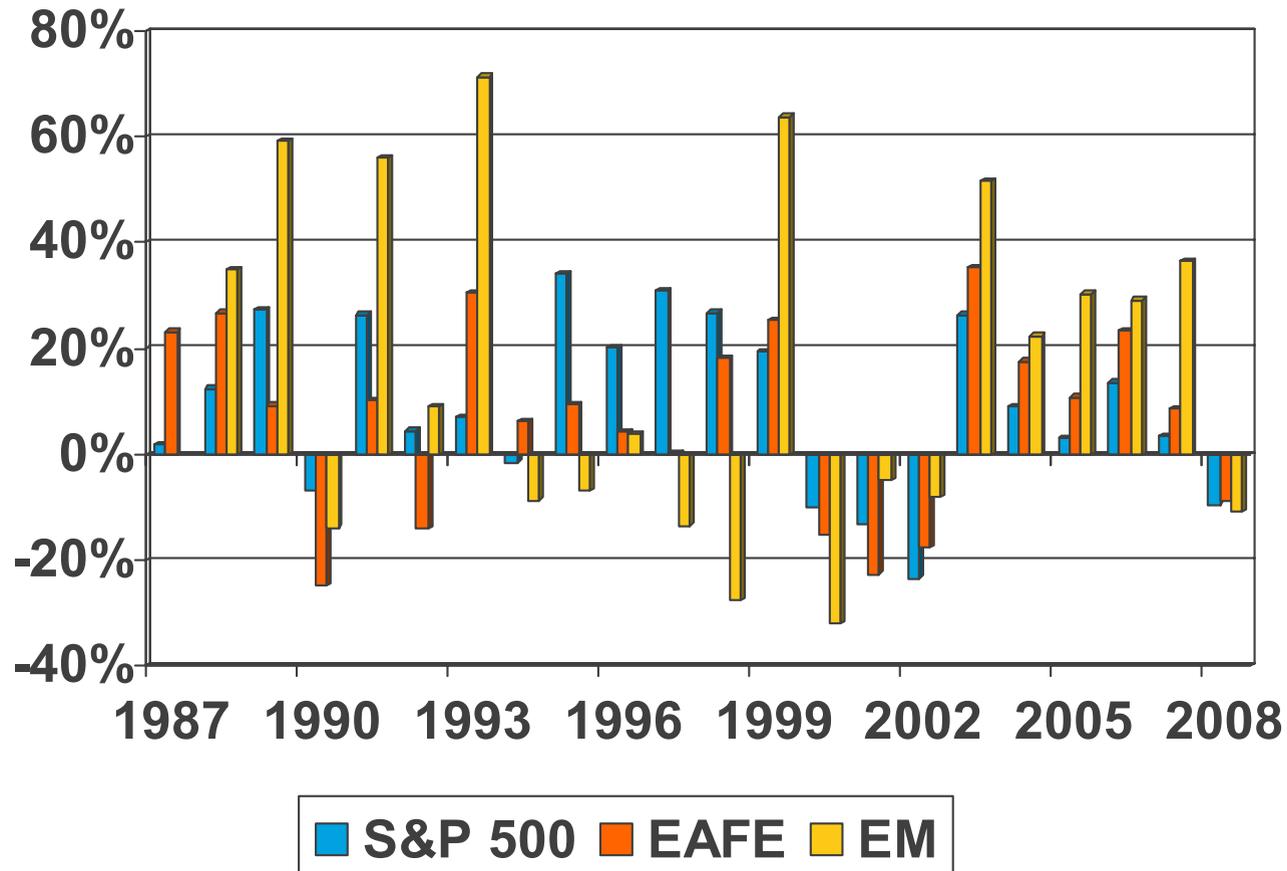


Source: MSCI

Non U.S. Equity

Developed versus Emerging Market returns

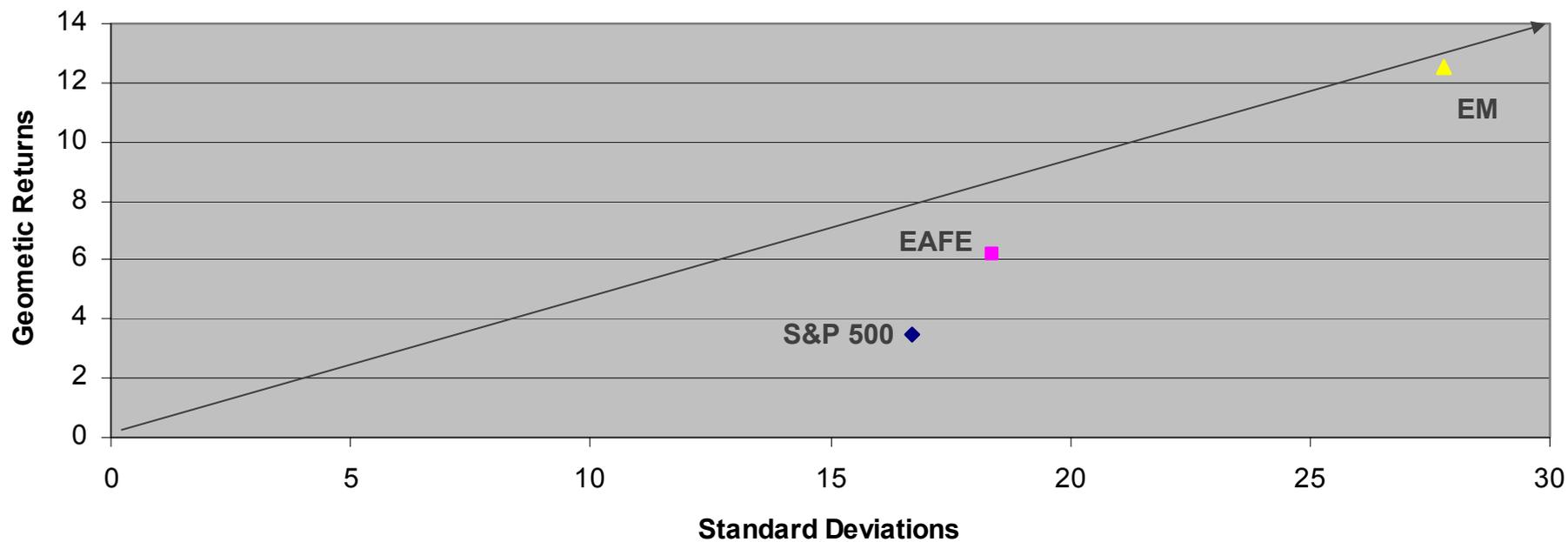
Annual Periods Ending March 31, 2008



Non U.S. Equity

Risk and Return

Risk and Returns as of March 31, 2008



◆ S&P 500 ■ EAFE ▲ EM

Non U.S. Equity

Key Drivers – Emerging Market Equity

Performance of this sub-asset class can be attributed to the following factors, which give it potential to add value in an international portfolio:

- Expectations for global growth
- Developing market consumption
- Movements in commodity cycle
- Global and regional interest rates
- Improvements in EM balance sheet
- Increasing liquidity

Active vs. Passive Management

Active vs. Passive Management

Let us agree on what we are debating, discussing and disagreeing about: active vs. passive management:

Active management is the art of stock picking and market timing. Passive management refers to a buy-and-hold approach to money management. It can be applied to any asset class: big stocks, small stocks, value or growth, foreign or domestic can all be accessed by passive techniques.

Neither label, "active" or "passive," is perfect, and there will not always be a complete dichotomy between them. In any event, this is a debate about both market behavior and investor behavior.

Rex A. Siquefield, October 1995

Active vs. Passive Management

Active Management

- A money management approach that aims to generate alpha i.e. outpace the 'market' as measured by a particular benchmark or index (e.g. the S&P 500, the Russell 1000, the Lehman Aggregate or the Intermediate Lehman Brothers U.S. Government / Credit)
- Prevailing market trends, the economy, political and other current events, and company-specific factors (such as projected earnings growth or interest rates / duration) will influence an active manager's decisions
- Active management includes a wide variety of strategies for identifying portfolio securities that are believed to offer above-average prospects for outperforming:
 - *As an example, some equity managers look for Value, while others search for Growth. Some fixed income providers are Core managers while others are High Yield investors.*
 - *Some managers focus on current and projected Fundamentals while others adopt a model-centric / quantitative approach*
 - *Some managers are Top-Down investors while others view stocks or bond credits from the Bottom-Up*
- Regardless of their individual approach, all active managers share a common thread - they buy and sell securities selectively, based on a forecast of future conditions.

Active vs. Passive Management

Passive Management

- Passive management is more commonly called 'indexing'. Index managers generally believe that it is difficult to beat the market.
- Index managers essentially offer asset class performance that closely matches an index for investors who are unwilling to assume the risks of active management.
- This management style is considered passive because portfolio managers do not make decisions about which securities to buy and sell (they simply replicate or mirror the composition of the index by purchasing or sampling the same securities included in a particular stock or bond market index).

Active vs. Passive Management

Alpha and Tracking Error

- Active management is simply an attempt to “outperform” the market as measured by a particular benchmark or index (e.g. the S&P 500 or the Lehman Aggregate).
- Beating the market is analogous to ‘generating positive alpha’ (e.g. if an active manager generates a 7% return while their appropriate benchmark generates a return of 5%, the manager has an excess return or alpha of 2% or 200 basis points over the index).
- Tracking error (also called active risk) is a measure of how closely a portfolio follows the index to which it is benchmarked.
- An index fund should have a tracking error close to zero.
- All active managers must exhibit some level of tracking error against their target benchmark (if they do not, they would be managing an index fund, thus we would question whether paying active manager fees is appropriate).

Active vs. Passive Management

Beta

Active management exposes a portfolio to beta risk (or market risk) and to alpha risk (deviations from the market that the active manager takes).

By definition beta is a quantitative measure of the volatility of a given portfolio, relative to the overall market. The broad market beta is equal to 1. A beta above 1 is more volatile than the overall market, while a beta below 1 is less volatile so for example if the market returns +/- 5%:

- A portfolio with a beta of 1.5 will return +/- 7.5%
- A portfolio with a beta of 2 will return +/- 10%
- A portfolio with a beta of 0.5 will return +/- 2.5%

An index fund should have a beta of approximately 1 while an actively managed fund should have a beta that is greater or smaller than 1

Active vs. Passive Management

Standard Deviation

A manager's alpha risk or active risk is measured by standard deviation

The standard deviation is often used by investors to measure the risk of a stock. The basic idea is that the standard deviation is a measure of volatility i.e. the more a stock's returns vary from the stock's average return, the more volatile the stock. Consider the following two stock portfolios and their respective returns over the last six months:

Month	Stock A			Stock B		
	Value	Return	Final Value	Value	Return	Final Value
1	1000	0.75%	1008	1000	1.50%	1015
2	1008	1%	1018	1015	5%	1066
3	1018	3%	1048	1066	12%	1194
4	1048	-1.5%	1032	1194	-9%	1086
5	1032	0.50%	1038	1086	-4%	1043
6	1038	2%	1058	1043	1.5%	1058

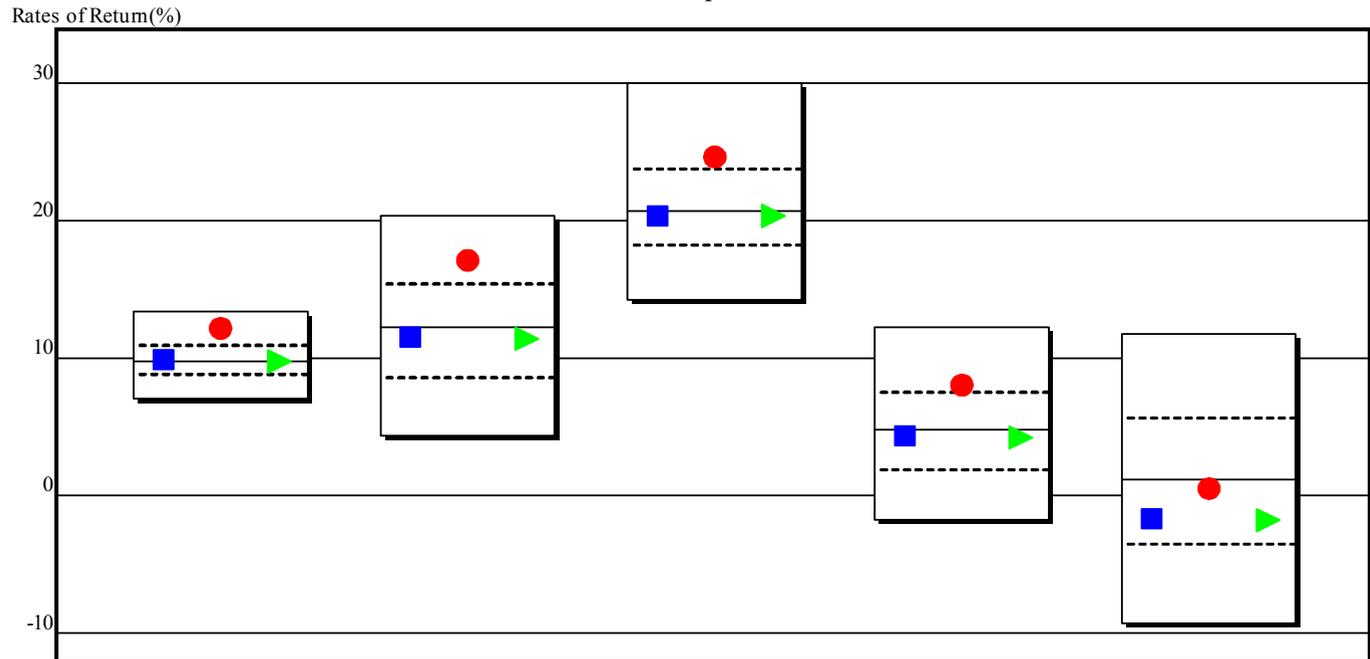
Both stocks end up increasing in value from \$1,000 to \$1,058. However, both stocks differ in volatility. Stock A's monthly returns range from -1.5% to 3% whereas Stock B's range from -9% to 12%.

The standard deviation of the returns is a better measure of volatility than the range of returns because it takes all the values into account. The standard deviation of the six returns for Stock A is 1.52; for Stock B it is 7.24

Equity Active vs. Passive Management

Generally speaking, in strong markets, we would expect an active manager to outperform the benchmark (while the index manager will approximate the benchmark's returns)

Equity Active vs. Passive Comparison with the Mercer US Equity Large Cap Equity Universe Performance before fees for periods ended December 2004

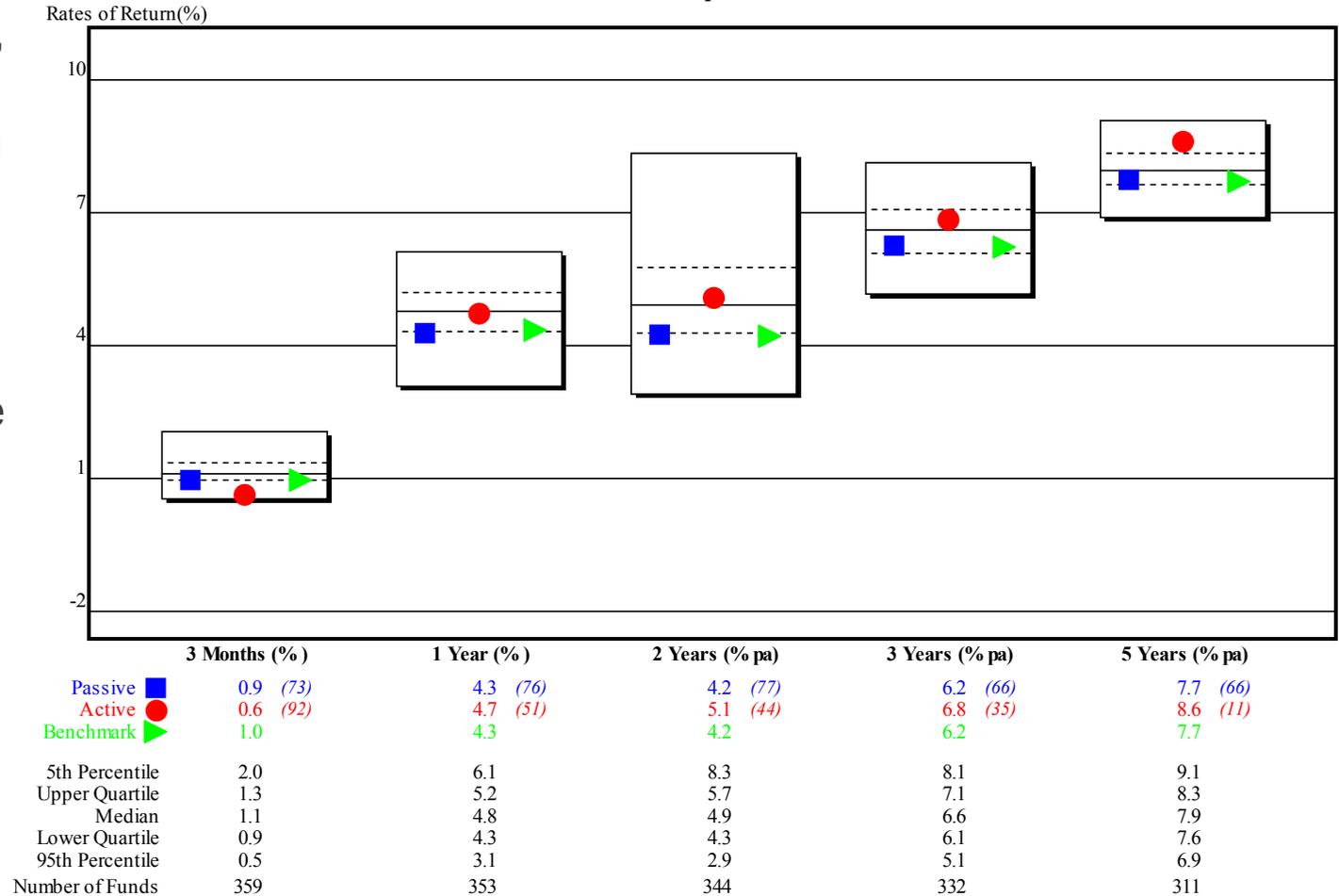


	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	9.8 (49)	11.5 (56)	20.4 (53)	4.4 (54)	-1.7 (66)
Active	12.1 (12)	17.2 (15)	24.6 (20)	8.1 (20)	0.5 (53)
Benchmark	9.8	11.4	20.3	4.3	-1.8
5th Percentile	13.3	20.2	29.9	12.1	11.7
Upper Quartile	10.9	15.4	23.7	7.5	5.6
Median	9.8	12.2	20.7	4.8	1.1
Lower Quartile	8.8	8.6	18.2	1.8	-3.6
95th Percentile	7.0	4.3	14.2	-1.9	-9.4
Number of Funds	1282	1231	1151	1081	903

Fixed Income Active vs. Passive Management

Generally speaking, in strong markets, we would expect an active manager to outperform the benchmark (while the index manager will approximate the benchmark's returns)

Fixed Income Active vs. Passive Comparison with the Mercer US Fixed Core Universe Performance before fees for periods ended December 2004

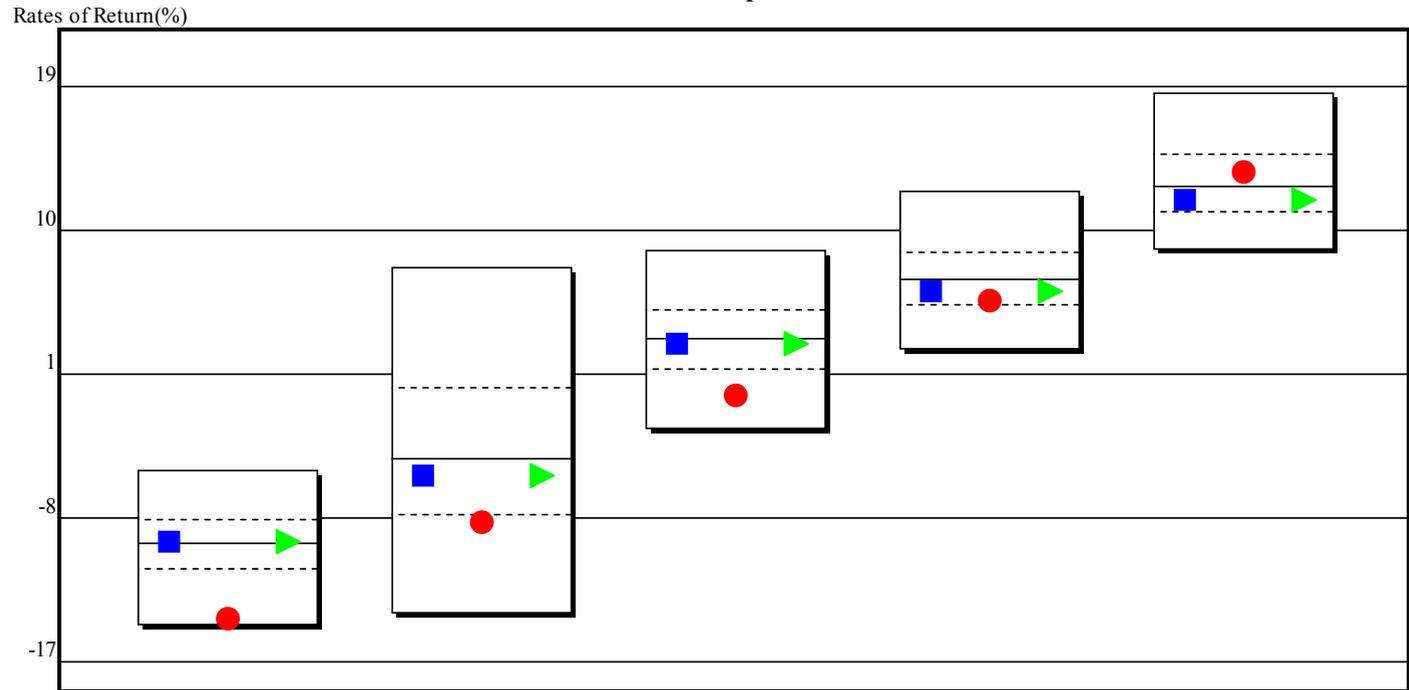


Equity Active vs. Passive Management

Equity Active vs. Passive

Comparison with the Mercer US Equity Large Cap Equity Universe
Performance before fees for periods ended March 2008

In weaker markets, less skillful active managers may fail to outperform the benchmark (while the index manager will approximate the benchmark's returns)

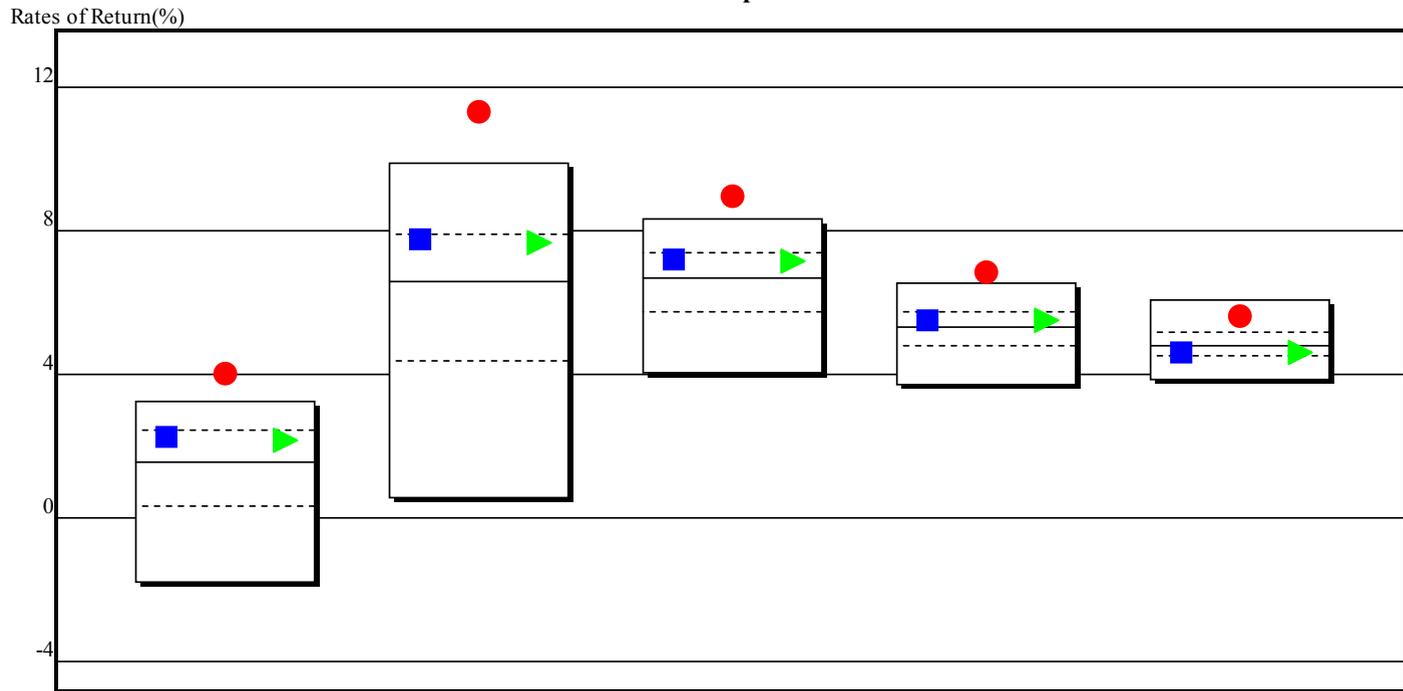


	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	-9.5 (47)	-5.4 (59)	2.9 (54)	6.2 (59)	11.9 (64)
Active	-14.3 (93)	-8.3 (77)	-0.3 (88)	5.7 (70)	13.7 (37)
Benchmark	-9.5	-5.4	2.9	6.2	11.9
5th Percentile	-5.1	7.6	8.7	12.4	18.5
Upper Quartile	-8.2	0.1	5.0	8.5	14.7
Median	-9.6	-4.4	3.2	6.8	12.7
Lower Quartile	-11.3	-7.8	1.3	5.3	11.2
95th Percentile	-14.8	-14.1	-2.5	2.5	8.8
Number of Funds	1136	1091	1021	956	862

Fixed Income Active vs. Passive Management

Fixed Income Active vs. Passive Comparison with the Mercer US Fixed Core Universe Performance before fees for periods ended March 2008

In weaker markets the index manager will approximate the benchmark's returns, while you may see an out-performance of active fixed income managers



	3 Months (%)	1 Year (%)	2 Years (% pa)	3 Years (% pa)	5 Years (% pa)
Passive	2.2 (30)	7.8 (28)	7.2 (32)	5.5 (40)	4.6 (68)
Active	4.0 (3)	11.3 (4)	8.9 (3)	6.9 (4)	5.6 (9)
Benchmark	2.2	7.7	7.1	5.5	4.6
5th Percentile	3.2	9.9	8.3	6.5	6.1
Upper Quartile	2.4	7.9	7.4	5.7	5.1
Median	1.5	6.6	6.7	5.3	4.8
Lower Quartile	0.3	4.3	5.7	4.8	4.5
95th Percentile	-1.8	0.5	4.0	3.7	3.8
Number of Funds	289	275	271	268	254

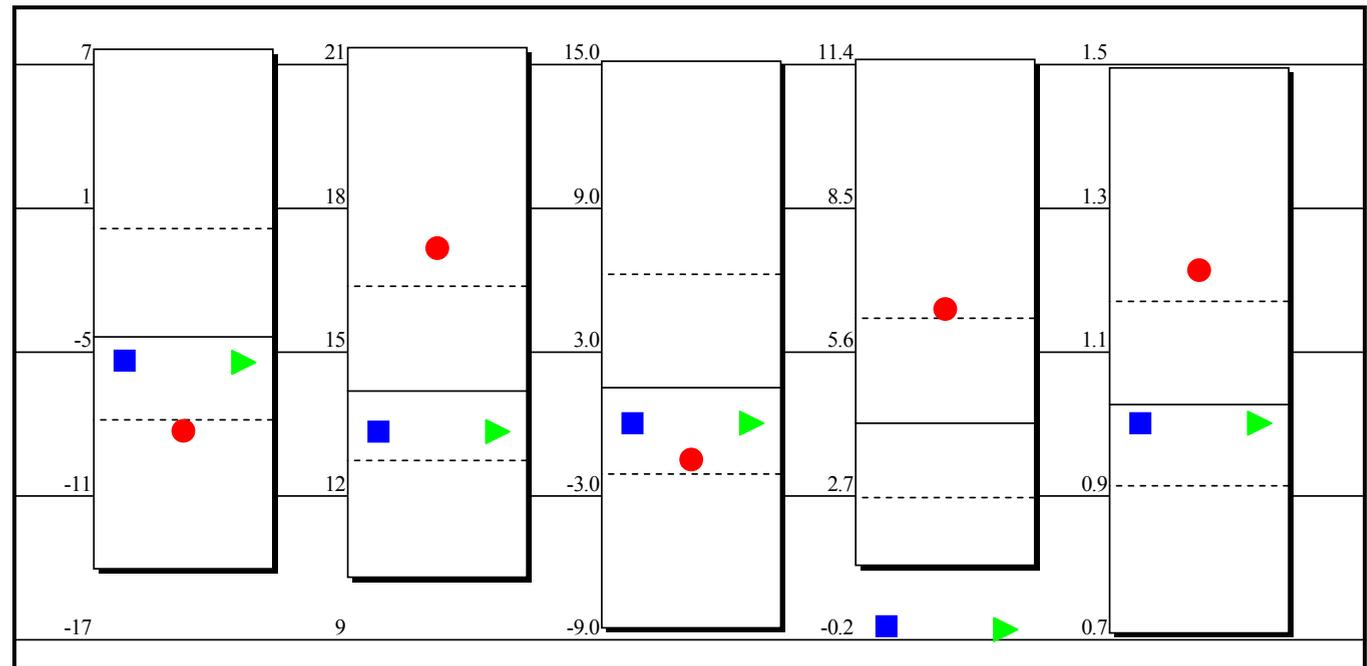
Equity Active vs. Passive Management

Equity Active vs. Passive

Comparison with the Mercer US Equity Large Cap Equity Universe

Risk and Return Characteristics (calculated quarterly) versus Benchmark for the period from Jun 2007 to Mar 2008

As expected the passive manager will have a similar risk and return profile as the benchmark while the active manager will have a more aggressive profile (due to a higher tracking error).



	Return (% pa)	Std Deviation (% pa)	Alpha (% pa)	Tracking Error (% pa)	Beta
Passive	-5.4 (59)	13.3 (64)	0.0 (61)	0.1 (100)	1.0 (57)
Active	-8.3 (77)	17.2 (19)	-1.5 (71)	6.5 (23)	1.2 (20)
Benchmark	-5.4 (59)	13.3 (65)	0.0 (61)	0.0 (100)	1.0 (58)
5th Percentile	7.6	21.3	15.1	11.5	1.5
Upper Quartile	0.1	16.4	6.2	6.3	1.2
Median	-4.4	14.2	1.5	4.1	1.0
Lower Quartile	-7.8	12.7	-2.1	2.6	0.9
95th Percentile	-14.1	10.3	-8.6	1.3	0.7
Number of Funds	1091	1091	1091	1091	1091

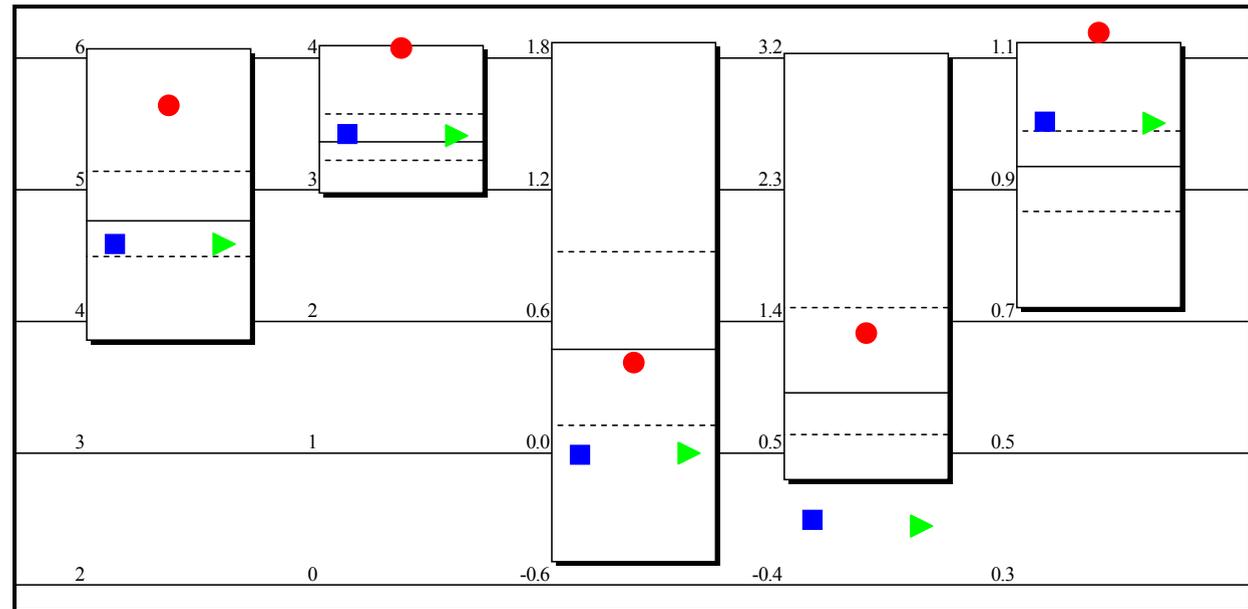
Fixed Income Active vs. Passive Management

Fixed Income Active vs. Passive

Comparison with the Mercer US Fixed Core Universe

Risk and Return Characteristics (calculated quarterly) versus Benchmark for the period from Jun 2003 to Mar 2008

As expected the passive manager will have a similar risk and return profile as the benchmark while the active manager will have a more aggressive profile (due to a higher tracking error).



	Return (% pa)	Std Deviation (% pa)	Alpha (% pa)	Tracking Error (% pa)	Beta
Passive	4.6 (68)	3.4 (39)	0.0 (82)	0.0 (100)	1.0 (21)
Active	5.6 (9)	4.1 (6)	0.4 (57)	1.3 (34)	1.1 (4)
Benchmark	4.6 (68)	3.4 (42)	0.0 (82)	0.0 (100)	1.0 (23)
5th Percentile	6.1	4.1	1.9	3.2	1.1
Upper Quartile	5.1	3.6	0.9	1.5	1.0
Median	4.8	3.4	0.5	0.9	0.9
Lower Quartile	4.5	3.2	0.1	0.6	0.9
95th Percentile	3.8	3.0	-0.5	0.3	0.7
Number of Funds	254	254	254	254	254

Active vs. Passive Management

Active Management (Advantages & Disadvantages)

Advantages

- **Expert analysis** - Seasoned managers make informed decisions based on experience, judgement, and prevailing market trends.
- **Possibility of higher-than-index returns.** Managers aim to beat the performance of the index, which means they strive for higher returns than the index delivers.
- **Defensive measures** - Managers can make changes if they believe the market may take a downturn. As an example, in the fixed income portfolio an active manager can easily adjust their duration whereas a passive manager must imitate the index.

Disadvantages

- **Higher fees and operating expenses.**
- **Mistakes may happen.** There is always the risk that managers may make unwise choices on behalf of investors, which could reduce returns.
- **Style issues may interfere with performance.** At any given time, a manager's style may be in or out of favor with the market, which could reduce returns.

Active vs. Passive Management

Passive Management (Advantages & Disadvantages)

Advantages

- **Low operating expenses.**
- **Market performance - Investors can be assured that index funds will perform on par with the indexes.**
- **There is no action required by the fund. There is no decision-making required by the manager or the investor as the portfolio closely replicates the characteristics of the index.**

Disadvantages

- **Performance is dictated by the index. Investors must be satisfied with market returns because that is the best any index fund can and should produce.**
- **A lack of control - Managers cannot take action. Index fund managers are usually prohibited from using defensive measures, such as moving out of stocks, if the manager thinks stock prices are going to decline.**
- **Bonds purchased in an indexed portfolio are held through all yield curve changes. So, if the yield curve becomes inverted and 2-Year bonds offer a higher yield than 5-Year bonds, the indexed portfolio cannot take advantage of the more attractive risk/return relationship of the 2-Year bond without exceeding its stated target tracking error target versus the benchmark.**

Active vs. Passive Management

Conclusions

There are advantages and disadvantages to using both active and passive strategies. It is important that the debate of active vs. passive management should not be taken out of the context of an investors' goals and objectives. A risk budget analysis should be performed to determine the appropriate utilization of active and passive strategies within their portfolio.

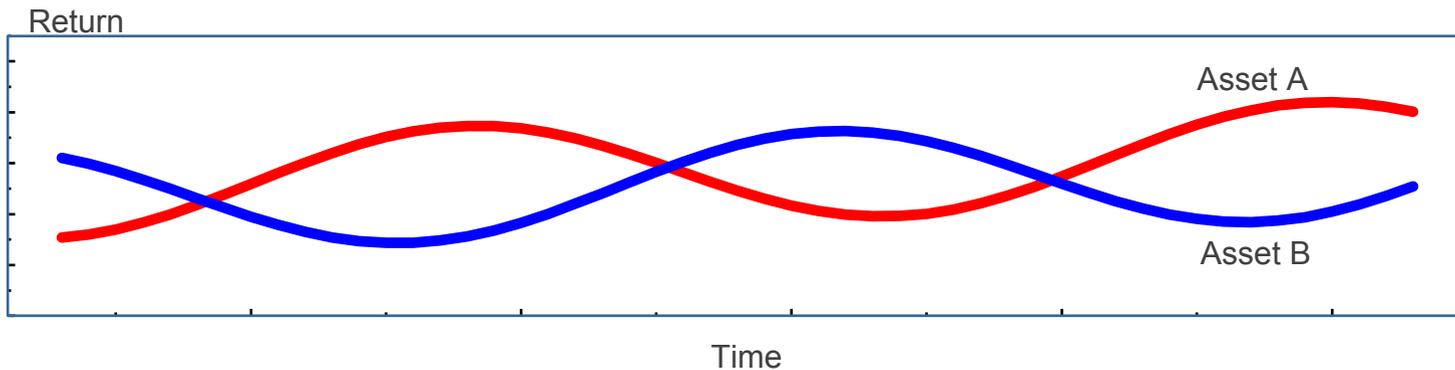
Diversification

General Investment Theory

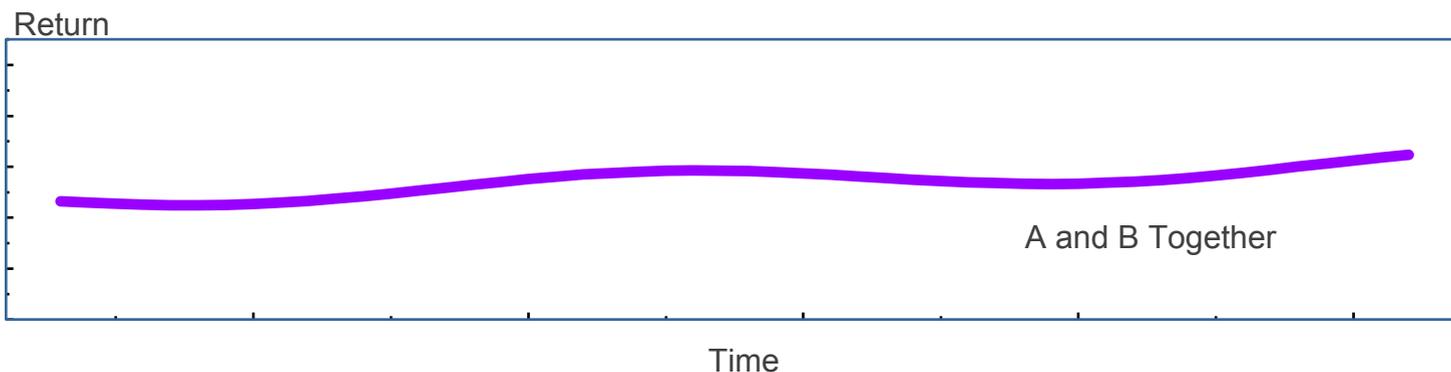
What is Diversification?

Diversification is the practice of holding a large number of assets or asset classes in a portfolio so as to reduce the portfolio's sensitivity to the return of an individual asset (or class of assets). Diversification can produce a more optimal risk/return relationship.

Assets A and B have low correlations



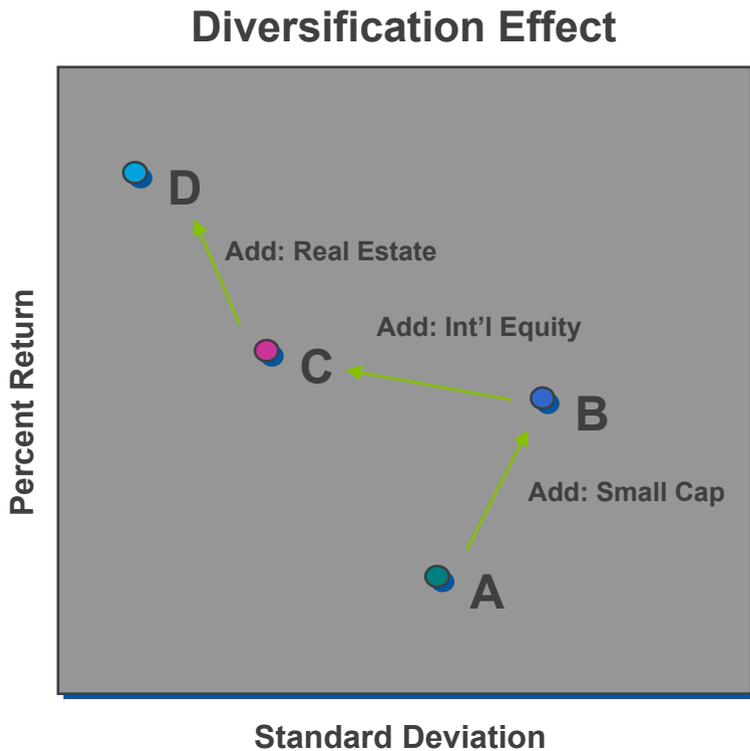
... so investing in both of them together smoothes results



General Investment Theory

Diversification and Risk

The following chart shows the diversification effect of different portfolio asset mixes. Although diversification is usually thought of in terms of risk reduction, it equivalently can be viewed in terms of return enhancement.

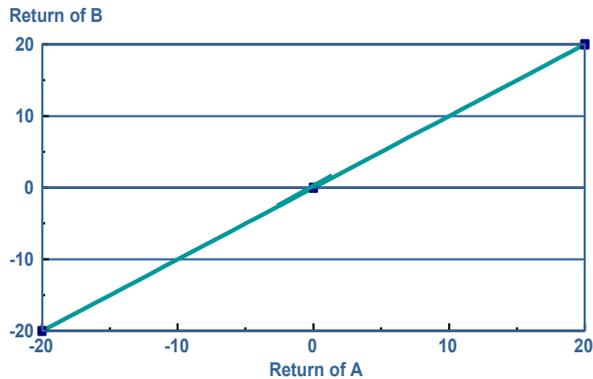


	Diversification			
	Least	→		Most
	A	B	C	D
Cash	10%	10%	10%	5%
Bonds	30%	30%	30%	25%
Large Cap Stock	60%	50%	40%	40%
Small Cap Stock		10%	10%	10%
International Stock			10%	10%
Real Estate				10%
	100%	100%	100%	100%

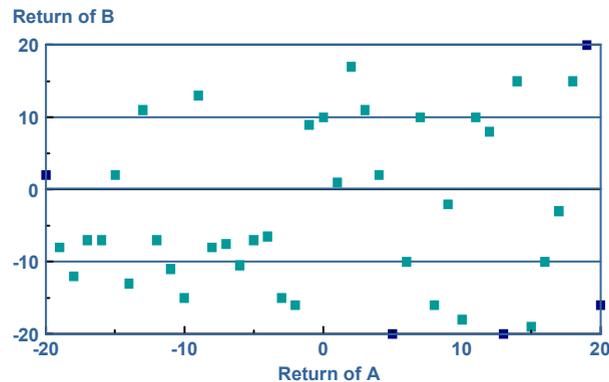
General Investment Theory

Asset Class Correlations

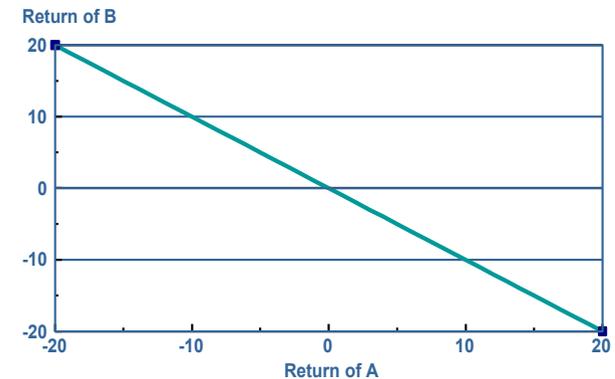
Perfect Correlation = +1.0



None or Random Correlation = 0.0



Perfectly Negative Correlation = -1.0



For statistics in between the extremes, the interpretation is one of degree. For example, a correlation of 0.90 would be strongly positive while a correlation of -0.10 would be closer to random.

Correlation - Statistical measure of the degree to which the movement of two asset classes are related. Correlations of 1 means that assets move together. A correlation of 0 suggests that there is no relationship between assets (Random relationship). And a less than 1.0 correlation indicates a less than perfectly positive relationship, hence the potential for diversification benefits.

General Investment Theory

Nominal Correlations with asset classes

		Domestic Equity-Large Cap	Domestic Equity-Small Cap	International Equity	International Eq-Emerging Mkts	Fixed Income-Aggregate	Fixed Income-Long G/C	Inflation-Indexed Bonds	Cash
		1	2	3	4	5	6	7	8
1	Domestic Equity-Large Cap	1.00							
2	Domestic Equity-Small Cap	0.85	1.00						
3	International Equity	0.75	0.60	1.00					
4	International Eq-Emerging Mkts	0.50	0.45	0.55	1.00				
5	Fixed Income-Aggregate	0.20	0.20	0.10	0.00	1.00			
6	Fixed Income-Long G/C	0.25	0.15	0.15	0.00	0.95	1.00		
7	Inflation-Indexed Bonds	0.15	0.15	0.10	0.10	0.60	0.60	1.00	
8	Cash	0.00	0.00	0.00	0.00	0.10	0.10	0.30	1.00

MERCER



MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

**Ohio Bureau of Workers' Compensation
Invested Assets Market Value Comparison
TOTAL FUNDS**

Asset Sector	Market Value Aug 31, 2008	% Assets	Market Value July 31, 2008	% Assets	Increase(Decrease) Prior Month-End	% Change	Market Value June 30, 2008	% Assets	Increase (Decrease) Prior Fiscal Year-End	% Change
Bonds	13,957,513,222	78.2%	13,804,843,214	79.9%	152,670,008	1.1%	\$13,917,829,156	79.8%	39,684,066	0.3%
Equity	3,201,805,576	17.9%	3,156,969,960	18.3%	44,835,616	1.4%	3,185,174,964	18.3%	16,630,612	0.5%
Net Cash - OIM	93,784,124	0.5%	37,376,967	0.2%	56,407,157	150.9%	31,217,754	0.2%	62,566,370	200.4%
Net Cash - Operating	492,110,903	2.8%	172,661,198	1.0%	319,449,705	185.0%	202,328,872	1.2%	289,782,031	143.2%
Net Cash - MIF, PWRF, SIEGF	93,207,476	0.5%	95,332,566	0.6%	(2,125,090)	-2.2%	95,980,364	0.6%	(2,772,888)	-2.9%
Total Net Cash	679,102,503	3.8%	305,370,731	1.8%	373,731,772	122.4%	329,526,990	1.9%	349,575,513	106.1%
Total Invested Assets	\$17,838,421,301	100%	\$17,267,183,905	100%	\$571,237,396	3.3%	\$17,432,531,110	100%	\$405,890,191	2.3%

OIM: Outside Investment Managers

MIF: Marine Industry Fund; **PWRF:** Public Work-Relief Employees' Fund; **SIEGF:** Self-Insured Employers' Guaranty Fund

Market Value of Bonds and Stocks includes accrued investment income.

Net Cash includes the impact of net trade receivables/payables, accrued money market earnings, and accrued investment manager fees.

August/July 2008 Comparisons

- Net investment income in August 2008 was \$255 million representing a monthly net portfolio return of +1.42%% (unaudited).
- Bond market value increase of \$152.7 mm comprised of \$93.3 mm in interest income, \$115.4 mm in net realized/unrealized gains reduced by \$56.0 mm in OIM net bond sales (increasing net cash balances accordingly).
- Equity market value increase of \$44.8 mm comprised largely of \$7.2 mm of dividend income, \$38.2 mm in net realized/unrealized gains and \$0.4 mm in higher OIM net cash balances.
- Net cash balances increased \$373.7 mm in August 2008 largely due to increased OIM cash balances (\$56.4mm) and increased operating cash balances (\$319.4mm).
JPMorgan US Govt. money market fund had 30-day average yield of 2.19% for August 2008 (2.19% for July08) and 7-day average yield of 2.20% on 8/31/08 (2.19% on 7/31/08).

August 2008/June 2008 FYTD Comparisons

- Net investment income FYTD of \$120 million comprised of \$194 mm of investment income and (\$73) mm of net realized/unrealized losses, offset slightly by \$1 mm in fees.
- Bond market value increase of \$40 mm comprised of \$180 mm in interest income and \$80 mm of net realized/unrealized losses, reduced by \$60 mm in higher OIM cash balances.
- Equity market value increase of \$17 mm comprised largely of \$12 mm in dividend income and \$7 mm in realized/unrealized gains, reduced by \$4 mm in lower OIM cash balances.