

CDIAC



ADVANCED CREDIT ANALYSIS

DAVID CARR, CITY OF SANTA MONICA
KEVIN WEBB, CFA

January 15, 2020

Disclaimer



The information presented in this presentation is intended to assist public investment professionals. The content presented is informational and does not constitute investment advice or the recommendation to invest in any or all of the investment instruments discussed. When choosing an investment instrument for a public portfolio, the whole portfolio, investment policy, suitability, financial needs of the public agency and any associated risks should be considered. In addition, the information in this presentation is set to reflect the period in time in which it is presented and any changes that may affect any of the instruments discussed, such as legislation, reform or market conditions, or that may alter the relevancy of any of these instruments, will not be reflective in the post archival records. In such instances, viewers should be advised to use the information only as a reference as no updates to the records will be made. Please consult the California Debt and Investment Advisory Commission's publication *Local Agency Investment Guidelines* for any interpretive updates.

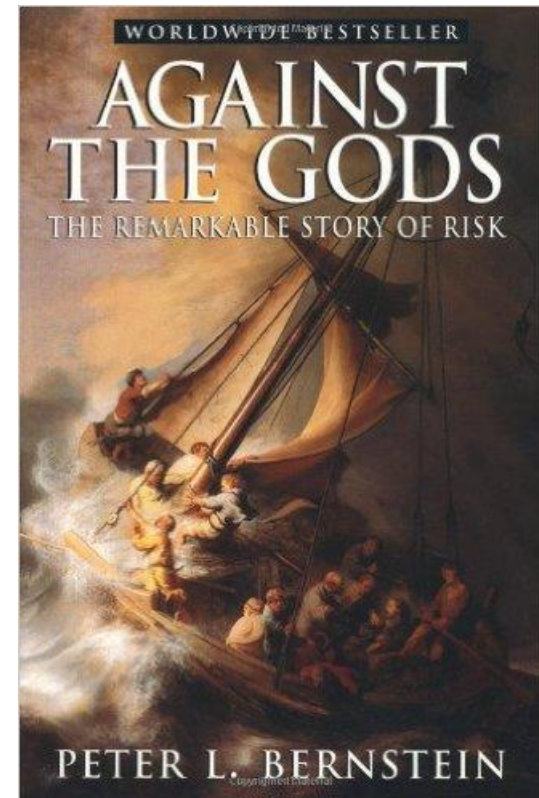
Agenda



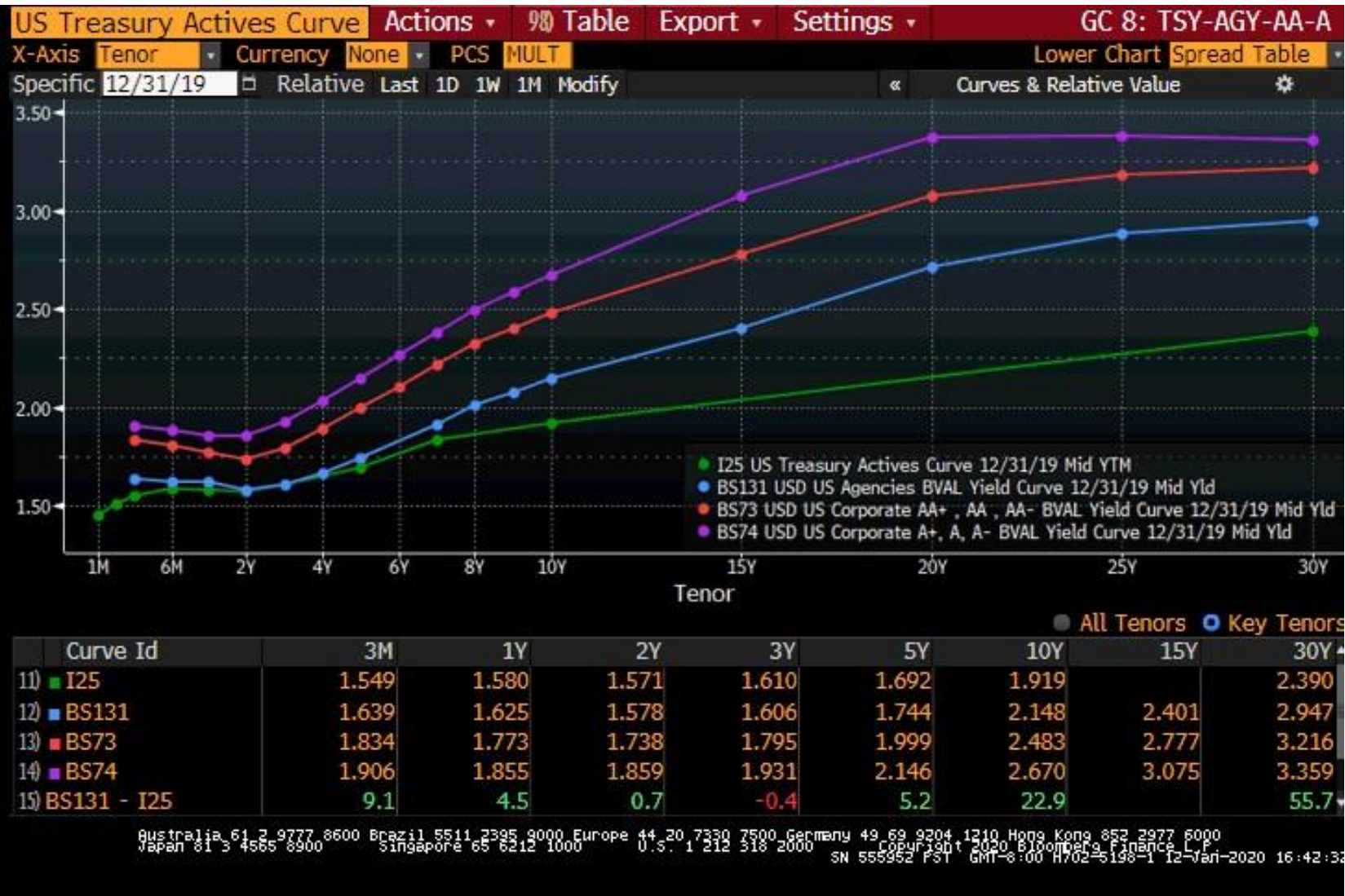
- It's All About Risk & Reward
 - ▣ Treasury Yield Curve
 - ▣ Default Risk
 - ▣ Credit Spread Risk
 - ▣ Downgrade Risk
- SRI/ESG

Risk & Reward

"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."



The Yield Curve Framework



Ratings: Letters

Moody's		S&P		Fitch		Rating description	
Long-term	Short-term	Long-term	Short-term	Long-term	Short-term		
Aaa	P-1	AAA	A-1+	AAA	F1+	Prime	
Aa1		AA+		AA+		High grade	
Aa2		AA		AA			
Aa3		AA-		AA-			
A1	P-2	A+	A-1	A+	F1	Upper medium grade	
A2		A		A			
A3		A-		A-			
Baa1	P-3	BBB+	A-2	BBB+	F2	Lower medium grade	
Baa2		BBB		BBB			
Baa3		BBB-		BBB-			
			A-3		F3		

Ratings: Letters & Numbers

Numeric Rating	Composite Rating	Moody Rating	S&P Rating	Fitch Rating
21	AAA	Aaa	AAA	AAA
20	AA1	Aa1	AA+	AA+
19	AA2	Aa2	AA	AA
18	AA3	Aa3	AA-	AA-
17	A1	A1	A+	A+
16	A2	A2	A	A
15	A3	A3	A-	A-
14	BBB1	Baa1	BBB+	BBB+
13	BBB2	Baa2	BBB	BBB
12	BBB3	Baa3	BBB-	BBB-

Ratings: Numbers Example 1



AMZN	AMAZON.COM INC	
NRSRO	Rating	Number
Moody	Baa1	14.00
S&P	AA-	18.00
Fitch		
Average		16.00
Rounded		16.00
Composite	A2	

Credit Risk

□ Default Risk

- the risk that the issuer will fail to satisfy the terms of the obligation with respect to the timely payment of interest and principal.

□ Credit Spread Risk

- The risk that an issuer's debt obligation will decline due to an increase in the credit spread is called credit spread risk.

□ Downgrade Risk

- An unanticipated downgrading of an issue or issuer

Default Rates



Average Cumulative Default Rates For Corporates By Region (1981 - 2016) (%)

--Time horizon (years)--

Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
U.S.															
AAA	0.00	0.04	0.17	0.29	0.42	0.54	0.59	0.67	0.76	0.85	0.90	0.94	0.99	1.09	1.20
AA	0.03	0.08	0.18	0.31	0.45	0.60	0.74	0.86	0.96	1.07	1.17	1.25	1.34	1.42	1.51
A	0.07	0.20	0.36	0.54	0.73	0.95	1.19	1.41	1.65	1.89	2.11	2.32	2.52	2.69	2.89
BBB	0.22	0.58	0.99	1.50	2.05	2.60	3.09	3.58	4.07	4.55	5.02	5.37	5.71	6.06	6.42
BB	0.80	2.52	4.57	6.57	8.38	10.14	11.62	12.98	14.17	15.25	16.13	16.91	17.61	18.22	18.84
B	3.92	9.00	13.43	16.88	19.57	21.76	23.56	24.98	26.24	27.42	28.42	29.20	29.90	30.53	31.16
CCC/C	28.85	39.23	44.94	48.55	51.31	52.53	53.95	55.00	55.96	56.66	57.32	57.93	58.60	59.14	59.14
Investment grade	0.12	0.32	0.56	0.86	1.17	1.49	1.80	2.09	2.38	2.67	2.95	3.17	3.39	3.59	3.81
Speculative grade	4.18	8.25	11.81	14.68	17.00	18.95	20.59	21.95	23.16	24.26	25.18	25.95	26.64	27.24	27.83
All rated	1.80	3.59	5.16	6.48	7.57	8.52	9.32	10.01	10.63	11.21	11.71	12.12	12.49	12.82	13.16

Bloomberg DRSK (Merton Model)



CALIFORNIA
DEBT AND
INVESTMENT
ADVISORY
COMMISSION

What is the 'Merton Model'

The Merton model is an analysis model – named after economist [Robert C. Merton](#) – that is used to assess the [credit risk](#) of a company's debt. [Analysts](#) at [brokerage](#) firms and investors utilize the Merton model to understand how capable a company is at meeting financial obligations, servicing its debt and weighing the general possibility that the company will go into credit default. This model was later built out by Fischer Black and Myron Scholes to develop [the Black-Scholes pricing model](#).



Main Driver of Default: Distance-to-Default

The DRSK<GO> framework for modeling default has its origins in the structural model proposed by Robert Merton. In this model, a firm is viewed as solvent as long as the value of the firm's assets is larger than the value of its liabilities. The issue is that the value of the assets of the firm is not observable and must thus be inferred. The Merton model links the value of the assets to the market cap and debt of a firm, both of which are observable. The key insight of the Merton framework is that the equity of the firm can be viewed as a call option on the total assets of the firm where the strike price is equal to its liabilities. This allows us to infer the value of the assets from the observed equity value using a BlackScholes option pricing approach.

Santa Monica 12/31/19



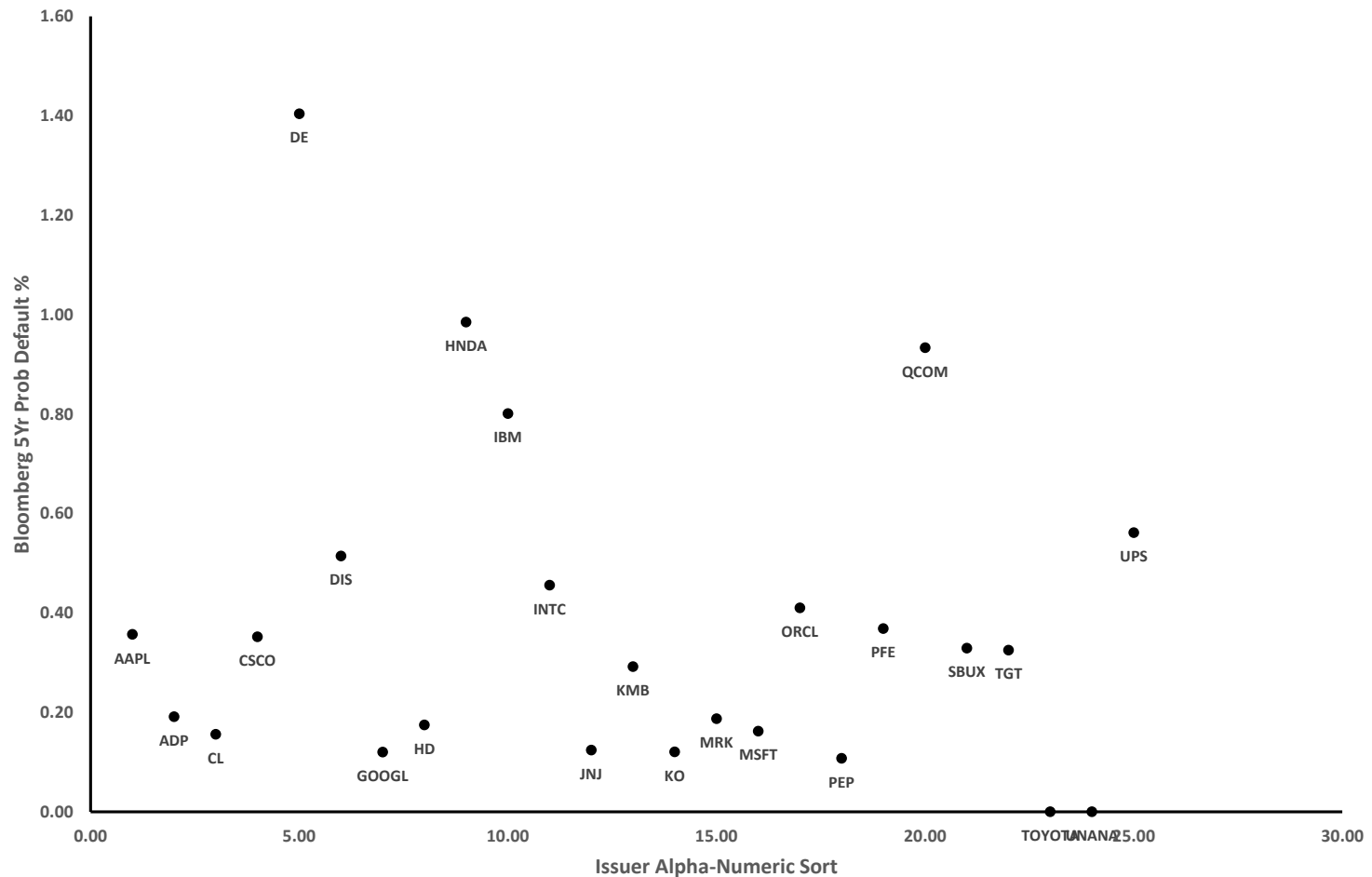
CALIFORNIA
DEBT AND
INVESTMENT
ADVISORY
COMMISSION

Ticker	Bloomberg 5Yr Prob Default %	Analyst % Buy Hold	Sustainalytics Rank	RobecoSAM Rank	ISS Quality Score	OAS
AAPL	0.36	85.71	78.07	36.00	1.00	22.67
ADP	0.19	95.24	72.91	36.00	1.00	24.06
CL	0.16	87.50	48.00	100.00	1.00	10.50
CSCO	0.35	93.94	93.86	100.00	1.00	21.30
DE	1.40	87.50	55.88	43.00	3.00	42.59
DIS	0.51	97.14	74.77	54.00	8.00	24.63
GOOGL	0.12	100.00	82.76	97.00	10.00	15.93
HD	0.17	94.12	90.00	68.00	1.00	23.23
HNDA	0.99	100.00	40.68	97.00	3.00	43.96
IBM	0.80	92.00	95.07	56.00	6.00	39.53
INTC	0.46	80.43	96.83	44.00	8.00	25.86
JNJ	0.12	95.65	88.08	83.00	9.00	10.29
KMB	0.29	82.35	80.00	36.00	3.00	37.05
KO	0.12	100.00	61.81	39.00	1.00	23.32
MRK	0.19	100.00	90.16	65.00	3.00	26.37
MSFT	0.16	100.00	96.55	92.00	3.00	13.03
ORCL	0.41	88.57	89.66	72.00	10.00	23.88
PEP	0.11	95.83	89.58	42.00	1.00	21.32
PFE	0.37	100.00	65.28	50.00	2.00	15.76
QCOM	0.93	96.88	76.32	61.00	6.00	35.93
SBUX	0.33	96.97	90.29	67.00	2.00	28.80
TGT	0.33	96.55	77.00	72.00	1.00	38.28
TOYOTA	0.00	0.00	0.00	0.00	0.00	40.65
UNANA	0.00	0.00	0.00	0.00	0.00	36.12
UPS	0.56	93.33	82.18	80.00	9.00	39.74

Santa Monica 12/31/19



Issuer Matrix for Santa Monica-20191231 (Using 12/31/19 Data)
Showing Corporates Issuers
Data Labels Showing Ticker



Credit Spread Risk

□ What is it?

- “Even in the absence of default, an investor is concerned that the market value of a bond will decline and/or the price performance of a bond will be worse than that of other bonds. To understand this, recall that the price of a bond changes in the opposite direction to the change in the yield required by the market. Thus, if yields in the economy increase, the price of a bond declines, and vice versa.” ...
- “The risk that an issuer's debt obligation will decline due to an increase in the credit spread is called credit spread risk.”



Credit Spread History



Santa Monica Corporate Spreads



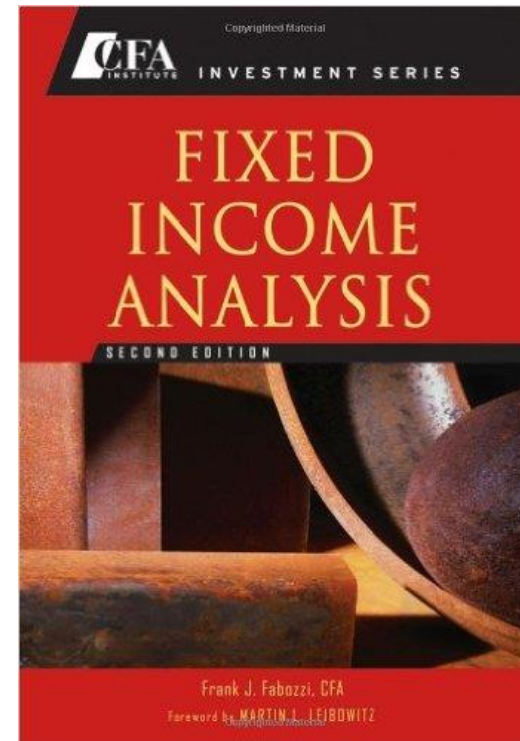
CALIFORNIA
DEBT AND
INVESTMENT
ADVISORY
COMMISSION

Ticker	Bloomberg 5Yr Prob Default %	Analyst % Buy Hold	Sustainalytics Rank	RobecoSAM Rank	ISS Quality Score	OAS
AAPL	0.36	85.71	78.07	36.00	1.00	22.67
ADP	0.19	95.24	72.91	36.00	1.00	24.06
CL	0.16	87.50	48.00	100.00	1.00	10.50
CSCO	0.35	93.94	93.86	100.00	1.00	21.30
DE	1.40	87.50	55.88	43.00	3.00	42.59
DIS	0.51	97.14	74.77	54.00	8.00	24.63
GOOGL	0.12	100.00	82.76	97.00	10.00	15.93
HD	0.17	94.12	90.00	68.00	1.00	23.23
HNDA	0.99	100.00	40.68	97.00	3.00	43.96
IBM	0.80	92.00	95.07	56.00	6.00	39.53
INTC	0.46	80.43	96.83	44.00	8.00	25.86
JNJ	0.12	95.65	88.08	83.00	9.00	10.29
KMB	0.29	82.35	80.00	36.00	3.00	37.05
KO	0.12	100.00	61.81	39.00	1.00	23.32
MRK	0.19	100.00	90.16	65.00	3.00	26.37
MSFT	0.16	100.00	96.55	92.00	3.00	13.03
ORCL	0.41	88.57	89.66	72.00	10.00	23.88
PEP	0.11	95.83	89.58	42.00	1.00	21.32
PFE	0.37	100.00	65.28	50.00	2.00	15.76
QCOM	0.93	96.88	76.32	61.00	6.00	35.93
SBUX	0.33	96.97	90.29	67.00	2.00	28.80
TGT	0.33	96.55	77.00	72.00	1.00	38.28
TOYOTA	0.00	0.00	0.00	0.00	0.00	40.65
UNANA	0.00	0.00	0.00	0.00	0.00	36.12
UPS	0.56	93.33	82.18	80.00	9.00	39.74

Transition Matrix

□ What is it?

- “A popular tool used by managers to gauge the prospects of an issue being downgraded or upgraded is a rating transition matrix. This is simply a table constructed by the rating agencies that shows the percentage of issues that were downgraded or upgraded in a given time period. So, the table can be used to approximate downgrade risk and default risk.”



Transition Rates: 5 Year

Average Multi-Year Global Corporate Transition Matrices (1981 - 2016) (%)

--Five-year transition rates (%)--

From/to	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
AAA	49.58 (11.91)	28.37 (13.14)	4.86 (2.67)	0.81 (1.54)	0.24 (0.47)	0.16 (0.41)	0.08 (0.28)	0.35 (0.60)	15.53 (6.45)
AA	1.49 (0.93)	50.29 (7.74)	24.87 (4.69)	3.71 (1.65)	0.59 (0.63)	0.39 (0.59)	0.04 (0.10)	0.34 (0.38)	18.26 (4.55)
A	0.08 (0.10)	5.22 (2.31)	54.95 (6.65)	15.13 (2.21)	2.15 (1.11)	0.71 (0.88)	0.16 (0.18)	0.57 (0.42)	21.04 (4.05)
BBB	0.03 (0.07)	0.47 (0.54)	10.51 (3.25)	51.02 (7.46)	7.68 (1.74)	2.29 (1.46)	0.40 (0.40)	1.93 (1.46)	25.68 (4.32)
BB	0.01 (0.06)	0.08 (0.18)	1.06 (0.99)	12.72 (3.26)	30.83 (6.80)	11.08 (2.19)	1.32 (0.91)	7.84 (4.84)	35.06 (4.51)
B	0.01 (0.11)	0.03 (0.09)	0.28 (0.58)	1.63 (1.22)	10.55 (2.73)	24.83 (5.50)	2.99 (1.02)	19.25 (8.87)	40.42 (5.51)
CCC/C	0.00 (0.00)	0.00 (0.00)	0.12 (0.51)	0.74 (1.85)	2.98 (2.08)	12.18 (4.73)	2.53 (3.78)	46.96 (12.36)	34.49 (9.21)

Numbers in parentheses are weighted standard deviations, weighted by the issuer base. Sources: S&P Global Fixed Income Research and S&P CreditPro®.

Standard & Poors "Default, Transition, and Recovery: 2016 Annual Global Corporate Default Study And Rating Transitions", Table 36 on Page 83.

http://media.spglobal.com/documents/SPGlobal_Ratings_Article_13+April+2017_Annual+Corporate+Default+Study+and+Rating+Transitions.pdf

A Ratings Digression Part 1

Lehman Brothers Credit Rating History

Moody's Senior Unsecured Debt

Rating	Watch	Effective
WR		12/10/2008
C		12/08/2008
B3	*-	09/15/2008
A2	*	09/10/2008
A2		07/17/2008
A1	*-	06/13/2008
A1		10/22/2003
A2	*+	06/24/2003
A2		11/03/2000

Up / Down / No Change / Initial

Close

S&P LT Local Issuer Credit

Rating	Watch	Effective
NR		09/25/2008
D		09/16/2008
SD		09/15/2008
A	*	09/12/2008
A	*-	09/09/2008
A		06/02/2008
A+		10/11/2005
A		02/22/2002

Fitch Senior Unsecured Debt

Rating	Watch	Effective
NR		10/27/2008
CCC		09/15/2008
A+	*-	09/09/2008
A+		06/09/2008
AA-		06/28/2007
A+		06/20/2001
A		05/31/1994

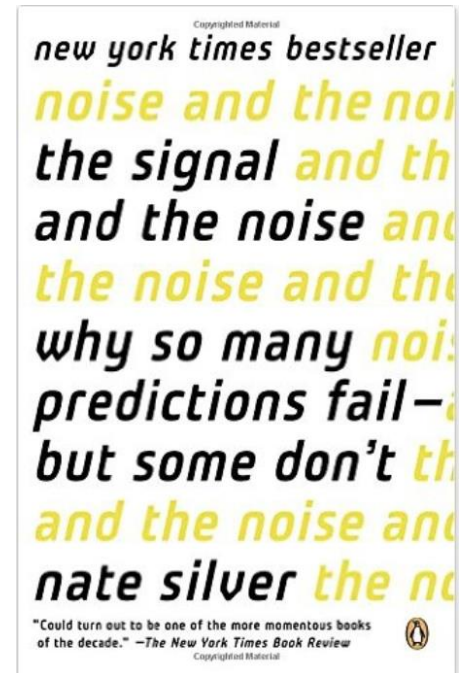
Up / Down / No Change / Initial

Close

A Ratings Digression Part 2

“The ratings agencies had given their AAA rating, normally reserved for a handful of the world’s most solvent governments and best-run businesses, to thousands of mortgage-backed securities, financial instruments that allowed investors to bet on the likelihood of someone else defaulting on their home. The ratings issued by these companies are quite explicitly meant to be predictions: estimates of the likelihood that a piece of debt will go into default. Standard & Poor’s told investors, for instance, that when it rated a particularly complex type of security known as a collateralized debt obligation (CDO) at AAA, there was only a 0.12 percent probability— about 1 chance in 850— that it would fail to pay out over the next five years. ...













In fact, around 28 percent of the AAA-rated CDOs defaulted, according to S&P’s internal figures. ... This is just about as complete a failure as it is possible to make in a prediction: trillions of dollars in investments that were rated as being almost completely safe instead turned out to be almost completely unsafe. It was as if the weather forecast had been 86 degrees and sunny, and instead there was a blizzard.”



Silver, Nate (2012-09-27).
The Signal and the Noise:
Why So Many Predictions Fail-
but Some Don't (pp. 20-21).
Penguin Group US. Kindle
Edition.

Equity Analysts Rating Analysis

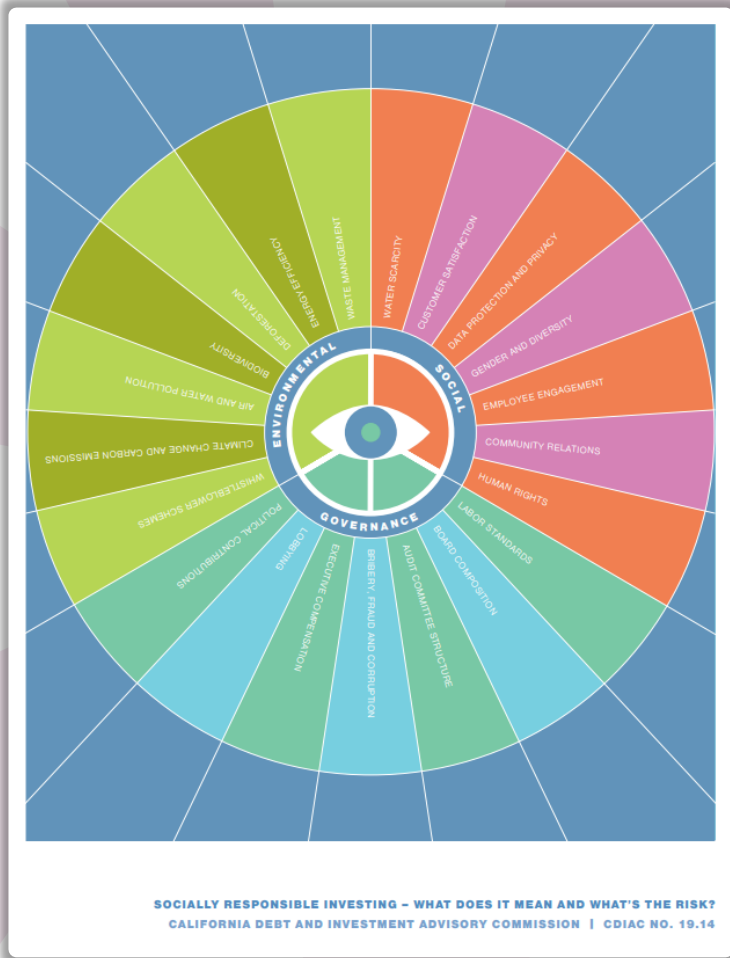
Analyst Ratings Cisco Systems Inc.

	3 Months Ago	1 Month Ago	Current
Buy	 14	 15	 13
Overweight	 2	 2	 2
Hold	 11	 11	 12
Underweight	0	0	0
Sell	0	0	0
Consensus	 OVERWEIGHT	 OVERWEIGHT	 OVERWEIGHT



Equity Analysts Rating Analysis





Resources

CDIAC Publications:

- [Socially Responsible Investing – What Does it Mean and What's the Risk?](#)
- [Local Agency Investment Guidelines \(LAIG\)](#)

Other Resources

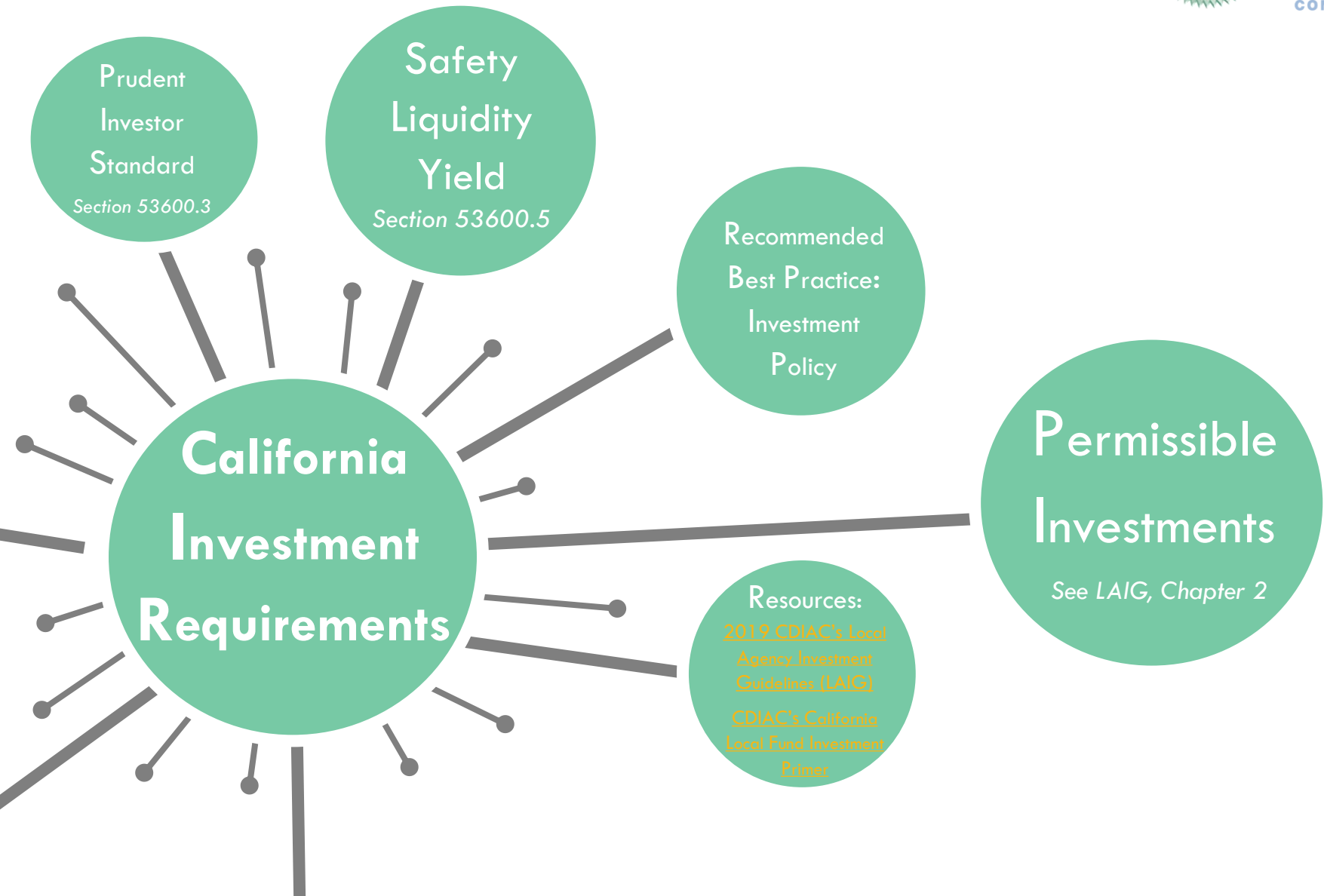
A list of ESG and SRI resources can be found at the back of Socially Responsible Investing publication and on the [webinar page](#).



Socially Responsible Investing

Strategies to promote concepts and ideals a local agency seeks to support while practicing prudent investment management.





Determining 'Want'

Whether an agency uses positive or negative screening, they still must build their 'screen' by determining what they do or do not want in their investments.

Environmental, Social, and Governance Criteria

1. Examples of ESG Categories

Environmental	Social	Governance
Climate change and carbon emissions	Customer satisfaction	Board composition
Air and water pollution	Data protection and privacy	Audit committee structure
Biodiversity	Gender and diversity	Bribery, fraud and corruption
Deforestation	Employee engagement	Executive compensation
Energy efficiency	Community relations	Lobbying
Waste management	Human rights	Political contributions
Water scarcity	Labor standards	Whistleblower schemes

2. Company/Investment Scores/Ratings

Source: [CFA Institute](#)

Impact Investing

Targeted Investments

Local Community Banks

Economic Development

Infrastructure, Affordable Housing



Santa Monica's Perspective

David Carr, Assistant City Treasurer, City of Santa Monica

ESG/SRI
Definition
Principles

Fiduciary
and Political
Considerations

Implementing
ESG/SRI Into
Investment
Decision
Making

Measuring /
Benchmarking
ESG-Related
Performance

Next
Steps



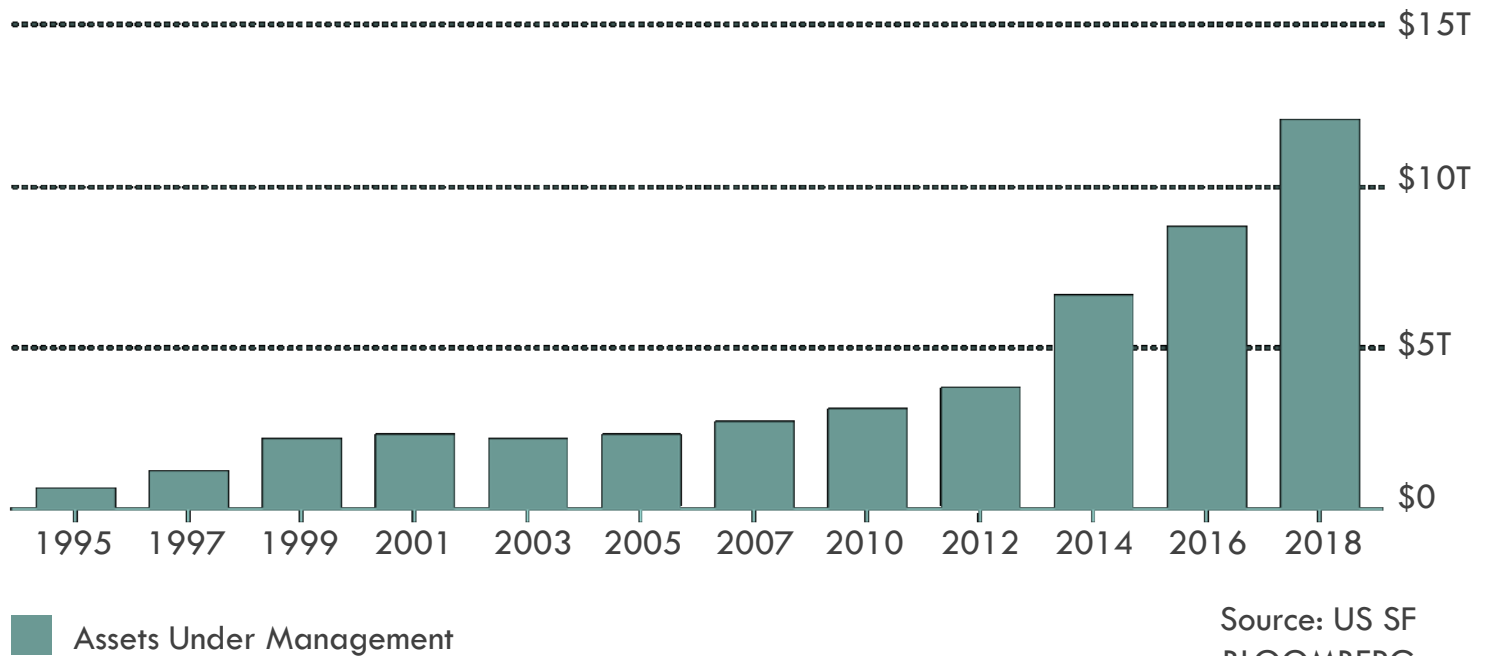
What is **ESG/SRI**?

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.

UN Principles of Responsible Investment

Sustainable Growth

Investors using socially responsible criteria hit \$12 trillion in US assets.





Fiduciary and Political Considerations



Political Considerations

- Governing Board Sets Policy
- History in Santa Monica



ESG vs SRI in Santa Monica

- Integration
- Screening
- Thematic



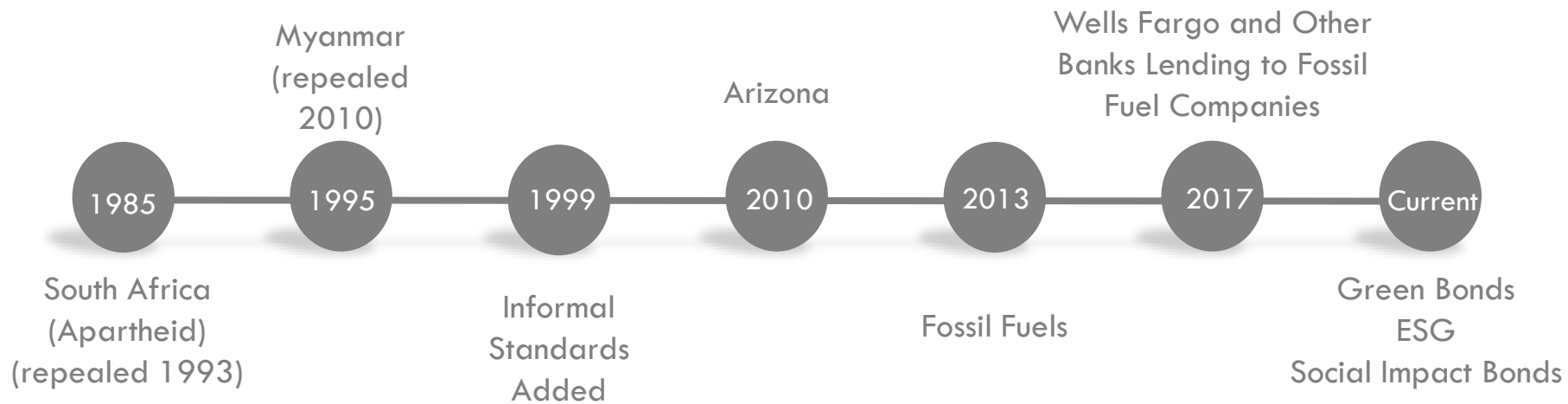
ESG Impact on Credit Ratings

- Risk vs Reward





Santa Monica's SRI Evolution





Santa Monica's Investment Policy

17. Socially Responsible Investing

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

- a. Investments are to be made in entities that support clean and healthy environment, including following safe and environmentally sound practices.
- b. No investments will be made in fossil fuel companies as defined by the organization 350.org or in banking institutions that provide financing to said companies.
- c. No investments are to be made in tobacco or tobacco-related products.
- d. No investments are to be made to support the production of weapons, military systems, or nuclear power.
- e. Investments are to be made in entities that promote community economic development.

Funds invested with trustee and/or outside investment managers such as the Cemetery and Mausoleum Perpetual Care Funds will comply with this section of the policy.



ESG Implementation

- ★ One component of investment analysis and decision making.
- ★ Typically applicable to corporates, but can be applied to other asset classes.
- ★ Variety of ESG data tools:
 - Bloomberg
 - Yahoo!
 - Brokers
 - Private ESG Analytical Firms (Sustainalytics, MSCI, RobecoSAM, etc.)



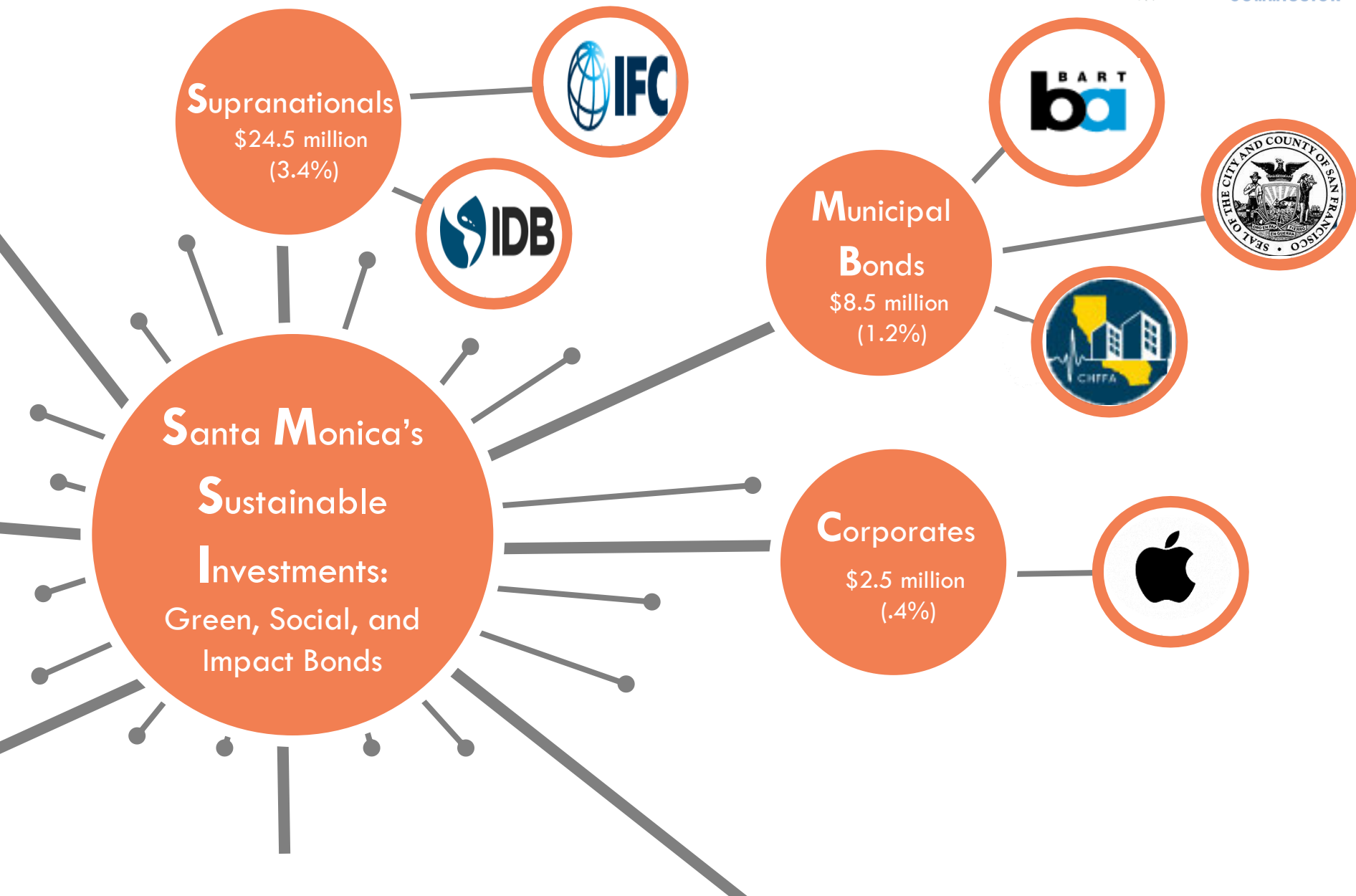
Implementation in Santa Monica

ESG does not alter other daily investment processes.

Check ESG score of corporates as an added component of credit analysis.

Partner with broker to look for suitable investments.

Corporates are not the only sector where SRI applies.



Santa Monica's
Sustainable
Investments:
Green, Social, and
Impact Bonds

Supranationals
\$24.5 million
(3.4%)



Municipal
Bonds
\$8.5 million
(1.2%)



Corporates
\$2.5 million
(.4%)





ESG Impact on Returns



Companies with higher ESG scores tend to have slightly higher returns.



Governance scores are the most highly correlated.



Increase of 0.3% to 0.4% annually.



ESG in Credit Analysis

Credit Rating Agency Signatories

Axesior Rating	Liberum Ratings
Beyond Ratings	Microfinanza Rating
China Chengxin International Credit Rating Co., Ltd	Moody's Corporation
Dagong Global Credit Ratings Group	RAM Ratings
Fedafin AG	Rating-Agentur Expert RA GmbH
Fitch Group, Inc	Rating and Investment Information, Inc.
Golden Credit Rating International Co., Ltd	Scope Ratings
Japan Credit Rating Agency	Spread Ratings
JCR Eurasia Rating	S&P Global Ratings

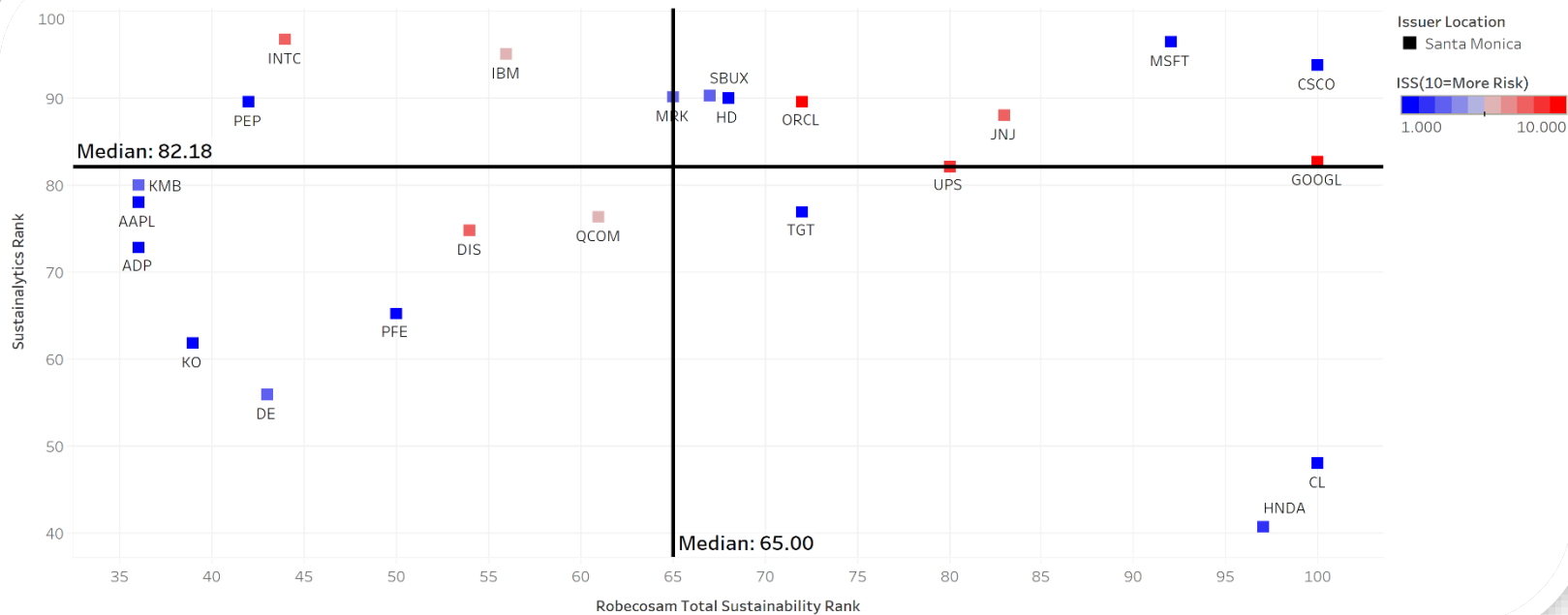


ESG in Credit Analysis Example

Country	US
Sector	Banking
Bank	7 February 2019
ESG Factor	Social and Governance
Action	<u>Credit rating downgraded from A to A-; outlook stable</u>
Key Rationale	Asset growth capped until the company further enhances its governance and compliance and risk management to the standards required by the regulator; the downgrade also reflects ongoing ramifications of its retail sales practices issues.
Source	S&P Global Ratings

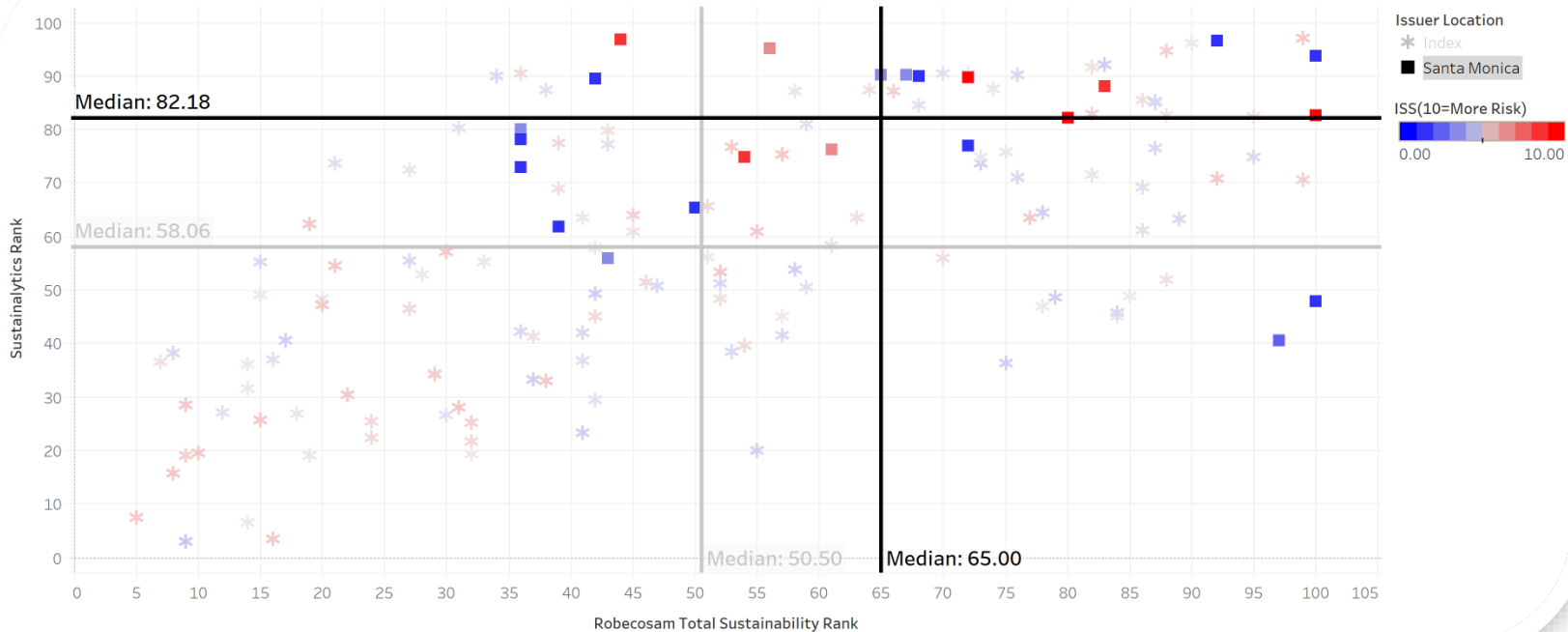


Santa Monica ESG Analysis



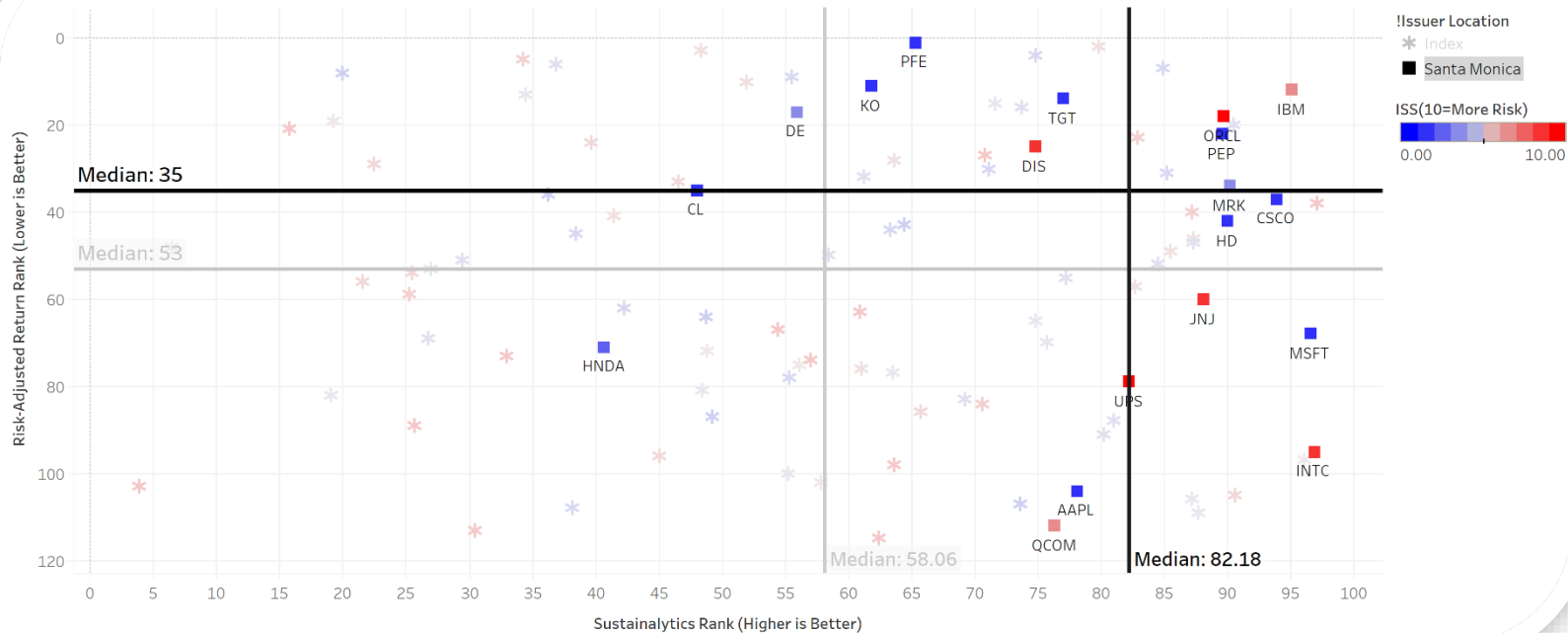


Santa Monica vs 1-5Yr A-AAA ESG Analysis





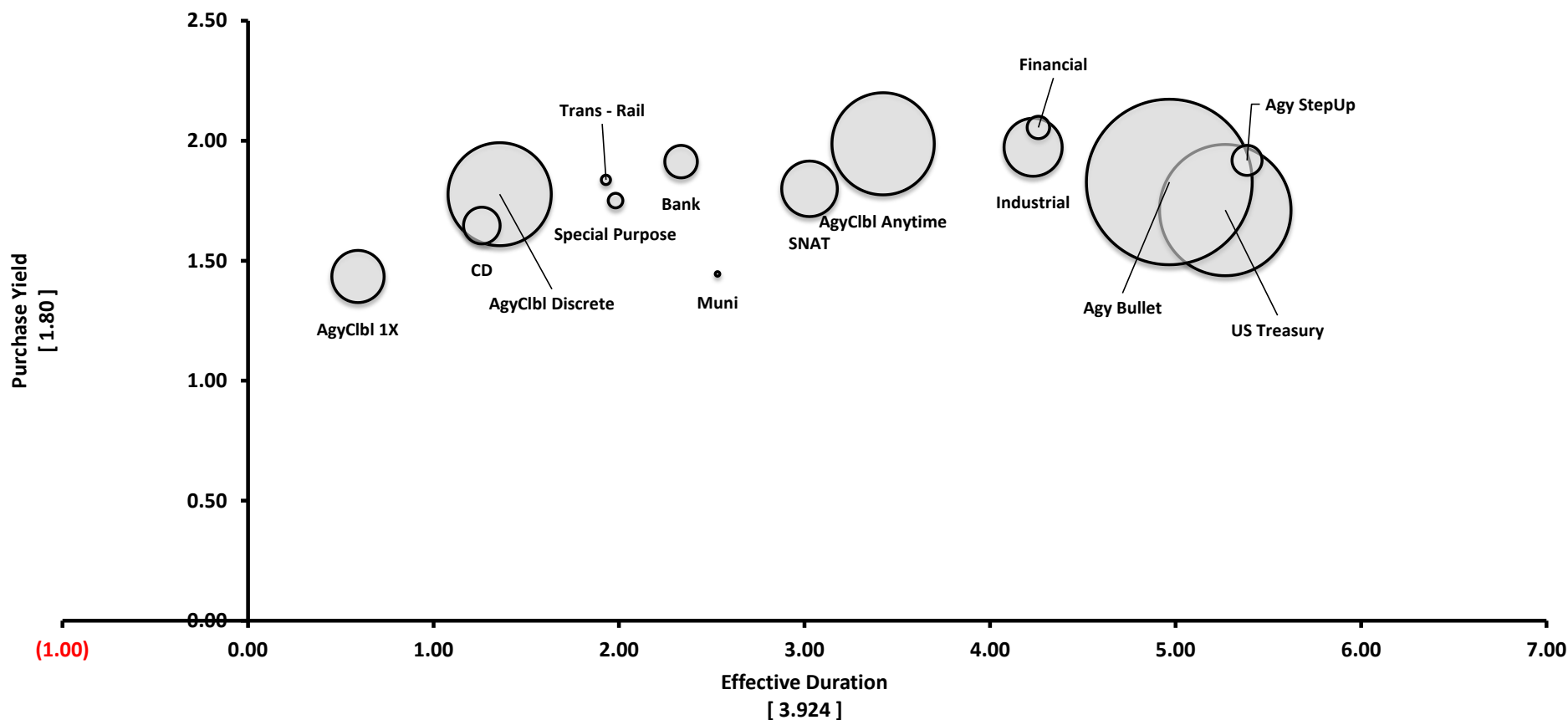
Risk-Adjusted Return vs ESG





Offerings Example 12/31/19

Offerings-20191231 (Using 12/31/19 Portfolio Data)
Effective Duration versus Purchase Yield Where Bubble Size is MktWgtd Purchase Yield [1.80]
Par Amount (\$000): 2,166,303.00 | Effective Duration: 3.92 | OAS: (0.82)



Offerings Example 12/31/19

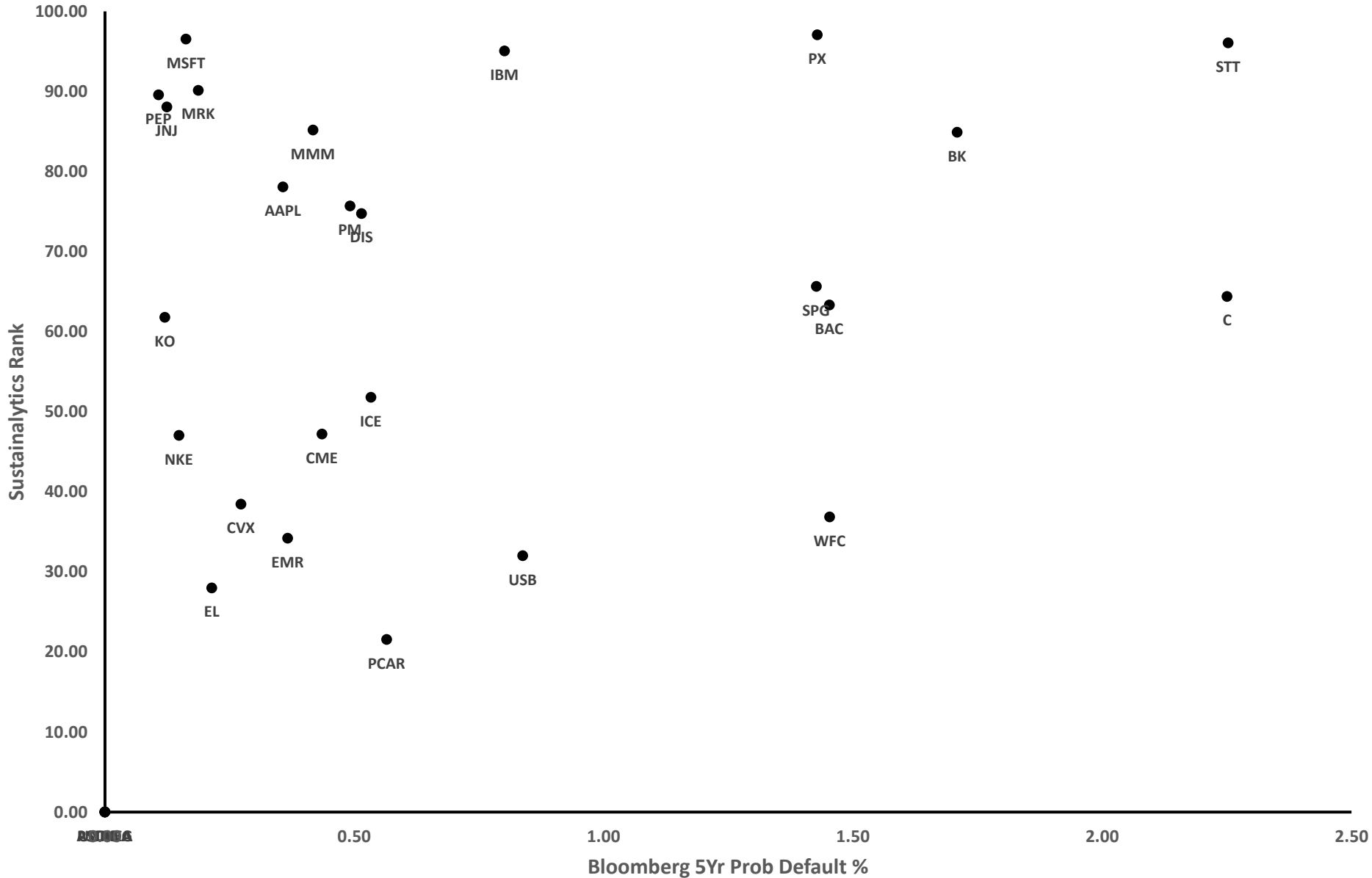


CALIFORNIA
DEBT AND
INVESTMENT
ADVISORY
COMMISSION

Sector	Effective Duration [3.924]	Purchase Yield [1.80]	MktWgtd Purchase Yield [1.80]	% of Total Market Value 100.00%	OAS [(0.817)]	Yield To Maturity [1.847]	Years To Maturity [5.127]
US Treasury	5.268	1.711	0.386	22.588%	(2.835)	1.711	6.26
Agy Bullet	4.966	1.828	0.609	33.328%	9.347	1.829	5.60
AgyClbl Anytime	3.423	1.987	0.237	11.933%	(8.417)	2.048	6.01
AgyClbl Discrete	1.356	1.777	0.241	13.548%	(25.05)	1.873	3.40
AgyClbl 1X	0.592	1.434	0.065	4.535%	(15.251)	1.814	2.20
Agy StepUp	5.385	1.919	0.023	1.214%	14.072	1.92	6.41
SNAT	3.027	1.800	0.074	4.088%	(10.29)	1.966	4.73
CD	1.261	1.647	0.033	2.031%	6.849	1.647	1.29
Muni	2.531	1.445	0.001	0.081%	39.367	2.144	2.83
Industrial	4.232	1.973	0.080	4.034%	28.123	1.988	4.64
Financial	4.261	2.055	0.014	0.669%	33.653	2.086	4.88
Bank	2.334	1.913	0.027	1.406%	29.429	1.94	2.54
Special Purpose	1.982	1.750	0.007	0.374%	16.139	1.768	2.08
Trans - Rail	1.929	1.837	0.003	0.172%	25.101	1.972	2.20

Ticker	<i>Bloomberg 5Yr Prob Default %</i>	<i>Analyst % Buy Hold</i>	<i>Sustainalytics Rank</i>	<i>RobecoSAM Rank</i>	<i>ISS Quality Score</i>	<i>OAS</i>
AAPL	0.36	85.71	78.07	36.00	1.00	30.92
ASCHEA	0.00	0.00	0.00	0.00	0.00	64.07
BAC	1.45	93.10	63.33	89.00	2.00	20.70
BK	1.71	86.36	84.92	87.00	1.00	12.92
BNSF	20.81	0.00	0.00	0.00	0.00	25.10
C	2.25	96.30	64.40	78.00	1.00	30.10
CME	0.44	85.71	47.21	20.00	9.00	33.28
CVX	0.27	100.00	38.46	53.00	2.00	11.29
DIS	0.51	97.14	74.77	54.00	8.00	19.33
EL	0.21	92.00	28.00	31.00	10.00	11.61
EMR	0.37	96.30	34.21	29.00	8.00	(1.57)
IBM	0.80	92.00	95.07	56.00	6.00	14.76
ICE	0.53	95.00	51.80	41.00	4.00	58.34
JNJ	0.12	95.65	88.08	83.00	9.00	15.53
KO	0.12	100.00	61.81	39.00	1.00	16.60
MMM	0.42	80.95	85.19	87.00	2.00	38.53
MRK	0.19	100.00	90.16	65.00	3.00	20.56
MSFT	0.16	100.00	96.55	92.00	3.00	21.50
NKE	0.15	94.44	47.06	78.00	5.00	(9.06)
PCAR	0.56	82.61	21.57	32.00	8.00	7.73
PEP	0.11	95.83	89.58	42.00	1.00	13.33
PM	0.49	94.74	75.69	75.00	4.00	28.14
PSJHOG	0.00	0.00	0.00	0.00	0.00	74.57
PX	1.43	100.00	97.09	99.00	7.00	14.30
SPG	1.43	100.00	65.66	51.00	7.00	43.96
STT	2.25	95.45	96.07	90.00	5.00	21.69
TFC	0.00	0.00	0.00	0.00	0.00	31.22
UNANA	0.00	0.00	0.00	0.00	0.00	27.48
USB	0.84	88.46	32.02	38.00	4.00	43.41
WFC	1.45	77.42	36.85	42.00	2.00	49.17

Issuer Matrix for Offerings-20191231 (Using 12/31/19 Data)
 Showing Corporates Issuers
 Data Labels Showing Ticker



Analysis as of 12/31/19. Calculations by Kevin Webb, CFA

Offerings as of 12/31/19
Data Labels: Security Description | Ratings Info

