

SESSION 2

Understanding Benchmarking



David R. Carr

*Director, Fixed Income
and Capital Markets Unit
Robert W. Baird & Co.*

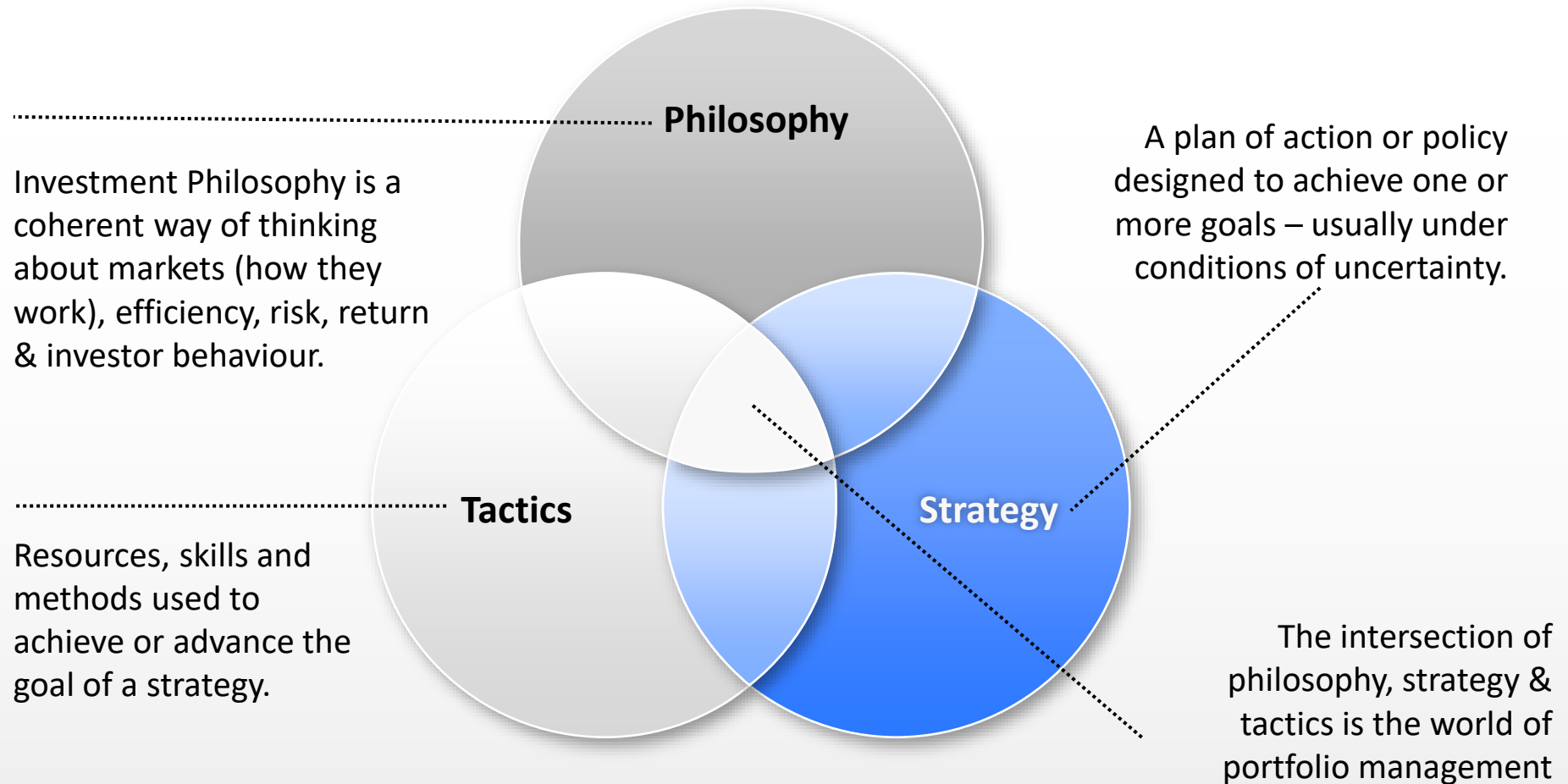


Kevin Webb

*Managing Director
Robert W. Baird & Co.*

Philosophy, Strategy & Tactics

Where Does this Fit?



The difference between strategy and tactics: Strategy is done above the shoulders, Tactics are done below the shoulders.

Understanding Benchmarks - Concepts

Agenda

1

Assumptions/Definitions

2

What are the Types of Benchmarks?

3

Are Benchmarks & Fixed Income Indices the Same?

4

What are the Problems with Indices as Benchmarks?

5

What should I Benchmark?

Understanding Benchmarks - Concepts

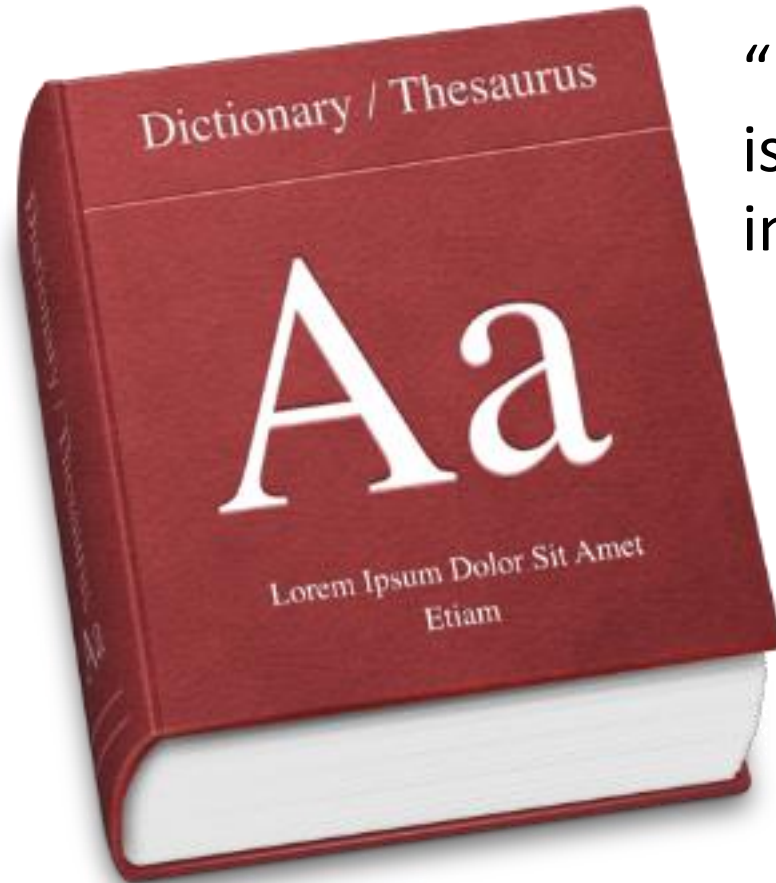
Agenda



Assumptions/Definitions



Definitions

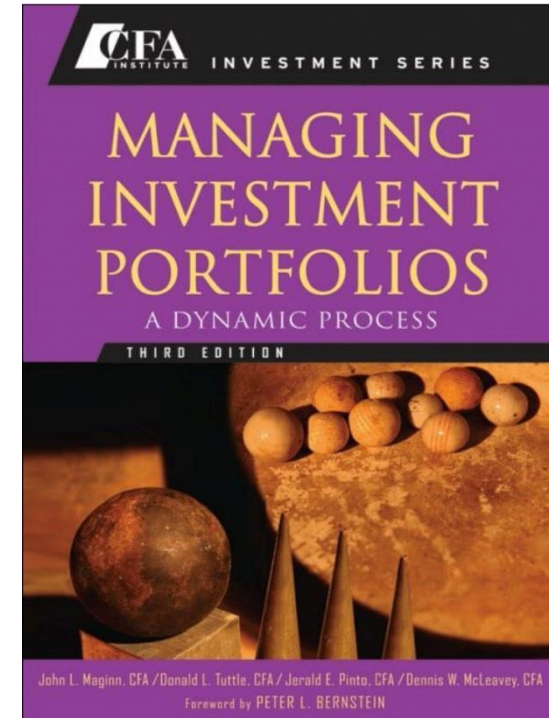


“Knowledge is knowing a tomato is a fruit; Wisdom is not putting it in a fruit salad.”



Benchmark

“Benchmark: Something taken as a standard of comparison; a comparison portfolio; a collection of securities or risk factors and associated weights that represents the persistent and prominent investment characteristics of an asset category or manager’s investment process.”



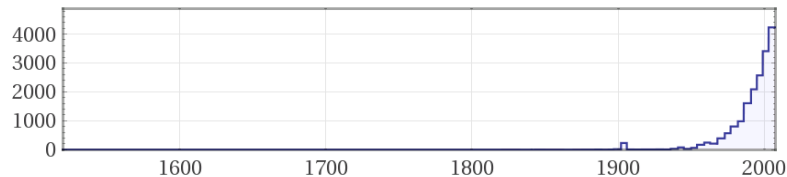
Benchmark

Definitions :

- 1 noun a standard by which something can be measured or judged
- 2 noun a surveyor's mark on a permanent object of predetermined position and elevation used as a reference point

benchmark | Computed by Wolfram|Alpha

Word frequency history :



(from 1539 to 2007) (in occurrences per billion words per year)

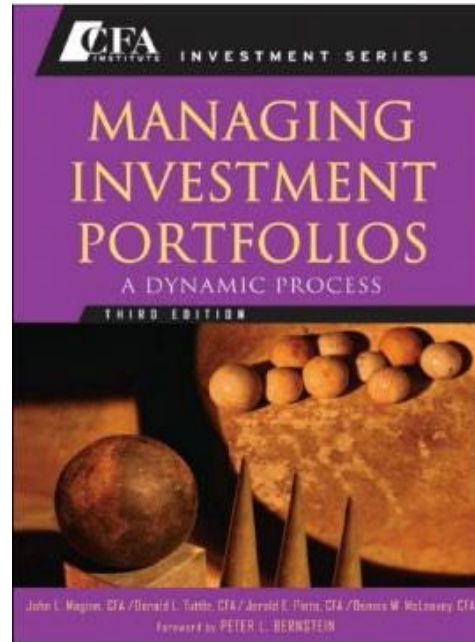
benchmark | Computed by Wolfram|Alpha

Google Books Ngram Viewer

Graph these comma-separated phrases: index,benchmark

case-insensitive

between 1800 and 2008 from the corpus English with smoothing of 7



“The Merriam-Webster Dictionary defines a benchmark as a “standard or point of reference in measuring or judging quality, value, etc.” Applying this general definition to investment management, a benchmark is a collection of securities or risk factors and associated weights that represents the persistent and prominent investment characteristics of an asset category or manager’s investment process.”

WolframAlpha, <http://www.wolframalpha.com/input/?i=benchmark&rawformassumption=%7B%22C%22,+%22benchmark%22%7D+%3E+%7B%22Word%22%7D&rawformassumption=%7B%22DPClash%22,+%22Financiale%22,+%22benchmark%22%7D+%3E+%7B%22NYSE:BHE%22%7D> (December 30, 2016). Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (p. 731). Wiley. Kindle Edition.

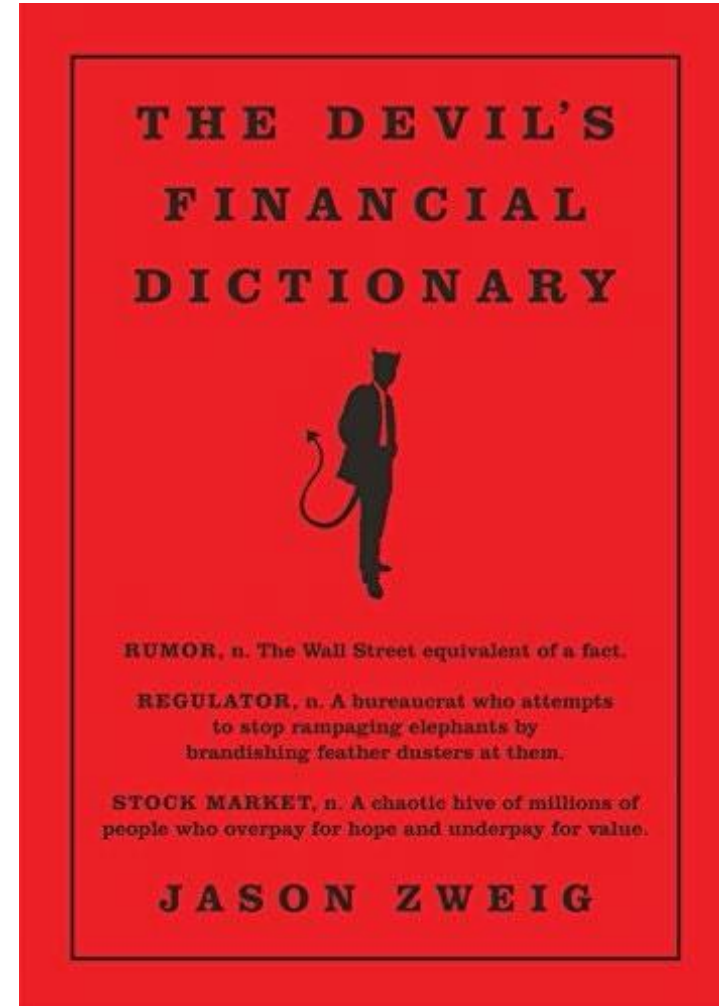
Benchmarks ~ Expectations



Risk Defined

More things can happen than will happen.

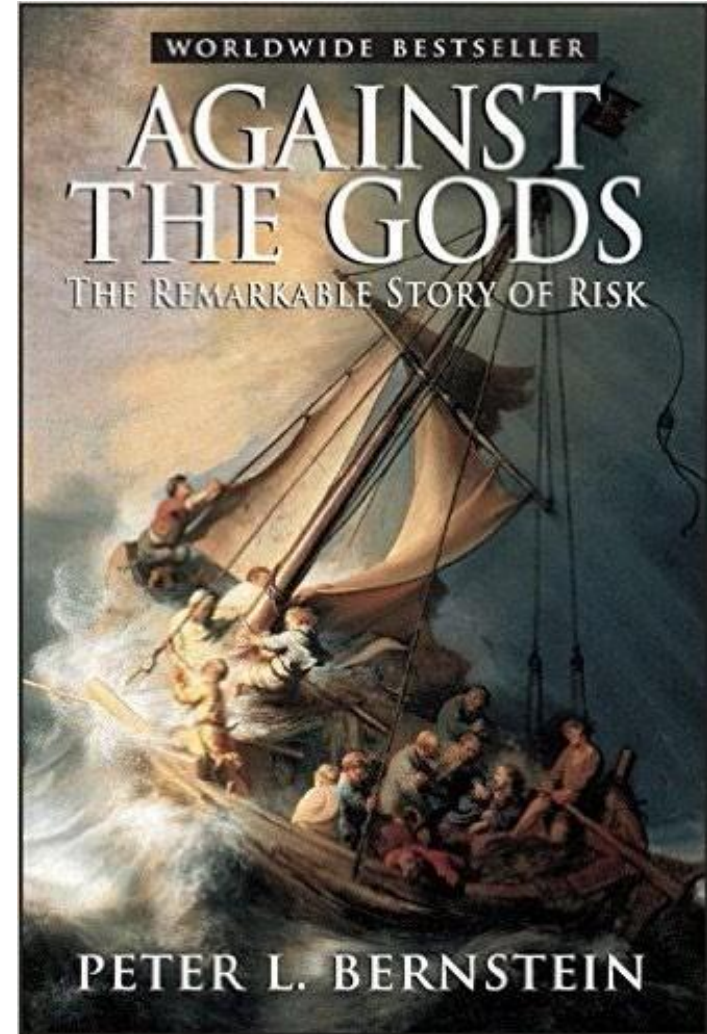
“ ... It has been philosophically defined by finance professor Elroy Dimson of London Business School this way: ***“Risk means more things can happen than will happen.”*** In the end, risk is the gap between what investors think they know and what they end up learning—about their investments, about the financial markets, and about themselves.”



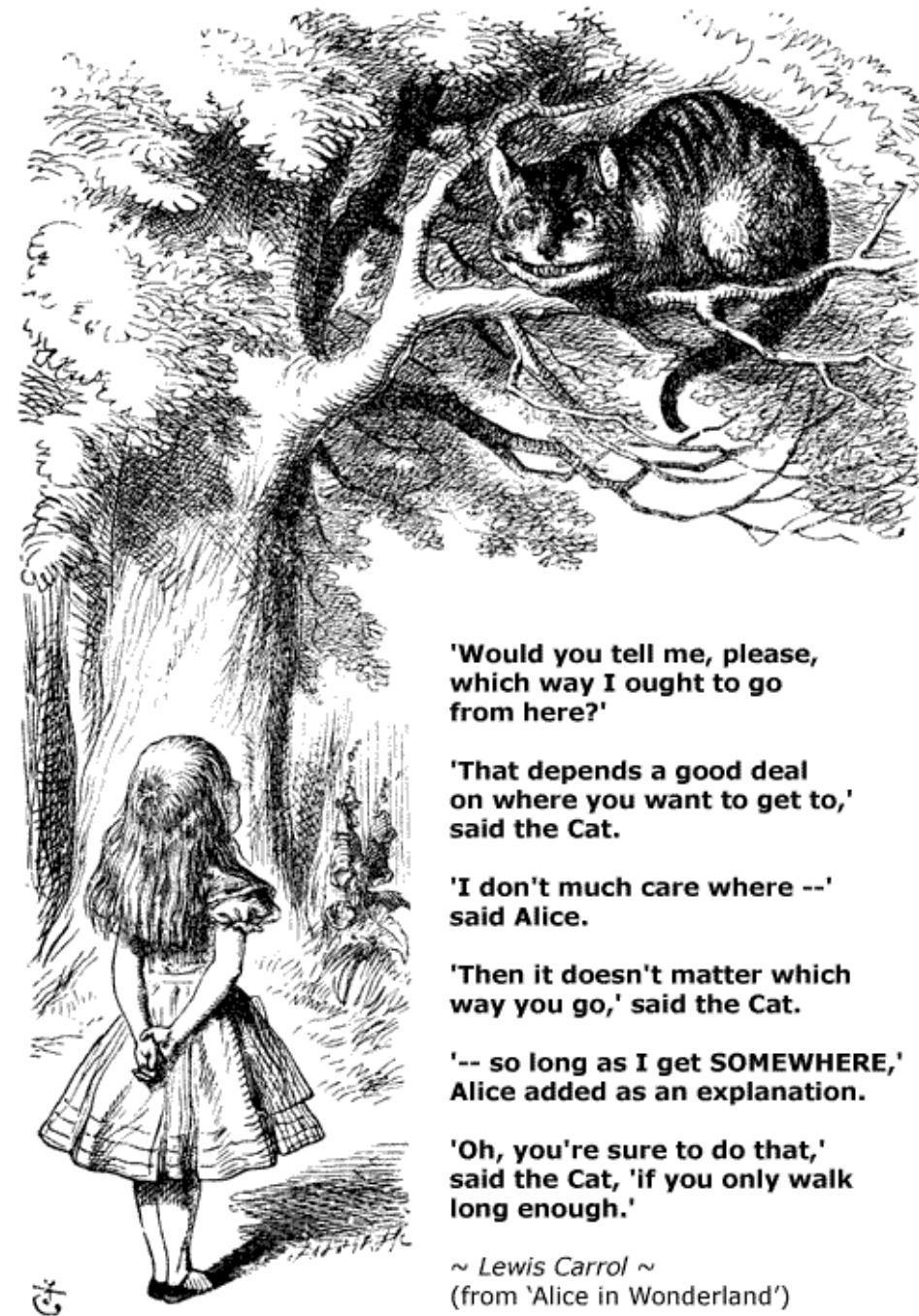
Risk & Return are Related

Finding the right trade-off is the key

“ *The scientist who developed the Saturn 5 rocket that launched the first Apollo mission to the moon put it this way: ***"You want a valve that doesn't leak and you try everything possible to develop one. But the real world provides you with a leaky valve. You have to determine how much leaking you can tolerate."*** (Obituary of Arthur Rudolph, in The New York Times, January 3, 1996.) ”



**The Benchmark
selection you
make is like asking
for a destination.
But how you get
there is part of
the question too.**



'Would you tell me, please,
which way I ought to go
from here?'

'That depends a good deal
on where you want to get to,'
said the Cat.

'I don't much care where --'
said Alice.

'Then it doesn't matter which
way you go,' said the Cat.

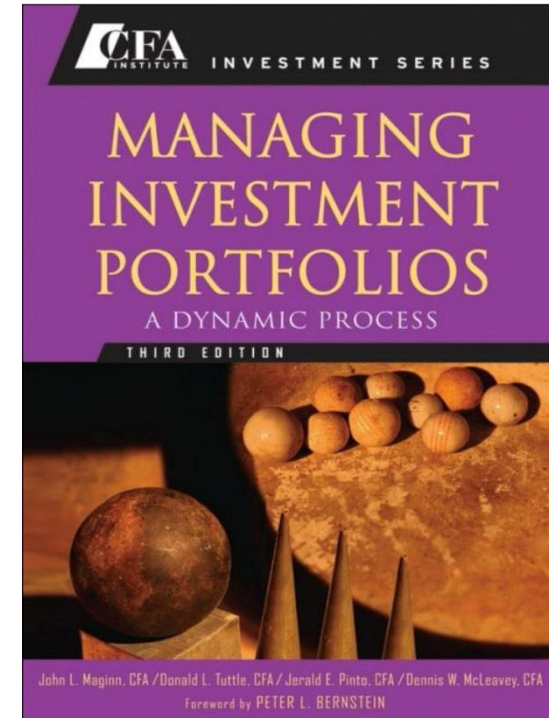
'-- so long as I get **SOMEWHERE**,'
Alice added as an explanation.

'Oh, you're sure to do that,'
said the Cat, 'if you only walk
long enough.'

~ Lewis Carroll ~
(from 'Alice in Wonderland')

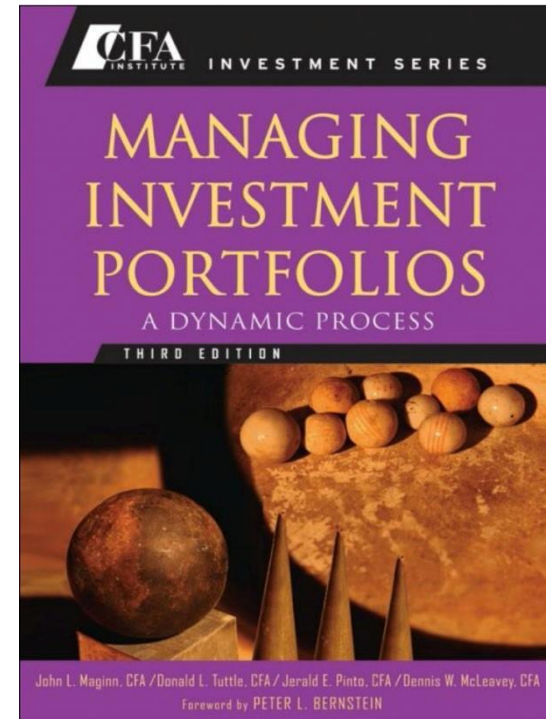
Passive Portfolio Management

“ A passive management strategy assumes that the market’s expectations are essentially correct or, more precisely, that the manager has no reason to disagree with these expectations —perhaps because the manager has no particular expertise in forecasting. By setting the portfolio’s risk profile (e.g., interest rate sensitivity and credit quality) identical to the benchmark’s risk profile and pursuing a passive strategy, the manager is quite willing to accept an average risk level (as defined by the benchmark’s and portfolio’s risk profile) and an average rate of return (as measured by the benchmark’s and portfolio’s return). **Under a passive strategy, the manager does not have to make independent forecasts and the portfolio should very closely track the benchmark index.** ”



Active Portfolio Management

“ An active management strategy essentially relies on the manager’s forecasting ability. Active managers believe that they possess superior skills in interest rate forecasting, credit valuation, or in some other area that can be used to exploit opportunities in the market. The portfolio’s return should increase if the manager’s forecasts of the future path of the factors that influence fixed-income returns (e.g., changes in interest rates or credit spreads) are more accurate than those reflected in the current prices of fixed-income securities. **The manager can create small mismatches (enhancement) or large mismatches (full-blown active management) relative to the benchmark to take advantage of this expertise.** ”



Understanding Benchmarking

Agenda

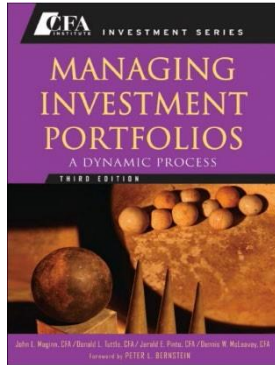


Assumptions/Definitions

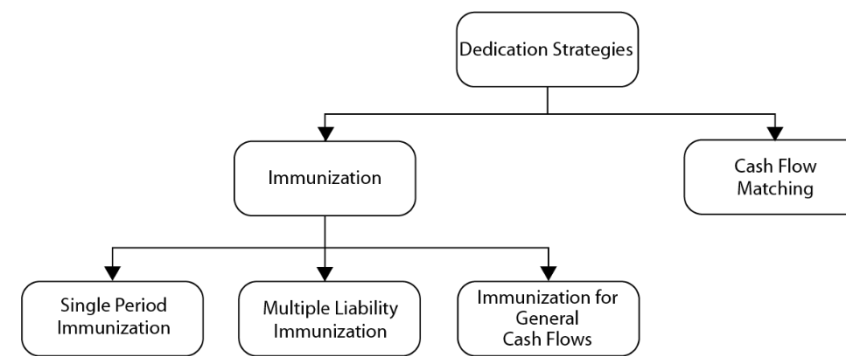
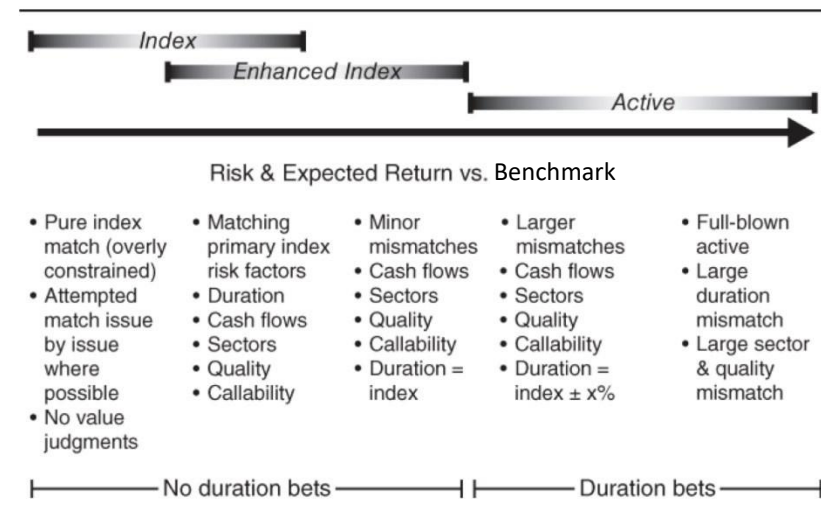
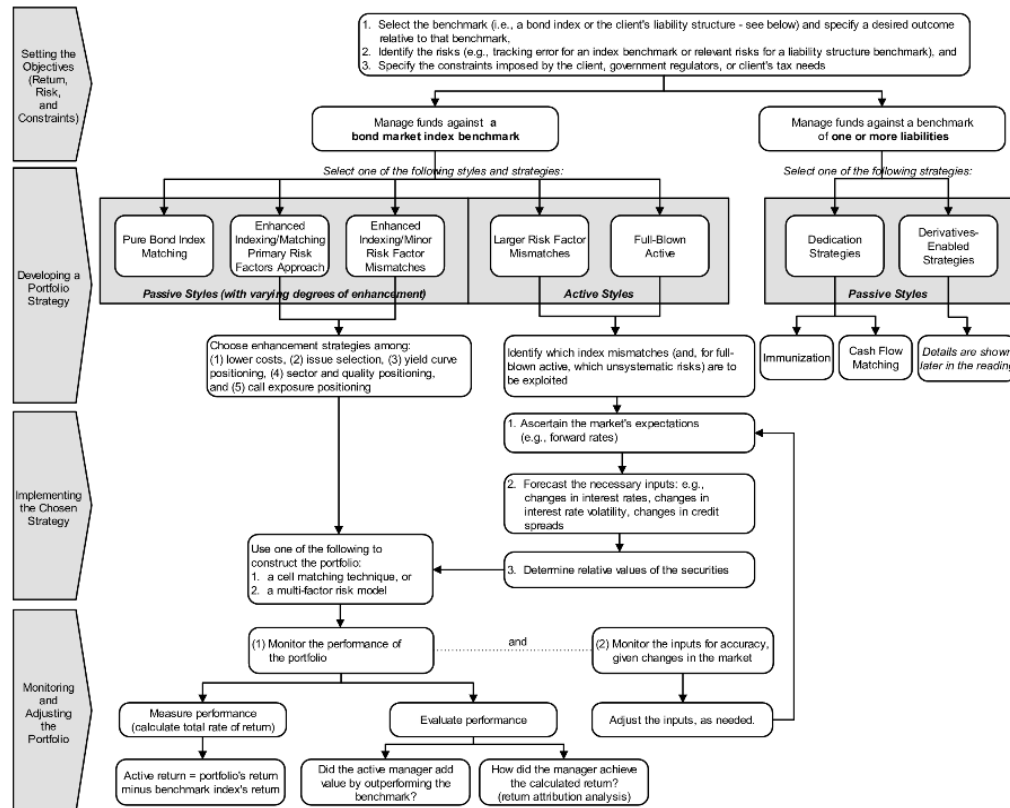


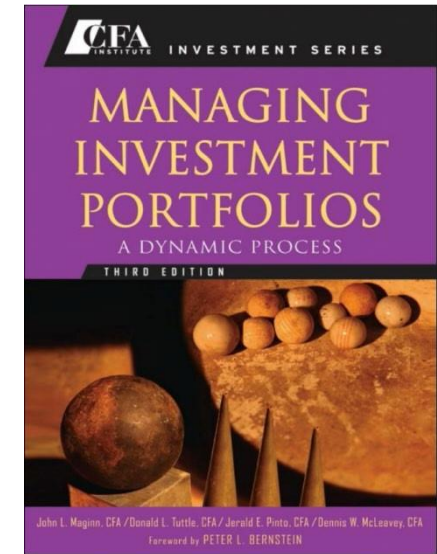
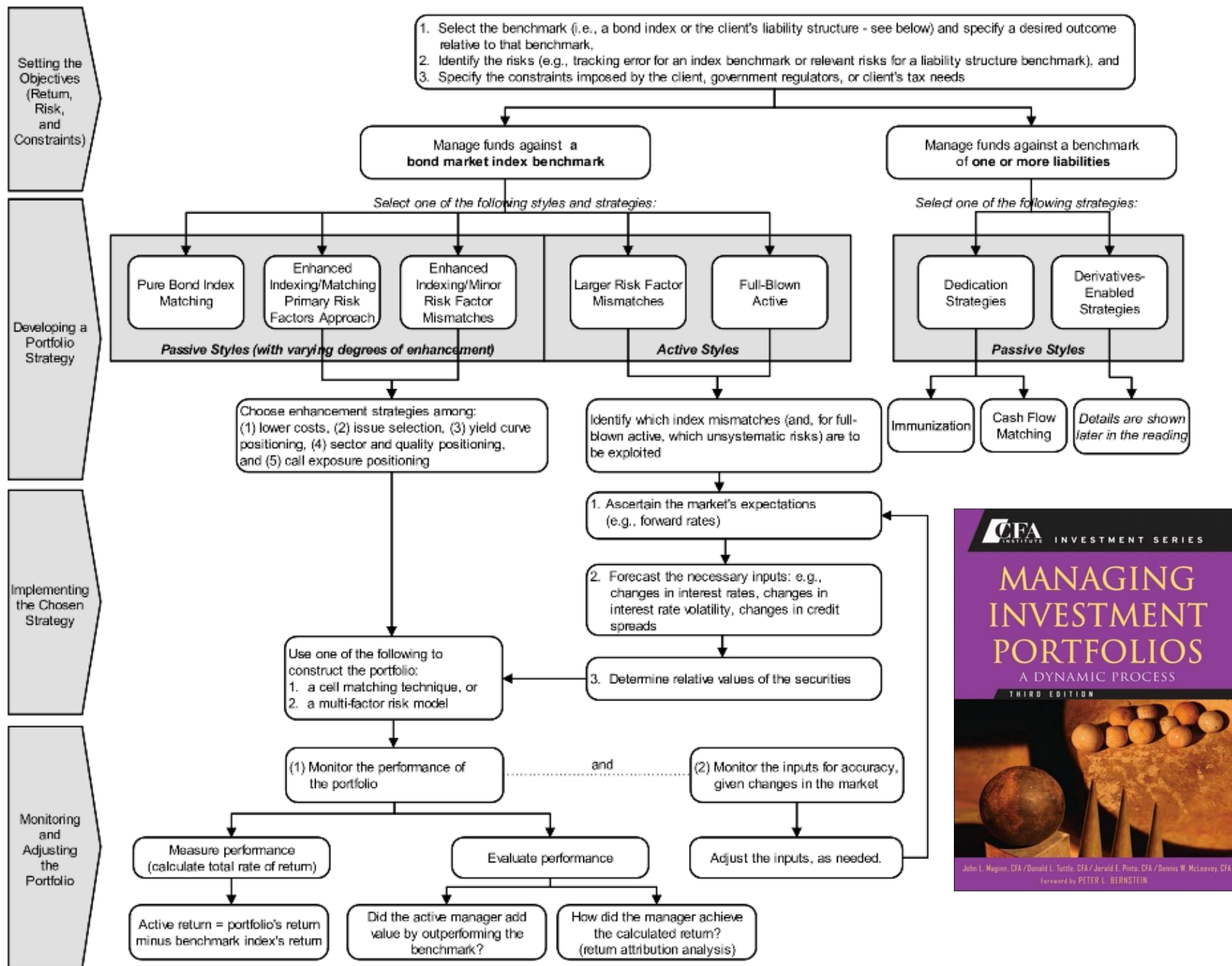
What are the Types of Benchmarks?

A Framework for Fixed-Income Portfolio Management

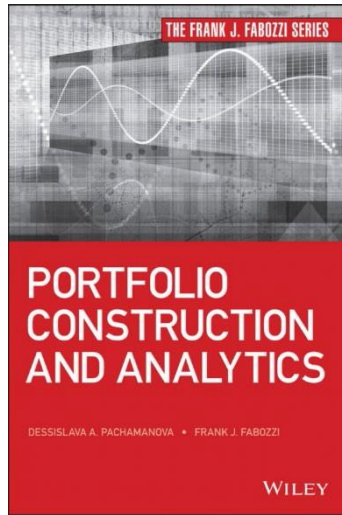


1. Setting the investment objectives (with related constraints).
2. Developing and implementing a portfolio strategy.
3. Monitoring the portfolio.
4. Adjusting the portfolio.





Portfolio Benchmark Index Strategy Spectrum



1. Pure bond index matching
2. Enhanced indexing/ primary factor matching
3. Enhanced indexing/ minor factor mismatches
4. Active management/ larger factor mismatches
5. Active management/ full-blown active



Risk & Expected Return vs. Benchmark

- | | | | | |
|--|--|---|--|---|
| <ul style="list-style-type: none"> • Pure index match (overly constrained) • Attempted match issue by issue where possible • No value judgments | <ul style="list-style-type: none"> • Matching primary index risk factors • Duration • Cash flows • Sectors • Quality • Callability | <ul style="list-style-type: none"> • Minor mismatches • Cash flows • Sectors • Quality • Callability • Duration = index | <ul style="list-style-type: none"> • Larger mismatches • Cash flows • Sectors • Quality • Callability • Duration = index \pm x% | <ul style="list-style-type: none"> • Full-blown active • Large duration mismatch • Large sector & quality mismatch |
|--|--|---|--|---|



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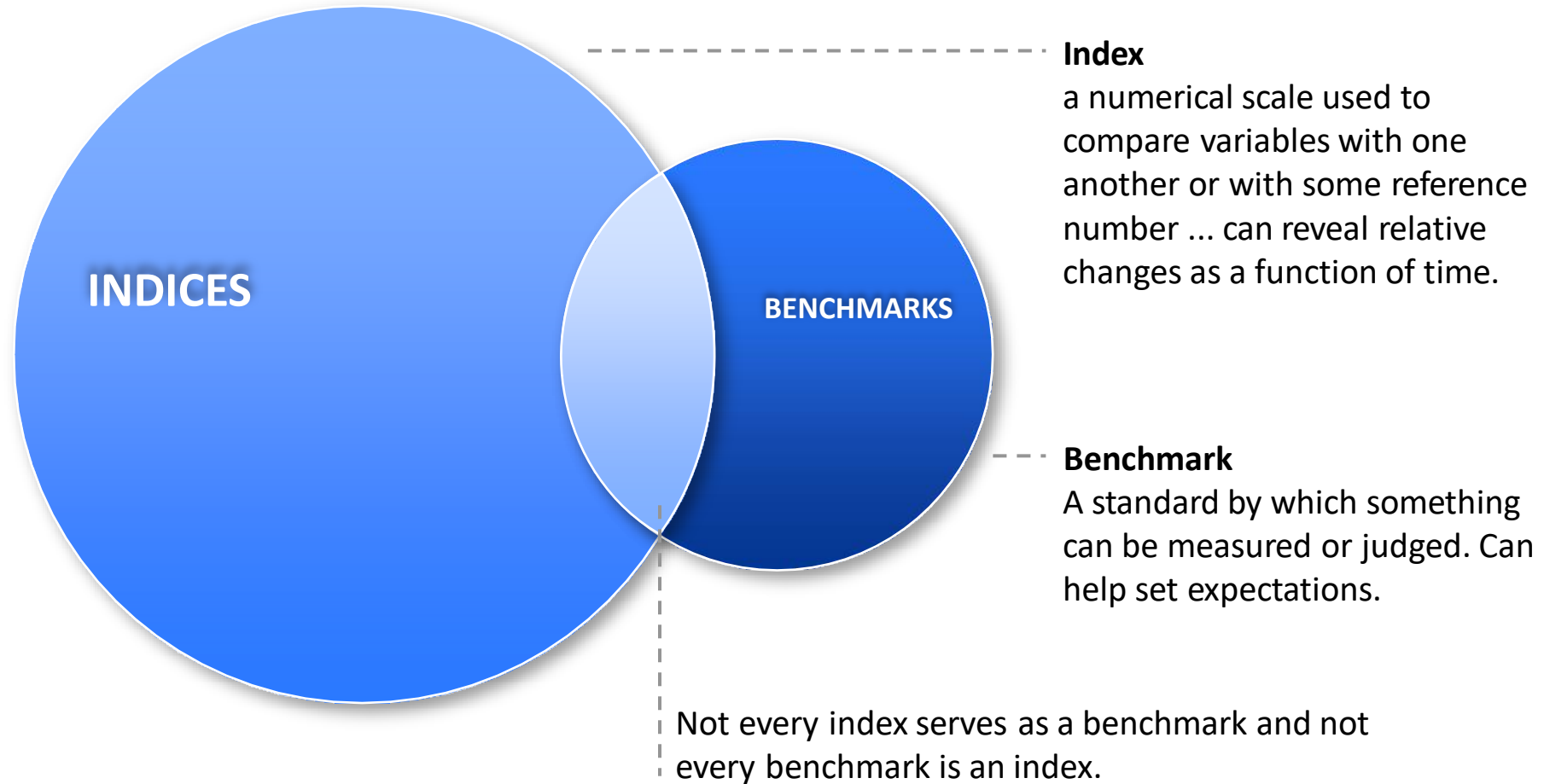
What are the Types of Benchmarks?

3

Are Benchmarks & Fixed Income Indices the Same?

Benchmark/Index Examples

Benchmark does not necessarily mean an Index



Index

Definitions :

- 1 noun a numerical scale used to compare variables with one another or with some reference number

- 2 noun a number or ratio (a value on a scale of measurement) derived from a series of observed facts; can reveal relative changes as a function of time

- 3 noun a mathematical notation indicating the number of times a quantity is multiplied by itself

- 4 noun an alphabetical listing of names and topics along with page numbers where they are discussed

- 5 noun the finger next to the thumb

- 6 verb list in an index

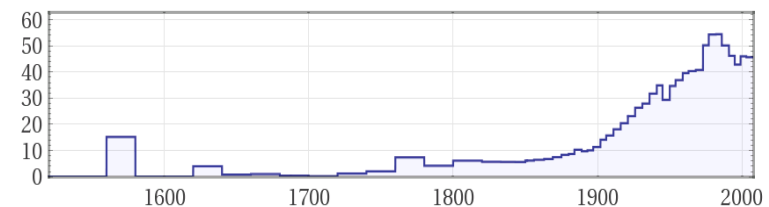
- 7 verb provide with an index

- 8 verb adjust through indexation

(8 meanings)

index | Computed by Wolfram|Alpha

Word frequency history :



(from 1539 to 2007) (in occurrences per million words per year)

index | Computed by Wolfram|Alpha

INDEX RULES SPELL OUT ALL PERTINENT DETAILS OF HOW AN INDEX IS COMPILED

Index rules define:

- Criteria for selecting constituent securities
- Methodologies for weighting and rebalancing the constituents
- Methodologies for determining index valuations

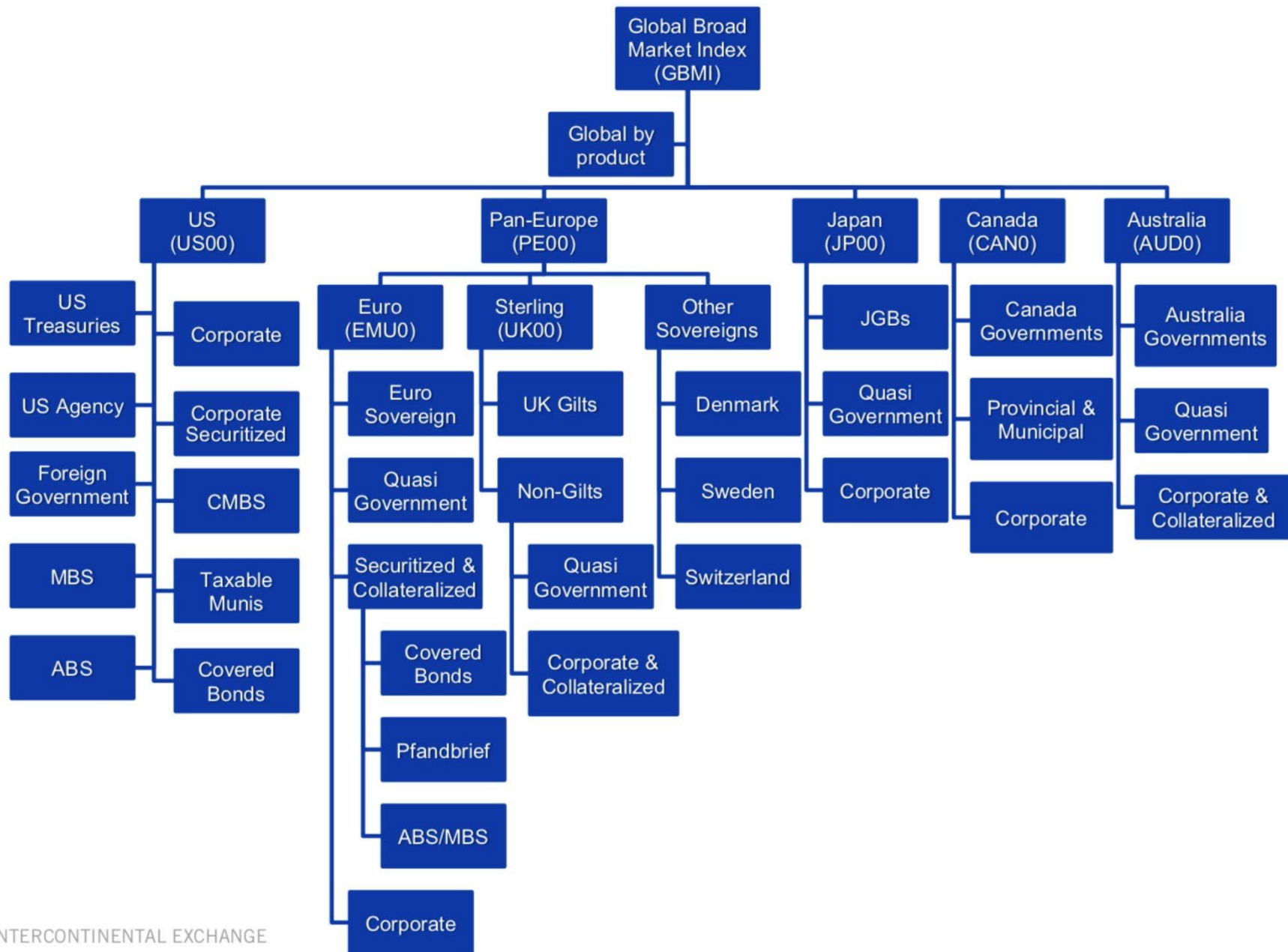
Rules are first established when the index is created

Rules may require amendment over the life of the index

For example, all ICE BofAML rules are reviewed annually:

- Proposed rule changes published in April
- Followed by a public commentary period
- Final rule changes published in July
- Effective date for adopted changes is September 30
- Changes can be implemented apart from the standard cycle to address special situations and market events

GLOBAL BROAD MARKET INDEX FAMILY



“STANDARD” SUB-INDICES AVAILABLE FOR MANY OF THE FLAGSHIP BENCHMARKS

Rating:

- High grade: AAA, AA, A, BBB, AAA-A, AAA-AA, A-BBB
- High yield: BB, B, CCC & lower, BB-B
- Cross-over: BBB-BB

Maturity:

- 1-3yr, 3-5yr, 1-5yr, 5-7yr, 7-10yr, 5-10yr, 1-10yr, 10-15yr, 15+yr, 10+yr

Sector:

- High grade: sub-indices for level 2 and 3 sector categories
- High yield: sub-indices for various level 4 groupings

Combinations of the above

Issuer constrained indices

- High grade: 1% issuer cap
- High yield: 2% issuer cap for USD; 3% issuer cap for EUR/GBP
- Emerging markets: 10% country cap; 2% issuer cap

ICE BofAML US Issuers 1-5 Year AAA-A US Corporate & Government Index (BU10)

ICE BofAML US Issuers 1-5 Year AAA-A US Corporate & Government Index is a subset of ICE BofAML US Corporate & Government Index including all US issuer securities with a remaining term to final maturity less than 5 years, rated AAA through A3, inclusive.

Inception date: December 31, 1996

ICE BofAML US Corporate & Government Index (B0A0)

ICE BofAML US Corporate & Government Index tracks the performance of US dollar denominated investment grade debt publicly issued in the US domestic market, including US Treasury, US agency, foreign government, supranational and corporate securities. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). In addition, qualifying securities must have at least one year remaining term to final maturity, at least 18 months to final maturity at point of issuance, a fixed coupon schedule and a minimum amount outstanding of \$1 billion for US Treasuries and \$250 million for all other securities. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the Index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. 144a securities (both with and without registration rights) and corporate pay-in-kind securities, including toggle notes, qualify for inclusion. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Eurodollar bonds (USD bonds not issued in the US domestic market), tax-exempt US municipal, equity-linked securities, DRD-eligible, securities in legal default, and hybrid securitized corporate securities are excluded from the Index.

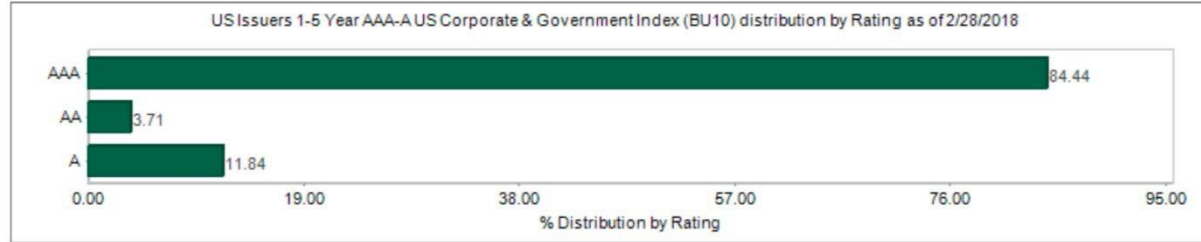
Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofAML Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates.

Inception date: December 31, 1972

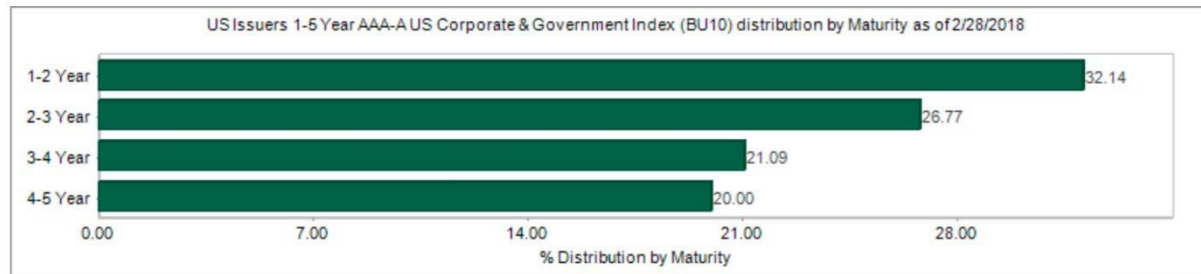
The above rules take into account all revisions up to and including September 30, 2017

<https://indices.ice.com>

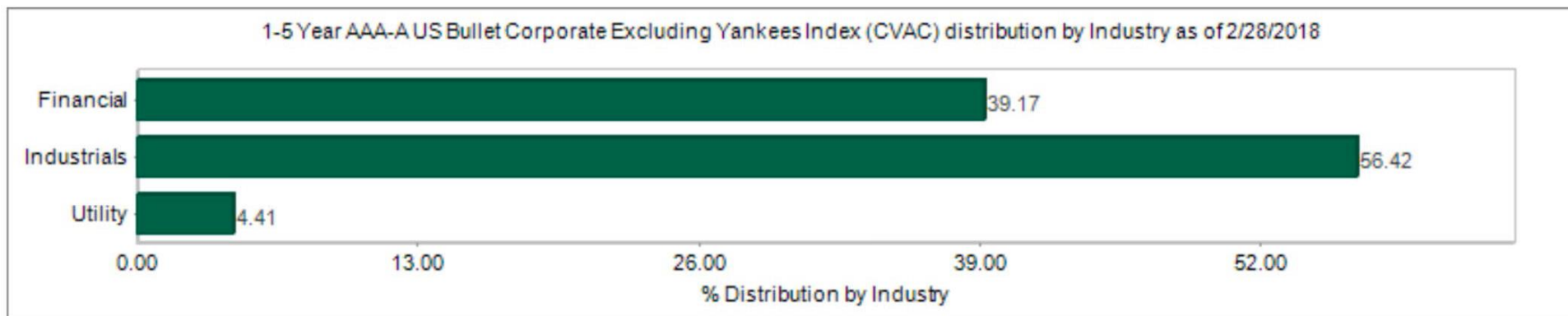
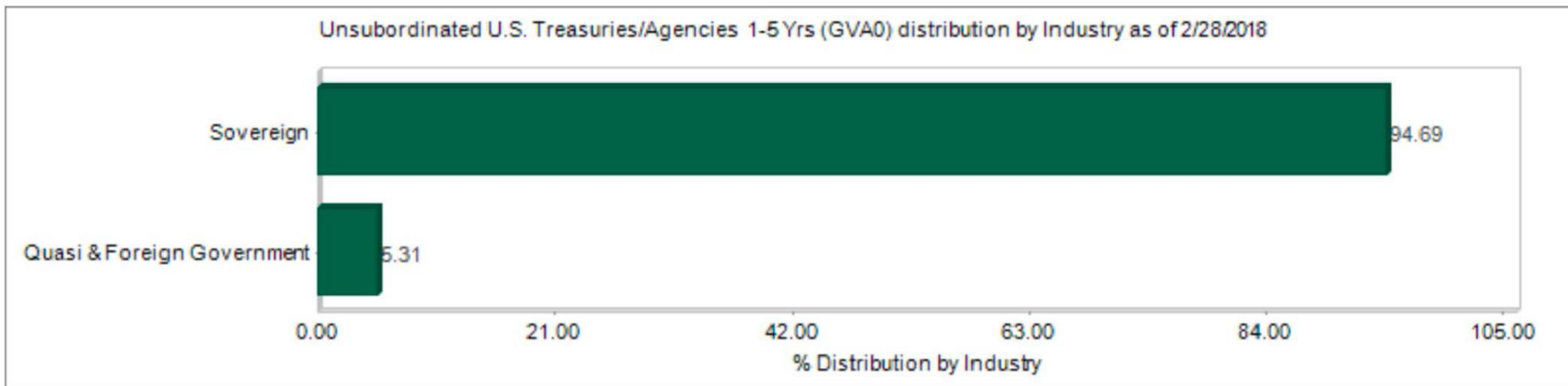
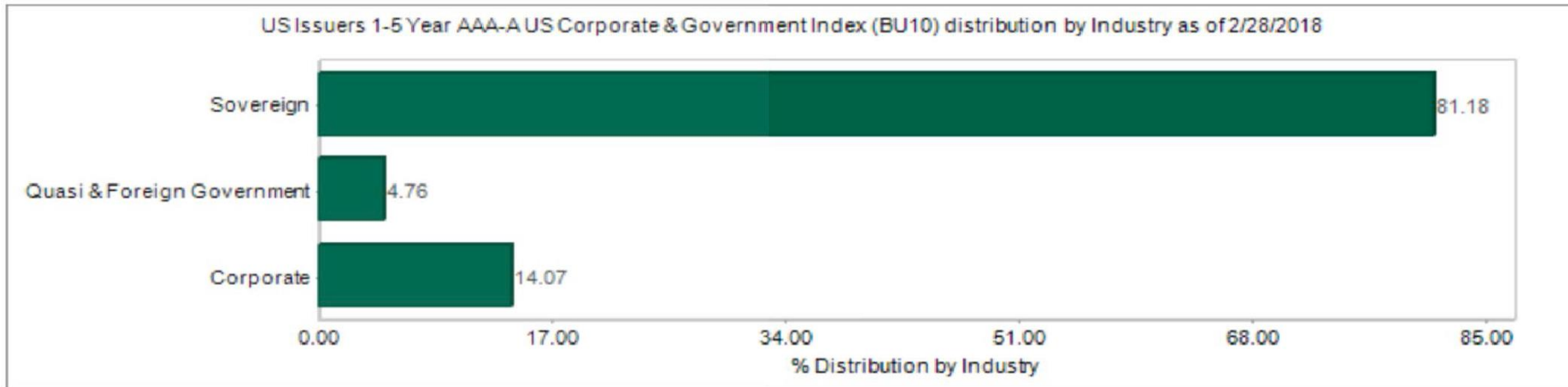
Index distribution by Rating	#	FullVal	%Full Val	Eff Dur	Contr EffDur	Eff Yld	OAS	TRR%MTD	ExRtn%MTD
AAA	404	5,566,801.193	84.44483	2.65	2.24	2.39	1	-0.124	0.017
AA	253	244,712.710	3.71214	2.33	0.09	2.55	21	-0.178	-0.057
A	858	780,720.345	11.84303	2.79	0.33	2.95	53	-0.408	-0.251
Grand Total	1,515	6,592,234.248	100.00000	2.66	2.66	2.46	8	-0.160	-0.017



Index distribution by Maturity	#	FullVal	%Full Val	Eff Dur	Contr EffDur	Eff Yld	OAS	TRR%MTD	ExRtn%MTD
1-2 Year	493	2,118,565.851	32.13730	1.45	0.47	2.25	6	-0.011	0.023
2-3 Year	419	1,764,774.845	26.77051	2.40	0.64	2.43	7	-0.121	-0.021
3-4 Year	301	1,390,340.739	21.09058	3.32	0.70	2.59	8	-0.242	-0.041
4-5 Year	302	1,318,552.813	20.00161	4.24	0.85	2.72	9	-0.363	-0.050
Grand Total	1,515	6,592,234.248	100.00000	2.66	2.66	2.46	8	-0.160	-0.017



Index distribution by Duration	#	FullVal	%Full Val	Eff Dur	Contr EffDur	Eff Yld	OAS	TRR%MTD	ExRtn%MTD
0-1 Year	39	119,563.975	1.81371	0.98	0.02	2.17	8	0.015	0.021
1-2 Year	502	2,157,699.966	32.73094	1.51	0.50	2.26	6	-0.018	0.019
2-3 Year	457	1,826,540.515	27.70746	2.50	0.69	2.46	8	-0.140	-0.026
3-4 Year	323	1,460,788.132	22.15923	3.49	0.77	2.62	9	-0.272	-0.046
4-5 Year	194	1,027,641.658	15.58867	4.35	0.68	2.72	8	-0.377	-0.048
Grand Total	1,515	6,592,234.248	100.00000	2.66	2.66	2.46	8	-0.160	-0.017



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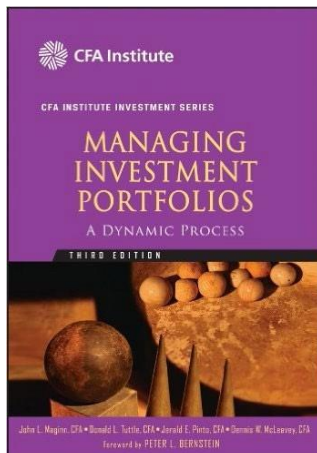
Are Benchmarks & Fixed Income Indices the Same?

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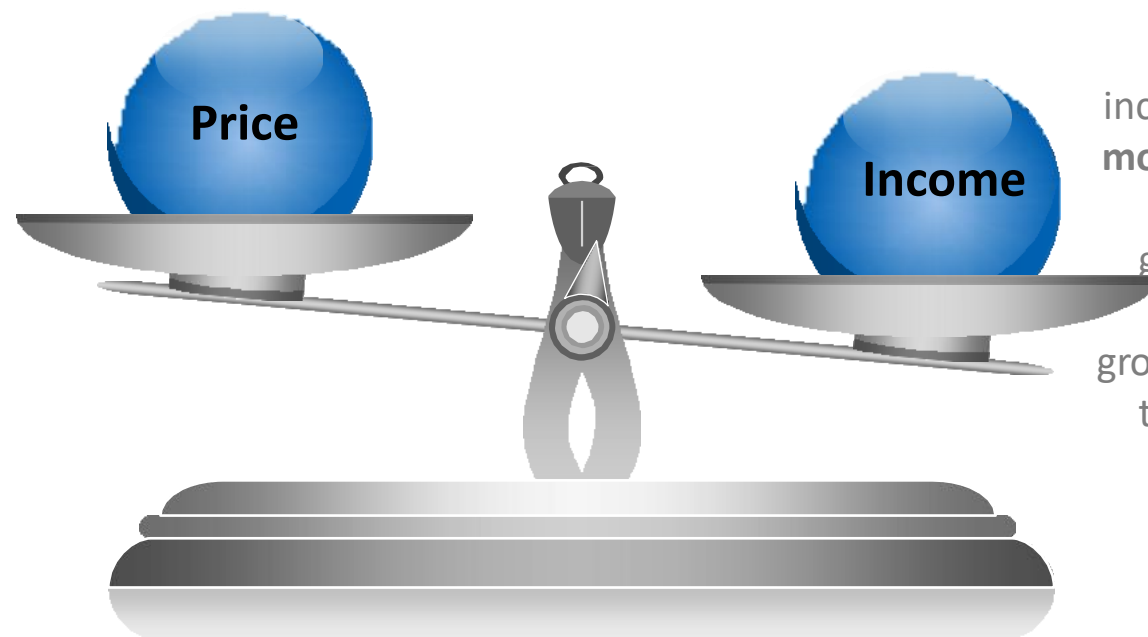
What are the Problems with Indices as Benchmarks?

What are your Return Preferences?

Total Return assumes indifference between Price return & Income return.



Total rate of return measures the increase in the investor's wealth due to both investment income (for example, dividends and interest) and capital gains (both realized and unrealized). ***The total rate of return implies that a dollar of wealth is equally meaningful to the investor whether that wealth is generated by the secure income from a 90-day Treasury bill or by the unrealized appreciation in the price of a share of common stock.***



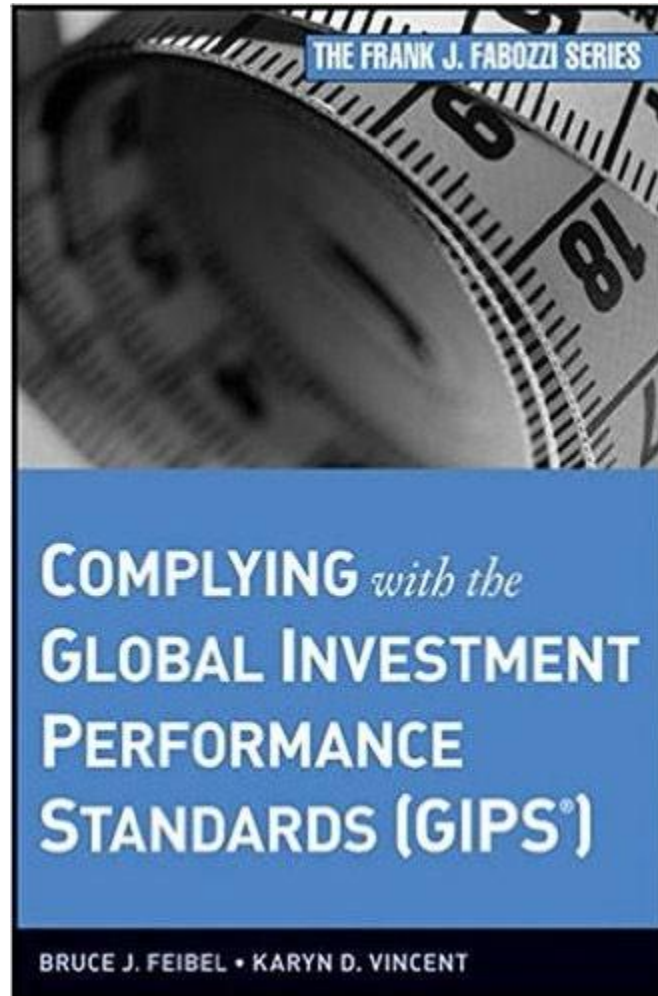
Income

Most public funds are income oriented and **put more weight on income.**

If you don't budget gains/losses and aren't tasked with portfolio growth from investments then you likely have an income preference.

What about GIPS?

The Global Investment Performance Standards

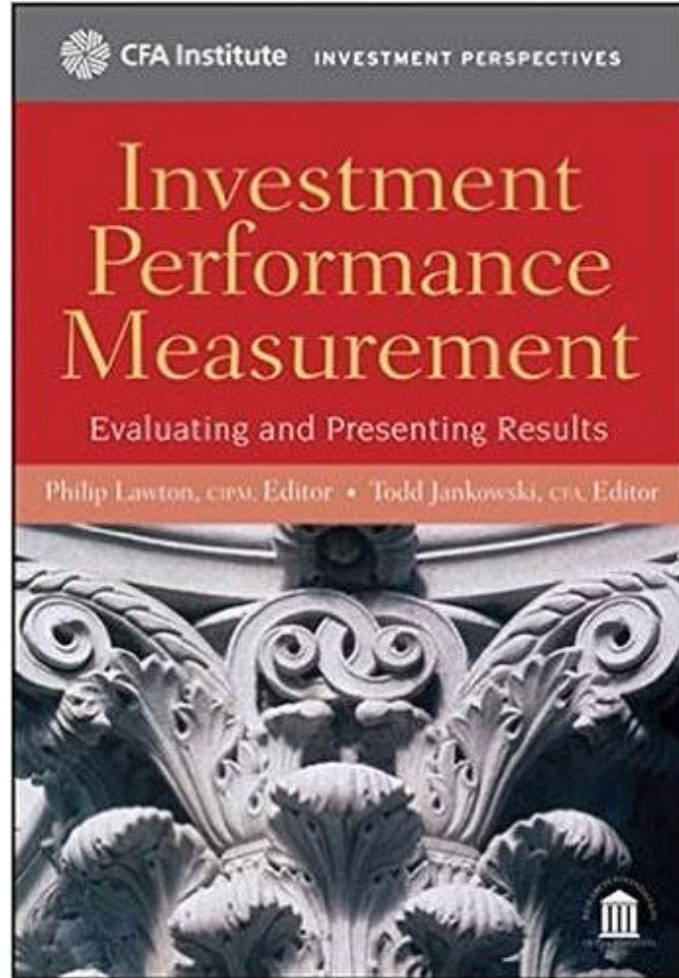


“ The GIPS standards are typically used when performance information is communicated between an investment firm and prospective institutional investors ... there is no law that an investment firm must create its marketing materials according to the GIPS standards ... ”

Feibel, Bruce J.; Vincent, Karyn D.. Complying with the Global Investment Performance Standards (GIPS) (Frank J. Fabozzi Series) (Kindle Locations 321-326). Wiley. Kindle Edition.

Problems Using Bond Indices as Benchmarks

Bums & Duration

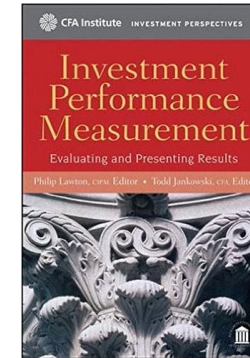


“ Fixed-income benchmarks embody a great many complex issues ... two issues: the duration problem and the “bums” problem. ...The duration problem is the fact that the duration of the benchmark comes from issuer preferences and is not necessarily the duration that a given investor should hold. The bums (or deadbeats) problem is that the biggest debtors (whether companies, countries, or other entities) have the largest weights in the benchmark. ”

Investment Performance Measurement: Evaluating and Presenting Results (CFA Institute Investment Perspectives) (Kindle Locations 4006-4012). Wiley. Kindle Edition.

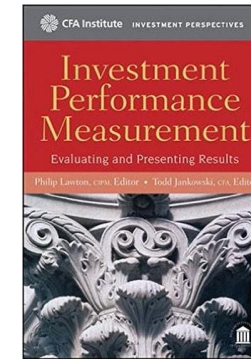
The Duration Problem

“ The duration structure of a cap-weighted bond benchmark—that is, the proportions of bonds in short-, intermediate-, and long-term categories—reflects the maturity or duration preferences of issuers, who are seeking to minimize their (apparent) cost of capital. Investors, however, are not trying to minimize their returns (which are the issuers’ costs of capital) but to maximize returns. Moreover, an investor usually has specific time-horizon preferences that make one duration more advantageous than another. These preferences do not necessarily match those of issuers in the aggregate, whose preferences are reflected in the benchmark. ... ***Because the benchmark duration is a historical accident, the optimal portfolio for an investor with no defined time horizon should be set by that investor’s risk tolerance rather than by matching the duration of the benchmark.***”



The “Bums” Problem

“Because the issuers who manage to go deepest into debt—the biggest bums—have the largest weights in a cap-weighted benchmark, such a benchmark is not likely to be mean-variance efficient. If you are tracking such a benchmark, when someone issues a security, you have to buy it in proportion to its capitalization weight to minimize tracking error to the benchmark, even if the security is only marginally of high enough quality to make it into the benchmark and even if the size of the issue, and hence its weight in the benchmark, is inordinately large. Such securities would seem to be the most likely to be downgraded or to default. The bums problem applies to countries in an international sovereign bond benchmark just as it does to corporations in a U.S. bond benchmark.”



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What Should I Benchmark?

Prudence Person

Investments shall be made with judgment and care, under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.

Prudent Investor

A U.S. law that sets the standard of fiduciary duty for those entrusted with the responsibility of managing others' money, such as trustees and estate administrators. It requires that a trustee weigh risk versus reward when making investment decisions, taking into account the income that may be generated by the investment as well as the probable safety of the invested capital.

Prudent Investor vs Prudent Man/Person

1. Trust accounts are judged on their entire portfolio, rather than whether the investment was prudent at the time of purchase.
 2. Diversification is explicitly required under the Prudent Investor Act
 3. Suitability is deemed more important than individual investments
4. Fiduciaries are allowed to delegate investment management to qualified third parties

What Should I Benchmark?

General Objectives

“The primary objectives, in priority order...

1. Safety

Safety of principal is the foremost objective... ***The goal will be to mitigate credit risk and interest rate risk.***

2. Liquidity

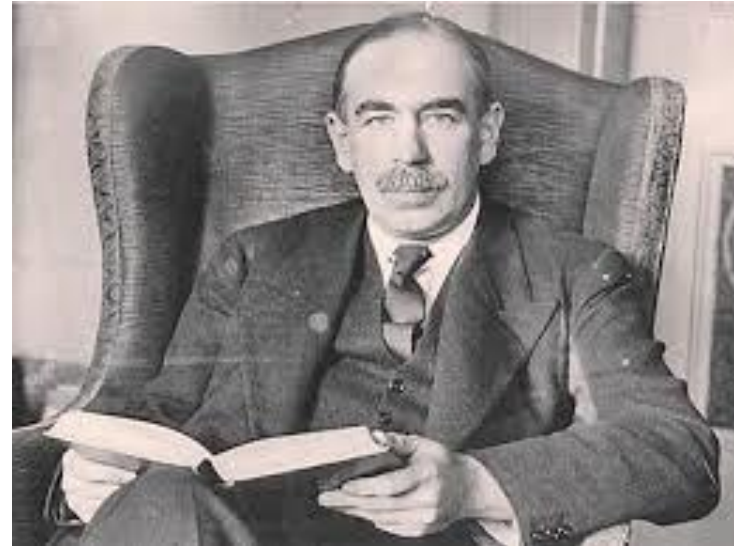
The investment portfolio shall ***remain sufficiently liquid*** to meet all operating requirements that may be reasonably anticipated.

3. Return

The investment portfolio shall be designed with the objective of attaining a ***market rate of return throughout budgetary and economic cycles***, taking into account the investment risk constraints of safety and liquidity needs.”

Economic Words of Wisdom

“The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. **It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions.**”



John Maynard Keynes writing in the introduction of
H.D. Henderson, *Supply and Demand* (New York: Harcourt, Brace and Company, 1922), v. Emphasis added.

What Measures to Benchmark?

The 5 Points of Suitability



Suitability Benchmark Process

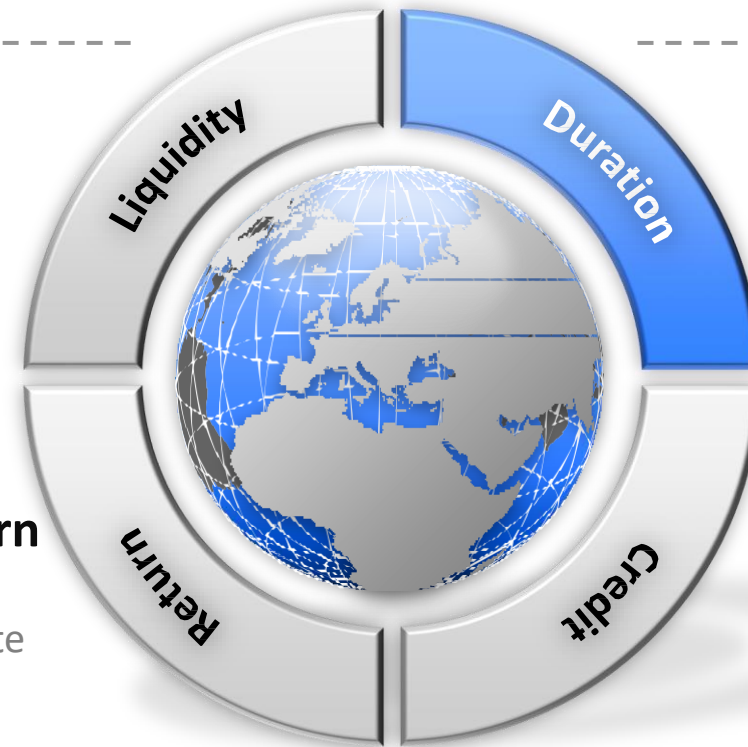
You decide your benchmarks. Don't let an index decide.

1. Liquidity

Examine historical cash flows to determine optimal liquidity.

4. Market Rate of Return

Use indices or liabilities to determine optimal market rate of return benchmark point/range.



2. Interest Rate Risk

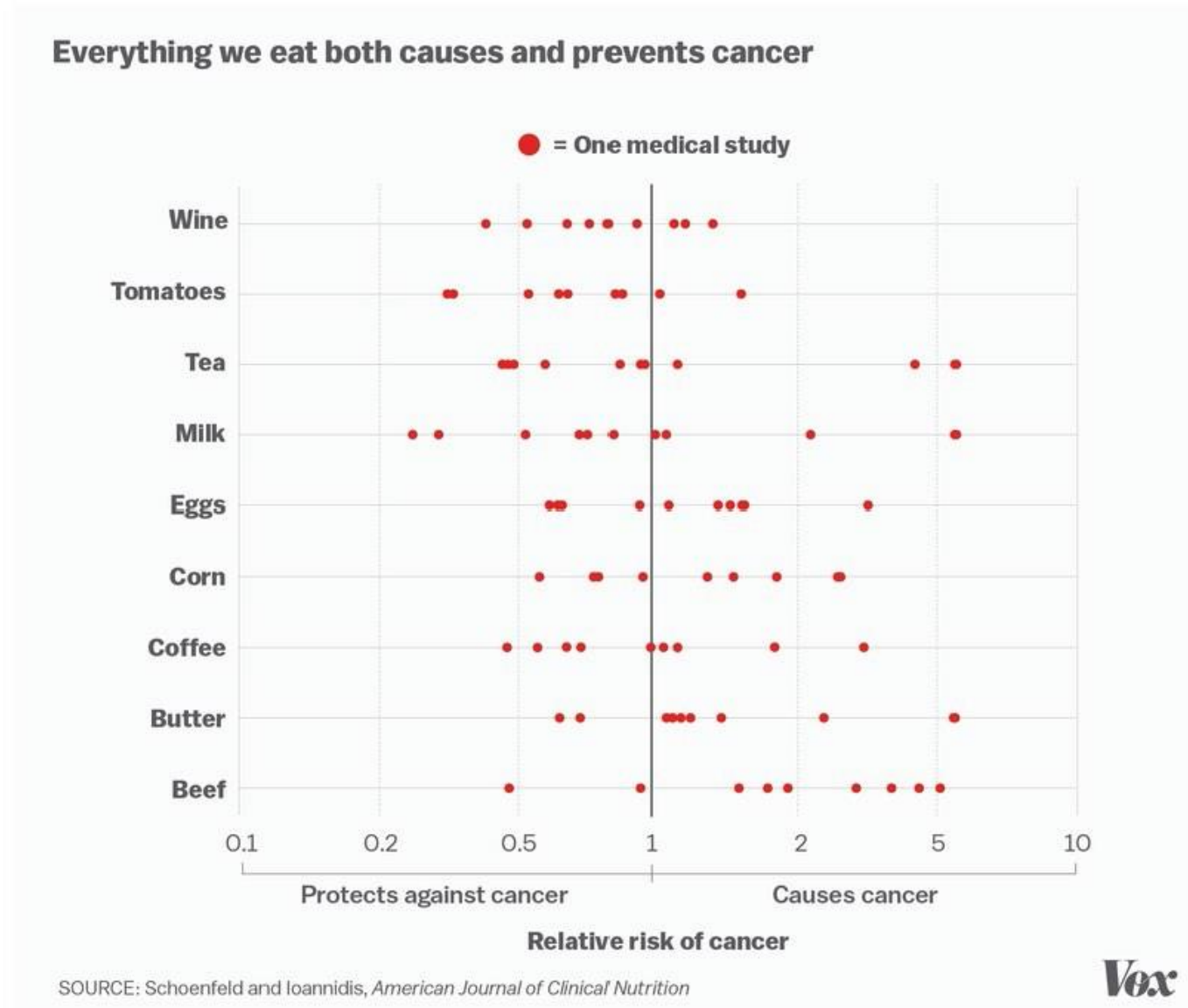
Use Treasury Bellwethers to get a "feel" for your interest rate risk preference.

3. Credit Risk

Use credit analysis to determine preference for credit volatility.

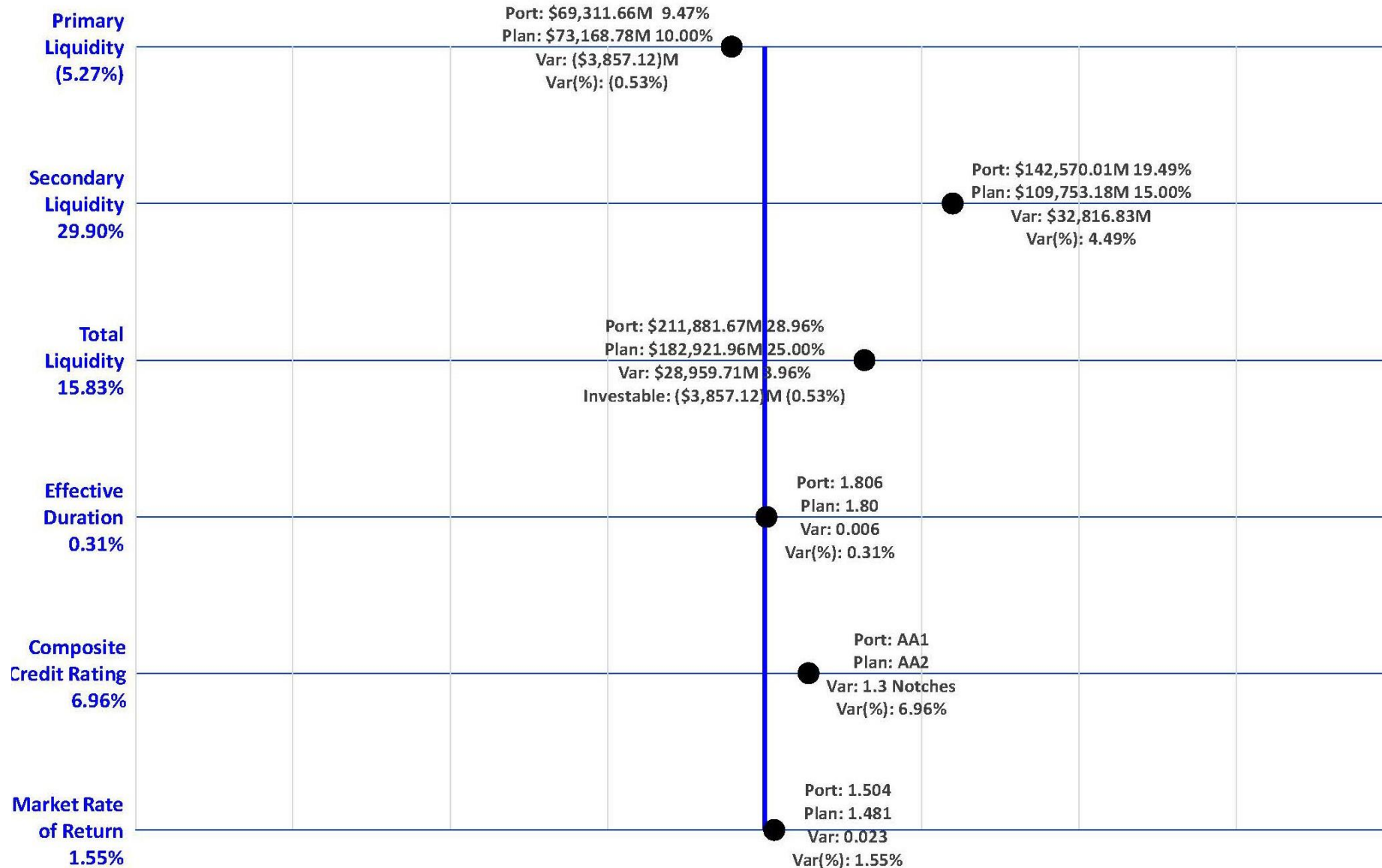
Visualizing the Portfolio versus the Benchmarks

... and allow relative comparisons across different measures.



Suitability Benchmark Visualization Analysis

Vertical blue line represents benchmark for each measure.



The first thing I get asked about the portfolio is...

Return is last for primary objectives but usually the first question asked...

"...the basic assumption that most institutional investors can outperform the market is false. The institutions are the market. They cannot, as a group, outperform themselves. In fact, given the cost of active management—fees, commissions, and so forth—most investment managers will, over the long term, underperform the overall market. ...

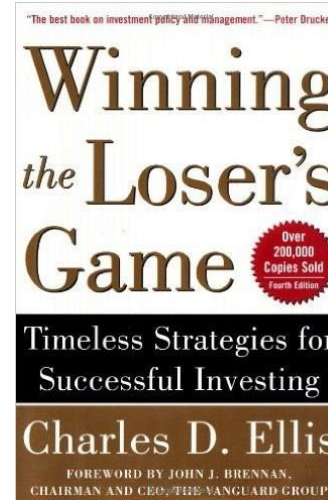
For any one manager to outperform the other professionals, he must be so skillful and so quick that he can regularly catch other professionals making errors—and can systematically exploit those errors faster than other professionals can. ...

The beginning of wisdom for you is to understand that few—if any—major investment organizations will outperform the market averages over long periods of time and that it is very difficult to

estimate which managers will outperform. ...

The truly important but not very difficult task to which investment managers and their clients could and should devote themselves involves four steps: (1) understanding the client's real needs, (2) defining realistic investment objectives that can meet a client's realistic needs, (3) establishing the right asset mix for each particular portfolio, and (4) developing well-reasoned, sensible investment policies designed to achieve the client's realistic and specified long-term investment objectives. In this work, success can be easily achieved."

Ellis, Charles D.. Winning the Loser's Game: Timeless Strategies for Successful Investing (Winning the Loser's Game, 3rd ed) (Kindle Locations 243-540). McGraw-Hill Education. Kindle Edition.



GFOA [Sample IPS](#)

General Objectives

"The primary objectives, in priority order...

1. Safety

Safety of principal is the foremost objective... ***The goal will be to mitigate credit risk and interest rate risk.***

2. Liquidity

The investment portfolio shall ***remain sufficiently liquid*** to meet all operating requirements that may be reasonably anticipated.

3. Return

The investment portfolio shall be designed with the objective of attaining a ***market rate of return throughout budgetary and economic cycles***, taking into account the investment risk constraints of safety and liquidity needs."

GFOA Sample Investment Policy, accessed 12/31/16, pages 1-2. Emphasis added.

A Note on Total Return / Market Rate of Return



It is not the return on my
investment that I am concerned
about; it's the return of my
investment

— *Will Rogers* —

Benchmarking SRI



- What is SRI (Socially Responsible Investing)?
- Different Approaches
- Challenges in Benchmarking
- Examples (Simple!)



What is SRI/ESG?



- Responsible investment is an approach to investing that aims to incorporate environmental, social, and governance (ESG) factors into investment decisions, to better manage risk and generate sustainable, long-term returns.

□ Source: UN Principles of Responsible Investment www.unpri.com

What is SRI/ESG?



- “Put Your Money Where Your Values Are”

Unattributed quote from NASDAQ.com

What is SRI/ESG?



“ESG is Here to Stay”, British Chamber of Commerce Mar/Apr 2021

https://issuu.com/britcham01/docs/bihk_2021_mar_apr-web/s/11940781

SUSTAINABLE DEVELOPMENT GOALS



<https://sdgs.un.org/goals>

Measuring/Reporting



- Decide what to measure/report
- Depends on policy objectives of jurisdiction
- Negative Screens
- Thematic/Impact Investing

Challenges



- How to measure
- Lack of standard accepted metrics
- Most metrics deal with risk rather than benefit
- Relevance/Understandable
- Cost (<https://www.csrhub.com/csrhub/>)



□ Examples of SRI Benchmarking

Socially Responsible Investment Policy

RESTRICTIONS – The direct investment of City funds are restricted as follows:

- Investments will be attempted to be made in entities that support clean and healthy environment, including following safe and environmentally sound practices.
- No investments will be made in fossil fuel companies as defined by the organization Fossil Free Indexes Solutions or in banking institutions that provide financing to said companies.
- No investments are to be made in tobacco or tobacco-related products.
- No investments will be made to support the production of weapons, military systems, or nuclear power.
- Investments will be attempted made in entities that promote community economic development.
- No investments will be made in Russian-owned companies or Russian debt at this time.



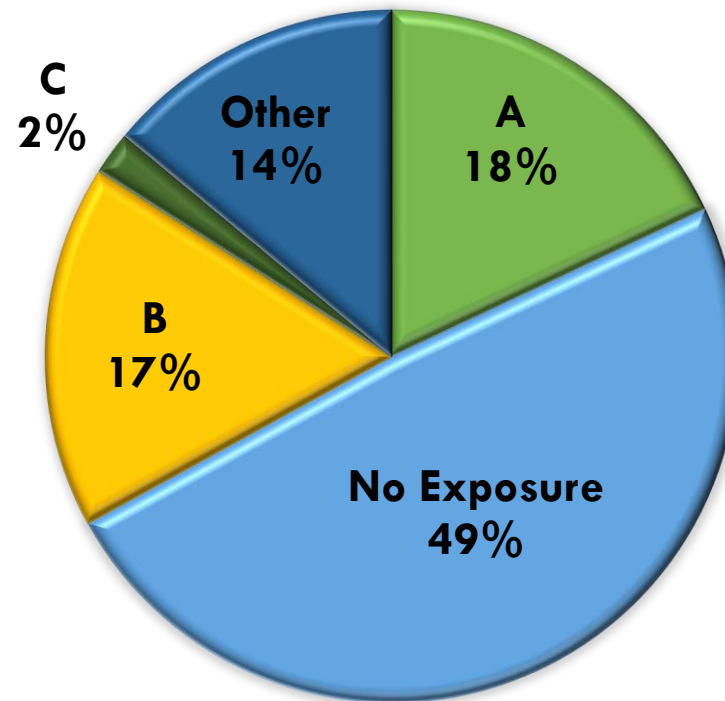
Yale University Russia Divestment Ratings

- A Companies totally halting Russian engagements or completely exiting Russia.
- B Companies temporarily curtailing most or nearly all operations while keeping return options open.
- C Companies that are scaling back some significant business operations but continuing some others.
- D Companies postponing future planned investment, development, and marketing while continuing substantive business.
- F Companies that are just continuing business-as-usual in Russia.

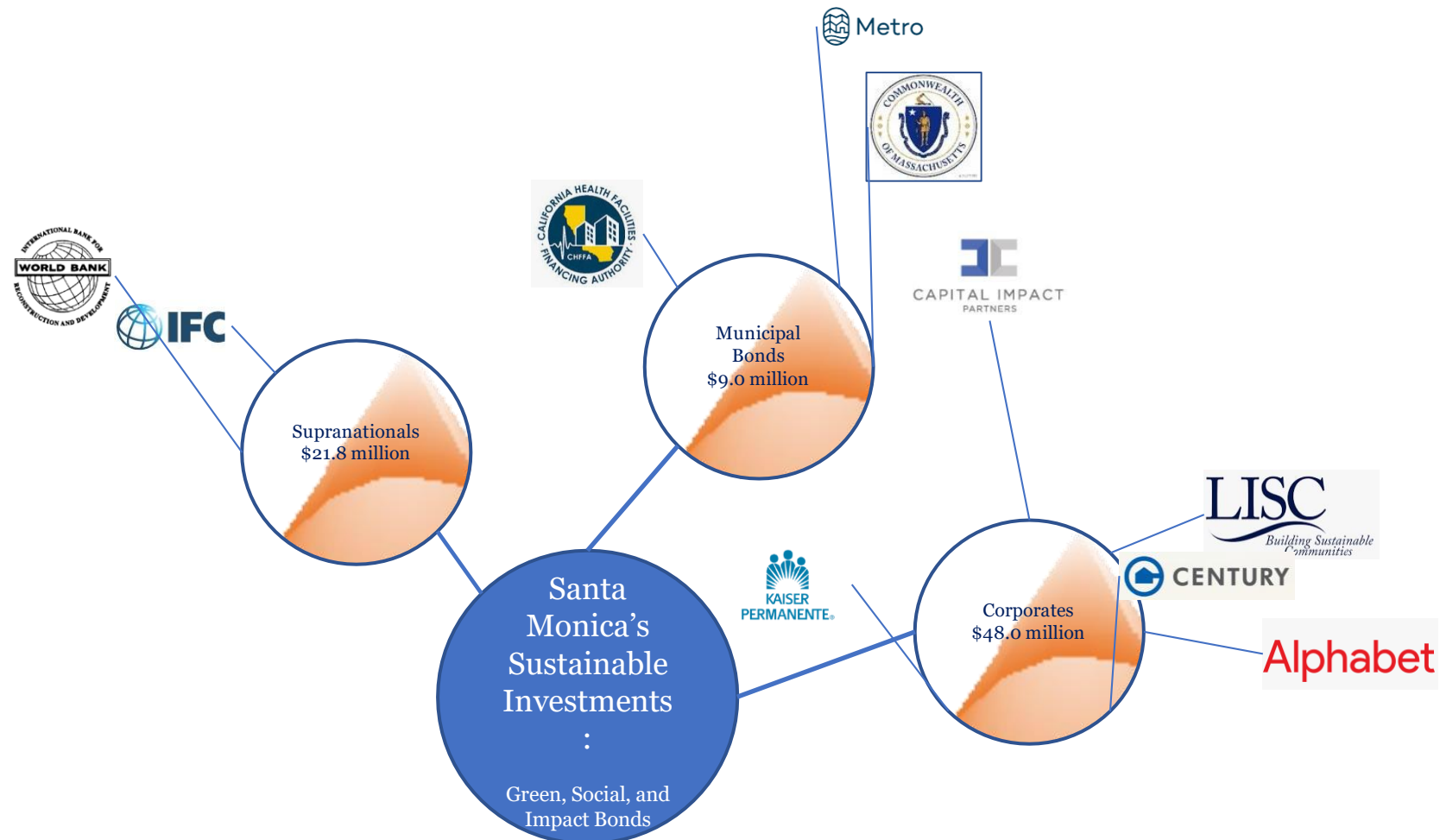
□ <https://som.yale.edu/story/2022/over-1000-companies-have-curtailed-operations-russia-some-remain>

City of Santa Monica Russia Divestment

YALE RATING



Thematic/Impact Investing Responsible Investing



Thematic/Impact/Sustainable Investing



- Investments in entities for projects supporting goals consistent with the UN Sustainable Development Goals
- Green bonds, impact bonds, affordable housing, supranationals
- Possible benchmark % of portfolio (or ex Treasuries/Agencies)
- Santa Monica – 12% (42% ex Treas/Agency)

ESG Scores (Bloomberg)

IBM 3 05/15/24 \$ **↑99.418** +.011 16.8 bp vs B 0 08/08/2024
 As of 16 Feb Source BMRK

IBM 3 05/15/2024 Corp Methodology ESG Controversies News ESG Analysis

Overview ESG Scores Climate EU Taxonomy SFDR

Financial Materiality Scores | ESG SCORE »

	Score	Trend	Vs Peers
ESG Score	5.16	--	Leading
Environmental	6.96	--	Leading
Social	2.68	--	Leading
Governance	7.37	--	Leading

Third-Party Scores | RV ESG »

- MSCI Rating AA
- Sustainalytics
 - Risk Score 14.14
 - Risk Category Low
 - Controversy Level 2.00
 - S&P Global ESG Rank 88.00

SDG Potential Rev % | ESGD SDG »

- Avg Pos SDG Impact % 8.95
- Avg Neg SDG Impact % -23.89
- Avg Net SDG Impact % -14.94

Sustainable Debt | SRCH »

- Green Debt --
- Social Debt --
- Sustainability --
- Sustainability-Linked --
- Transition --
- Total --

EU SFDR | ESG SFDR »

- M4 Fossil Fuel Exposure .00
- M10 UNGC Violations N
- M13 % Women on Board 21.43

EU Taxo | ESG EUTAXO »

- Estimated Eligible Rev % 86.99
- Estimated Aligned Rev % 0.00
- Aligned CAPEX % --
- Aligned OPEX % --

Disclosures | FA ESG »

- ESG Disclosure Score 67.35

Revenue Breakdown | CCB »

- Information Techno... 31.80%
- Infrastructure Soft... 29.74%
- Computer Hardware... 25.45%
- Commercial Finance 13.01%

GHG Targets | ESG NETZ »

- Net Zero Targets Y
- Science-Based Targe... Y

GHG Emissions | ESG GHG »

- GHG Data Type Reported
- Total GHG 262.00
- Total GHG/Sales 4.32
- Total GHG/EVIC 1.44

Temperature Rise | ESG TR »

- Scope 1+2 Mid Term 3.20C

Country/Region Climate Score | GOVS »

- Ctry of Risk US
- Ctry Net Zero Status Under discussion
- Ctry Net Zero Targe... 2050
- Ctry Climate Score 3.72

ESG Fund Exposure | FSRC »

- ESG Funds 73
- EU SFDR Fund Exposure | FSRC »
- Article 9 Funds 0
- Article 8 Funds 81

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 4585 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000
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ESG Scores Yahoo Finance

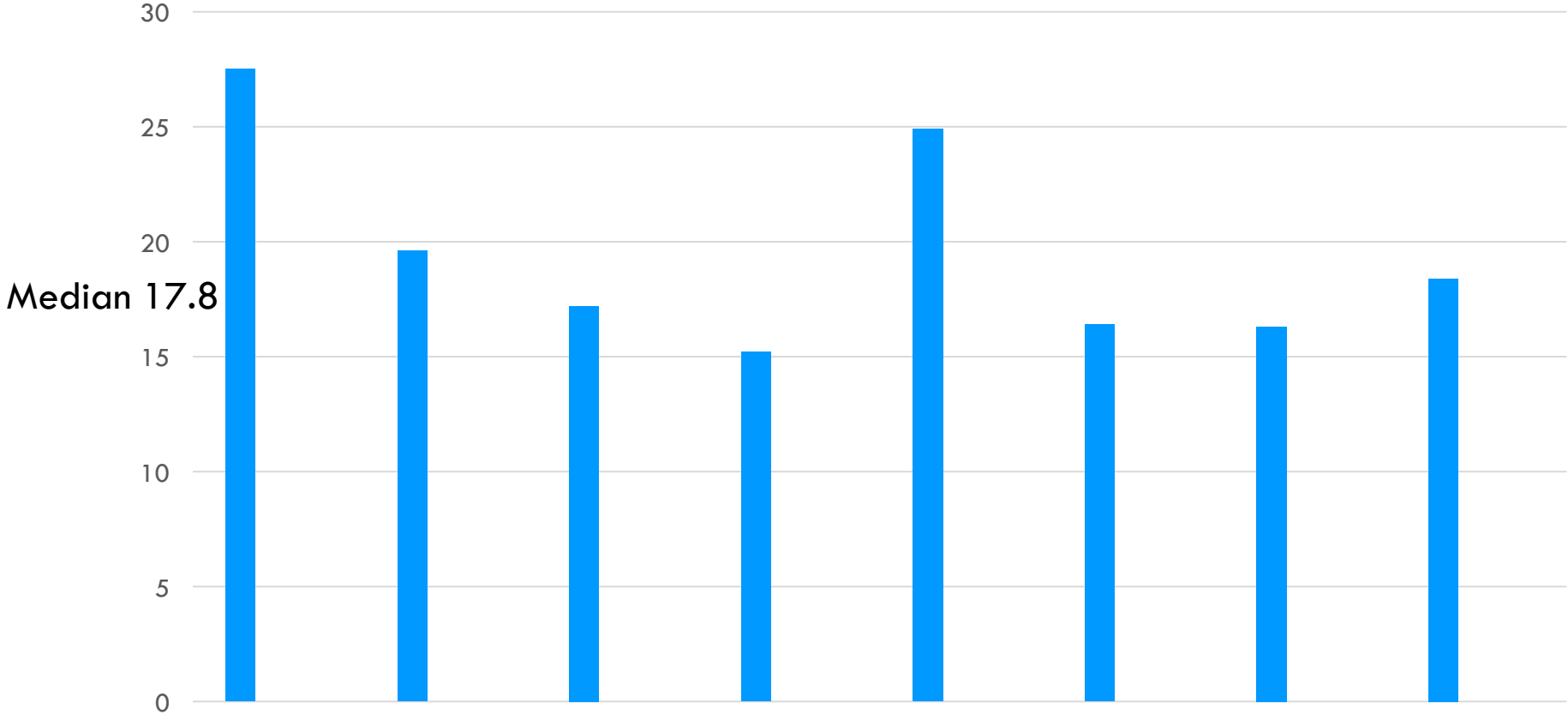


- [https://finance.yahoo.com/quote/IBM/sustainability
?ncid=dcm_27706222_379825263_527551786
186155749&.neo_opt=1](https://finance.yahoo.com/quote/IBM/sustainability?ncid=dcm_27706222_379825263_527551786_186155749&.neo_opt=1)

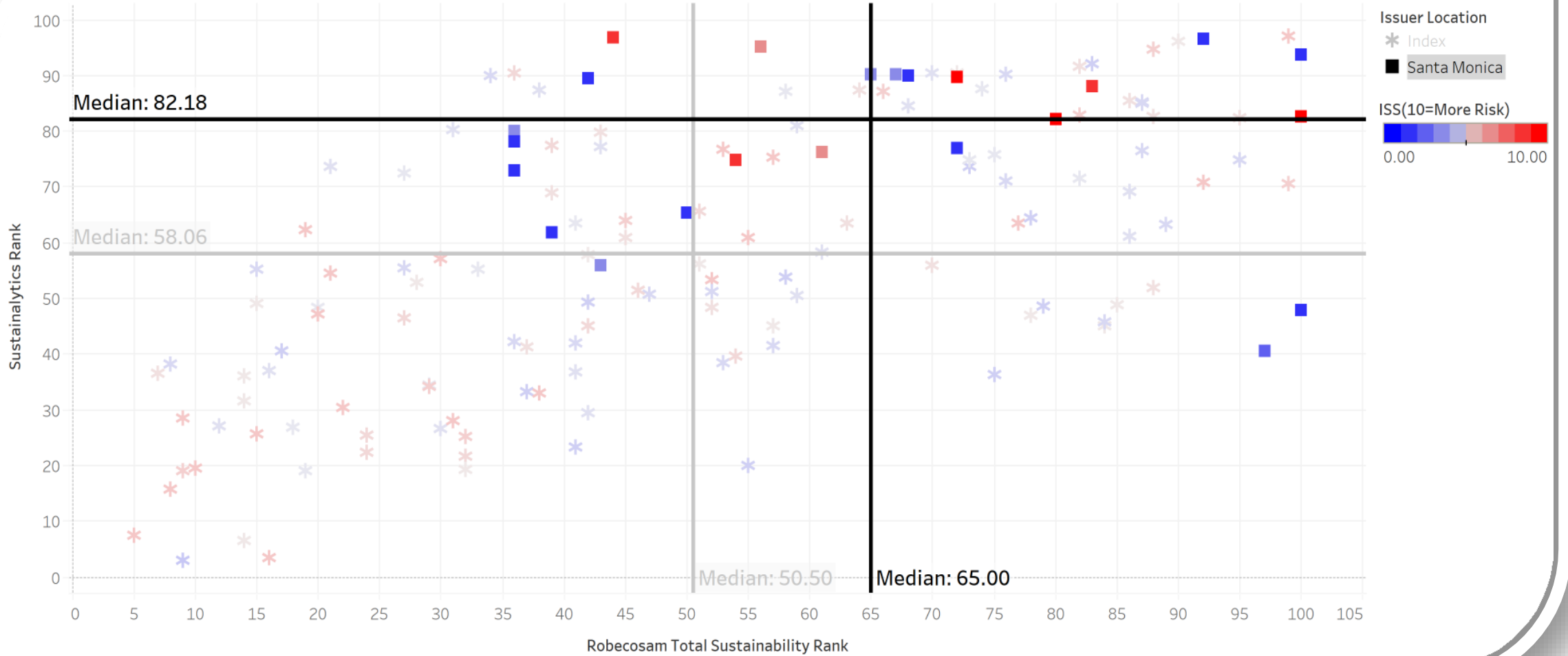
SM Corporate ESG Scores



Corporate ESG Scores



Santa Monica vs 1-5Yr A-AAA ESG Analysis



Where's the Score

KPERM 3.002 06/01 '68.512 +.733 80.1 bp vs T 4.750 11/15/2053
 As of 23 F Source BM

KPERM 3.002 06/01/2051 Methodology ESG Controversies News ESG Analysis

Financial Materiality Scores ESG SCORE >			Third-Party Scores RV ESG >	
Score	Trend	Vs Peers	MSCI Rating	---
			Sustainalytics	---
			Risk Score	---
			Risk Category	---
			Controversy Level	---
			S&P Global ESG Rank	---

EU SFDR ESG SFDR >		GHG Targets ESG NETZ >		SDG Potential Rev % ESGD SDG >	
M4 Fossil Fuel Exposure	--	Net Zero Targets	--	Avg Pos SDG Impact %	---
M10 UNGC Violations	--	Science-Based Targe...	--	Avg Neg SDG Impact %	---
M13 % Women on Board	--			Avg Net SDG Impact %	---

EU Taxo ESG EUTAXO >		GHG Emissions ESG GHG >		Sustainable Debt SRD1 >	
Estimated Eligible Rev %	--	GHG Data Type	--	Green Debt	1,825
Estimated Aligned Rev %	--	Total GHG	--	Social Debt	---
Aligned CAPEX %	--	Total GHG/Sales	--	Sustainability	---
Aligned OPEX %	--	Total GHG/EVBC	--	Sustainability-Linked	---
Disclosures FA ESG >		Temperature Rise ESG TR >		Transition	---
ESG Disclosure Score	--	Scope 1+2 Mid Term	--	Total	1,825

Revenue Breakdown CO2 >		Country/Region Climate Score GNS >		ESG Fund Exposure PSRC >	
Ctry of Risk	US	ESG Funds	45	EU SFDR Fund Exposure PSRC >	
Ctry Net Zero Status	Under discussion	Article 9 Funds	2	Article 8 Funds	36
Ctry Net Zero Targe...	2050				
Ctry Climate Score	3.72				

Australia 61 2 9777 8600 Brazil 5511 2395 3000 Europe 44 20 7350 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 4565 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000

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Final Words



- No standard SRI Benchmarks (create your own)
- Decide what is meaningful and transparent to report.
- Can be a specific or broad
- No two agencies are alike
- CDIAC has additional information
- <https://www.treasurer.ca.gov/cdiac/publications/issue-brief/2019/19-14.pdf>

Questions



Contact Information

David Carr

Director

RW Baird

805.630.3873

Dcarr@RwBaird.com

Kevin Webb, CFA

Managing Director

RW Baird

725.249.1682

KpWebb@RwBaird.com



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