ADVANCED PUBLIC FUNDS INVESTING:

THE ANALYTICS OF INVESTMENT SELECTION

JANUARY 22-23, 2025

COSTA MESA, CA

INTRODUCTION

Economic Environment: Forecasts, Interest Rates and Hot Topics

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Head of Macro Strategy
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A Complex, Evolving, Iterative Interaction

The complex interaction of Macro, Geopolitical and ESG is shaping global events, economic development, market opportunities and risks

ACADEMY SECURITIES

Trump 2.0

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What's Different?

- **The World View of the U.S.**
  - How has perception of the U.S. changed since 2016? 2020?
- **The U.S. View of the U.S.**
  - How do we view ourselves now?
- **Trump's "Lessons Learned"**
  - Needs to be fully staffed right from the start
  - Cannot depend on Republicans winning the midterms
  - Loyalty and willingness to push his policies through is a requirement (in his eyes)
  - Xi did not deliver on the "deal" to buy agricultural goods.

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The Big Policies

- **China as the Strategic Competitor**
  - Tariffs, Trade, Sanctions, Prohibited Items
- **Immigration**
  - Big wins or hard core?
  - Disappointing engagement with Mexico so far
- **Refining Even More Than Drilling**
  - Rare Earths, Critical Minerals, Energy – not just production, but processing
  - Reviewing rules and regulations (pushing back on “Not In My Backyard”)
- **No Shortage of Other Topics**
  - From 51st states, to D.O.G.E., to Musk, to Greenland, to **Work From Office**

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Geopolitical Opportunities

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What We Are Optimistic About

- **A Peace or Truce between Russia and Ukraine**
  - Trump views the war as the problem, not necessarily Putin which is a different mindset
  - The frozen Russian dollar reserves plays into Trump's plan
- **The Defeat of Iran and Middle East Growth**
  - Iran and its proxies have been exposed as being weak
  - The threat of Iran getting nuclear weapons will influence Israel
  - The Middle East wants to get back to "westernizing" their economies
- **SPACE**
  - A renewed focus on space, both from a commercial and military standpoint

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Not So Optimistic

- **Africa**
  - China and Russia continue to make inroads, at our expense
- **BRICS**
  - Will never be a “political” alliance but can be a marriage of convenience on international trade
- **Cyber**
  - Cyber defense is increasingly demanding a joint public / private effort
  - Why can’t we develop deterrence, especially for state sponsored actors?
- **Shipping**
  - Chinese ownership of ports, potentially dangerous “choke points”

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Debt and Deficits

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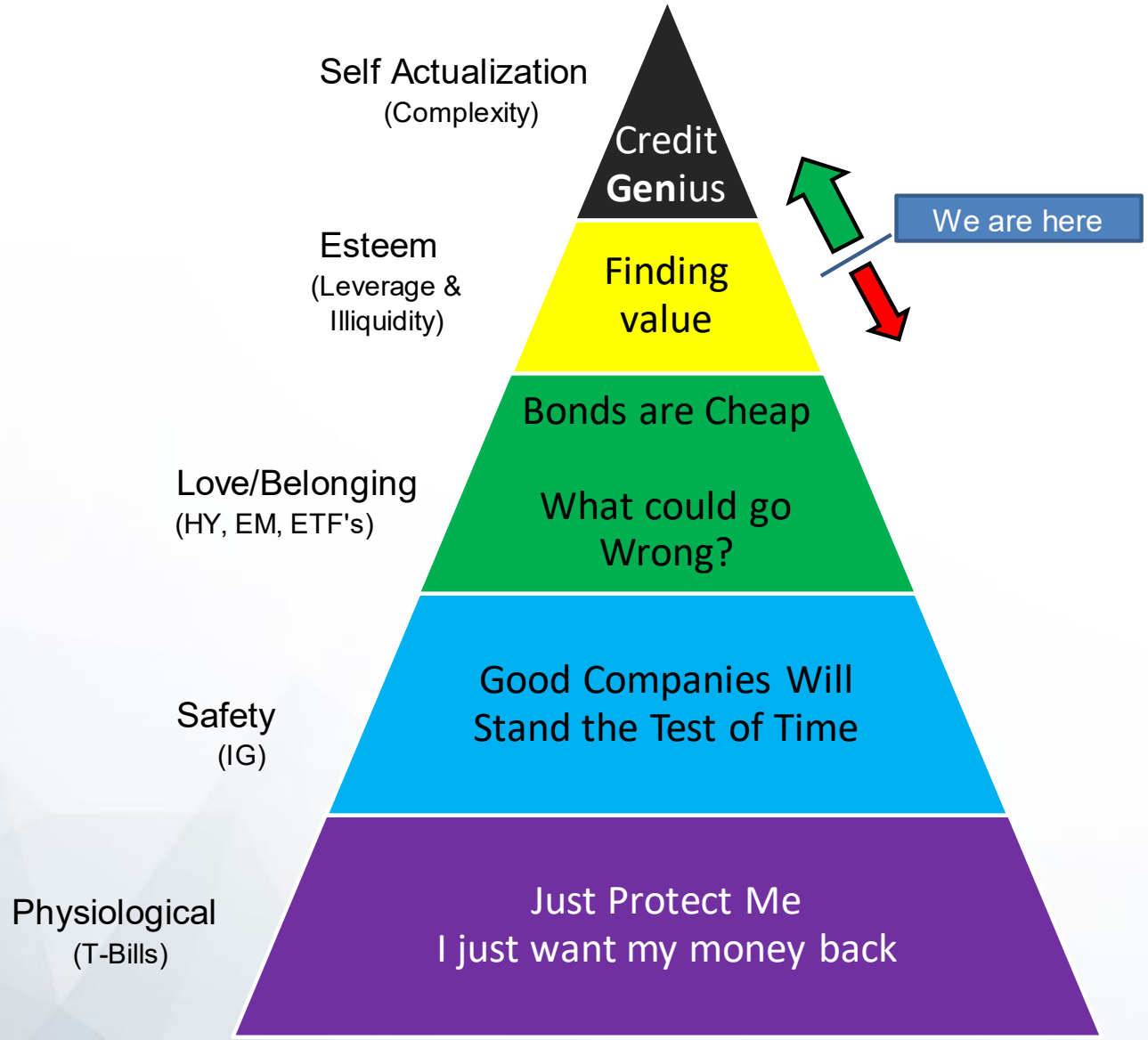
Maslow's Hierarchy of a Credit Bubble



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Bubbles Only Happen in “Safe Assets”

- **Bubbles only happen in “safe assets”**
  - That is where leverage builds.
  - That is where investors aren’t prepared for any losses.
  - They tend to permeate the banking system.
- **Historically this has been the case**
  - S&L Crisis – missed interest rate risk.
  - Long Term Capital / Russia Default – extremely large trades on “arcane” products and “sovereigns don’t default.”
  - IG Credit – WorldCom and Enron introduced fraud as a risk.
  - Great Financial Crisis – AAA mortgage-backed bonds.
  - European Debt Crisis – sovereign debt.
- **Usually is Something “New”**
  - Once a bubble has “popped” it is unlikely to be source of the next bubble.

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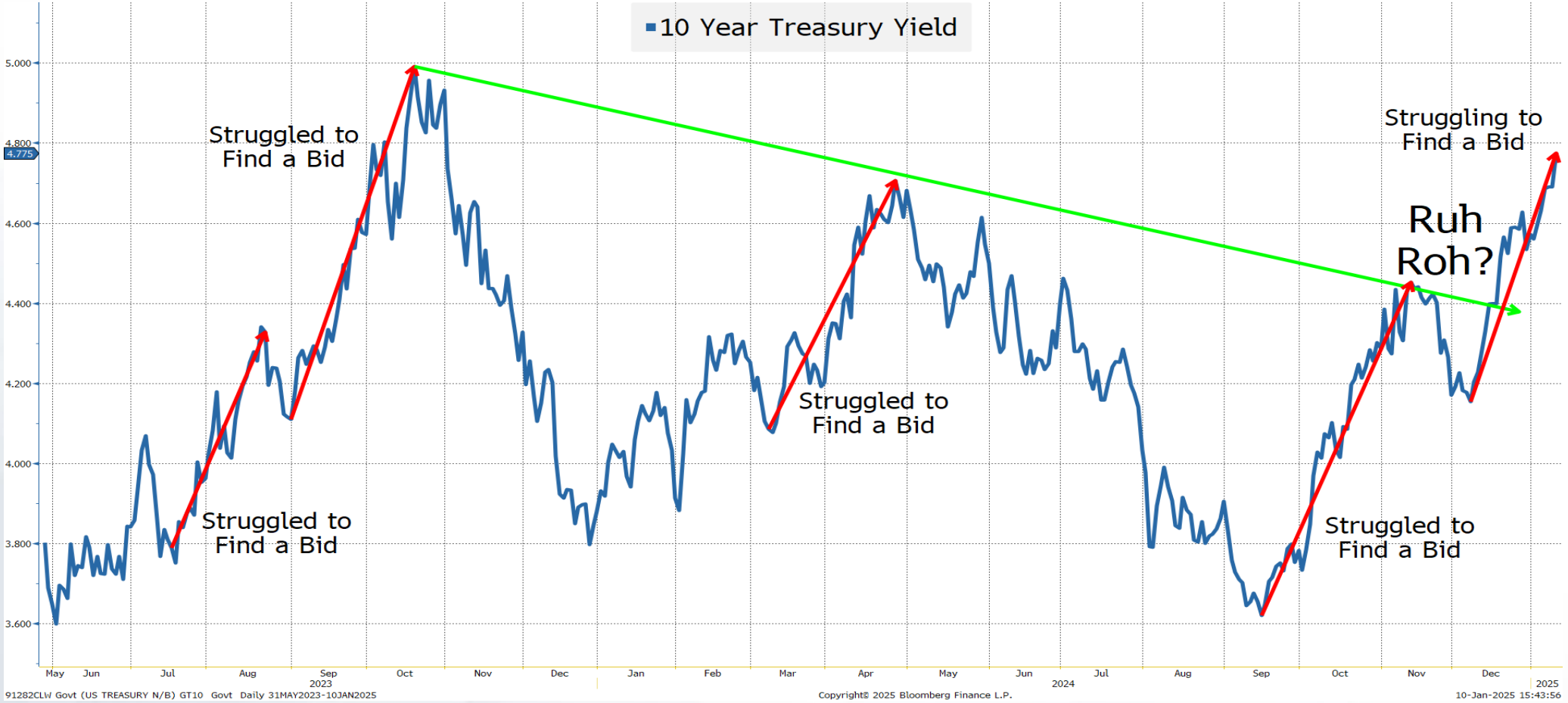
The Bidless Treasury Market



Inflation, Debt Ceiling, Positioning, Election, Foreign Selling?

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The Fed, Inflation & Jobs

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What is Priced In?

Meeting	# Cuts	Rate
01/29/25	0.03	4.32%
03/19/25	0.25	4.26%
05/07/25	0.42	4.22%
06/18/25	0.74	4.14%
07/30/25	0.83	4.12%
09/17/25	0.96	4.09%
10/29/25	1.05	4.07%
12/10/25	1.11	4.05%

As of January 10th

- 2s vs 5s is 20 bps
- 2s vs 10s is 38 bps
- 2s vs 30s is 58 bps

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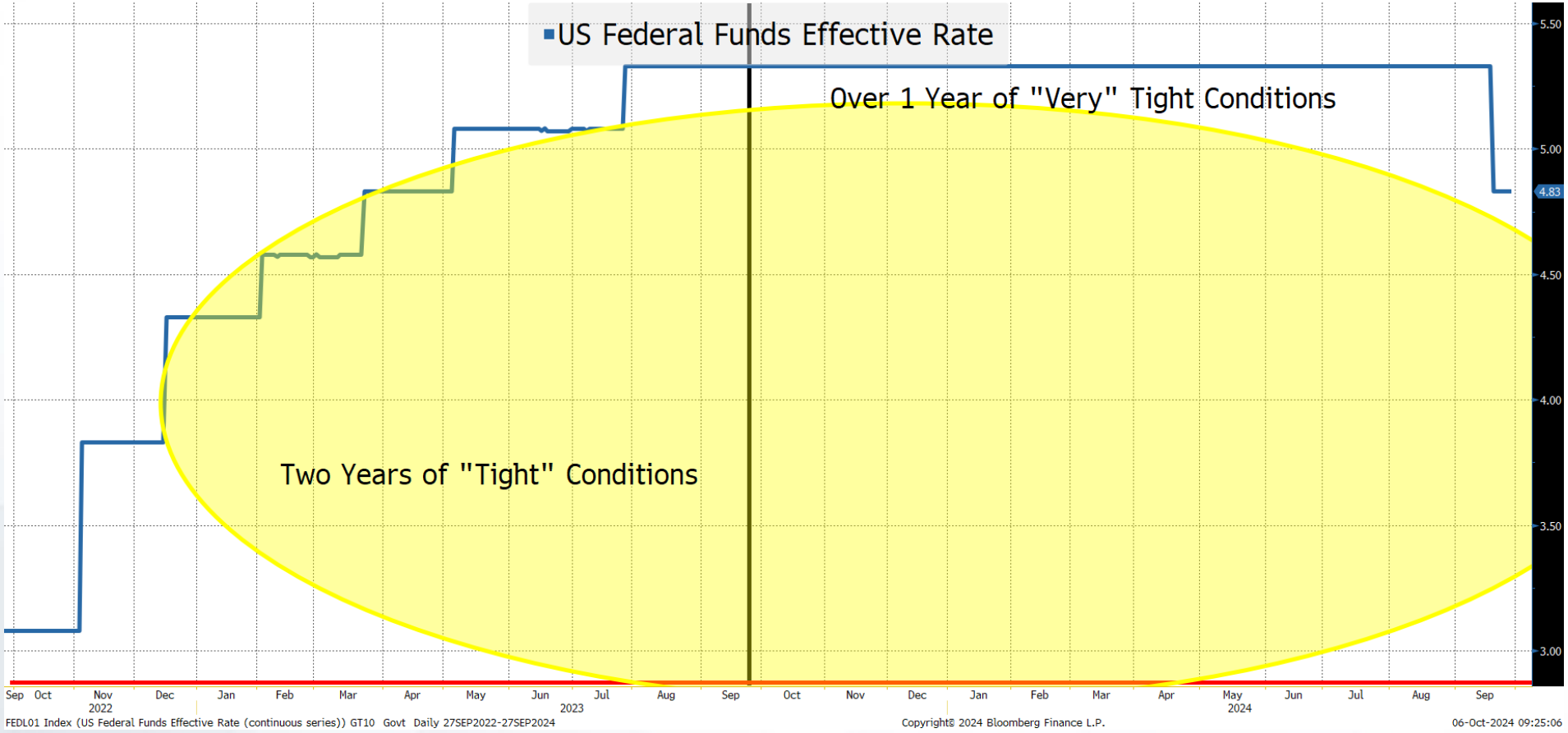
The Neutral Rate



Does 3% look “neutral”? Atlanta GDPNow is almost 3%?

What is the “correct” Terminal Rate or Neutral Rate?

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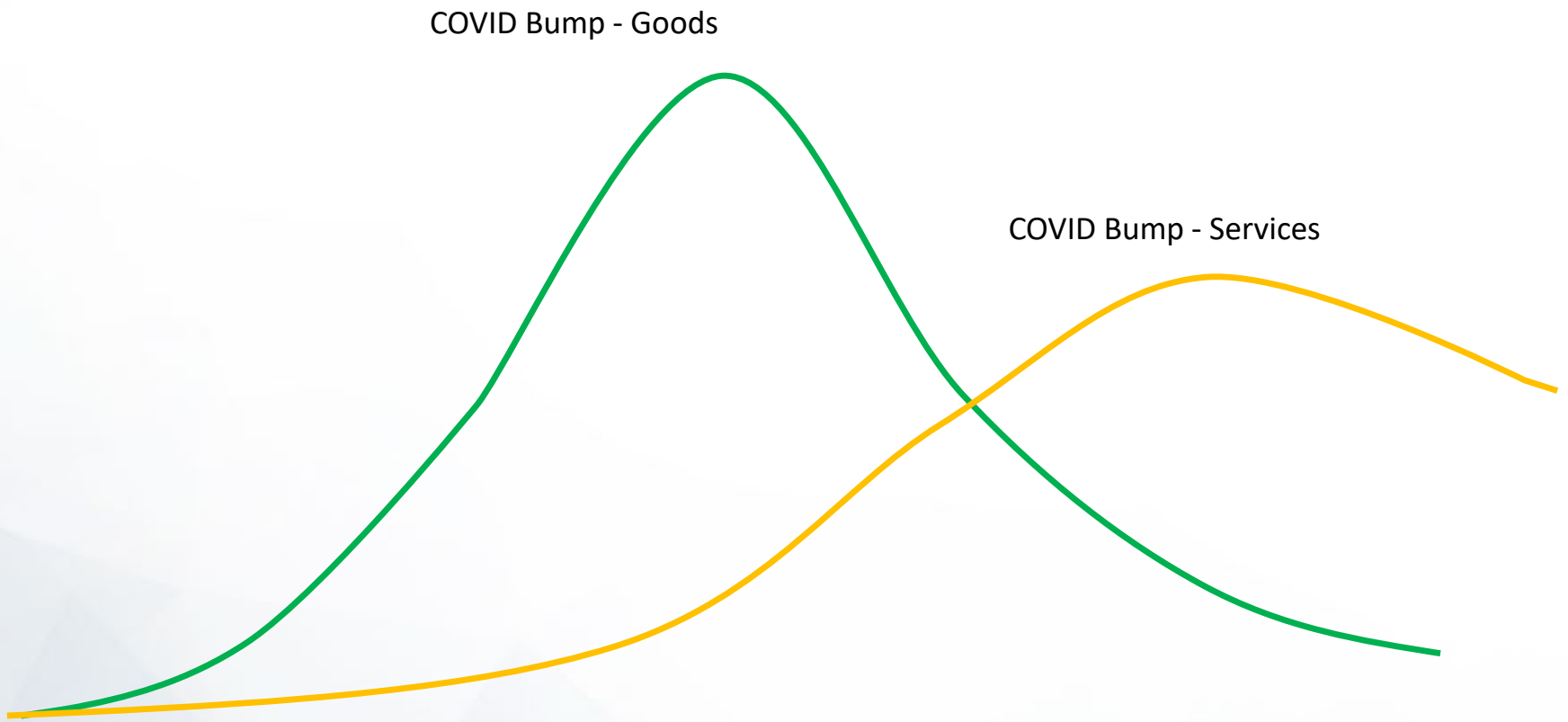
COVID and Inflation



Understanding the role COVID played in inflation is crucial to estimating future inflation

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Inflation Pressures

- **On-Shoring, Re-Shoring, Etc.**
  - If it was cheaper to make here, we would already be doing it
  - While building out industries will provide benefits down the road, the build out phase will be inflationary
- **A Return of SALT**
  - If this occurs, it will be inflationary (I'm doubtful we get this)
- **Rebuilding Ukraine**
  - Inflation pressure in Europe, but with knock on effects
- **India as a Wildcard**

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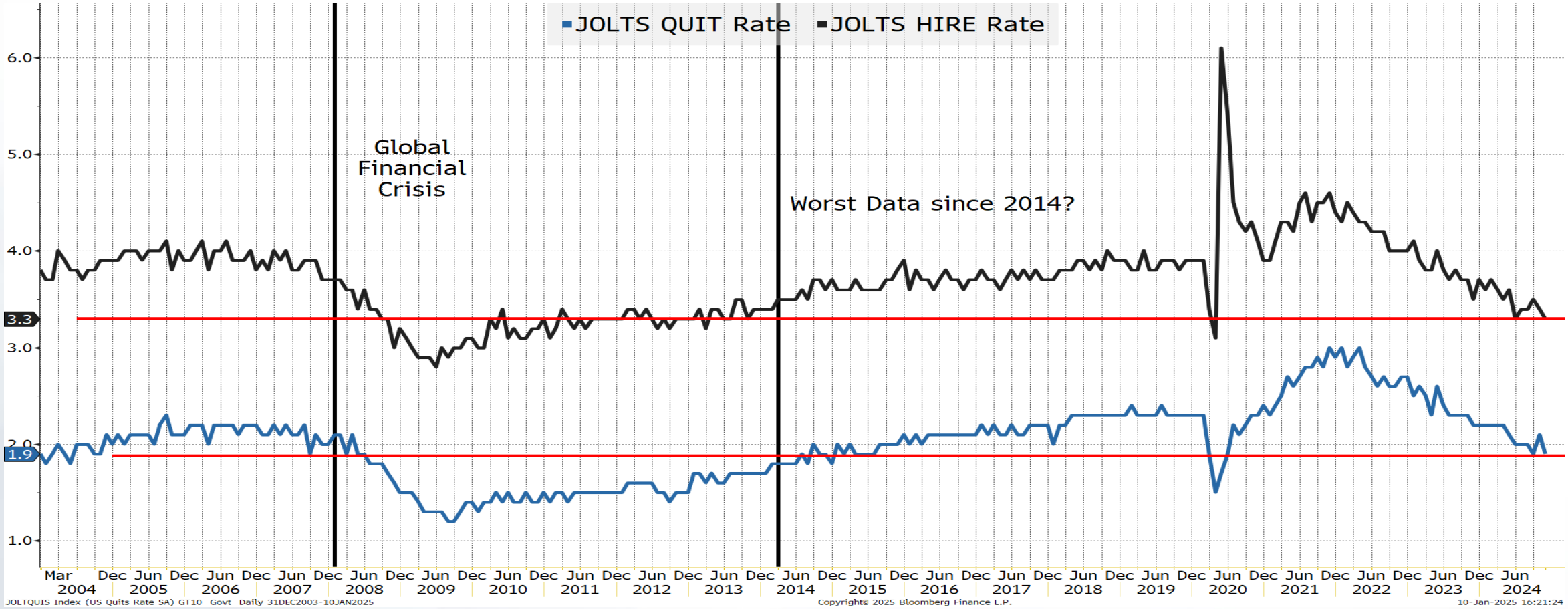
My Favorite Jobs Chart



Doesn't send the robust numbers other metrics have shown

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Reasons Not To Trust The Jobs Data

- **It has been wrong, consistently wrong, by large amounts**
  - Initial survey response rates are low
- **Seasonal Adjustments**
  - Including the covid period data likely causes incorrect seasonal adjustments
  - The demographic shifts in construction have not been captured in seasonal adjustments
- **The "Birth/Death" Model**
  - Has the "gig" economy changed the demand for EIN's?
  - The number of jobs associated with EIN's?

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Credit Risk

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Credit – Tighter and Tighter?

- **High Quality, Short Dated, Does Well**
  - **GOVERNANCE**
- **The "Bottom End" Is Well Supported**
  - Private Credit competing with Banks who "underlent" post SVB
- **Throw Out the "Old" High Yield Charts**
  - The high yield market of today looks nothing like the high yield market of the past
- **Commercial Real Estate**
  - The worst behind us?

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QUESTIONS?

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SESSION ONE

Advanced Investment Concepts

PARTH BHATT

Chief Deputy Treasurer

County of San Bernardino

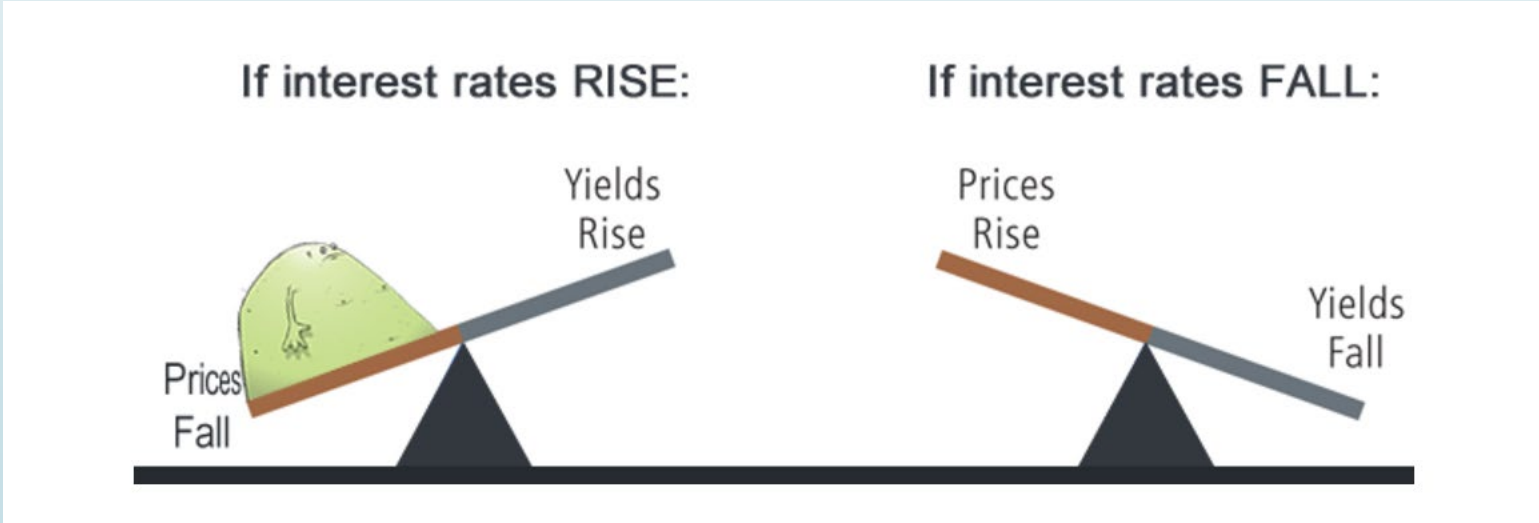
Agenda

- Introduction to Bond Price, Coupon, Yield
  - Bullets
    - Discount Notes, T-Bills, Non-Interest-Bearing Commercial Paper
  - Floaters
- Introduction to Duration & Convexity
  - Bullets
- Spreads & Yield Curve
- Portfolio Structures
- Monetary Policy Impact

Source: Fixed Income Analysis, CFA Institute, 5th edition; Bloomberg & Federal Reserve

Introduction to Bond Price, Coupon, Yield

- Price of a bond is derived by discounting future cashflows at prevailing market interest rates
- The price of the bond and yield have a inverse relationship
  - When Yields go UP bond prices go DOWN
  - When Yields go DOWN bond Prices go UP



Introduction to Bond Price, Coupon & Yield (cont. 2 of 4)

- Premium/Discount relationship
  - Premium Bond sells ABOVE the price of $100
  - Discount Bond sells BELOW the price of $100
- Premium Bond:
  - Coupon > Market Yield
- Discount Bond
  - Coupon <Market Yield
- Deep Dive

Introduction to Bond Price, Coupon & Yield (cont. 3 of 4)

Equation 1 is a general formula for calculating a bond price given the market discount rate:

$$PV = \frac{PMT}{(1+r)^1} + \frac{PMT}{(1+r)^2} + \cdots + \frac{PMT + FV}{(1+r)^N} \quad (1)$$

where

PV = present value, or the price of the bond
PMT = coupon payment per period
FV = future value paid at maturity, or the par value of the bond
r = market discount rate, or required rate of return per period
N = number of evenly spaced periods to maturity

Introduction to Bond Price, Coupon & Yield (cont. 4 of 4)

- Premium Bond – Coupon > Market Discount Factor

$$\frac{4}{(1.03)^1}+\frac{4}{(1.03)^2}+\frac{4}{(1.03)^3}+\frac{4}{(1.03)^4}+\frac{4}{(1.03)^5}+\frac{104}{(1.03)^6}=105.417$$

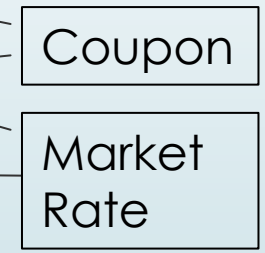
- Discount Bond – Coupon < Market Discount Factor

$$\frac{2}{(1.03)^1}+\frac{2}{(1.03)^2}+\frac{2}{(1.03)^3}+\frac{2}{(1.03)^4}+\frac{2}{(1.03)^5}+\frac{102}{(1.03)^6}=94.583$$

- Zero Coupon Bond
  - Extreme Case – Can a zero-coupon bond sell at a premium?

$$\frac{100}{(1.02)^{10}}=82.035$$

- Excel Illustration



Key Takeaways – Coupon, Yield & Maturity

- The bond price is inversely related to the market discount rate. When the market discount rate increases, the bond price decreases (the inverse effect).
  - Yield UP Price DOWN

- For the same time-to-maturity, a lower-coupon bond has a greater percentage price change than a higher-coupon bond when their market discount rates change by the same amount (the coupon effect).
  - Yield UP Price DOWN less (if the coupon is higher)
  - If you expect rates to rise buy higher coupon securities all else equal (reduce price depreciation effect)
  - If you expect rates to fall buy lower coupon securities all else equal (Increase price appreciation effect)

Duration & Convexity

- They both measure a bond's price sensitivity to market rates
- The relationship between the price of bond and market rates is non-linear
  - i.e., They do not move in 1:1 ratio or equal proportion
- If the relationship was linear then duration alone would be enough to measure the price move relative to market rates
- Convexity adjusts the duration effect to account for the non-linear relationship

Duration & Convexity (cont. 2 of 4)

- Duration is the primary, or first-order, effect on a bond's percentage price change given a change in the yield-to-maturity. Convexity is the secondary, or second-order, effect. It indicates the change in the duration as the yield-to-maturity changes.
- **Convexity is a positive attribute for a bond**. Other things being equal, a more convex bond appreciates in price more than a less convex bond when yields fall and depreciates less when yields rise.
- Callable bonds have **negative effective convexity** when interest rates are low. The increase in price when the benchmark yield is reduced is less in absolute value than the decrease in price when the benchmark yield is raised.

Duration & Convexity (cont. 3 of 4)

- Effective Duration calculation

$$\text{EffDur} = \frac{(PV_-) - (PV_+)}{2 \times (\Delta\text{Curve}) \times (PV_0)}$$

- Convexity Calculation

$$C = \frac{\frac{1}{(1+i)^2}\left[\sum_{t=1}^{N} \frac{CF_t}{(1+i)^t}(t^2 + t)\right]}{V_B}$$

Duration & Convexity (cont. 4 of 4)

$$\text{Change in Bond Price} \approx -\text{Modified Duration}\,(\Delta\text{YTM}) + .5(\text{Convexity})\,(\Delta\text{YTM})^2$$

Key Takeaways – Duration & Convexity

- Generally, for the same coupon rate, a longer-term bond has a greater percentage price change than a shorter-term bond when their market discount rates change by the same amount (the maturity/duration effect).
  - If you expect yields to go down then buy longer maturity/duration
  - If you expect yields to rise then buy shorter maturity/duration
- For the same coupon rate and time-to-maturity, the percentage price change is greater when the market discount rate goes down than when it goes up (the convexity effect).
  - Convexity is your friend try to keep the overall portfolio convexity positive
  - Reduce negative convexity

Riding the Yield Curve

- You need $100 in two years to pay bills. One-year market rate is 1% and two-year market rate is 2%. How will you invest the $100 today (assuming no change in interest rates over the time of your investment) ?

Riding the Yield Curve (cont. 2 of 5)

- Option 1 – Buy a one-year bond at 1% and reinvest the proceeds again in one year?
- Option 2 – Buy a two-year bond at 2% and hold it to maturity?

Riding the Yield Curve (cont. 3 of 5)

- Option 1
  - Year one earn a $1 in interest
  - Year two earn a $1 in interest
  - Total return 1% a year
- Option 2 – Buy a two-year bond at 2% and hold it to maturity?
  - Year one – earn $2 in interest
  - Year two – earn $2 in interest
  - Total Return 2% a year

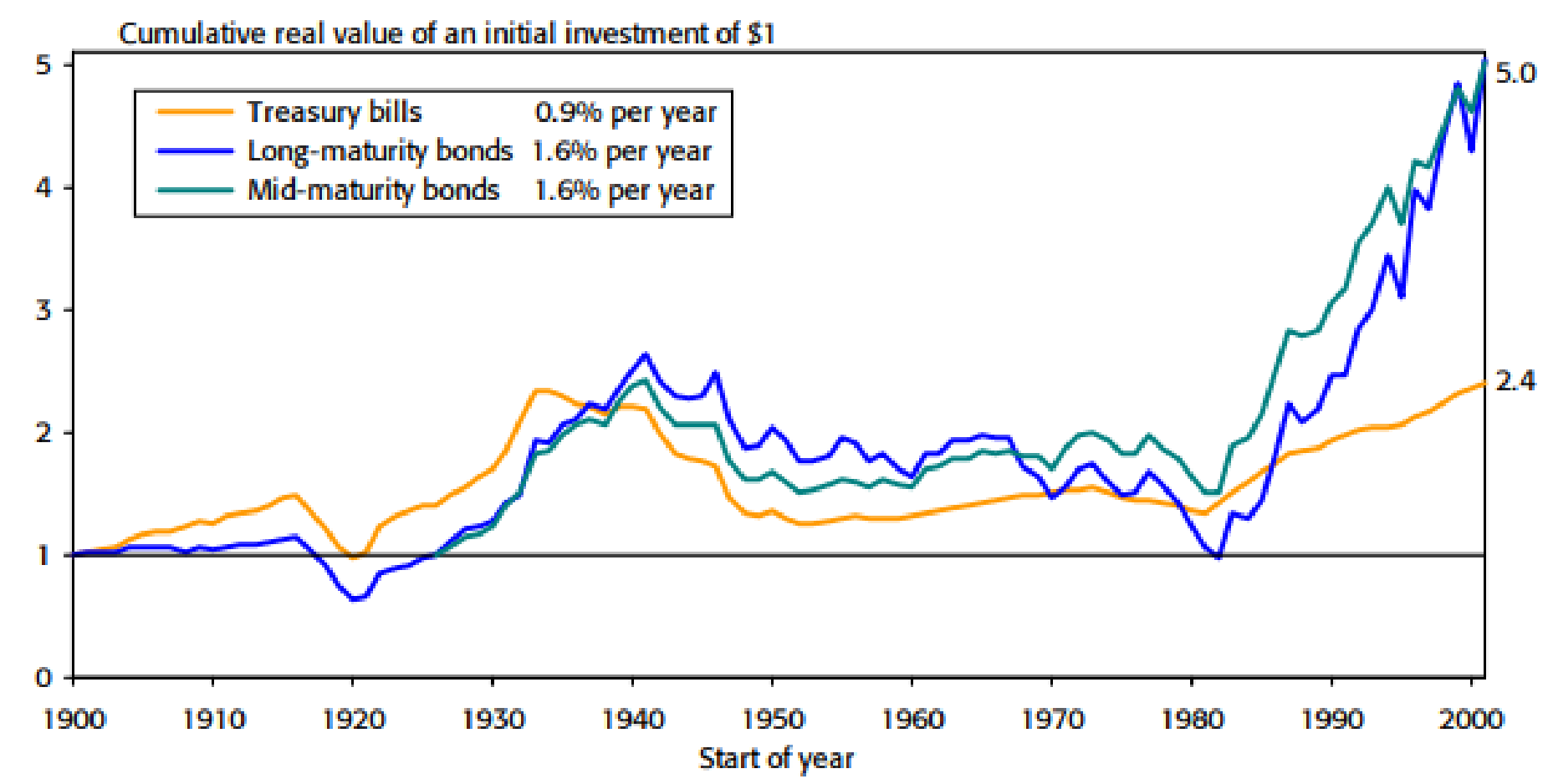
Riding the Yield Curve (cont. 4 of 5)

- Option 3 - Invest in a two-year bond and sell it in one year's time. Reinvest the proceeds in a two-year bond again and sell it again in one year's time.
  - Year one earn a $2 in interest + $1 in capital gain when you sell it in one year
  - Year two earn a $2 in interest + $1 in capital gain when you sell it in one year
  - Total return 3% a year

Riding the Yield Curve (cont. 5 of 5)

- Works in a positively sloped yield curve environment
  - Yield curve was positive over 75% of the time in the past 100 years
- Requires purchasing securities of slightly longer than the horizon timeline
- Requires rebalancing/extending duration of the portfolio as time passes to capture capital gains generated by passage of time

Historical Returns



Source: Triumph of the optimists

Matched Maturity (Benchmark) Spread

A 6% annual coupon corporate bond with two years remaining to maturity is trading at a price of 100.125. The two-year, 4% annual payment government benchmark bond is trading at a price of 100.750. The one-year and two-year government spot rates are 2.10% and 3.635%, respectively, stated as effective annual rates.

1. Calculate the G-spread, the spread between the yields-to-maturity on the corporate bond and the government bond having the same maturity.

Solution to 1: The yield-to-maturity for the corporate bond is 5.932%.

$$100.125 = \frac{6}{(1+r)^1} + \frac{106}{(1+r)^2}; r = 0.05932$$

The yield-to-maturity for the government benchmark bond is 3.605%.

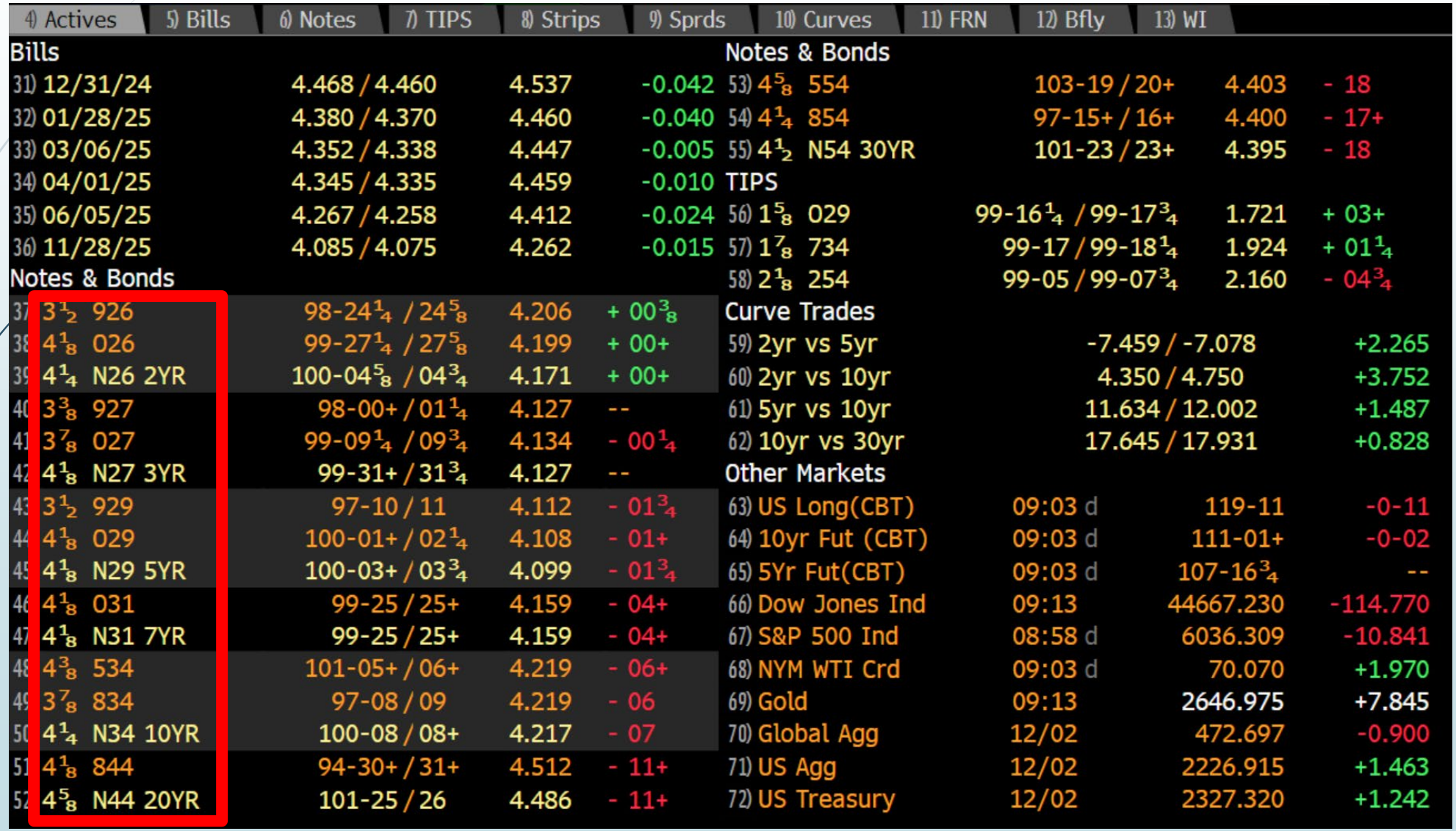
$$100.750 = \frac{4}{(1+r)^1} + \frac{104}{(1+r)^2}; r = 0.03605$$

The G-spread is 232.7 bps: 0.05932 − 0.03605 = 0.02327.

Matched Maturity (Benchmark) Spread

(cont. 2 of 2)

On-The-Run Vs. Off-The-Run Treasuries



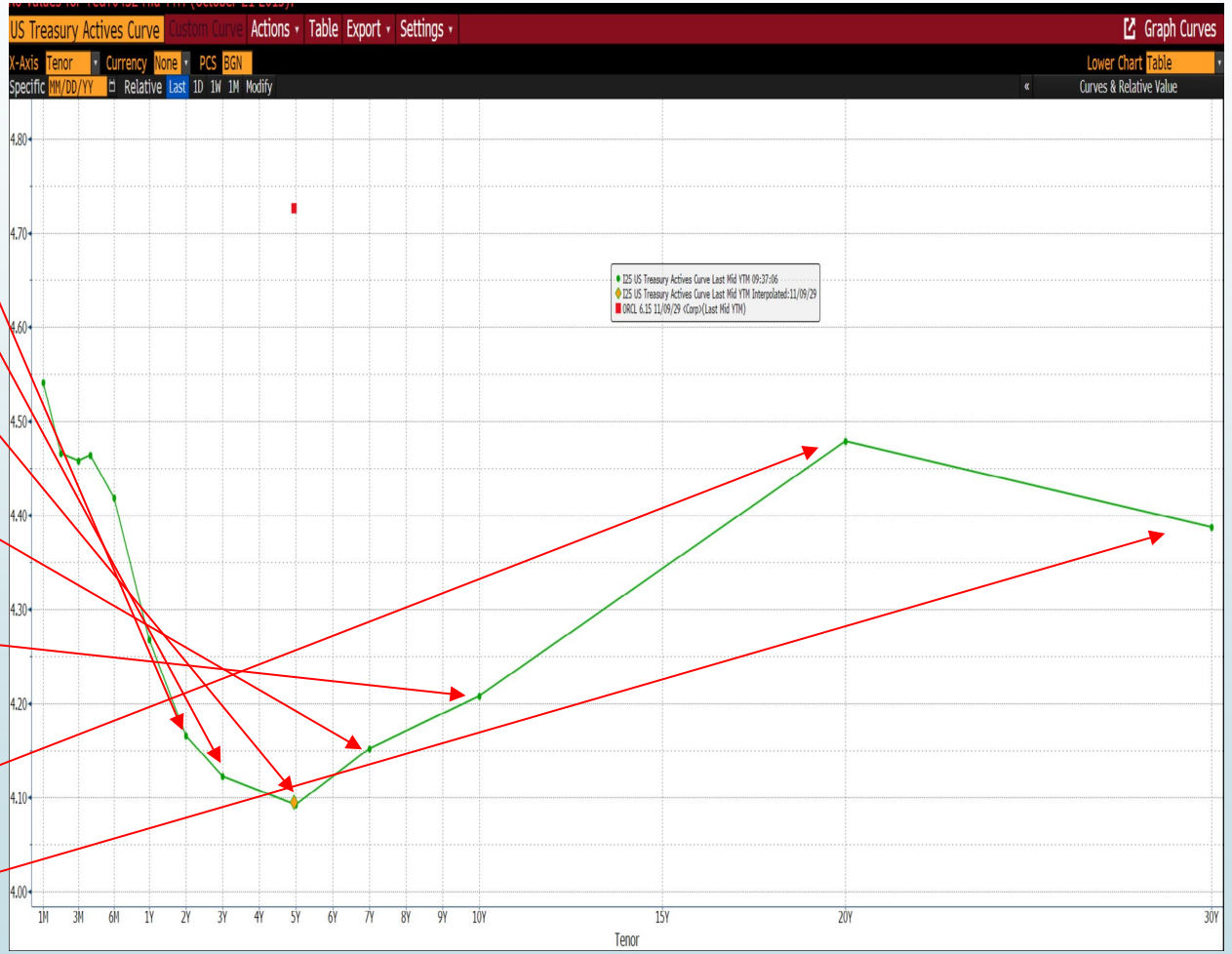
4) Actives	5) Bills	6) Notes	7) TIPS	8) Strips	9) Sprds	10) Curves	11) FRN	12) Bfly	13) WI

Bills									
31) 12/31/24	4.468 / 4.460	4.537	-0.042	Notes & Bonds					
32) 01/28/25	4.380 / 4.370	4.460	-0.040	53) $4\frac{5}{8}$ 554	103-19 / 20+	4.403	- 18		
33) 03/06/25	4.352 / 4.338	4.447	-0.005	54) $4\frac{1}{4}$ 854	97-15+ / 16+	4.400	- 17+		
34) 04/01/25	4.345 / 4.335	4.459	-0.010	55) $4\frac{1}{2}$ N54 30YR	101-23 / 23+	4.395	- 18		
35) 06/05/25	4.267 / 4.258	4.412	-0.024	TIPS					
36) 11/28/25	4.085 / 4.075	4.262	-0.015	56) $1\frac{5}{8}$ 029	99-16$\frac{1}{4}$ / 99-17$\frac{3}{4}$	1.721	+ 03+		
Notes & Bonds				57) $1\frac{7}{8}$ 734	99-17 / 99-18$\frac{1}{4}$	1.924	+ 01$\frac{1}{4}$		
37) $3\frac{1}{2}$ 926	98-24$\frac{1}{4}$ / 24$\frac{5}{8}$	4.206	+ 00$\frac{3}{8}$	58) $2\frac{1}{8}$ 254	99-05 / 99-07$\frac{3}{4}$	2.160	- 04$\frac{3}{4}$		
38) $4\frac{1}{8}$ 026	99-27$\frac{1}{4}$ / 27$\frac{5}{8}$	4.199	+ 00+	Curve Trades					
39) $4\frac{1}{4}$ N26 2YR	100-04$\frac{5}{8}$ / 04$\frac{3}{4}$	4.171	+ 00+	59) 2yr vs 5yr	-7.459 / -7.078		+2.265		
40) $3\frac{3}{8}$ 927	98-00+ / 01$\frac{1}{4}$	4.127	--	60) 2yr vs 10yr	4.350 / 4.750		+3.752		
41) $3\frac{7}{8}$ 027	99-09$\frac{1}{4}$ / 09$\frac{3}{4}$	4.134	- 00$\frac{1}{4}$	61) 5yr vs 10yr	11.634 / 12.002		+1.487		
42) $4\frac{1}{8}$ N27 3YR	99-31+ / 31$\frac{3}{4}$	4.127	--	62) 10yr vs 30yr	17.645 / 17.931		+0.828		
43) $3\frac{1}{2}$ 929	97-10 / 11	4.112	- 01$\frac{3}{4}$	Other Markets					
44) $4\frac{1}{8}$ 029	100-01+ / 02$\frac{1}{4}$	4.108	- 01+	63) US Long(CBT)	09:03 d	119-11	-0-11		
45) $4\frac{1}{8}$ N29 5YR	100-03+ / 03$\frac{3}{4}$	4.099	- 01$\frac{3}{4}$	64) 10yr Fut (CBT)	09:03 d	111-01+	-0-02		
46) $4\frac{1}{8}$ 031	99-25 / 25+	4.159	- 04+	65) 5Yr Fut(CBT)	09:03 d	107-16$\frac{3}{4}$	--		
47) $4\frac{1}{8}$ N31 7YR	99-25 / 25+	4.159	- 04+	66) Dow Jones Ind	09:13	44667.230	-114.770		
48) $4\frac{3}{8}$ 534	101-05+ / 06+	4.219	- 06+	67) S&P 500 Ind	08:58 d	6036.309	-10.841		
49) $3\frac{7}{8}$ 834	97-08 / 09	4.219	- 06	68) NYM WTI Crd	09:03 d	70.070	+1.970		
50) $4\frac{1}{4}$ N34 10YR	100-08 / 08+	4.217	- 07	69) Gold	09:13	2646.975	+7.845		
51) $4\frac{1}{8}$ 844	94-30+ / 31+	4.512	- 11+	70) Global Agg	12/02	472.697	-0.900		
52) $4\frac{5}{8}$ N44 20YR	101-25 / 26	4.486	- 11+	71) US Agg	12/02	2226.915	+1.463		
				72) US Treasury	12/02	2327.320	+1.242		

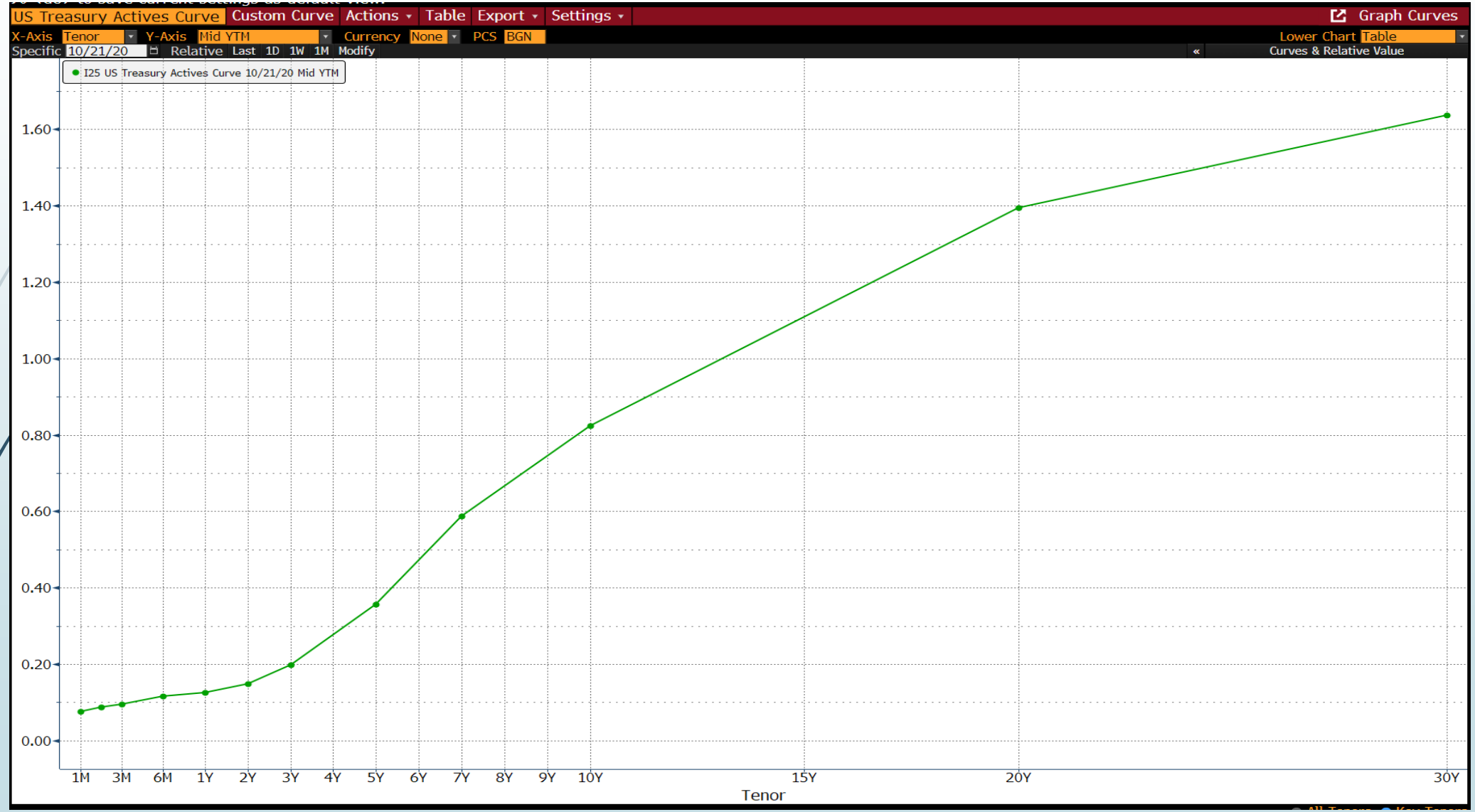
Yield Curve

US Bonds | FIT »

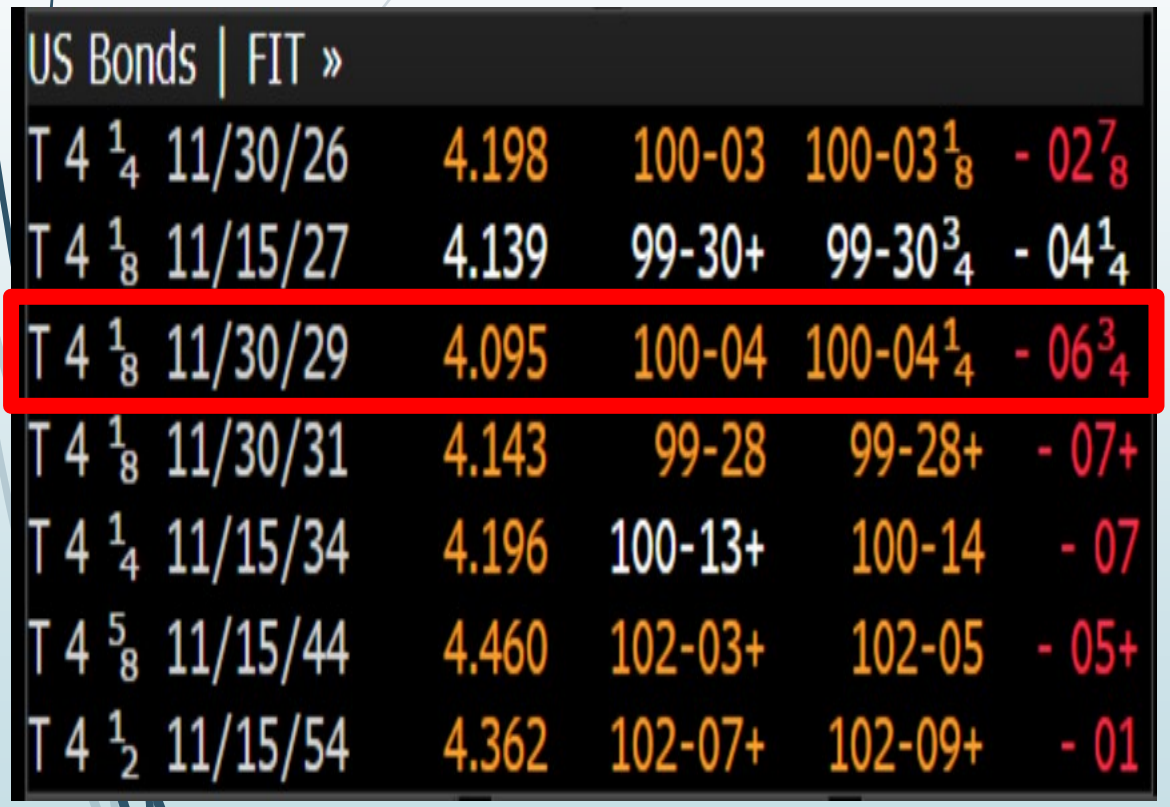
T 4 1/4 11/30/26	4.198	100-03	100-03 1/8	- 02 7/8
T 4 1/8 11/15/27	4.139	99-30+	99-30 3/4	- 04 1/4
T 4 1/8 11/30/29	4.095	100-04	100-04 1/4	- 06 3/4
T 4 1/8 11/30/31	4.143	99-28	99-28+	- 07+
T 4 1/4 11/15/34	4.196	100-13+	100-14	- 07
T 4 5/8 11/15/44	4.460	102-03+	102-05	- 05+
T 4 1/2 11/15/54	4.362	102-07+	102-09+	- 01

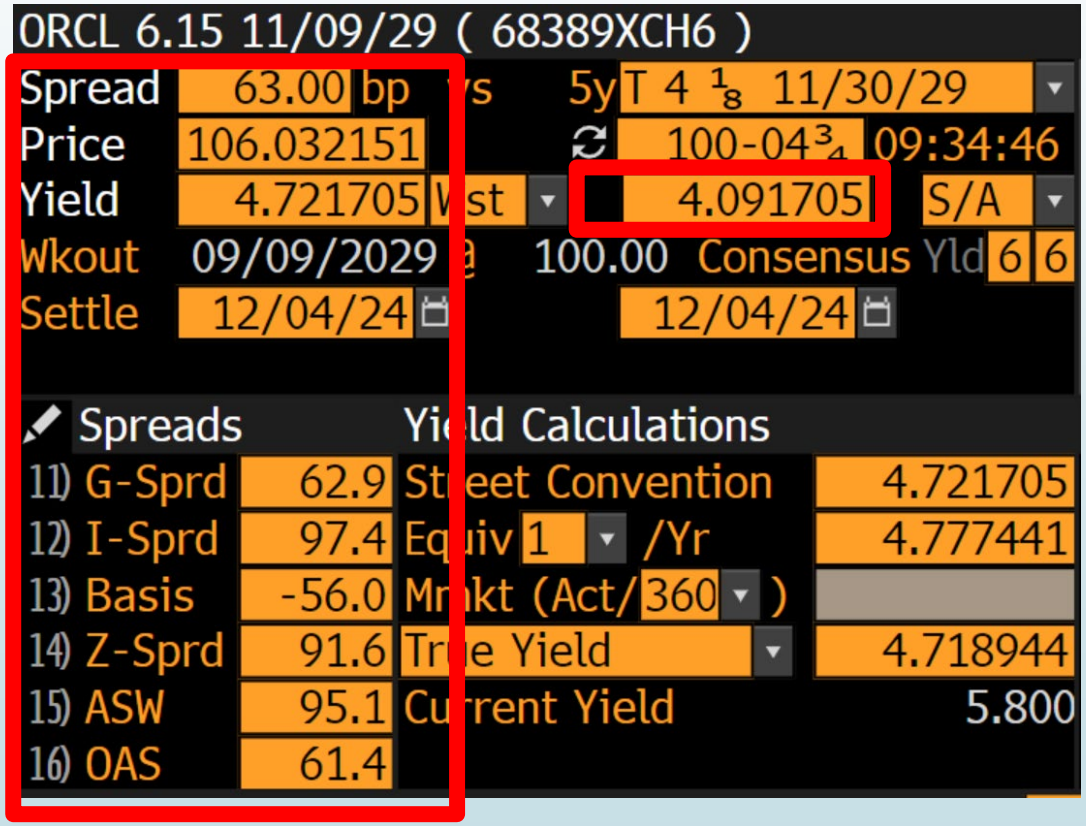


Yield Curve – Normal Looking One

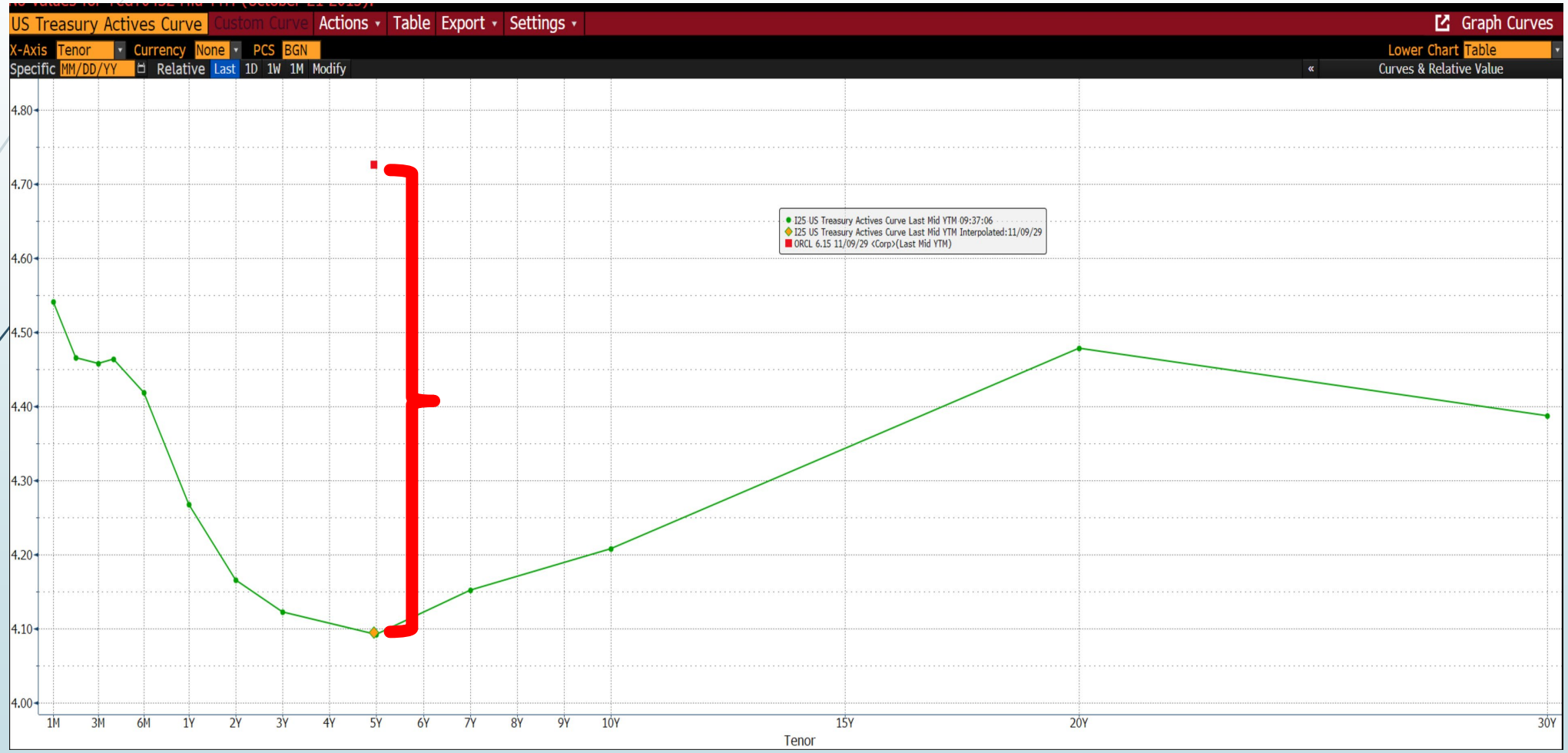


G-Spread - Bloomberg





G Spread – Yield Curve



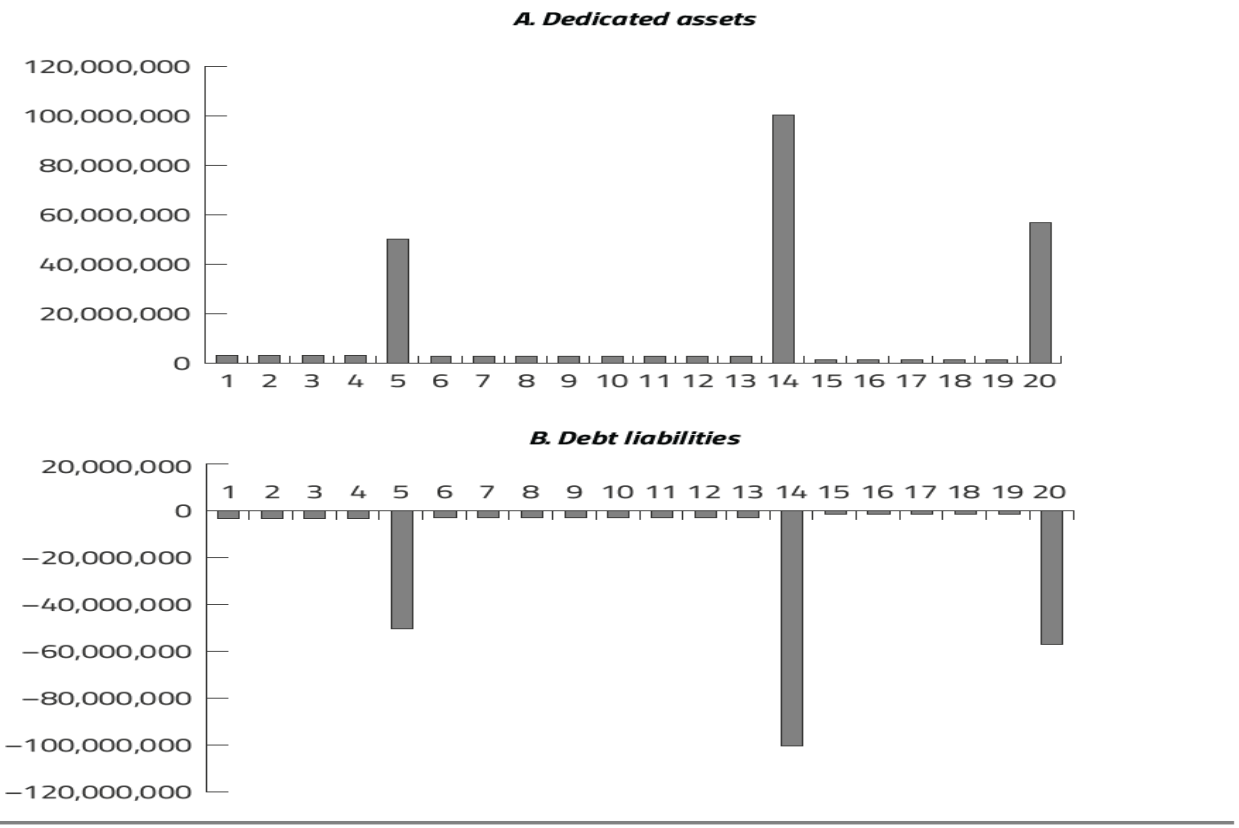
G Spread – Historical Spreads

Spreads – Uses

- When it comes to spreads pick a measure and stick to it
- It will help standardize comparability across and within different bond types
  - OAS for Callables
  - G-Spread or matched maturity spreads for Corps
  - Swap spread for ABS
  - J-Spread for CMBS
- It will help build a history practically & in your mind of the measures relative to cheapness or richness

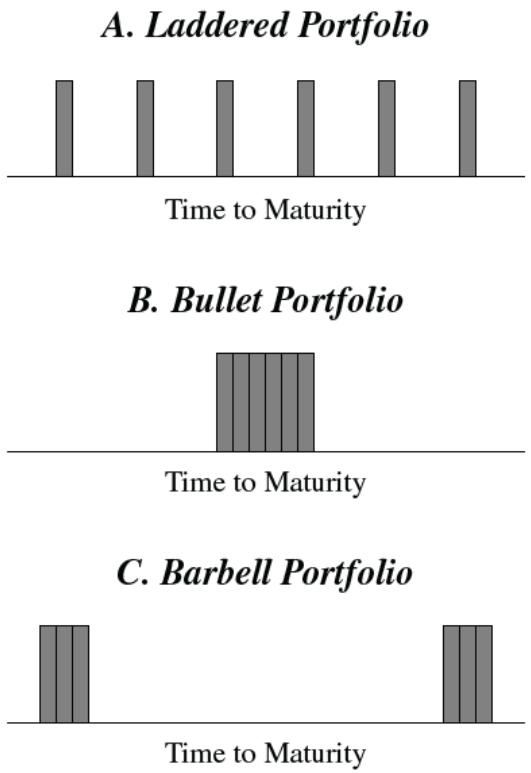
Portfolio Structures - Cashflow Matching

EXHIBIT 12 Cash Flow Matching



Portfolio Structures – Ladder, Bullet and Barbell

EXHIBIT 13 Laddered, Bullet, and Barbell Fixed-Income Portfolios



Types Of Portfolio Structures - Bullet

➨ **Bullet Portfolio**

- **Structure**: Bonds with similar maturities are concentrated around a single target date.
- **Performance**:
  - **Rising Interest Rates**: Underperforms due to sensitivity to rate increases, as bonds near maturity are less adaptable.
  - **Falling Interest Rates**: Outperforms as bond prices increase.
  - **Stable Interest Rates**: Performs moderately; predictable cash flows align with the target maturity.

Types Of Portfolio Structures - Barbell

- **Barbell Portfolio**
- **Structure**: Combines short-term bonds for liquidity and long-term bonds for yield.
- **Performance**:
  - **Rising Interest Rates**: Mixed performance. Short-term bonds reinvest quickly at higher yields, but long-term bonds lose value.
  - **Falling Interest Rates**: Outperforms; long-term bonds gain in price significantly.
  - **Stable Interest Rates**: Performs moderately; short-term bonds offer flexibility, and long-term bonds provide yield.

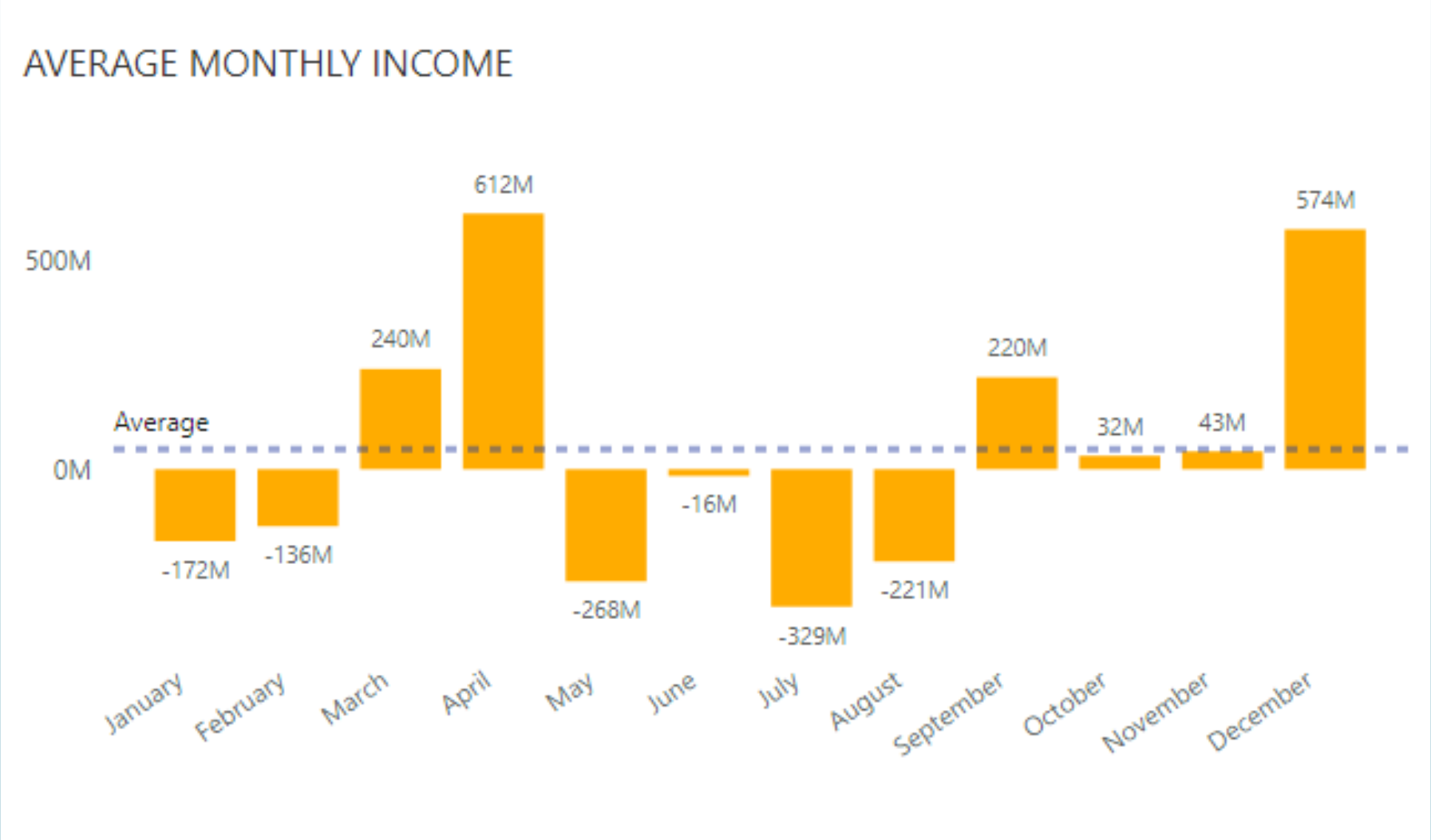
Types Of Portfolio Structures - Ladder

- **Laddered Portfolio**
- **Structure**: Bonds mature at regular intervals, providing liquidity and reinvestment opportunities.
- **Performance**:
  - **Rising Interest Rates**: Performs relatively well as maturing bonds can be reinvested at higher yields.
  - **Falling Interest Rates**: Moderate performance; reinvested funds yield less, but price increases on existing bonds balance the impact.
  - **Stable Interest Rates**: Strong performance due to predictable cash flow and consistent reinvestment.

San Bernardino County's Portfolio Structure

- Its a combination of cashflow matching and barbell strategy
- All cash outflow targeted and immunized inside of one year
- More dynamic with excess liquidity with respect to duration
- Target long term outflows with long term bond purchases if possible

San Bernardino County – Net Historical Cashflow (12 Year Average)



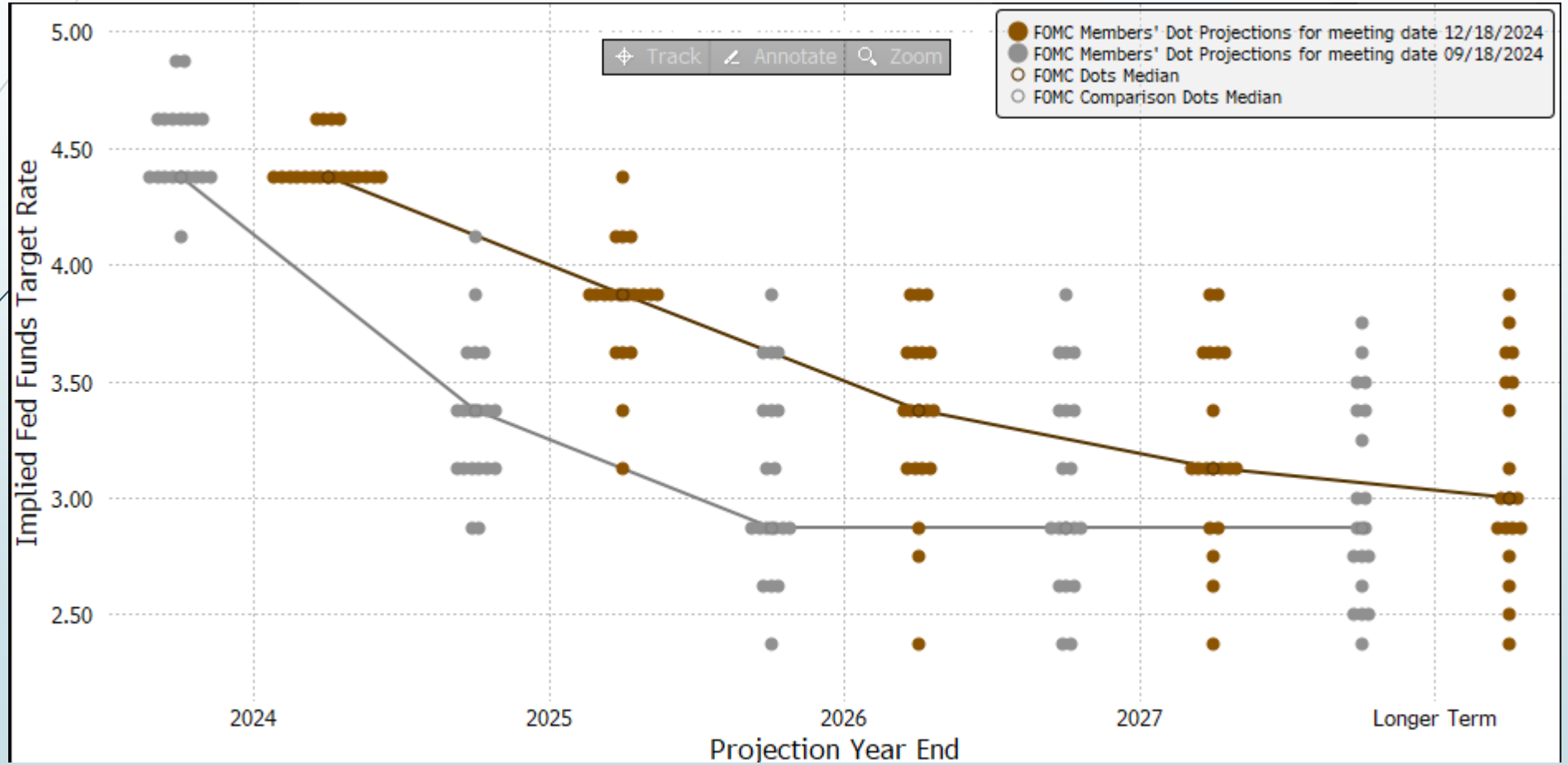
Monetary Policy Impact

- Summary of Economic Projection

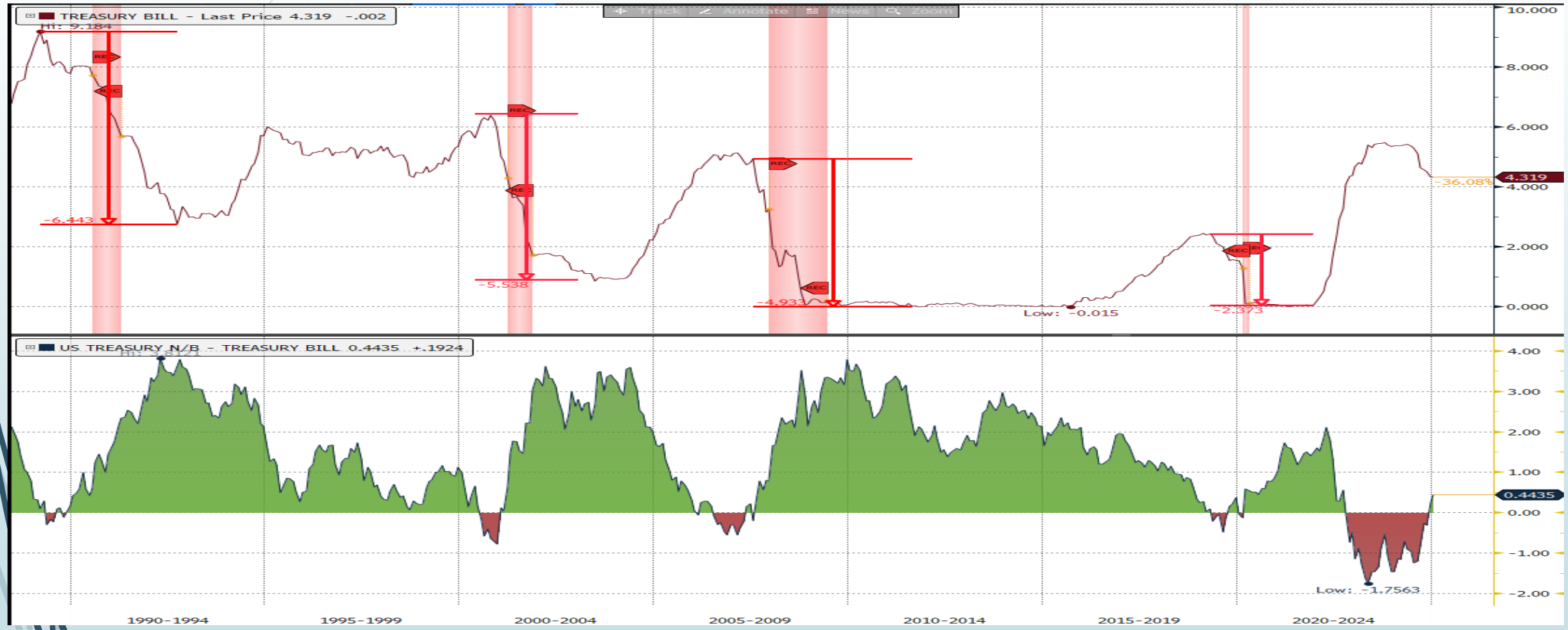
Percent

Variable	Median[1]					Central Tendency[2]					Range[3]				
	2024	2025	2026	2027	Longer run	2024	2025	2026	2027	Longer run	2024	2025	2026	2027	Longer run
Change in real GDP	2.0	2.0	2.0	2.0	1.8	1.9–2.1	1.8–2.2	1.9–2.3	1.8–2.1	1.7–2.0	1.8–2.6	1.3–2.5	1.7–2.5	1.7–2.5	1.7–2.5
June projection	2.1	2.0	2.0		1.8	1.9–2.3	1.8–2.2	1.8–2.1		1.7–2.0	1.4–2.7	1.5–2.5	1.7–2.5		1.6–2.5
Unemployment rate	4.4	4.4	4.3	4.2	4.2	4.3–4.4	4.2–4.5	4.0–4.4	4.0–4.4	3.9–4.3	4.2–4.5	4.2–4.7	3.9–4.5	3.8–4.5	3.5–4.5
June projection	4.0	4.2	4.1		4.2	4.0–4.1	3.9–4.2	3.9–4.3		3.9–4.3	3.8–4.4	3.8–4.3	3.8–4.3		3.5–4.5
PCE inflation	2.3	2.1	2.0	2.0	2.0	2.2–2.4	2.1–2.2	2.0	2.0	2.0	2.1–2.7	2.1–2.4	2.0–2.2	2.0–2.1	2.0
June projection	2.6	2.3	2.0		2.0	2.5–2.9	2.2–2.4	2.0–2.1		2.0	2.5–3.0	2.2–2.5	2.0–2.3		2.0
Core PCE inflation[4]	2.6	2.2	2.0	2.0		2.6–2.7	2.1–2.3	2.0	2.0		2.4–2.9	2.1–2.5	2.0–2.2	2.0–2.2	
June projection	2.8	2.3	2.0			2.8–3.0	2.3–2.4	2.0–2.1			2.7–3.2	2.2–2.6	2.0–2.3		
Memo: Projected appropriate policy path															
Federal funds rate	4.4	3.4	2.9	2.9	2.9	4.4–4.6	3.1–3.6	2.6–3.6	2.6–3.6	2.5–3.5	4.1–4.9	2.9–4.1	2.4–3.9	2.4–3.9	2.4–3.8
June projection	5.1	4.1	3.1		2.8	4.9–5.4	3.9–4.4	2.9–3.6		2.5–3.5	4.9–5.4	2.9–5.4	2.4–4.9		2.4–3.8

Monetary Policy Impact (cont. 2 of 2)

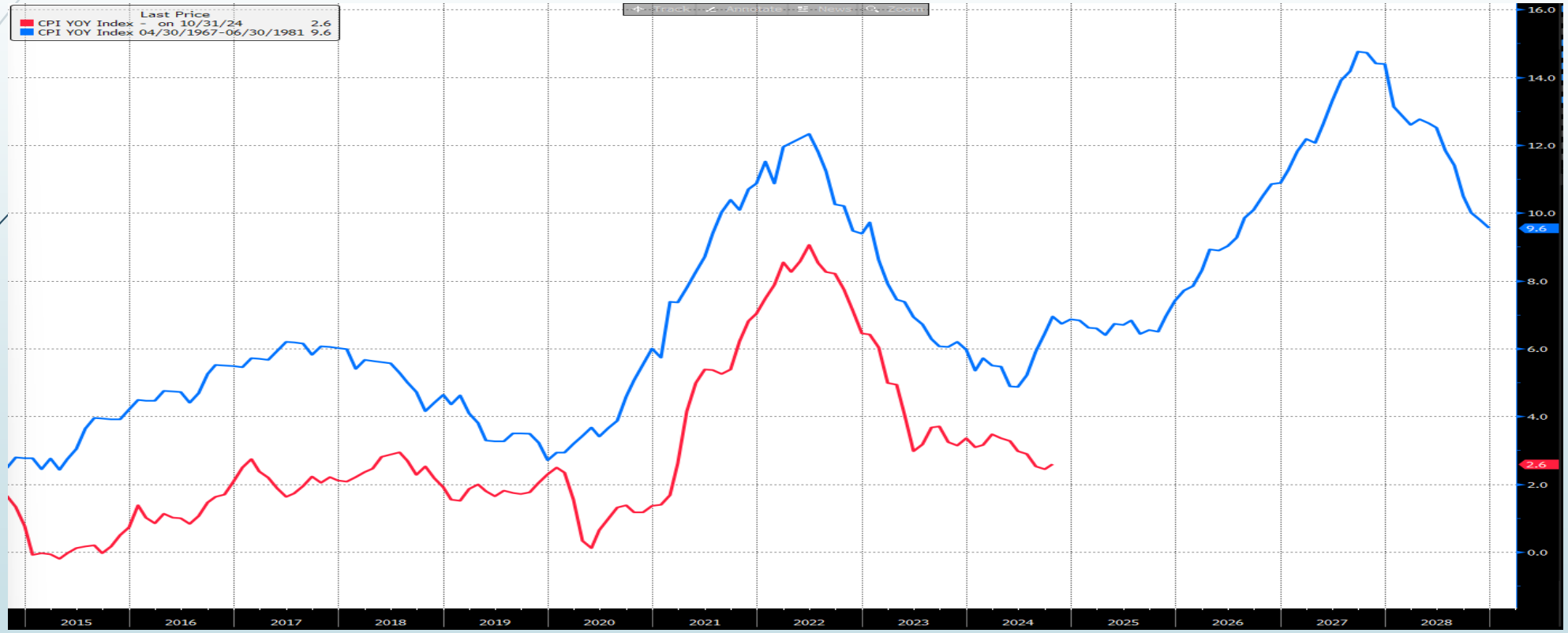


Monetary Policy Implications



3-month t-bill yield, 10-year treasury and 3-month t-bill spread

Monetary Policy Implications (cont. 2 of 2)



QUESTIONS?

PARTH BHATT
Chief Deputy Treasurer
County of San Bernardino

15-MINUTE

BREAK

SESSION TWO

Investment Options: Governmental Securities

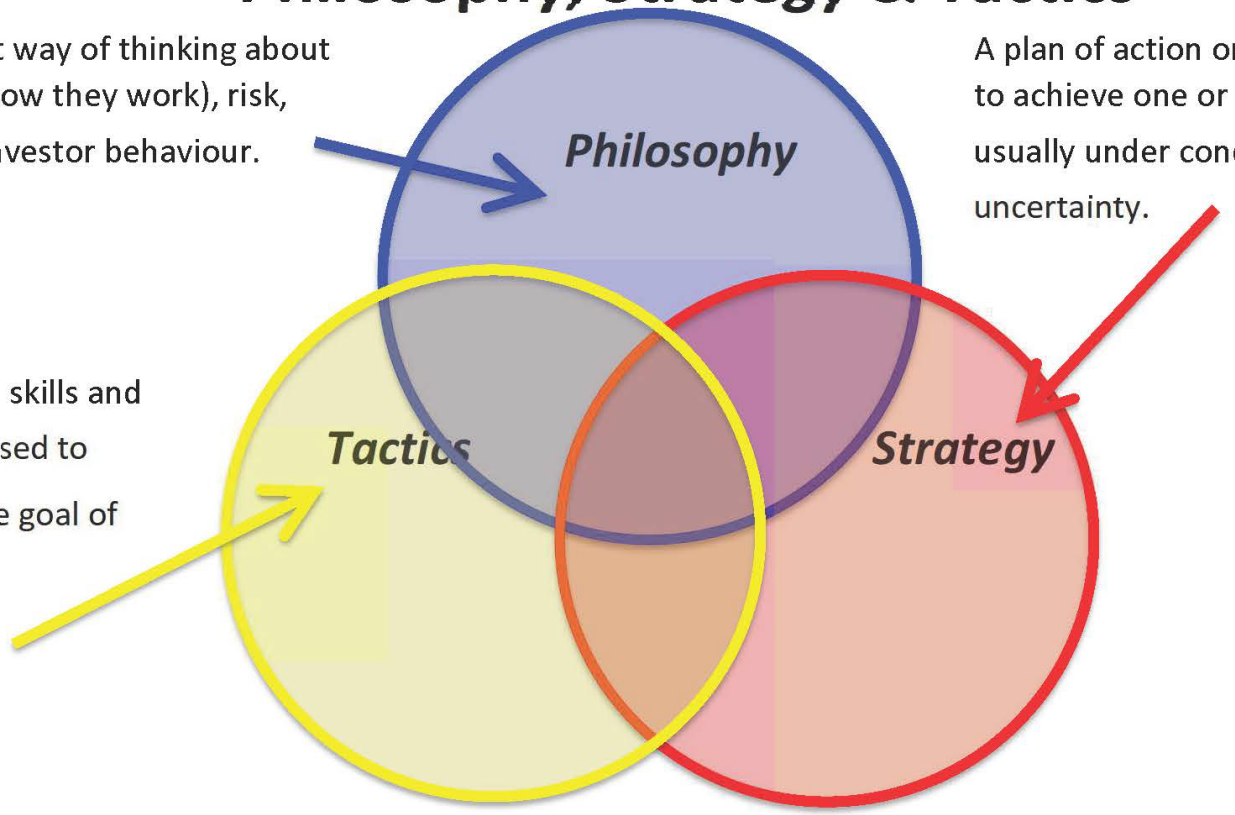
KEVIN WEBB, CFA
Managing Director
Robert W. Baird & Co.
KpWebb@RwBaird.com

Philosophy, Strategy & Tactics

A coherent way of thinking about markets (how they work), risk, return & investor behaviour.

A plan of action or policy designed to achieve one or more goals usually under conditions of uncertainty.

Resources, skills and methods used to achieve the goal of a strategy.



The difference between Strategy and Tactics: Strategy is done above the shoulders and Tactics is done below the shoulders.

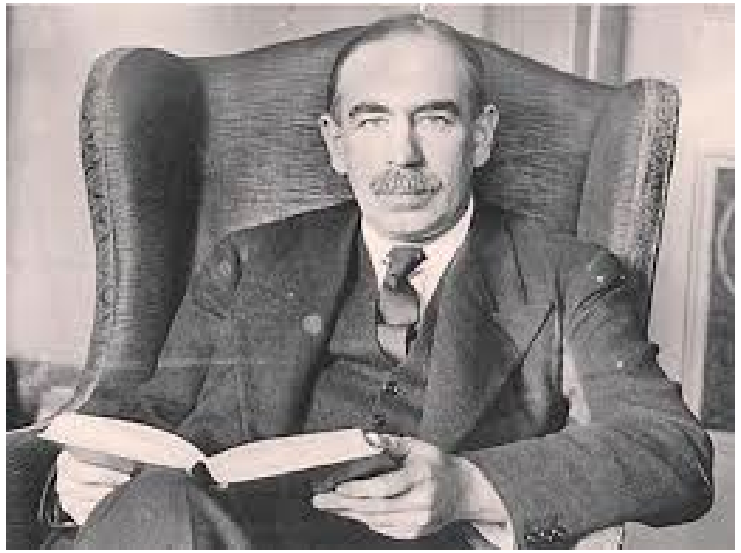
"The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions."

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


WARNING
ASSUMPTIONS
A H E A D

Economic Words of Wisdom 1

"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.**"



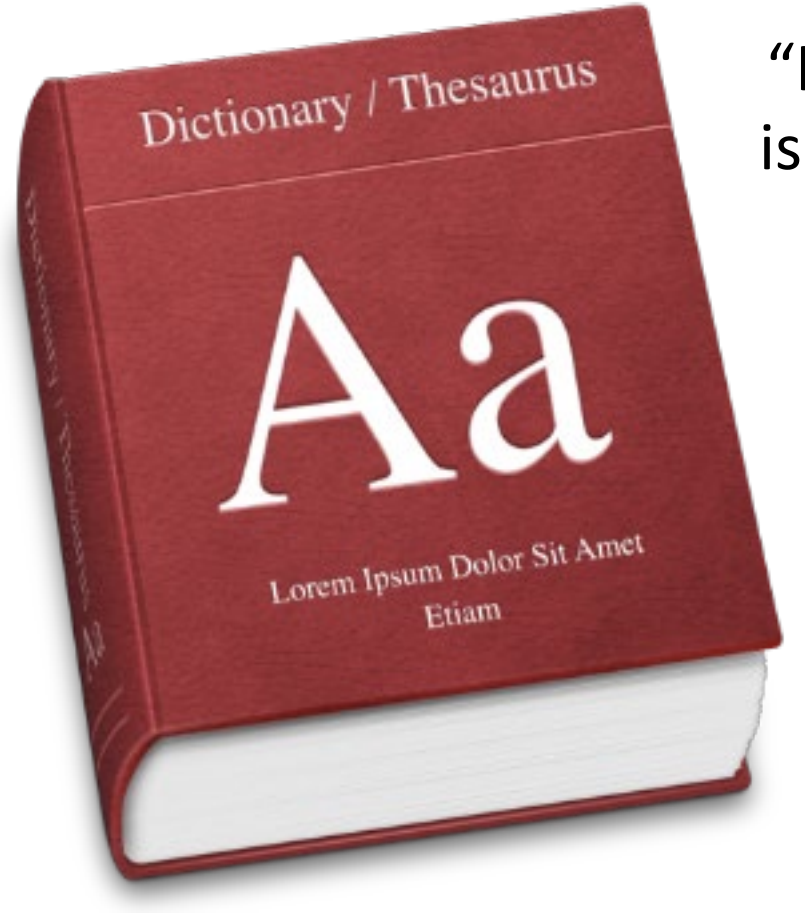
John Maynard Keynes writing in the introduction of
H.D. Henderson, Supply and Demand (New York: Harcourt, Brace and Company, 1922), v. Emphasis added.

Economic Words of Wisdom 2

“Nobel laureate Kenneth Arrow has warned, **"[O]ur knowledge of the way things work, in society or in nature, comes trailing clouds of vagueness. Vast ills have followed a belief in certainty."**”

Peter L. Bernstein. Against the Gods: The Remarkable Story of Risk (Kindle Location 126). Kindle Edition. Emphasis added.

Definitions



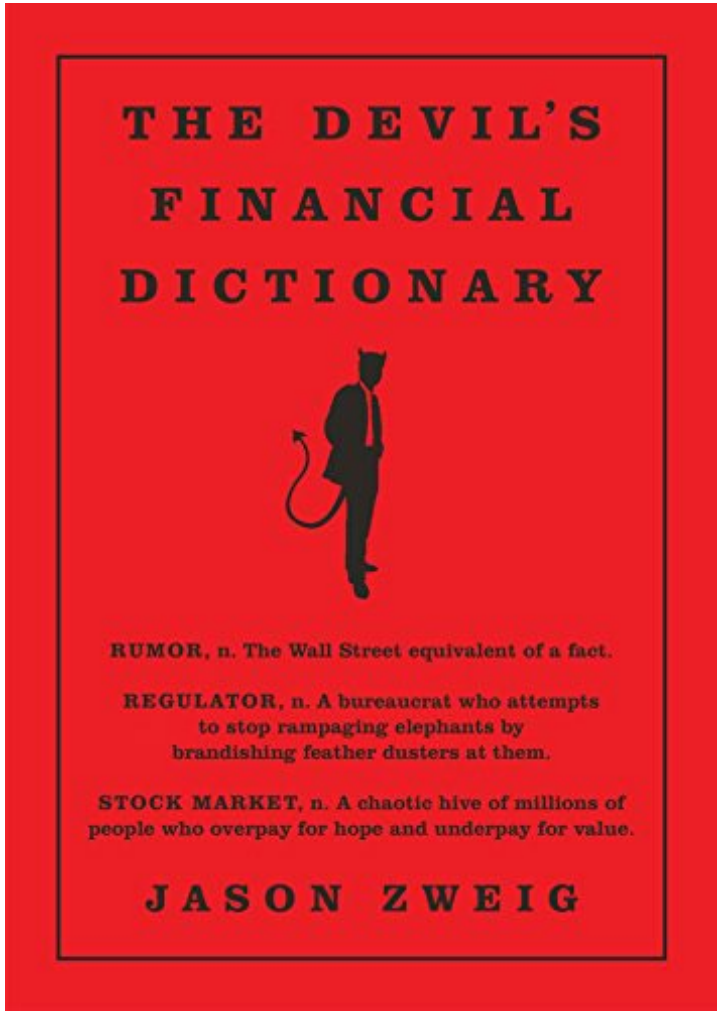
"Knowledge is knowing a tomato is a fruit; Wisdom is not putting it in a fruit salad."

Brandreth, Gyles. Oxford Dictionary of Humorous Quotations (Kindle Location 4265). OUP Oxford. Kindle Edition.
See this useful Microsoft Help page for Microsoft Word on the definition/history of "Lorem Ipsum Dolor Sit Amet Etiam":
https://support.microsoft.com/en-us/kb/114222

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.

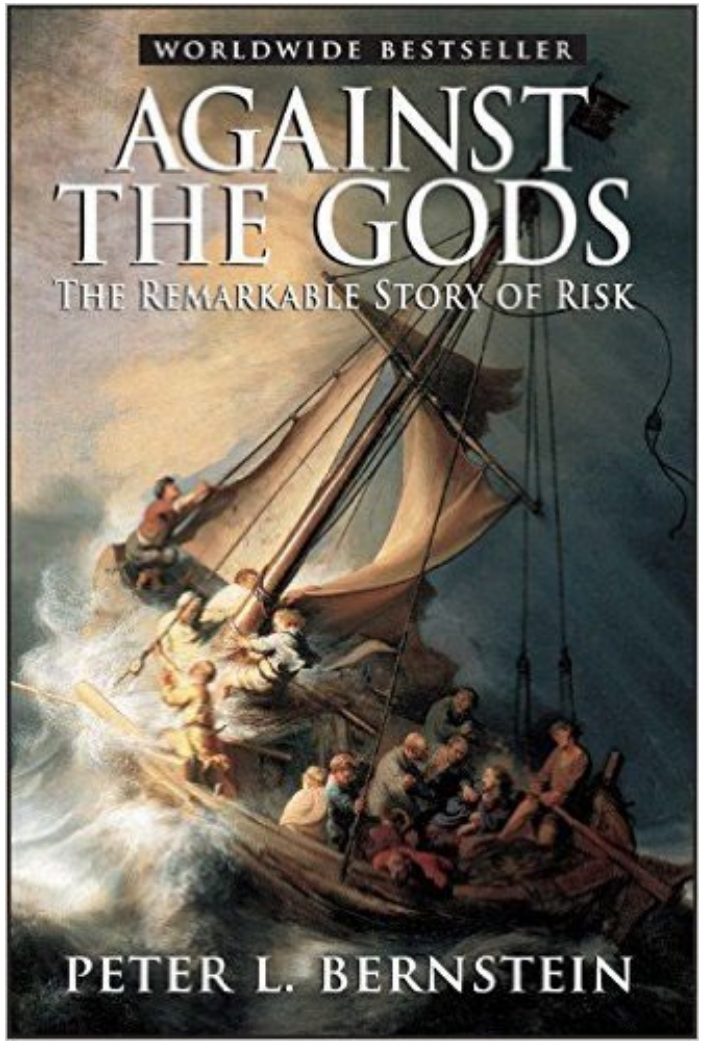


Zweig, Jason. The Devil's Financial Dictionary (p. 182). PublicAffairs. Kindle Edition. Emphasis added.

Risk &

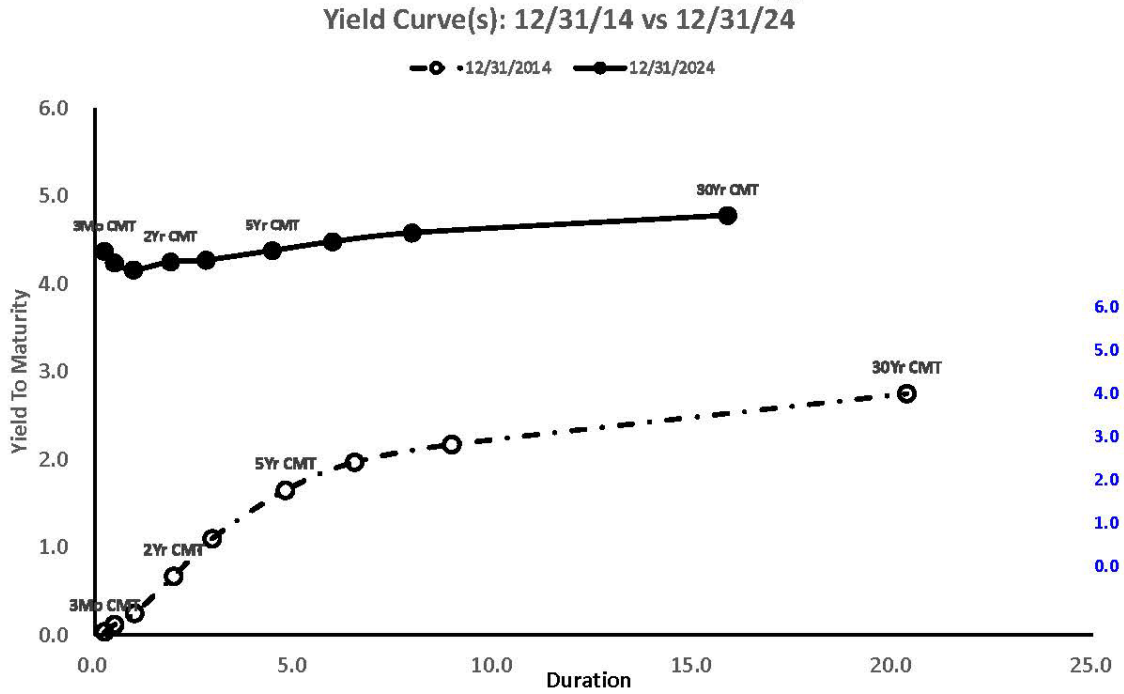
Finding the right trade-off is the key

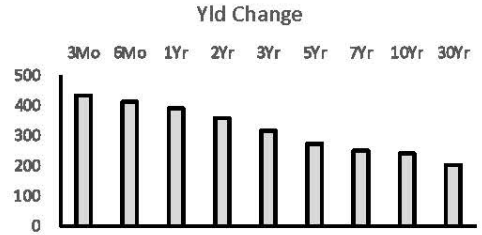
> *The scientist who developed the Saturn 5 rocket that launched the first Apollo mission to the moon put it this way: ***"You want a valve that doesn't leak and you try everything possible to develop one. But the real world provides you with a leaky valve. You have to determine how much leaking you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

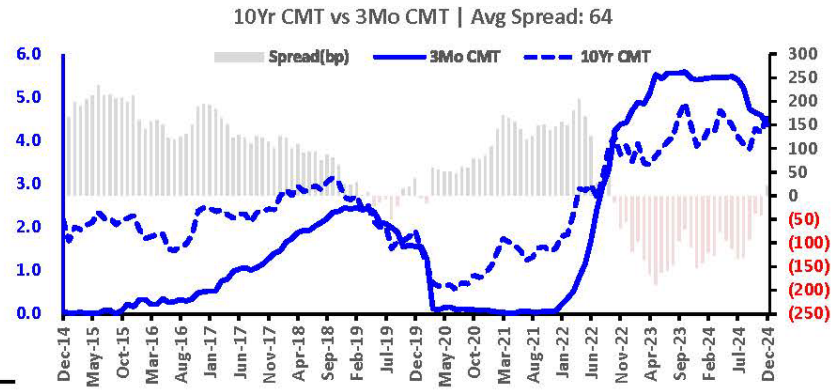


Peter L. Bernstein. Against the Gods: The Remarkable Story of Risk (Kindle Locations 69-71). Kindle Edition. Emphasis added.

Strategy Webb Toolkit Curve Lab Analysis



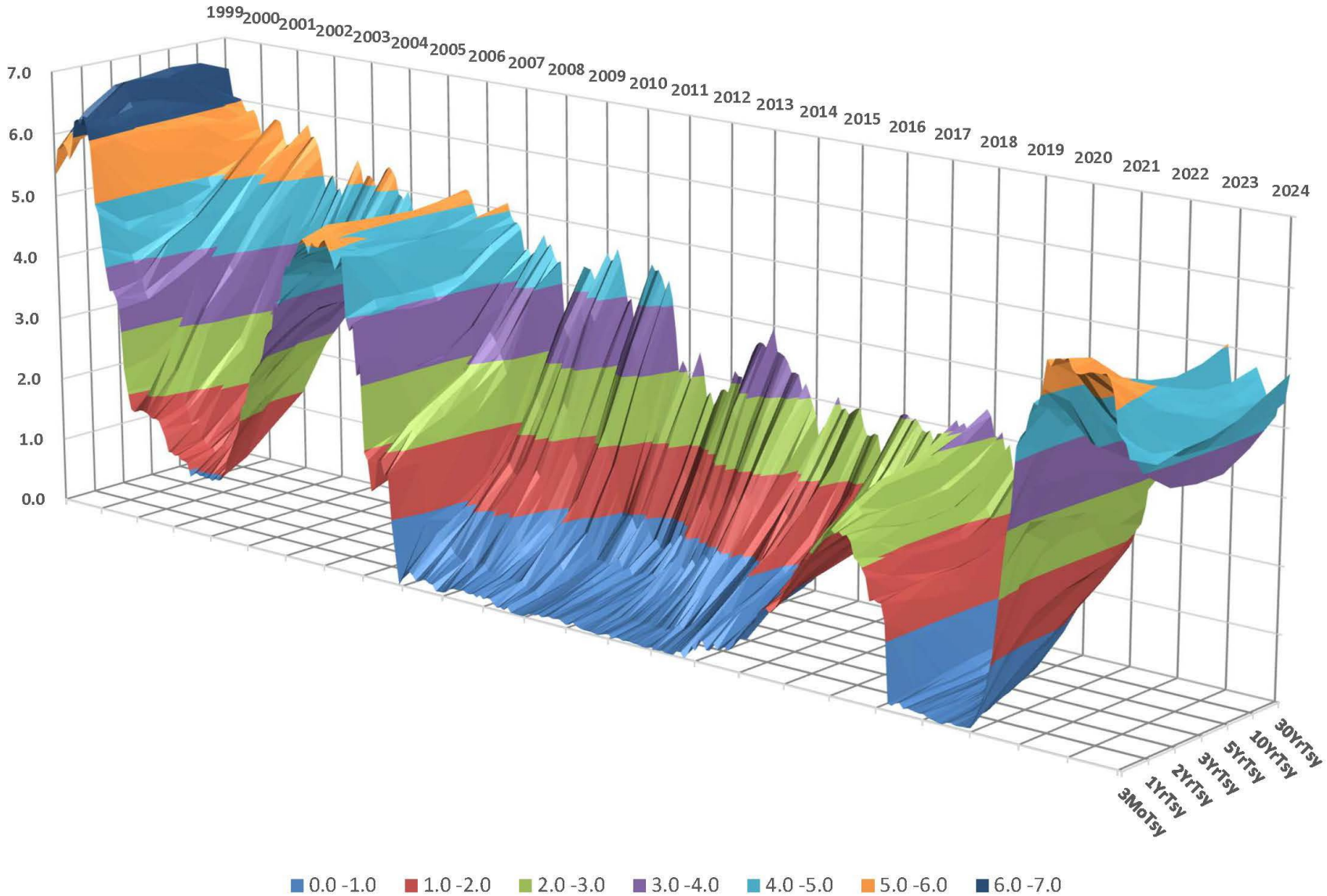




Curve 1: 12/31/2014 Curve 2: 12/31/2024 Curve Risk as: Duration Treasury 1: 3Mo CMT Treasury 2: 10Yr CMT

Treasury (Constant Maturity)	Yield to Maturity	Modified Duration	Spread to 3Mo Treasury(bp)	Incremental Slope (bp)	Yield to Maturity	Modified Duration	Spread to 3Mo Treasury(bp)	Incremental Slope (bp)	Yield Change (bp)	Duration Change(bp)
3Mo CMT	0.04	0.25	0		4.37	0.24	0		433	(1)
6Mo CMT	0.12	0.50	8	8	4.24	0.49	(13)	(13)	412	(1)
1Yr CMT	0.25	1.00	21	13	4.16	0.97	(21)	(8)	391	(3)
2Yr CMT	0.67	1.98	63	42	4.25	1.90	(12)	9	358	(9)
3Yr CMT	1.10	2.94	106	43	4.27	2.79	(10)	2	317	(16)
5Yr CMT	1.65	4.78	161	55	4.38	4.45	1	11	273	(33)
7Yr CMT	1.97	6.51	193	32	4.48	5.95	11	10	251	(56)
10Yr CMT	2.17	8.95	213	20	4.58	7.95	21	10	241	(99)
30Yr CMT	2.75	20.34	271	58	4.78	15.85	41	20	203	(449)

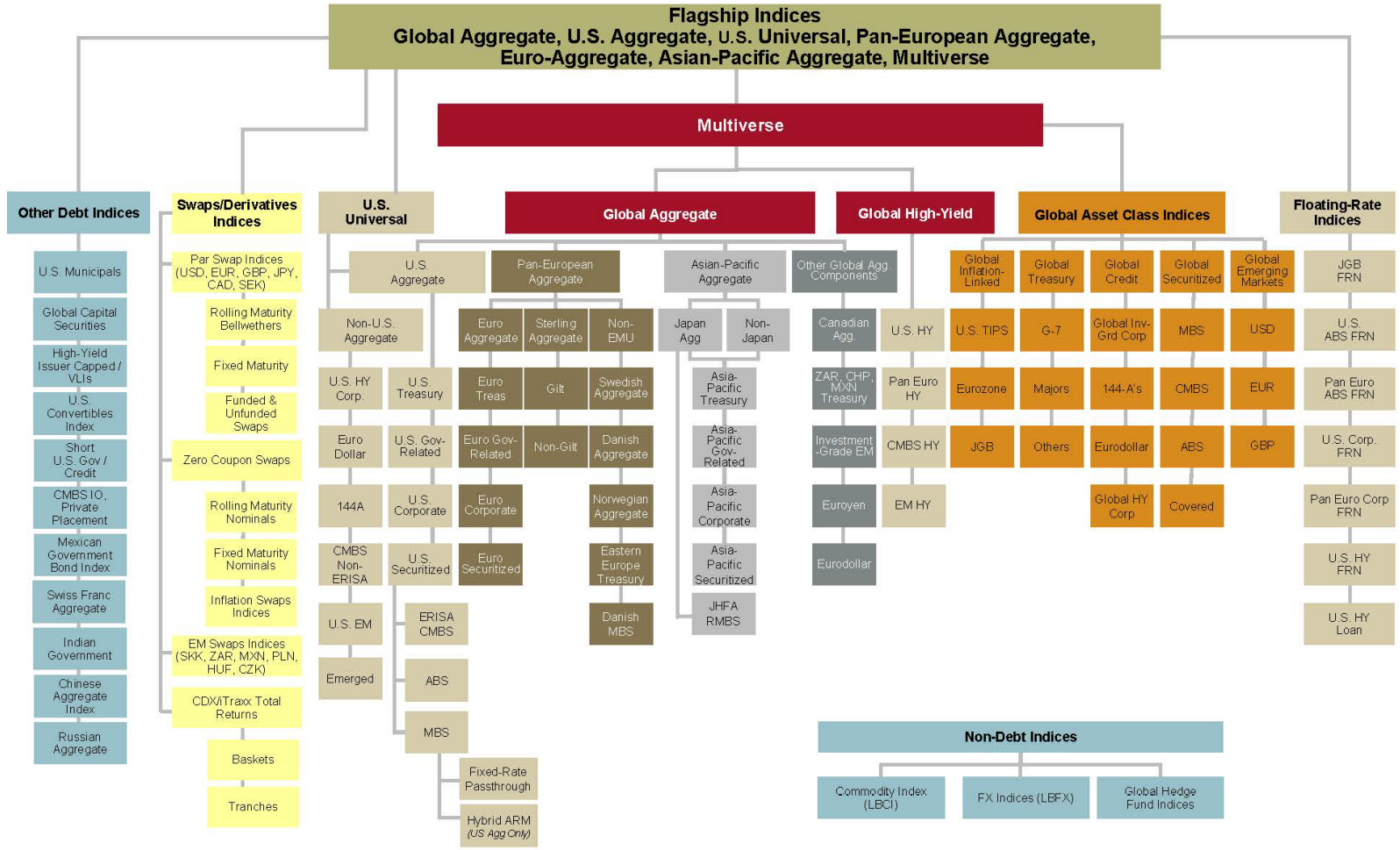
Strategy Webb Yield Curve Perspective: Dec-99 to Dec-2024



The analysis is provided for informational purposes and the accuracy is not guaranteed. Designed and created by Kevin Webb, CFA. Data from FRED @ St Louis Fed, BofA Merrill Lynch and Bloomberg.

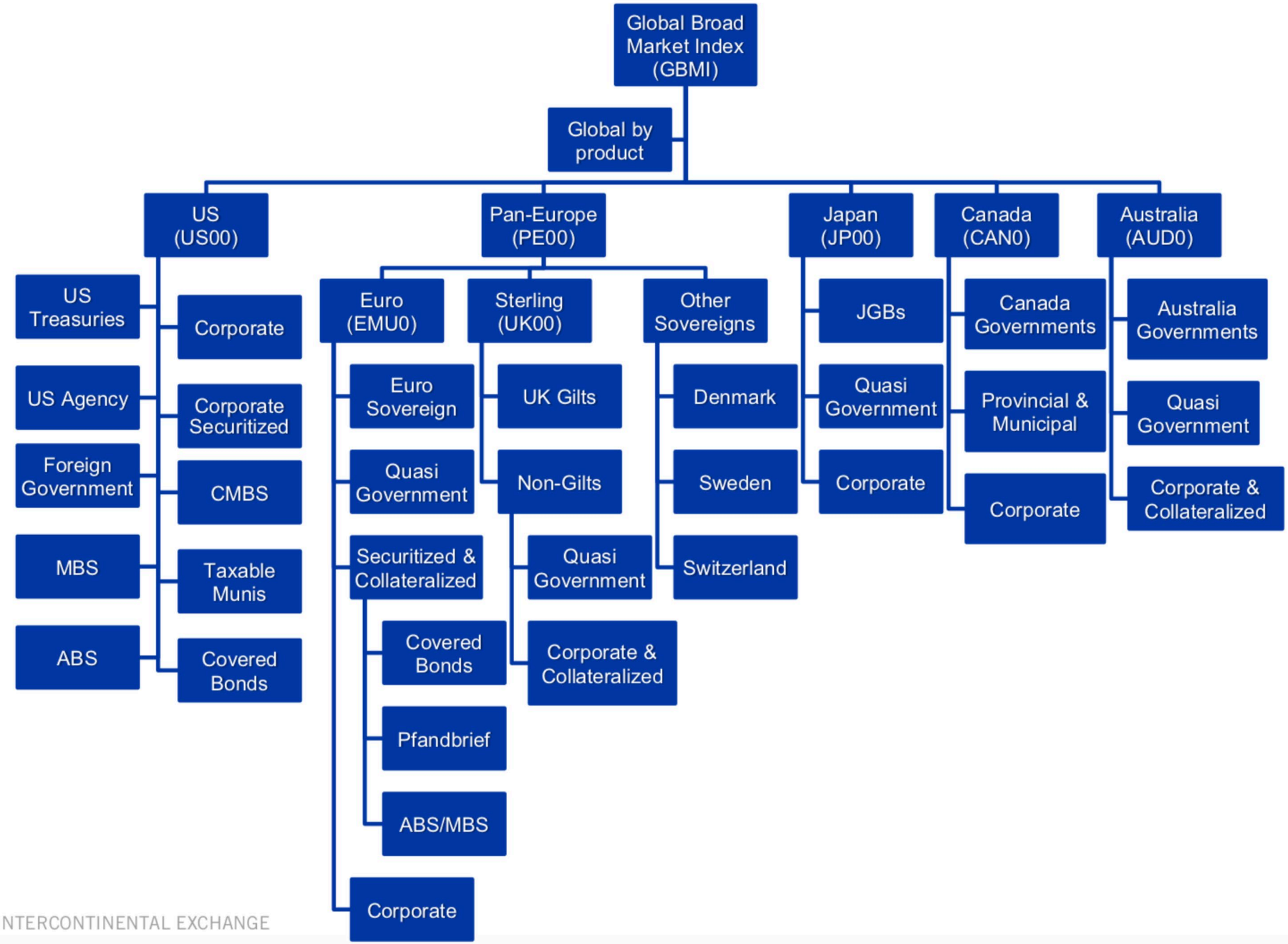
Bond Market Indices Overview

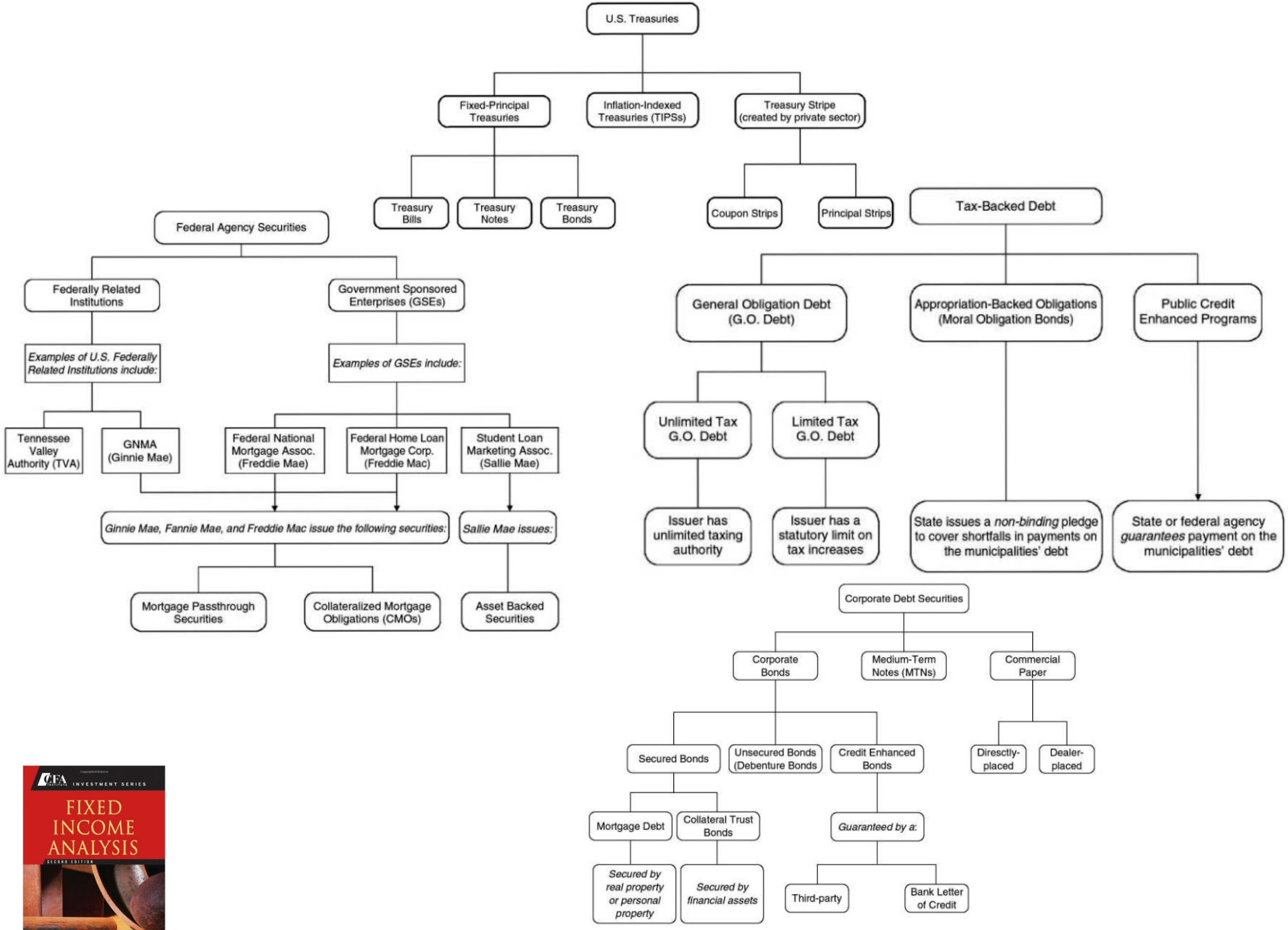
Figure 1. **Lehman Brothers Global Family of Indices-Index Map as of January 2008**

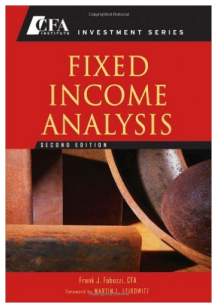


A Guide to the Lehman Brothers Global Family of Indices – Global Family of Indices 35th Anniversary 1973-2008, page 8, March 2008.
Note: Barclays purchased Lehman Brothers assets (including the indices) after Lehman's bankruptcy in Sep-08. Barclay's current guide can be found here: https://index.barcap.com/Home/Guides_and_Factsheets

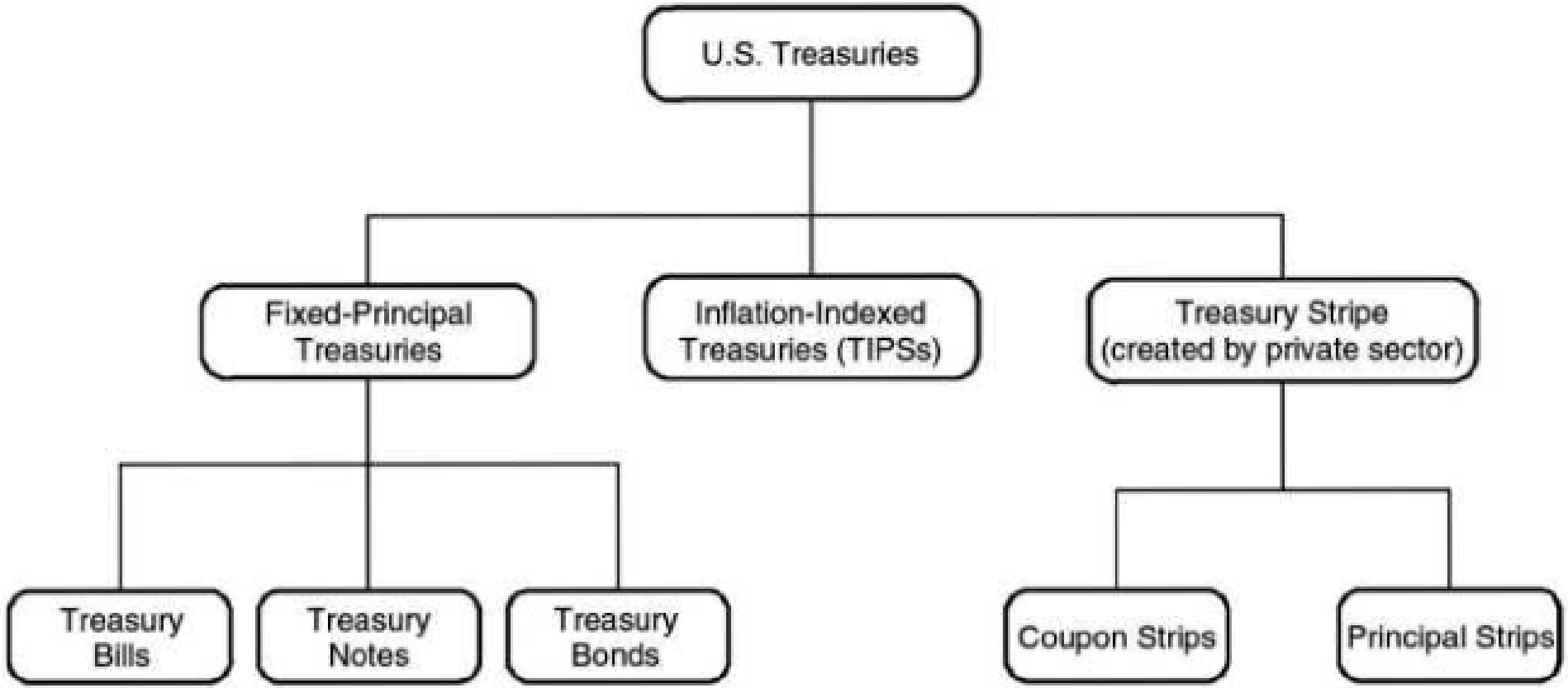
GLOBAL BROAD MARKET INDEX FAMILY

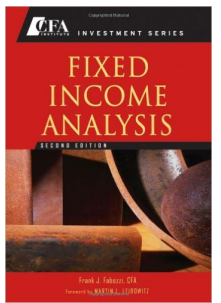






Frank J. Fabozzi. Fixed Income Analysis (Kindle Location 973-1212). Kindle Edition.





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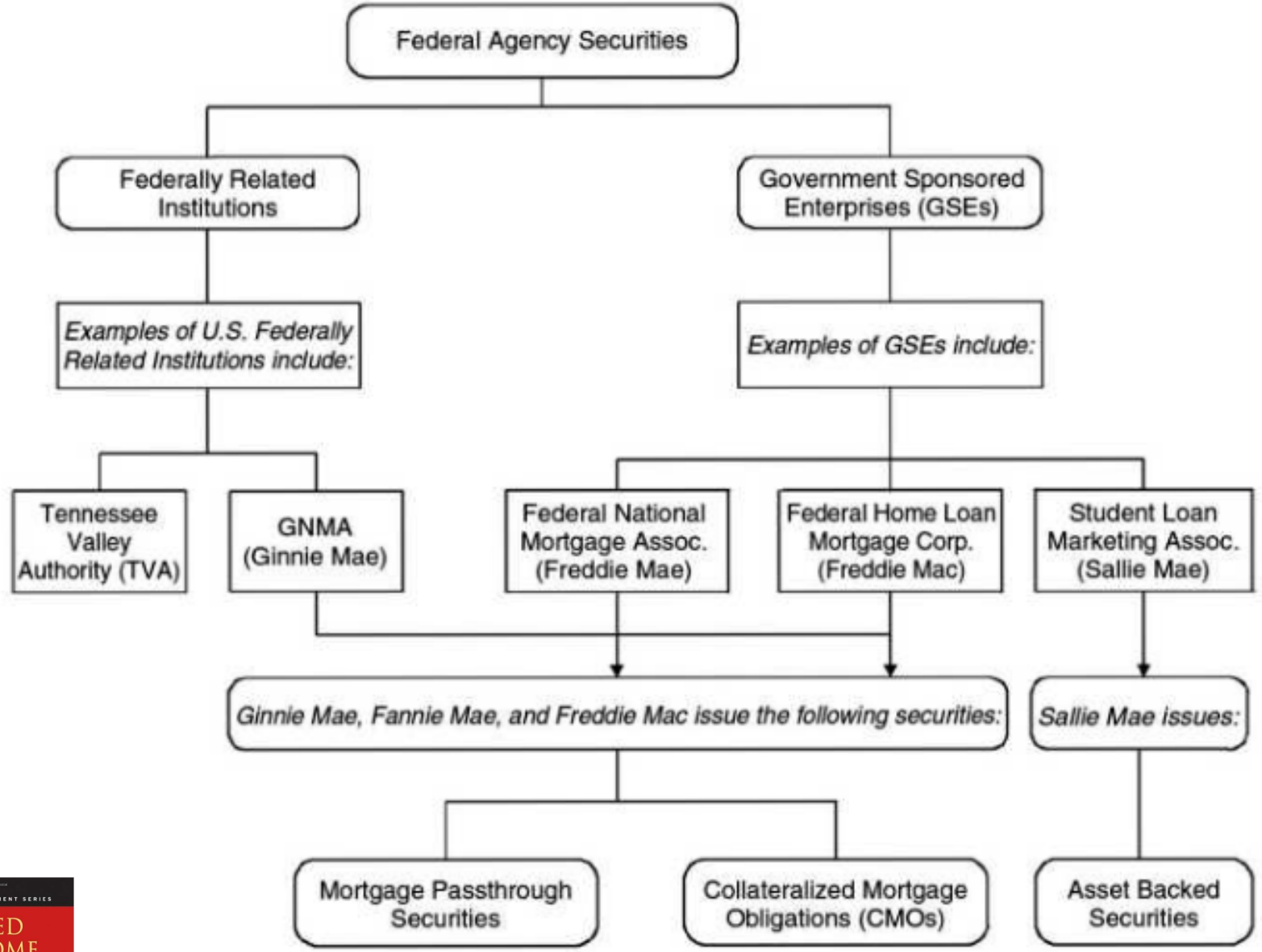

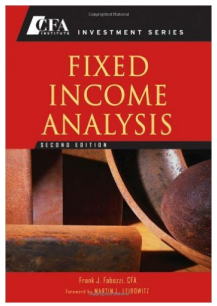

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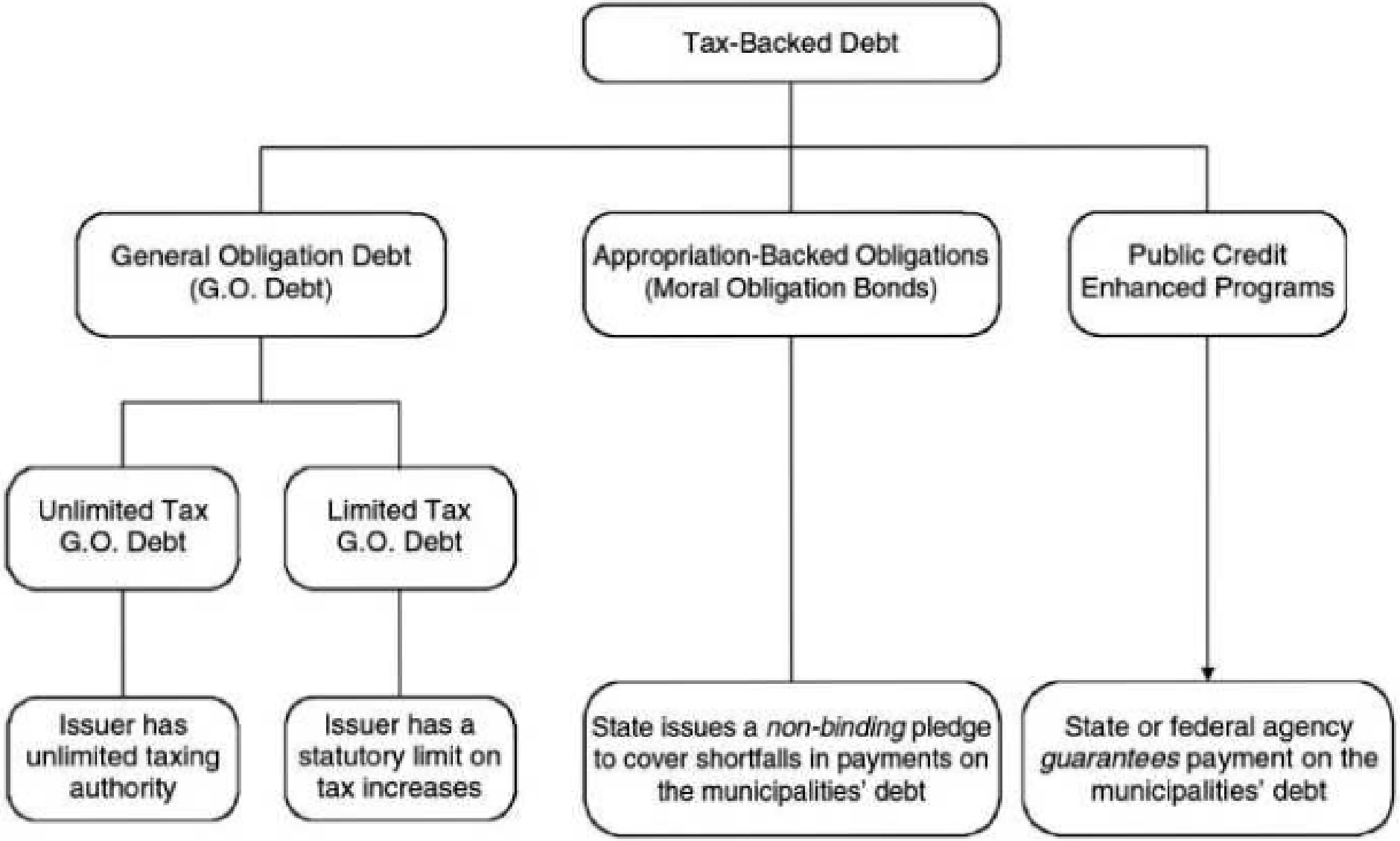
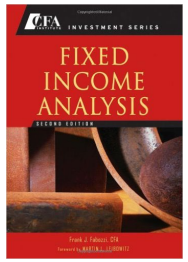
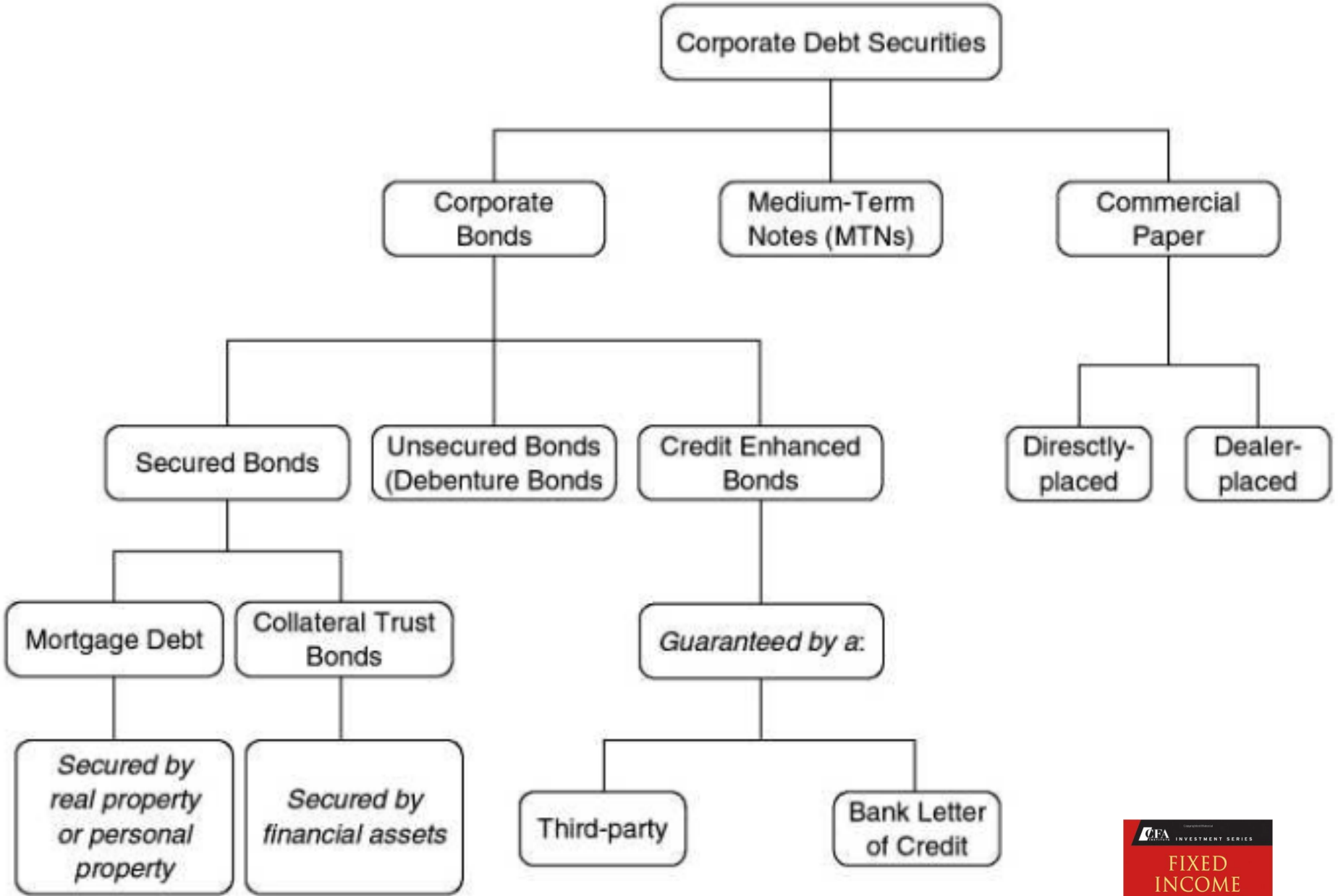
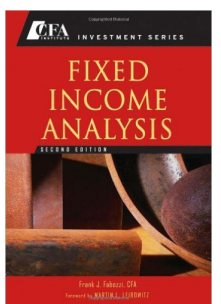




Frank J. Fabozzi. Fixed Income Analysis (Kindle Location 973-1212). Kindle Edition.





Frank J. Fabozzi. Fixed Income Analysis (Kindle Location 973-1212). Kindle Edition.

Fixed Income Structure Variations (not exhaustive)

Redemption Variations

- Bullet – fixed maturity date
- Callable – Can be redeemed in whole or part
  - Fixed Call Schedule
    - One Time – European
    - Discretely – Bermudan
    - Continuously – American
  - Variable Call Schedule
    - Make Whole – Dooms Day
    - Principal Prepayment – Variable over time

Coupon Variations

- Fixed Coupon – Doesn’t change
- Non-Fixed Coupon – Can change
  - Step Coupons
    - Step Up or Step Down
  - Floater – formula based
  - Formula - Example: Range Notes, Fixed to Float, etc.

Credit Variations

- NRSRO Rated
- Not Rated

Why do we use Return instead of $?

"A rate of return is the gain received from an investment over a period of time expressed as a percentage***. Returns are a ratio relating how much was gained given how much was risked***. …

There are several reasons that returns have emerged as the preferred statistic for summarizing investment performance:

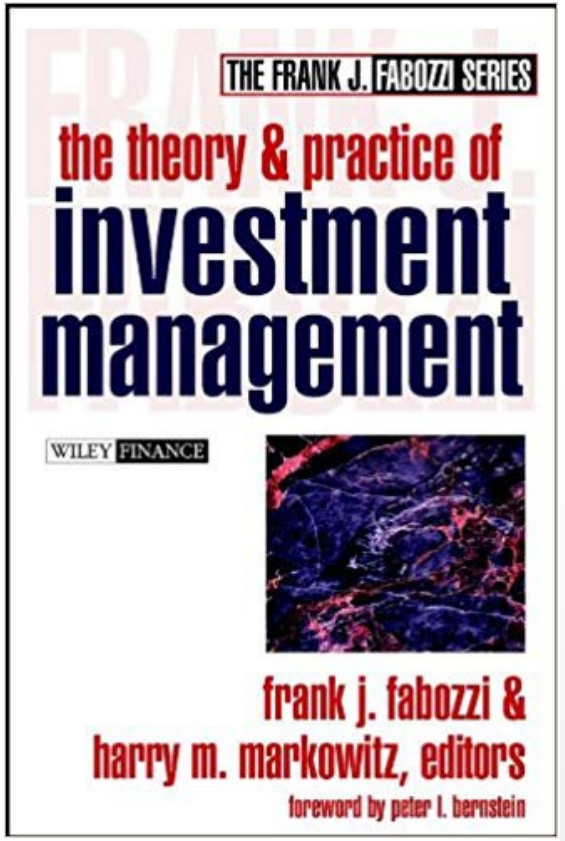
*The rate of return ***concentrates a lot of information into a single statistic***. ...

*This single number, the return, is a ratio. ***It is faster for an investor to analyze proportions than absolute numbers***. ...

****Returns are comparable even if the underlying figures are not***. ...

****Returns calculated for different periods are comparable***; that is, an investor can compare this year's return to last year's. …

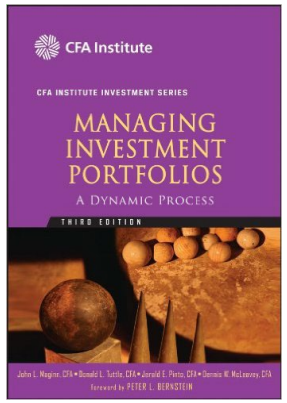
****The interpretation of the rate of return is intuitive. Return is the value reconciling the beginning investment value to the ending value over the time period we are measuring***. … "



The Theory and Practice of Investment Management (Frank J. Fabozzi Series) (Kindle Locations 1180-1189). Kindle Edition. Emphasis added.

Total Return Defined

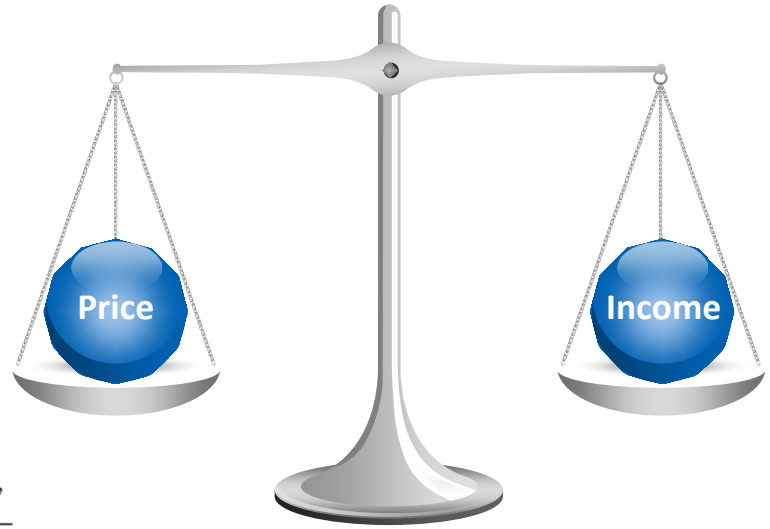
Total Return assumes indifference between Price return & Income return.



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.***

$$HPR = \frac{I_t + P_t - P_{t-1}}{P_{t-1}}$$

where HPR = holding period return
I_t = income
P_t = ending price
P_{t-1} = beginning price

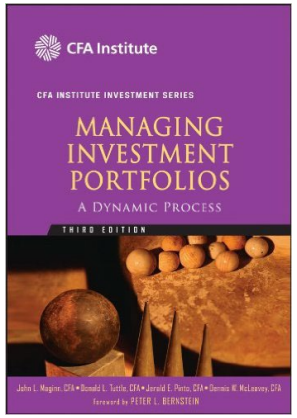


$$Total\ Return = \frac{(EndingMarketValue - BegMarketValue) + CashFlow}{BegMarketValue}$$

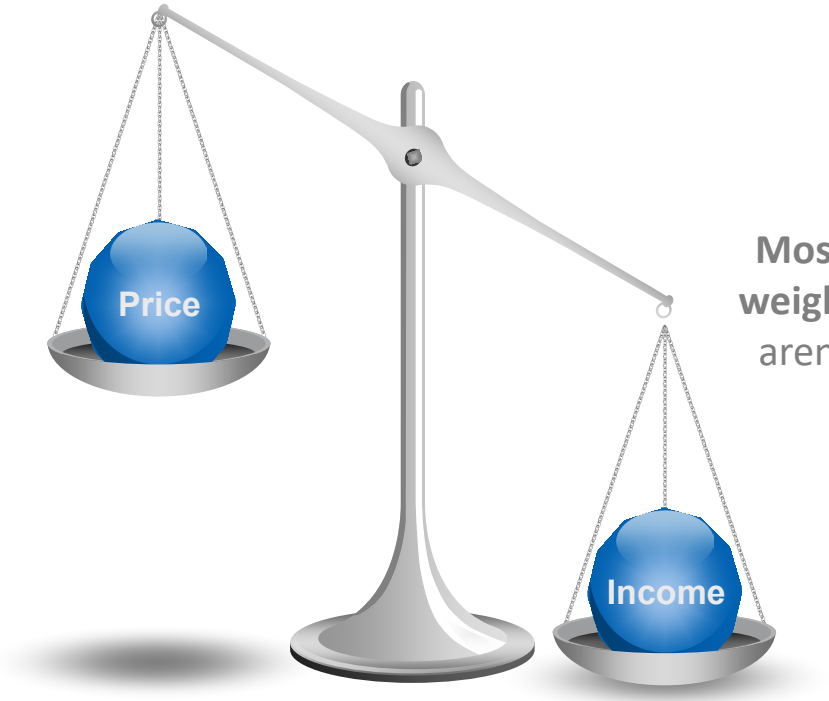
Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (p. 723). Wiley. Kindle Edition. Emphasis added.
Mark P. Kritzman. The Portable Financial Analyst: What Practitioners Need to Know (Wiley Finance) (Kindle Locations 452-454). Kindle Edition.

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.***



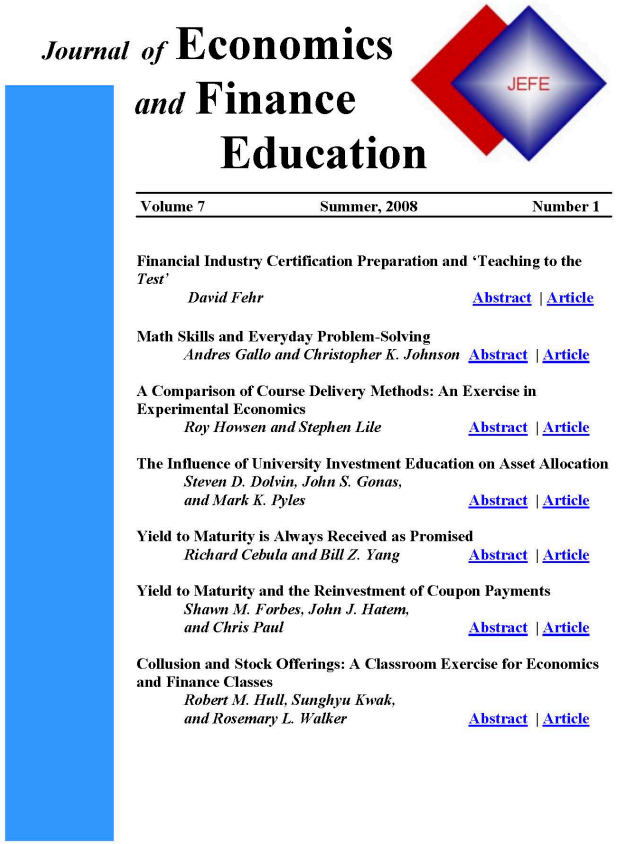
Income

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.

Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (p. 723). Wiley. Kindle Edition. Emphasis added.

We are told that Total Return is “better” than yield.

“Yield to maturity (YTM hereafter) is “the standard measure of the total rate of return of the bond over its life. …… This interest rate is often viewed as a measure of the average rate of return that will be earned on a bond if it is bought now and held until maturity” (Bodie, et al, 2002, p. 426). And it is considered “the most accurate measure of interest rate” (Mishkin, 2004, p. 64). Unfortunately, due to a fact that “yield to maturity will equal the rate of return realized over the life of the bond if all coupons are reinvested at an interest rate equal to the bond’s yield to maturity (Bodie, et al, 2002, p. 429), YTM has been widely misinterpreted as “the true rate of return an investor would receive by holding the security until its maturity if each … interest payment is reinvested at the yield to maturity” (Strong, 2004, p.70, italic original). Similar interpretations can be also found in, to name a few, Reilly and Brown (1997, pp.530-531), Madura (1998, p. 217), and Fabozzi and Modigliani (2002, p. 364). “



Journal of **Economics and Finance Education**

JEFE

Volume 7 Summer, 2008 Number 1

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Richard Cebula & Bill Yang, “Yield to Maturity is Always Received as Promised”, Journal of Economics and Finance Education Volume 7, no. 1 (2008): 43

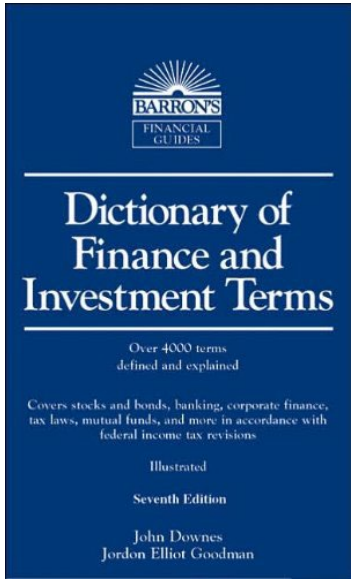
i = Yield = IRR = Required Rate of Return = etc…

$$i = (FV/PV)^{(1/n)-1}$$

INTEREST 1. cost of using money, expressed as a rate per period of time, usually one year, in which case it is called an annual rate of interest. (1)

REQUIRED RATE OF RETURN return required by investors before they will commit money to an investment at a given level of risk. Unless the expected return exceeds the required return, an investment is unacceptable. See also HURDLE RATE; INTERNAL RATE OF RETURN; MEAN RETURN. (2)

INTERNAL RATE OF RETURN (IRR) discount rate at which the present value of the future cash flows of an investment equal the cost of the investment. When the net present values of cash outflows (the cost of the investment) and cash inflows (returns on the investment) equal zero, the rate of discount being used is the IRR. When IRR is greater than the required return-called the hurdle rate in capital budgeting-the the investment is acceptable. (3)



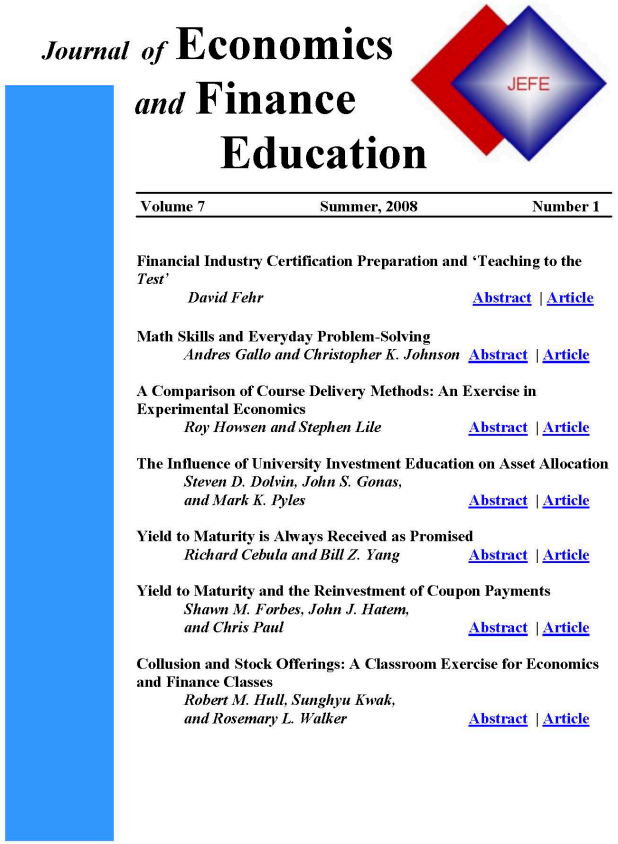
YIELD TO MATURITY (YTM) concept used to determine the rate of return an investor will receive if a long-term, interest-bearing investment, such as a bond, is held to its MATURITY DATE. It takes into account purchase price, REDEMPTION value, time to maturity, COUPON yield, and the time between interest payments. Recognizing time value of money, it is the DISCOUNT RATE at which the PRESENT VALUE of all future payments would equal the present price of the bond, also known as INTERNAL RATE OF RETURN. It is implicitly assumed that coupons are reinvested at the YTM rate. YTM can be approximated using a bond value table (also called a bond yield table) or can be determined using a programmable calculator equipped for bond mathematics calculations. ***See also DURATION***; HORIZON ANALYSIS; YIELD TO AVERAGE LIFE, YIELD TO CALL.

YIELD TO WORST bond yield assuming worst-case scenario, that is, earliest redemption possible under terms of the INDENTURE. See also YIELD TO CALL; YIELD TO MATURITY. (4)

1. John Downes;Jordan Elliot Goodman. Dictionary of Finance and Investment Terms (Barron's Financial Guides) (Kindle Locations 4807-4808). Kindle Edition.
2. John Downes;Jordan Elliot Goodman. Dictionary of Finance and Investment Terms (Barron's Financial Guides) (Kindle Locations 8221-8222). Kindle Edition.
3. John Downes;Jordan Elliot Goodman. Dictionary of Finance and Investment Terms (Barron's Financial Guides) (Kindle Locations 4849-4852). Kindle Edition.
4. John Downes;Jordan Elliot Goodman. Dictionary of Finance and Investment Terms (Barron's Financial Guides) (Kindle Locations 11433-11438). Kindle Edition.

YTM is always received as promised

This note points out that the above-mentioned common treatment in many textbooks turns out to be a fallacy. The truth is that YTM on a (coupon) bond is always received regardless of how coupon payments are re-invested, provided that the bond is held until maturity without default. It addresses a basic question in bond theory: between YTM and realized compounding yield (RCY hereafter), which concept measures the true rate of return from holding a coupon bond until maturity? It is well accepted that YTM measures the rate of return from holding a bond until maturity for both coupon bond and zero-coupon bond as well. By definition, the YTM received from holding a bond is independent of how coupon payments are allocated, as long as they are paid on time as contracted. By comparing the initial investment and the final value accumulated over the investment horizon, on the other hand, RCY on a bond measures the rate of return from an account (or trust) that holds the bond and the interests paid. Of course, it depends on how coupon payments are reinvested. We demonstrate that the RCY actually measures the YTM from a combined investment - holding a coupon bond plus an additional periodic investment with each coupon payment received. Not surprisingly, YTM and RCY would be normally unequal; RCY equals YTM if and only if coupon payments are reinvested at the same rate as the initial YTM. However, this conclusion should not be interpreted as "the yield to maturity is actually received only if coupon payments are reinvested at the yield to maturity".



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Richard Cebula & Bill Yang, "Yield to Maturity is Always Received as Promised", Journal of Economics and Finance Education Volume 7, no. 1 (2008): 43

Settlement:	12/31/2024	
Maturity:	12/31/2029	
Par Amount:	1,000,000.00	
Price:	100.000	100.000
Coupon:	4.380%	
Payment Frequency:	2	
Yield:	4.380%	
Modified Duration:	4.447	4.447
Convexity:	0.232	0.232

Total Present Value

Price = ----------

Par Amount

Cash Flow

Present Value = ----------

(1 + Yield / Frequency)^Period

Present Value

Total Present Value

Time Period * Weight

Nominal Cash Flows Received

Cash Flow = Par*(Coupon / Frequency)

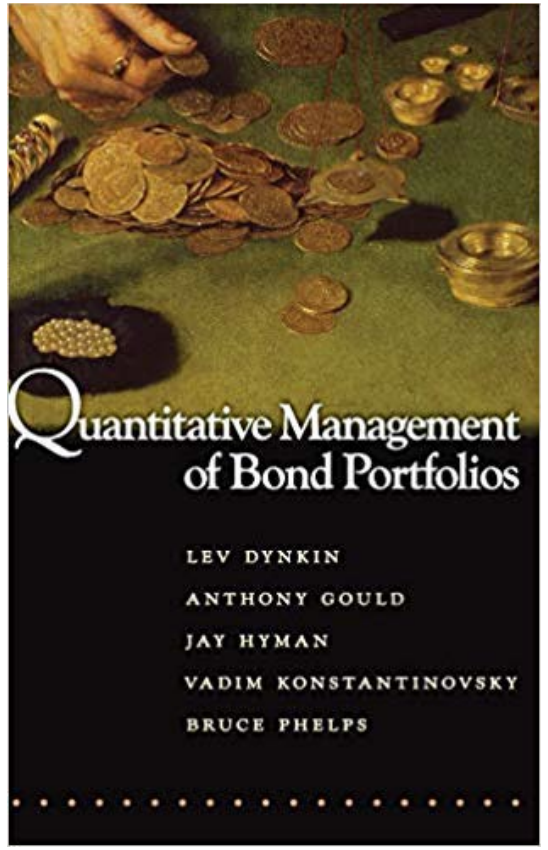
Time Period	Cash Flow	Present Value	Weight	Weighted Value Time To Receipt	Convexity Calc
1	21,900.00	21,430.67	0.0214	0.0214	41,043.93
2	21,900.00	20,971.39	0.0210	0.0419	120,492.99
3	21,900.00	20,521.96	0.0205	0.0616	235,821.48
4	21,900.00	20,082.16	0.0201	0.0803	384,612.78
5	21,900.00	19,651.79	0.0197	0.0983	564,555.41
6	21,900.00	19,230.64	0.0192	0.1154	773,439.26
7	21,900.00	18,818.51	0.0188	0.1317	1,009,151.92
8	21,900.00	18,415.22	0.0184	0.1473	1,269,675.15
9	21,900.00	18,020.57	0.0180	0.1622	1,553,081.45
10	1,021,900.00	822,857.08	0.8229	8.2286	86,676,286.11
Total	1,219,000.00	1,000,000.00	1.000	9.089	92,628,160.48

Macaulay Duration:	4.544	<--- Is the sum of the weighted time to receipt divided by the coupon frequency.
Modified Duration:	4.447	<--- Is the Macaulay Duration divided by (1+ Bond Yield/2) which converts the weighted time to receipt into a percentage change.

Don’t let Tactics drive Philosophy

Don’t let Wall Street make you over in their image and likeness…

"A manager of a book accounting portfolio is likely to follow different portfolio strategies than if he were managing a marked-to-market portfolio. ... a book manager may buy a widespread credit asset to produce a steady book yield and book income advantage ... He continues to enjoy this advantage even if the bond’s spread widens, as long as the bond does not become credit impaired ... In contrast, a total return manager buying the same asset would be penalized as soon as the asset’s market performance begins to deteriorate. Overall, the book manager typically strives more to identify assets that will produce relatively high book income (book yield) with a high degree of confidence (i.e., low default or prepayment risk) and less to anticipate monthly spread changes. This focus on book yield can often work to his advantage. To the extent that a portion of a bond’s yield reflects a risk premium to compensate total return managers for spread volatility unrelated to default risk, the book manager can garner that additional spread because spread volatility does not affect the manager’s performance."

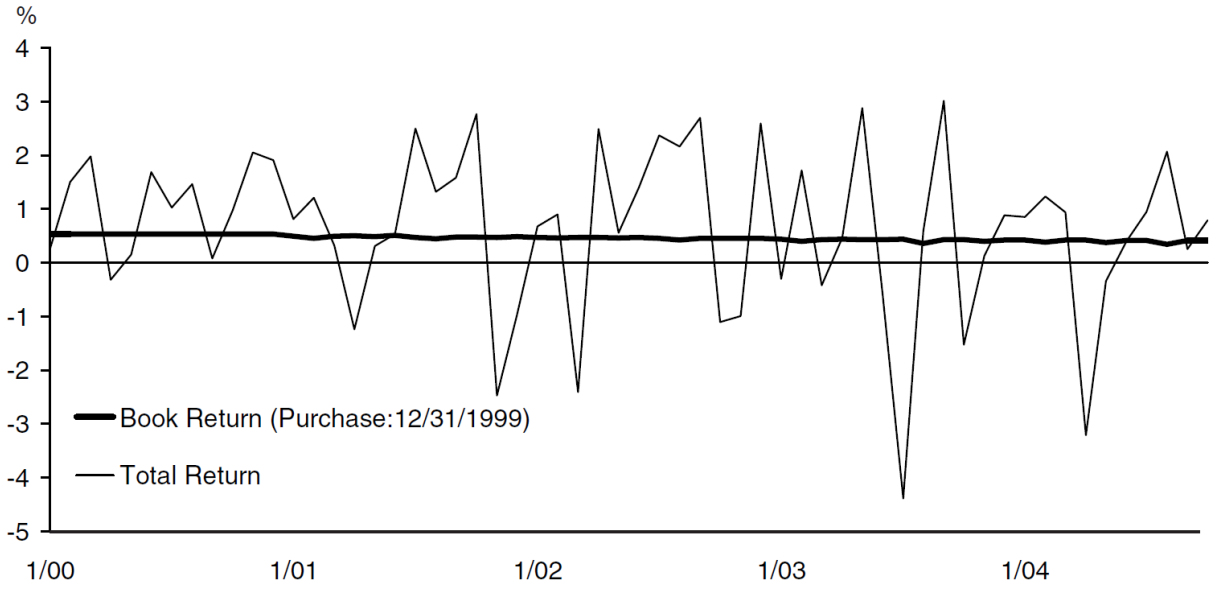


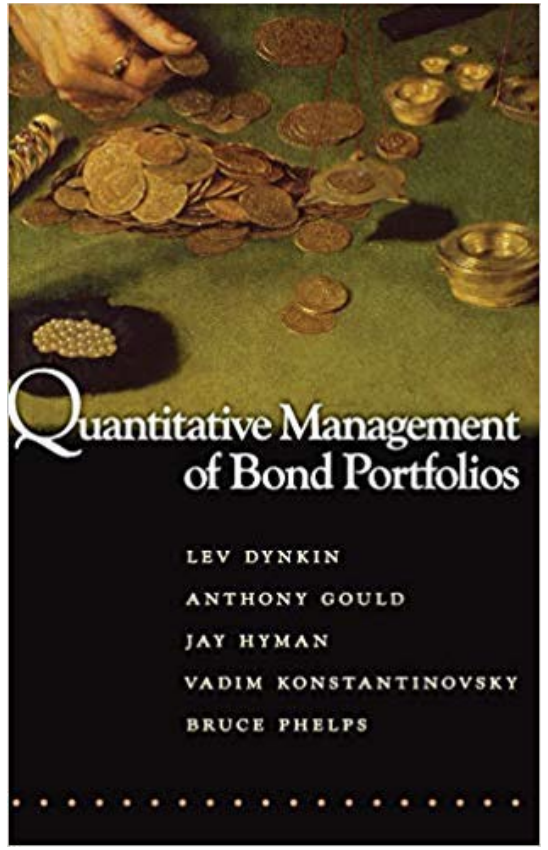
Dynkin, Lev; Gould, Anthony; Hyman, Jay; Konstantinovsky, Vadim; Phelps, Bruce. Quantitative Management of Bond Portfolios (Advances in Financial Engineering Book 1) (p. 255). Princeton University Press. Kindle Edition.

Don’t let Tactics drive Philosophy (cont. 2 of 2)

Don’t let Wall Street make you over in their image and likeness…

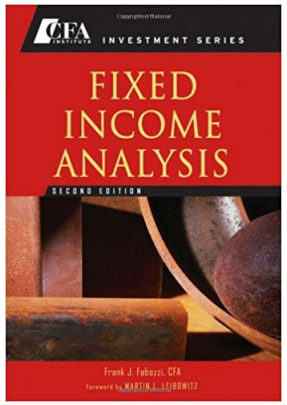
Figure 1. **Book Return versus Market Return: A Portfolio of the Lehman Brothers U.S. Treasury Index,** Purchased on December 31, 1999





Bruce Phelps, et. al. Quantitative Management of Bond Portfolios. Emphasis added.

Interest Rate Risk = Duration/Convexity



Duration

Interpretation: Generic description of the sensitivity of a bond's price (as a percentage of initial price) to a change in yield

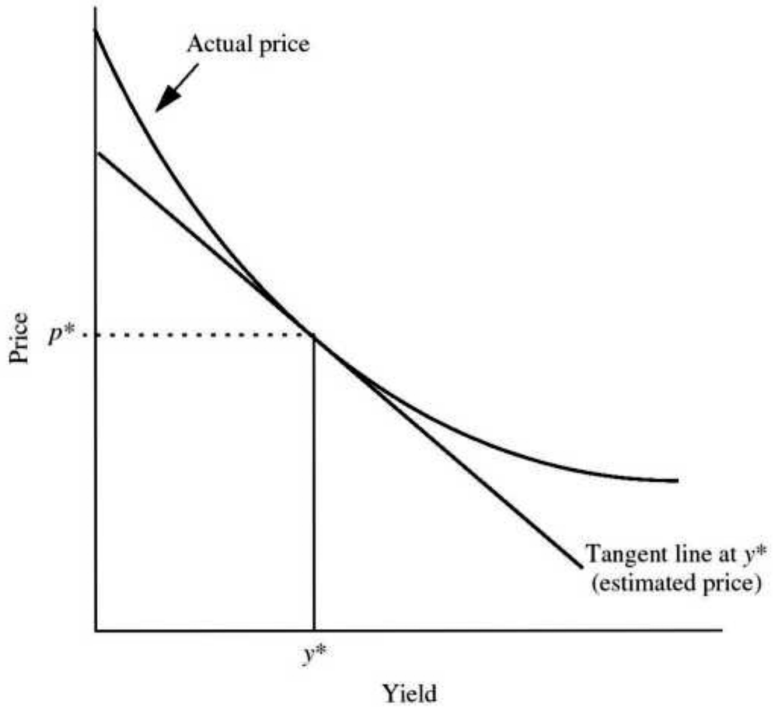
Duration is the approximate percentage change in a bond's price for a 100 basis point change in yields.

Modified Duration

Duration measure in which it is assumed that yield changes do not change the expected cash flows

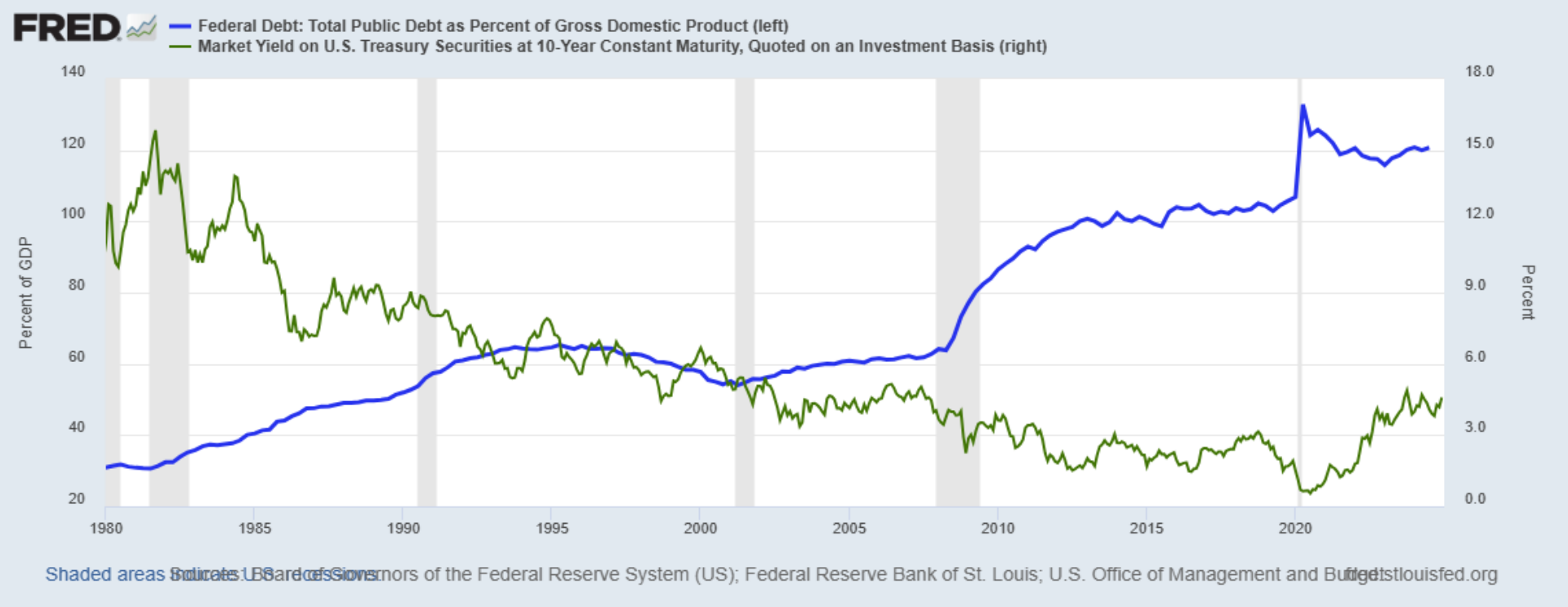
Effective Duration

Duration measure in which recognition is given to the fact that yield changes may change the expected cash flows

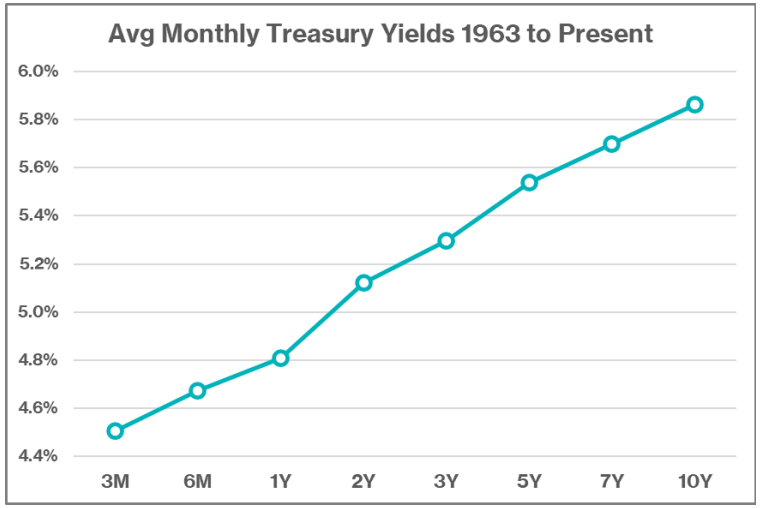


The duration measure indicates that regardless of whether interest rates increase or decrease, the approximate percentage price change is the same. … The duration measure indicates that regardless of whether interest rates increase or decrease, the approximate percentage price change is the same. The reason for this result is that duration is in fact a first (linear) approximation for a small change in yield.' **The approximation can be improved by using a second approximation. This approximation is referred to as the "convexity adjustment." It is used to approximate the change in price that is not explained by duration.**

Frank J. Fabozzi. Fixed Income Analysis (Kindle Locations 3111-3113). Kindle Edition. Emphasis added.



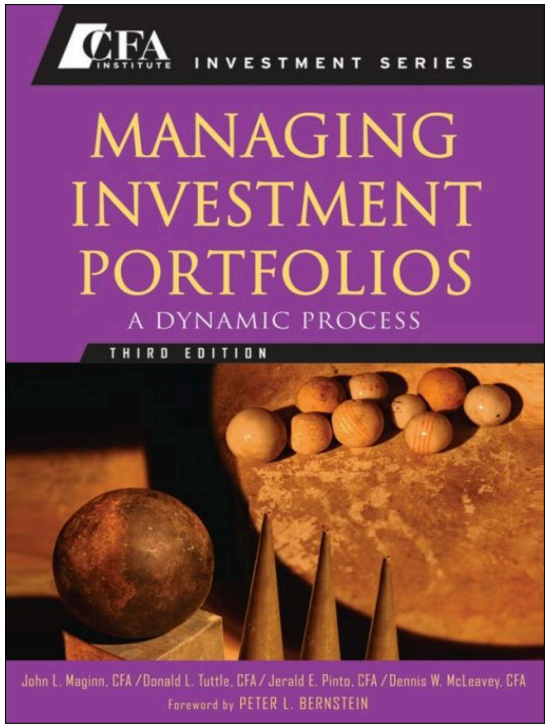
Maturity	Avg Yield	Avg Dur	Modified Sharp Ratio	% Yield of 10Yr	% Risk of 10Yr
3M T-Bill	4.50%	0.25		77%	3%
6M T-Bill	4.67%	0.50	**0.34**	80%	6%
1Y T-Bill	4.81%	1.00	**0.30**	82%	12%
2Y T-Note	5.12%	1.82	**0.34**	87%	22%
3Y T-Note	5.30%	2.79	**0.28**	90%	34%
5Y T-Note	5.54%	4.61	**0.22**	94%	56%
7Y T-Note	5.70%	6.36	**0.19**	97%	77%
10Y T-Note	5.86%	8.22	**0.17**	100%	100%



Upper graph from Fred. Lower table and graph from Rick Phillips presentation Day 1, Session 3.

Passive Portfolio Management

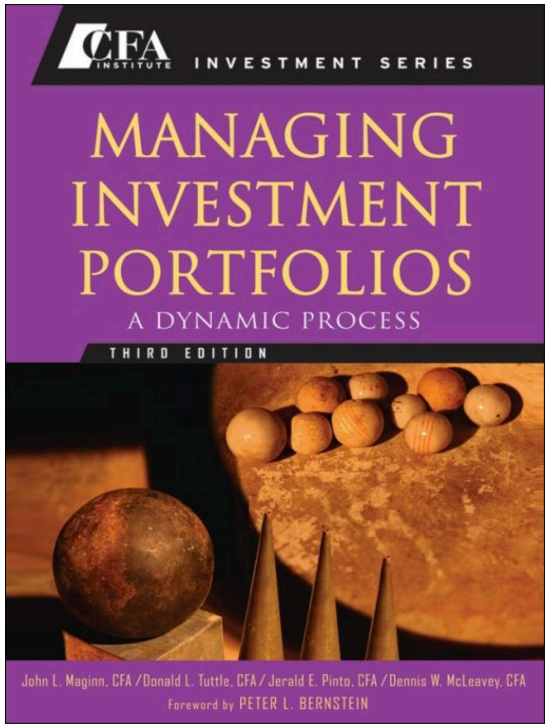
"A passive management strategy assumes that the market's expectations are essentially correct or, more precisely, that the manager has no reason to disagree with these expectations —perhaps because the manager has no particular expertise in forecasting. By setting the portfolio's risk profile (e.g., 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.**"



Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (p. 331). Wiley. Kindle Edition. Emphasis added.

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.”



Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (p. 331). Wiley. Kindle Edition. Emphasis added.

Strategy Webb Risk/Reward Overview Part 1: The Yield Curve Framework

Curve Begin Date: 12/31/2000 **Curve End Date:** 12/31/2024

Bellwether Treasury	Average Edur	Average Ytw	Main Street Ratio	Annualized Total Return StdDev	Annualized Total Return	Sharpe Ratio (Total Return)
3-mo US Treasury Bill	0.236	1.646	0.000	0.547	1.738	0.000
6-mo US Treasury Bill	**0.483**	**1.755**	**0.225**	**0.609**	**1.982**	**0.399**
US Treasury Current 2 Yr	1.920	2.011	0.190	1.680	2.287	0.326
USTreasury Current 3 Yr	**2.813**	**2.189**	**0.193**	**2.566**	**2.718**	**0.382**
US Treasury Current 5 Yr	4.630	2.558	0.197	4.372	3.132	0.319
US Treasury Current 10 Yr	**8.559**	**3.141**	**0.175**	**7.547**	**3.173**	**0.190**
US Treasury Current 30 Yr	18.138	3.748	0.116	14.531	3.520	0.123

Graph Item Definitions

Average Edur (Horizontal Axis)

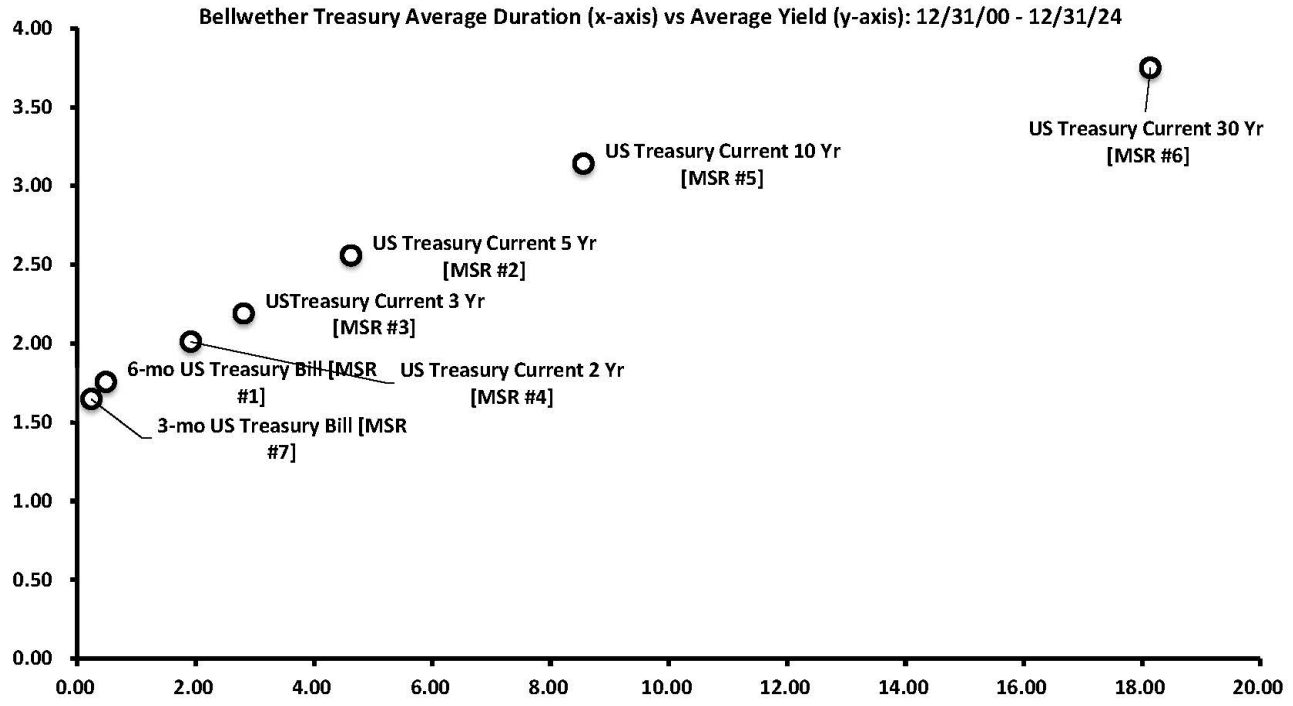
This is the average of the monthly effective durations over the period. Effective Duration is the by-product of an option model that takes into consideration any possible early redemption features and is read as a percent which gives the inverse percent change in market value for a given percent change in interest rates.

Average Ytw (Vertical Axis)

This is the Average Yield To Worst and represents the average over the period of all the yield to worsts. Yield to Worst is the lowest potential yield that can be received without a default. Yield To Worst over a given period can act as a proxy for what the expected book income might have been. A higher number, all things equal, is better.

Label Description

Identifies the Bellwether Treasury with the Main Street Ratio (MSR) ranking to the right in brackets. The rankings are arranged from best (#1) to worst (#7).



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Graph Item Definitions

Annualized Total Return StdDev (Horizontal Axis)

The Standard Deviation of the Monthly Return Annualized. Gives an indication of the historical market value volatility. The higher the number the more volatile. A lower number, all things being equal, is better.

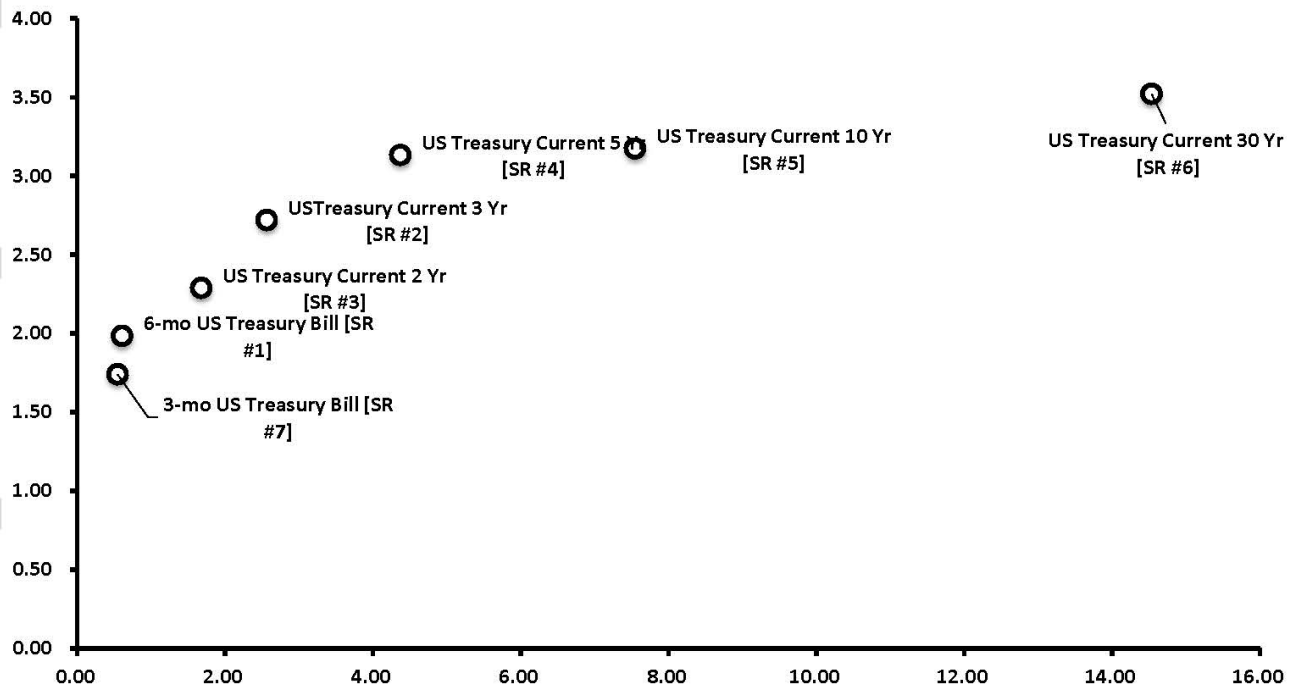
Annualized Total Return (Vertical Axis)

The monthly total returns annualized over the period. This includes return from price and coupon. A higher number, all things being equal, is better.

Label Description

Identifies the Bellwether Treasury with the Sharpe Ratio (SR) ranking to the right in brackets. The rankings are arranged from best (#1) to worst (#7).

Bellwether Treasury Annualized Standard Deviation (x-axis) vs Annualized Total Return (y-axis): 12/31/00 - 12/31/24



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Graph Item Definitions

Main Street Ratio (Horizontal Axis)

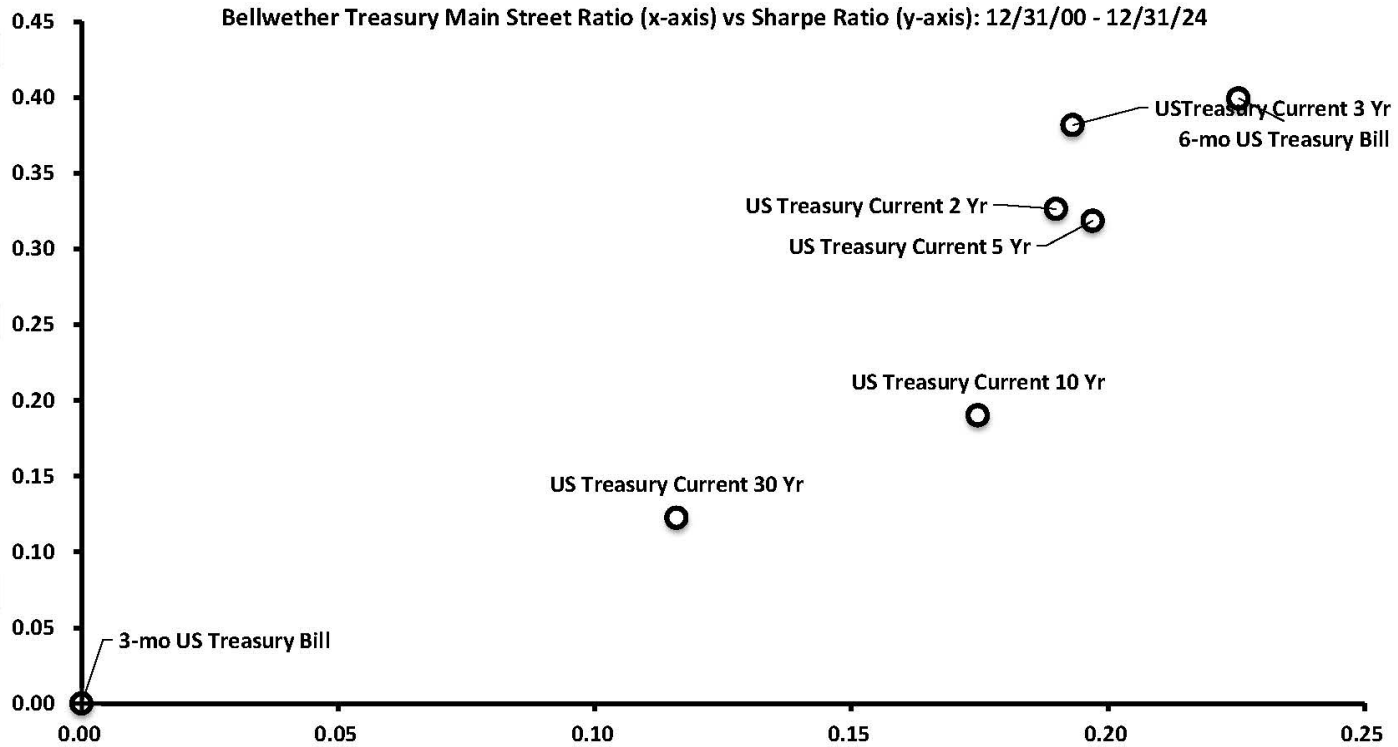
The Main Street Ratio measures the average excess Yield To Worst that could have been earned over the risk-free rate (US 3 Month Tsy Bill) per unit of average interest rate risk (Average Effective Duration) over the period. It is (Avg YTW-3MoTBillYTW)/Avg Edur. All things being equal, a higher ratio is better.

Sharpe Ratio (Total Return) (Vertical Axis)

Named after Nobel Laureate William Sharpe, the Sharpe Ratio shows the excess return over the risk-free rate (the US 3 Month Tsy Bill) per unit of risk (the standard deviation of the total return of the index being analyzed). The ultimate industry standard "how much bang for the buck" ratio. All things being equal, a higher ratio is better.

Label Description

Identifies the Bellwether Treasury. The layout of the scatter diagram shows the relationship between the Main Street Ratio (x-axis) and the Sharpe Ratio (y-axis).



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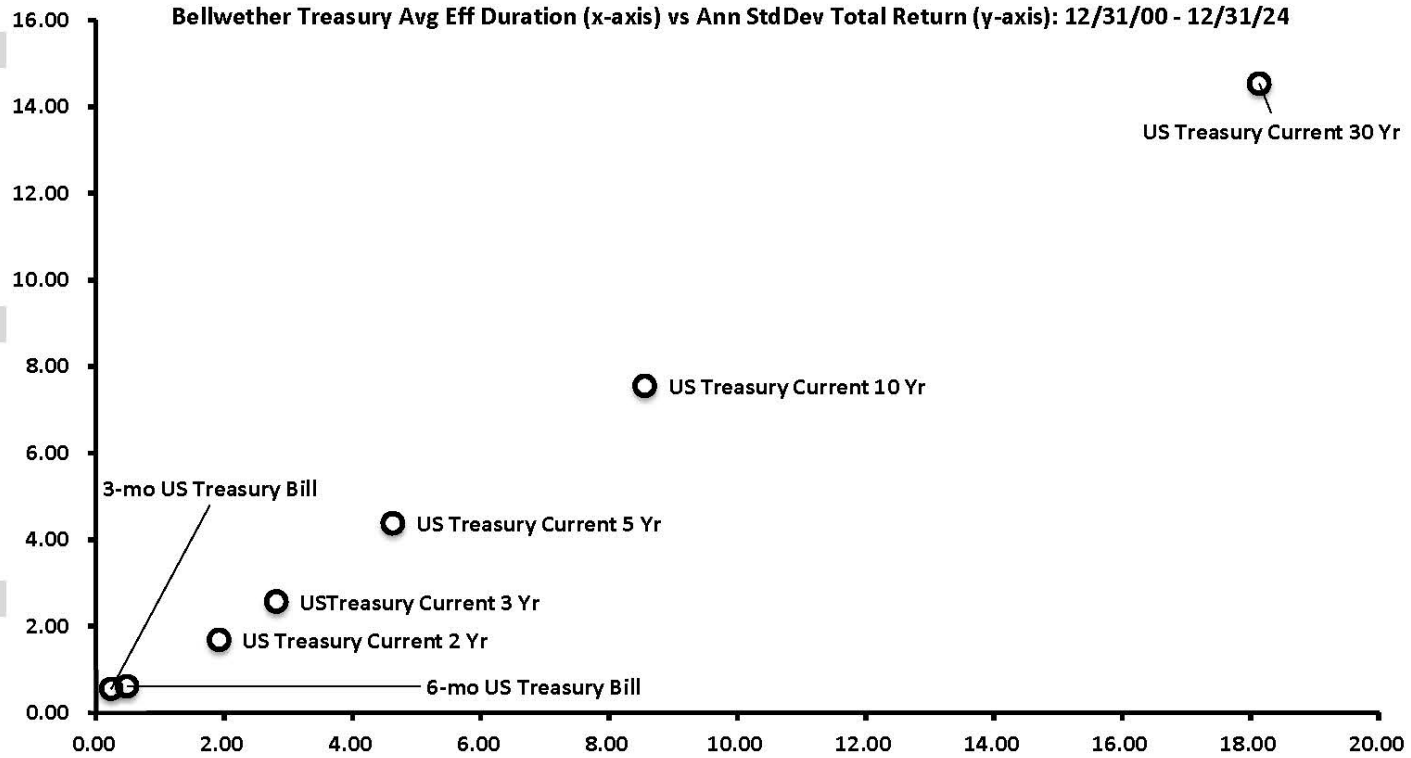
Annualized Total Return StdDev (Vertical Axis)

The Standard Deviation of the Monthly Return Annualized. Gives an indication of the historical market value volatility. The higher the number the more volatile. A lower number, all things being equal, is better.

Label Description

Identifies the Bellwether Treasury. The scatter plot shows that (for the Treasury Curve) Duration is a good proxy for total risk.



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Strategy Webb Risk/Reward Overview Part 2: Usefulness of the Yield Curve Framework

Indices Begin Date: 12/31/2000 **Indices End Date:** 12/31/2024

Fixed Income Sector	Average Edur	Average Ytw	Main Street Ratio	Annualized Total Return StdDev	Annualized Total Return	Sharpe Ratio (Total Return)
3-mo US Treasury Bill	0.236	1.646	0.000	0.547	1.738	0.000
US Treasuries 1-3yr	**1.813**	**2.002**	**0.196**	**1.530**	**2.328**	**0.385**
Agy Bullet 1-3Yr	1.810	2.187	0.299	1.587	2.651	0.575
Agy Callable 1-3Yr	**1.256**	**2.236**	**0.470**	**1.154**	**2.016**	**0.240**
US Treasuries 3-5yr	3.748	2.405	0.202	3.505	3.175	0.410
Agy Bullet 3-5Yr	**3.651**	**2.626**	**0.268**	**3.367**	**3.612**	**0.556**
Agy Callable 3-5Yr	2.206	2.597	0.431	2.189	2.327	0.269

Graph Item Definitions

Average Edur (Horizontal Axis)

This is the average of the monthly effective durations over the period. Effective Duration is the by-product of an option model that takes into consideration any possible early redemption features and is read as a percent which gives the inverse percent change in market value for a given percent change in interest rates.

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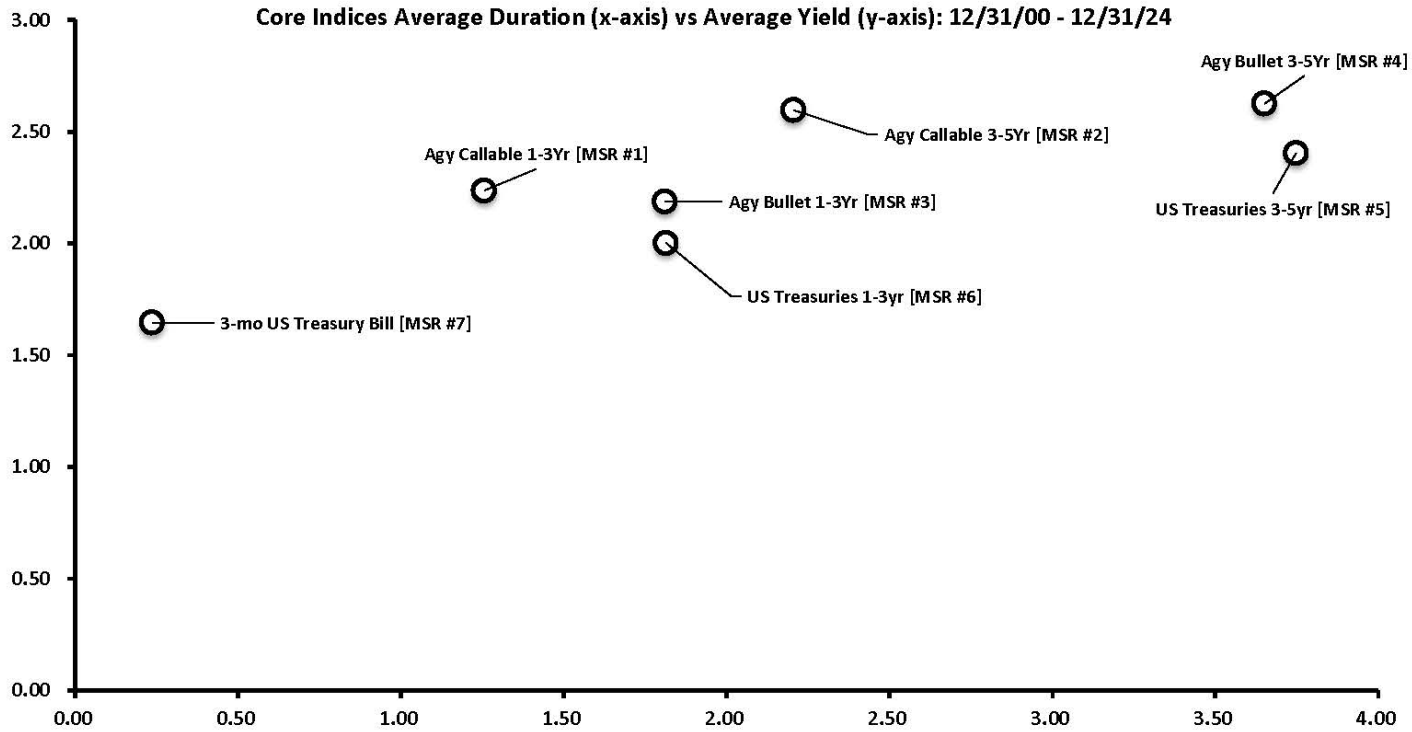

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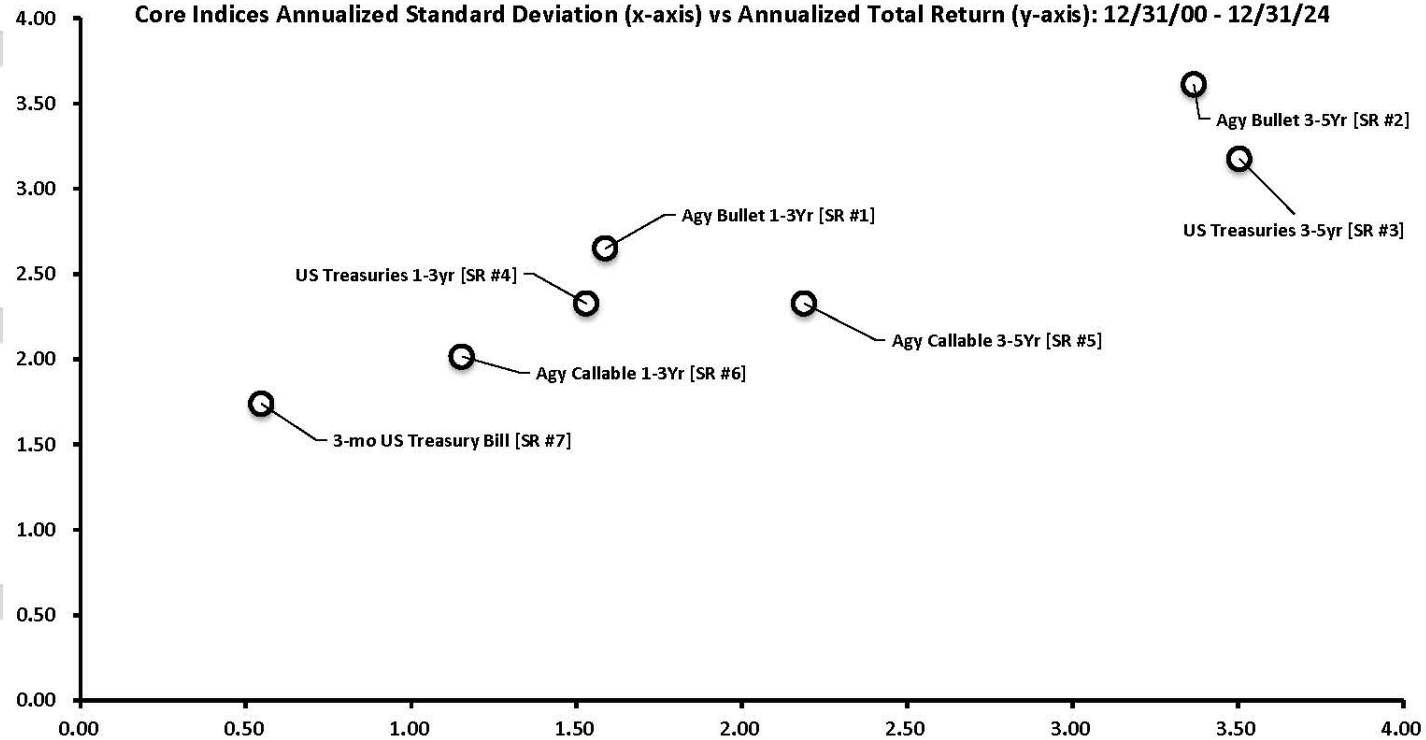

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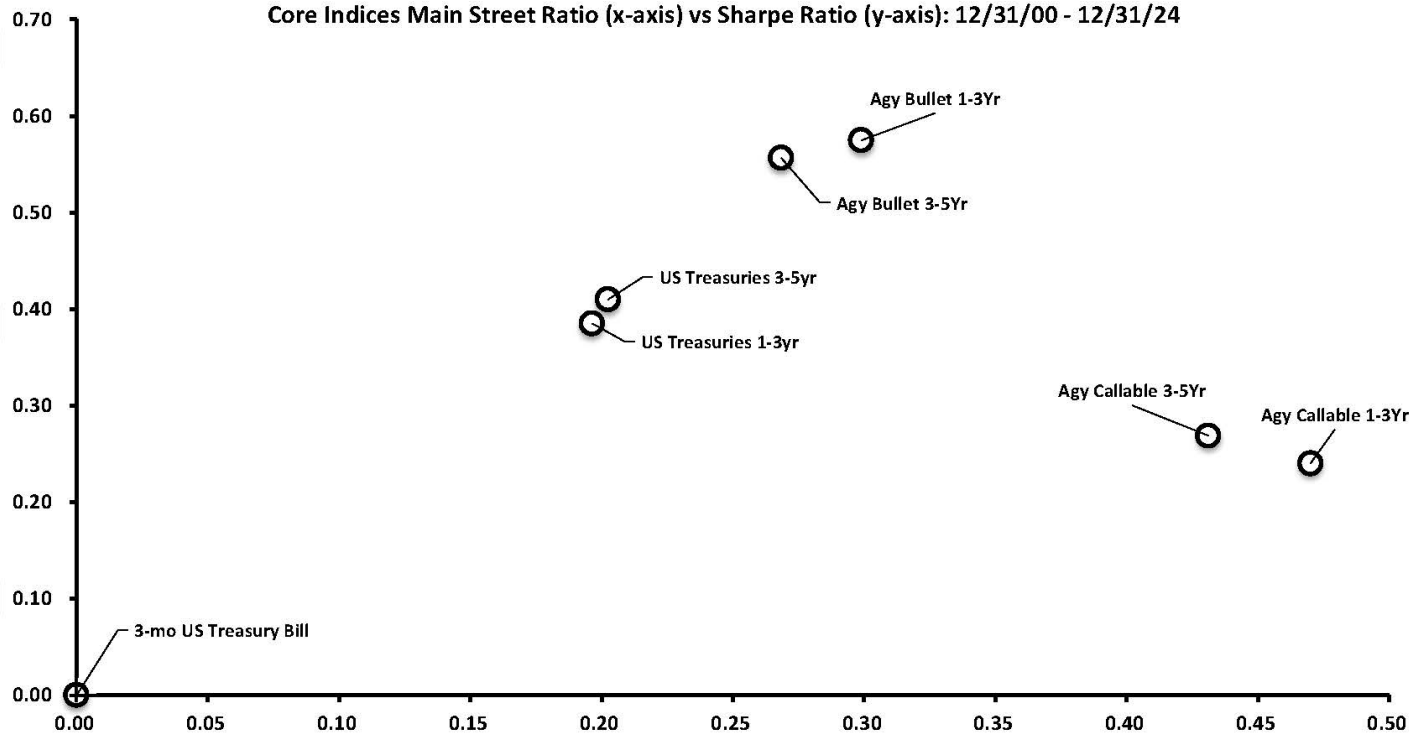
Label Description

Identifies the Fixed Income Sector. The layout of the scatter diagram shows the relationship between the Main Street Ratio (x-axis) and the Sharpe Ratio (y-axis).



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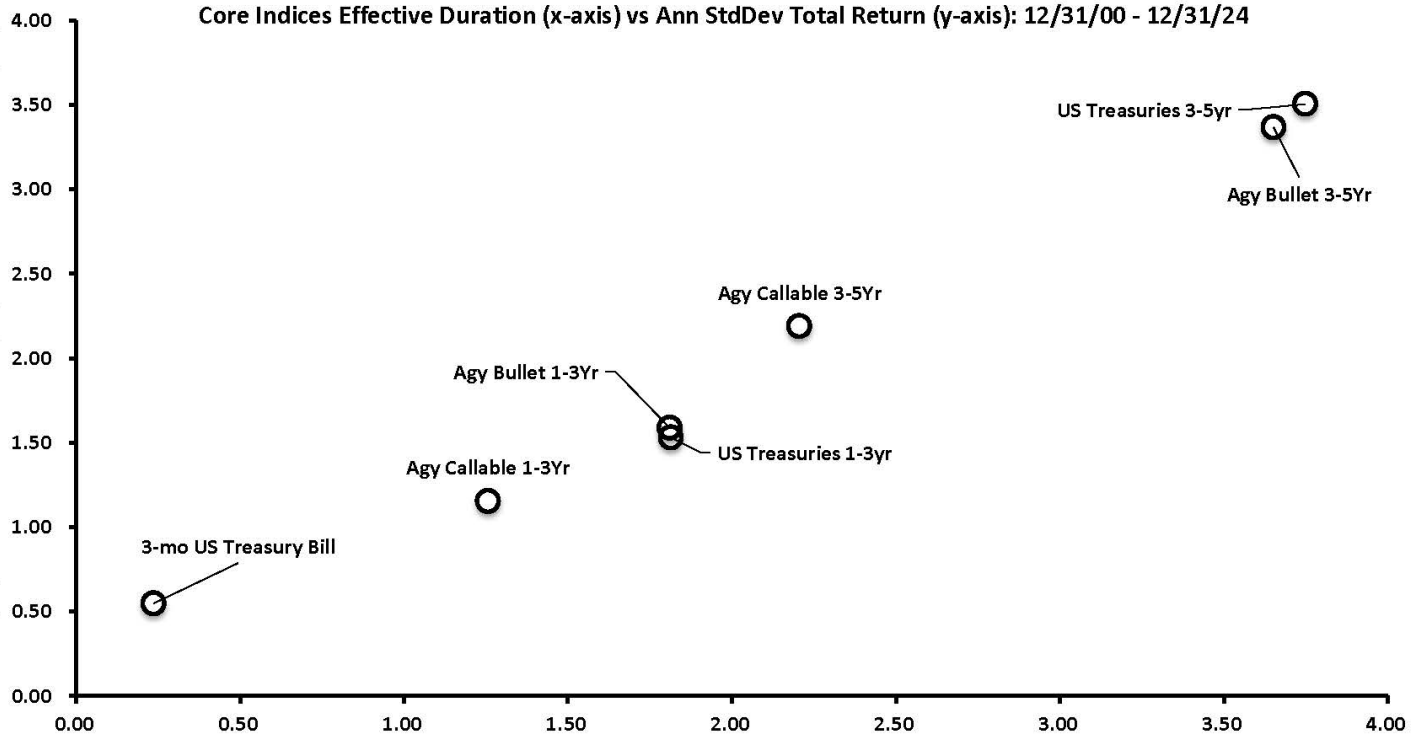

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US Treasury Master	**5.944**	**2.647**	**0.168**	**4.881**	**3.153**	**0.290**
Agency Bullet Master	4.299	2.718	0.249	3.627	3.527	0.493
Agency Callable Master	**2.220**	**2.621**	**0.439**	**1.999**	**2.413**	**0.338**
US Corp Master	6.607	4.395	0.416	6.165	4.761	0.490
Mortgage Master	**3.724**	**3.674**	**0.545**	**3.857**	**3.406**	**0.432**
US Domestic Master	5.354	3.415	0.330	4.317	3.658	0.445

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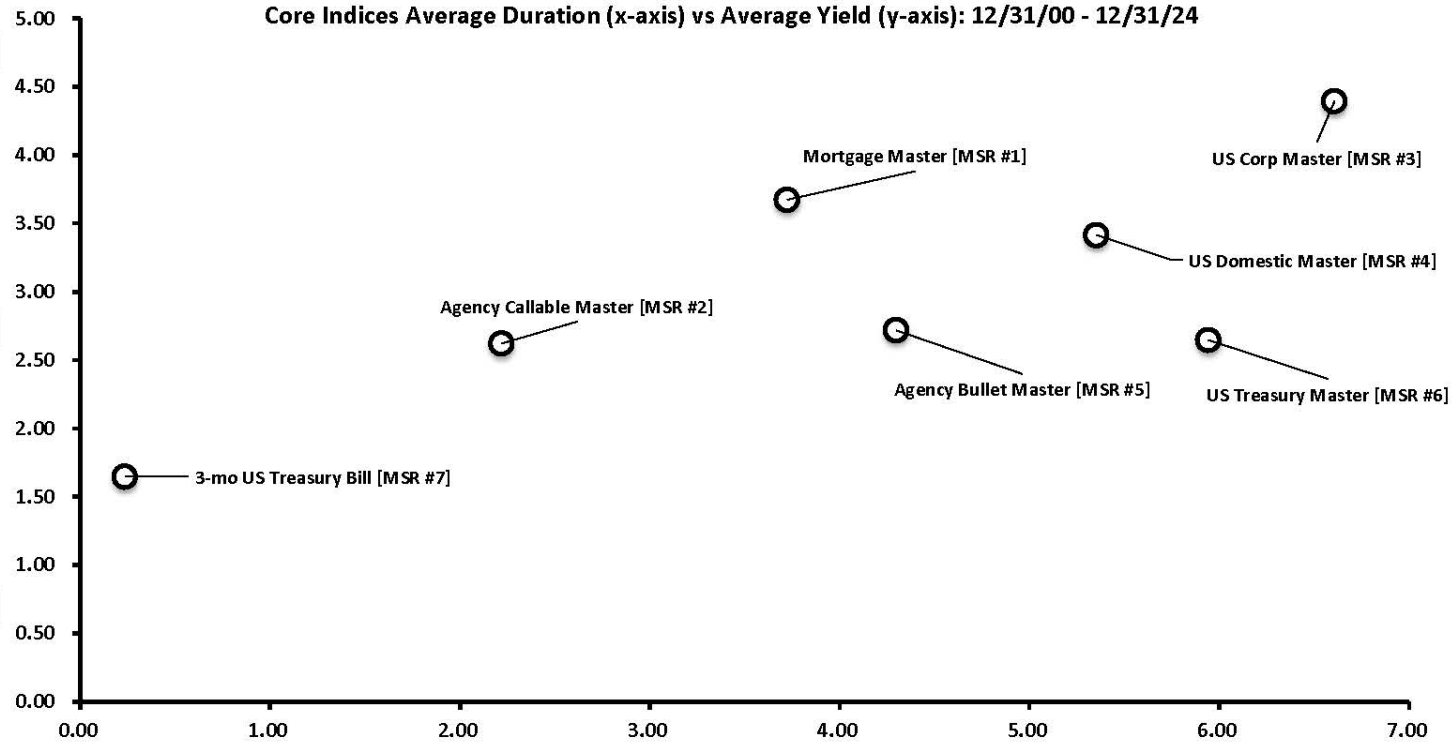

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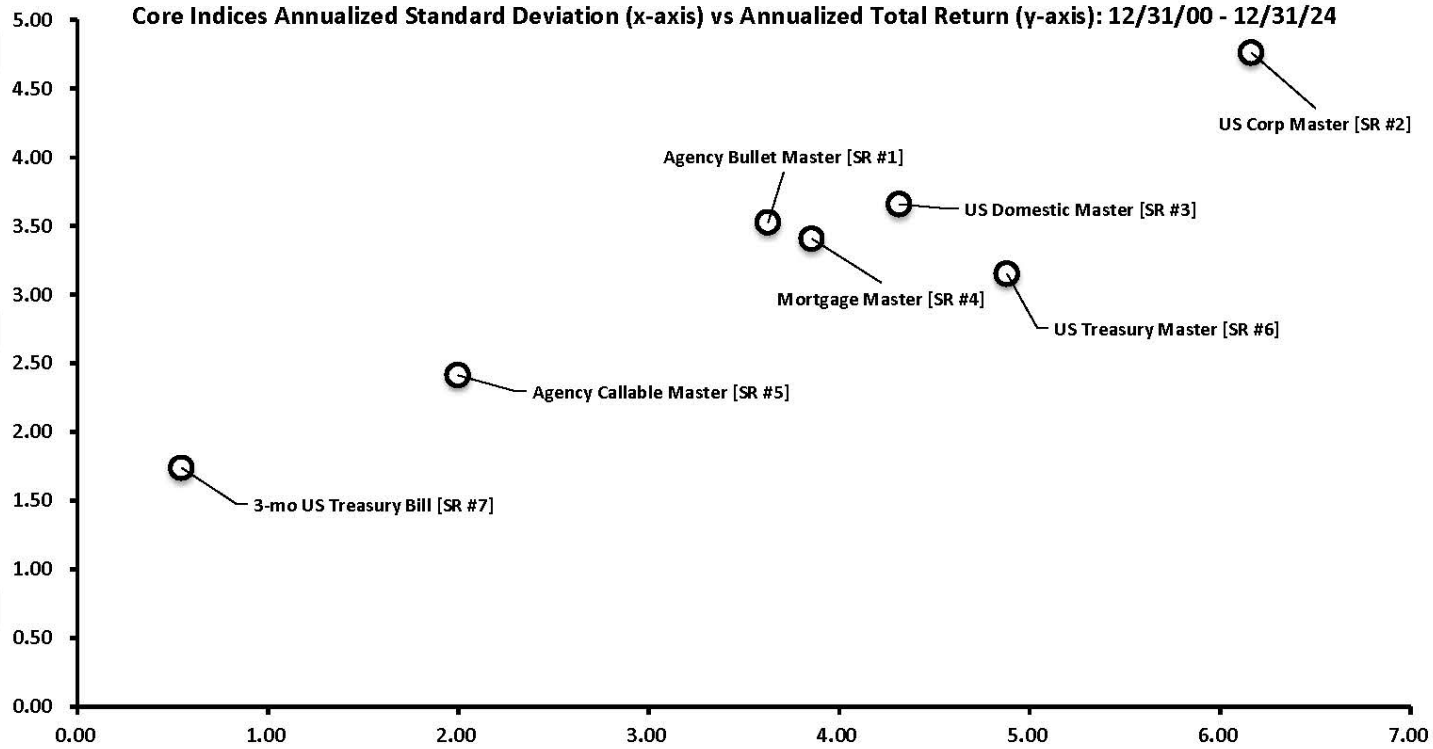

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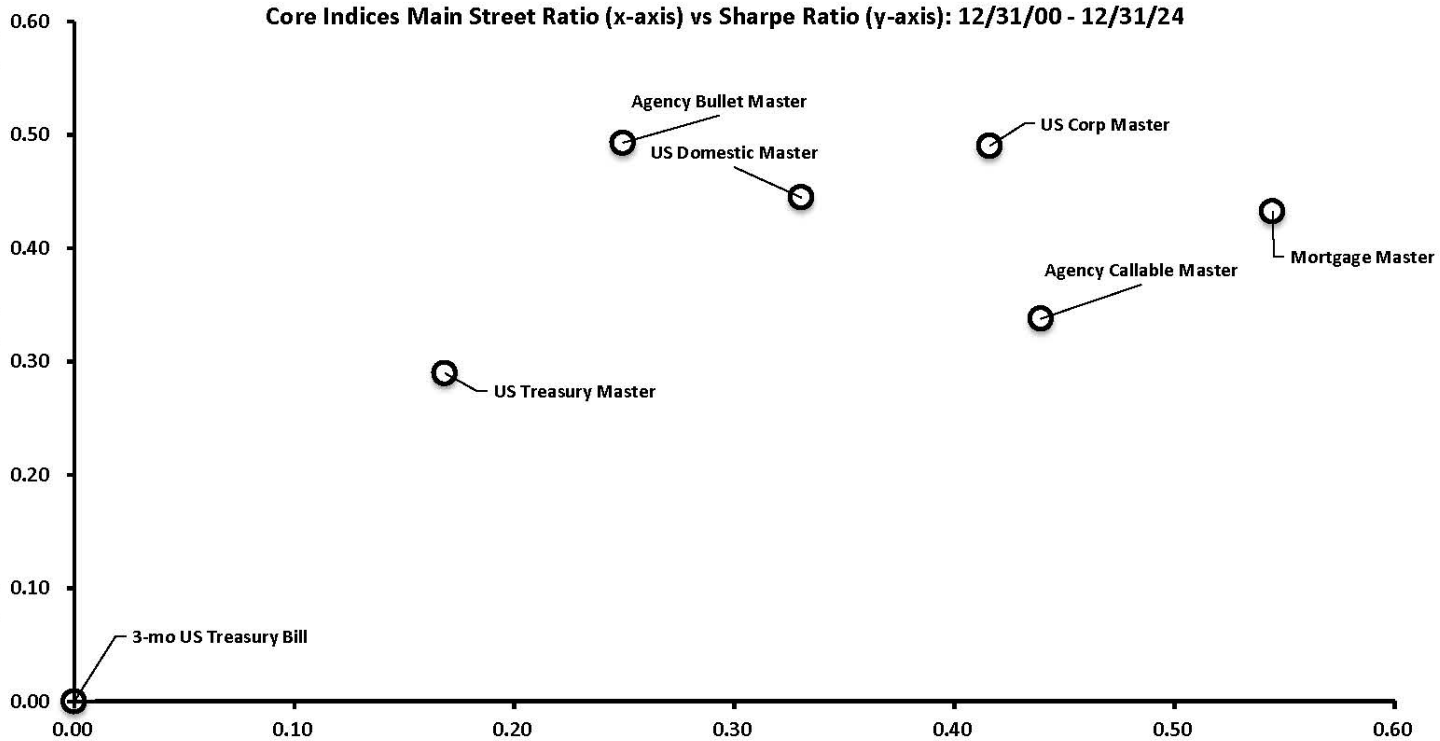

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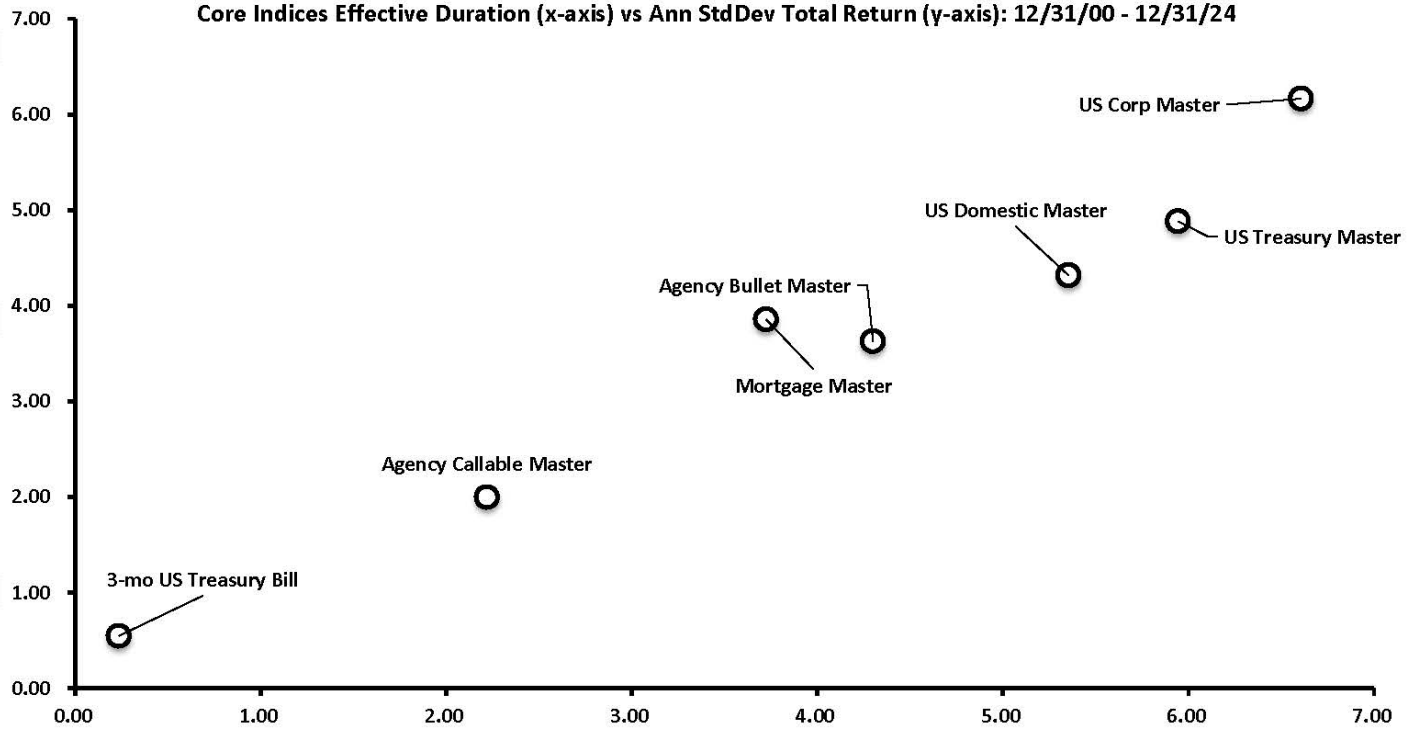

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Strategy Webb Indices Comparison: 12/31/00 to 12/31/24

Fixed Income Sector	Average Edur	Average Ytw	Main Street Ratio	Annualized Total Return StdDev	Average Ytw	WEBB Ratio
US Treasuries 1-3yr	1.813	2.002	0.196	1.530	2.002	0.233
Agy Bullet 1-3Yr	1.810	2.187	0.299	1.587	2.187	0.341
Agy Callable 1-3Yr	1.256	2.236	0.470	1.154	2.236	0.512
US Treasuries 3-5yr	3.748	2.405	0.202	3.505	2.405	0.216
Agy Bullet 3-5Yr	3.651	2.626	0.268	3.367	2.626	0.291
Agy Callable 3-5Yr	2.206	2.597	0.431	2.189	2.597	0.434
US Treasuries 1-5yr	2.541	2.151	0.199	2.212	2.151	0.228
Agy Bullet 1-5Yr	2.347	2.325	0.289	2.062	2.325	0.330
Agy Callable 1-5Yr	1.565	2.365	0.459	1.493	2.365	0.482
US Treasuries 10+yr	14.220	3.666	0.142	11.681	3.666	0.173
Agy Bullet 10+Yr	11.597	4.082	0.210	9.851	4.082	0.247
Agy Callable 10+Yr	6.677	3.945	0.344	5.833	3.945	0.394

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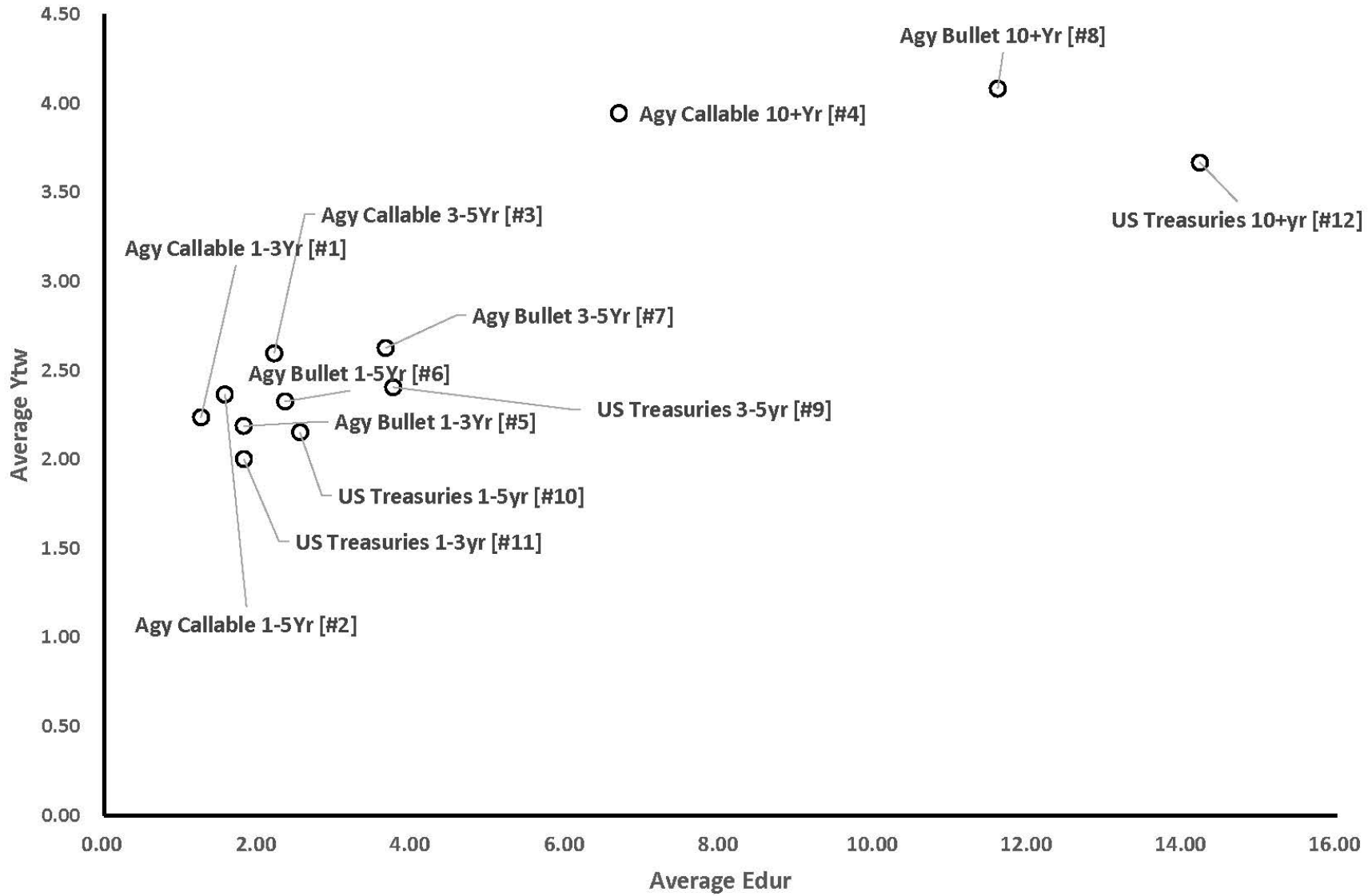

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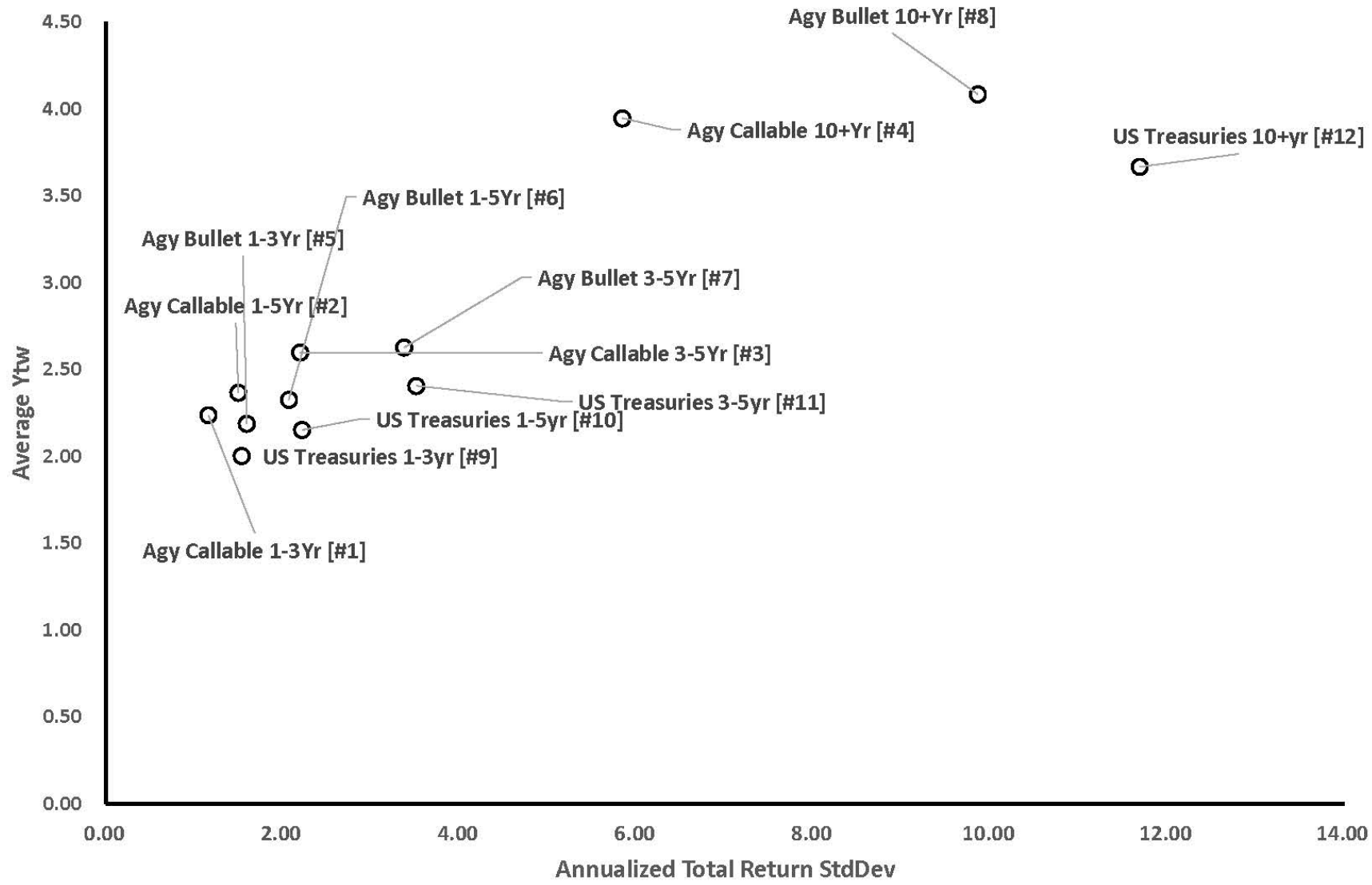

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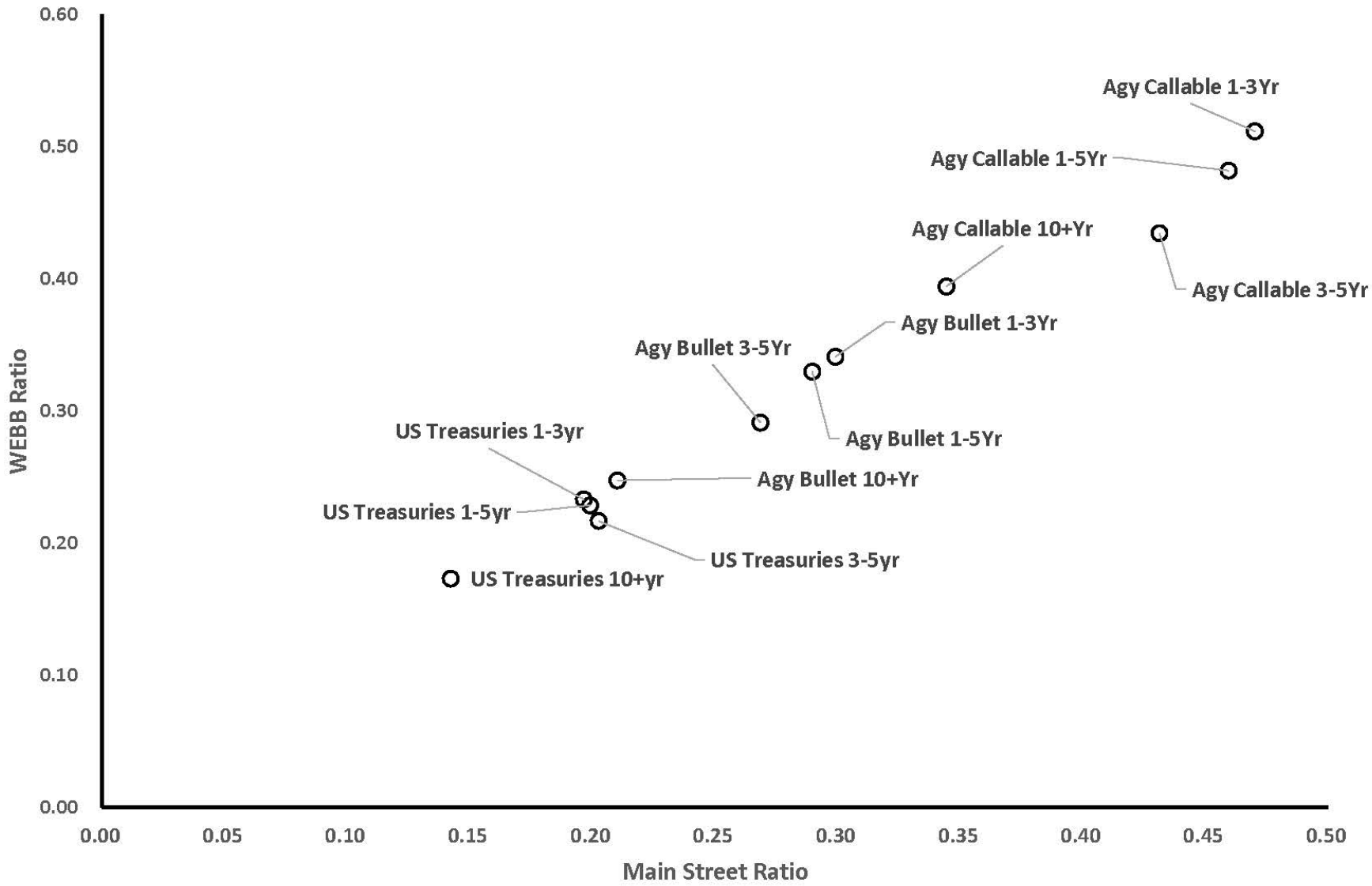
WEBB Ratio (Vertical Axis)

The WEBB Ratio is an estimate of Book Income adjusted for Total Risk. It divides the Average Yield To Worst by the Annualized Total Return Standard Deviation. Provides an estimate of how much average income per unit of risk was obtained over the historical period. A higher number, all things equal, is better.



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QUESTIONS?

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LUNCHEON

SESSION THREE
Advanced Credit Analysis

IAN CAPULE, CFA
Assistant Investment Officer
County of San Bernardino

ROBIN DIXON
Investment Officer
County of San Bernardino

Approved Issuer List (AIL)

- Within California State Code guidelines:

FIGURE 1

ALLOWABLE INVESTMENT INSTRUMENTS PER STATE GOVERNMENT CODE (AS OF JANUARY 1, 2024)[A] APPLICABLE TO ALL LOCAL AGENCIES[B]

See "Table of Notes for Figure 1" on the next page for footnotes related to this figure.

INVESTMENT TYPE	MAXIMUM MATURITY[C]	MAXIMUM SPECIFIED % OF PORTFOLIO[D]	MINIMUM QUALITY REQUIREMENTS	GOV'T CODE SECTIONS
Local Agency Bonds	5 years	None	None	53601(a)
U.S. Treasury Obligations	5 years	None	None	53601(b)
State Obligations—CA And Others	5 years	None	None	53601(c) 53601(d)
CA Local Agency Obligations	5 years	None	None	53601(e)
U.S Agency Obligations	5 years	None	None	53601(f)
Bankers' Acceptances	180 days	40%[E]	None	53601(g)
Commercial Paper—Non-Pooled Funds[F] (under $100,000,000 of investments)	270 days or less	25% of the agency's money[G]	Highest letter and number rating by an NRSRO[H]	53601(h)(2)(c)
Commercial Paper—Non-Pooled Funds[I] (min. $100,000,000 of investments)	270 days or less	40% of the agency's money[G]	Highest letter and number rating by an NRSRO[H]	53601(h)(2)(c)
Commercial Paper—Pooled Funds[J]	270 days or less	40% of the agency's money[G]	Highest letter and number rating by an NRSRO[H]	53635(a)(1)
Negotiable Certificates of Deposit	5 years	30%[K]	None	53601(i)
Non-negotiable Certificates of Deposit	5 years	None	None	53630 et seq.
Placement Service Deposits	5 years	50%[L]	None	53601.8 and 53635.8
Placement Service Certificates of Deposit	5 years	50%[L]	None	53601.8 and 53635.8
Repurchase Agreements	1 year	None	None	53601(j)
Reverse Repurchase Agreements and Securities Lending Agreements	92 days[M]	20% of the base value of the portfolio	None[N]	53601(j)
Medium-Term Notes[O]	5 years or less	30%	"A" rating category or its equivalent or better	53601(k)
Mutual Funds And Money Market Mutual Funds	N/A	20%[P]	Multiple[Q, R]	53601(l) and 53601.6(b)
Collateralized Bank Deposits[S]	5 years	None	None	53630 et seq. and 53601(n)
Mortgage Pass-Through and Asset-Backed Securities[T]	5 years or less[T]	20%	"AA" rating category or its equivalent or better[T]	53601(o)
County Pooled Investment Funds	N/A	None	None	27133
Joint Powers Authority Pool	N/A	None	Multiple[U]	53601(p)
Local Agency Investment Fund (LAIF)	N/A	None	None	16429.1
Voluntary Investment Program Fund[V]	N/A	None	None	16340
Supranational Obligations[W]	5 years or less	30%	"AA" rating category or its equivalent or better	53601(q)
Public Bank Obligations	5 years	None	None	53601(r), 53635(c) and 57603

Approved Issuer List (AIL)

- Approved by our Investment Advisor (PFM)
- Meets Investment Policy Statement guidelines

Each security on the approved list is monitored based on their earnings reporting frequency and a tearsheet is created.

Company credit ratings are monitored on a daily basis, and any changes are highlighted and noted on the AIL.

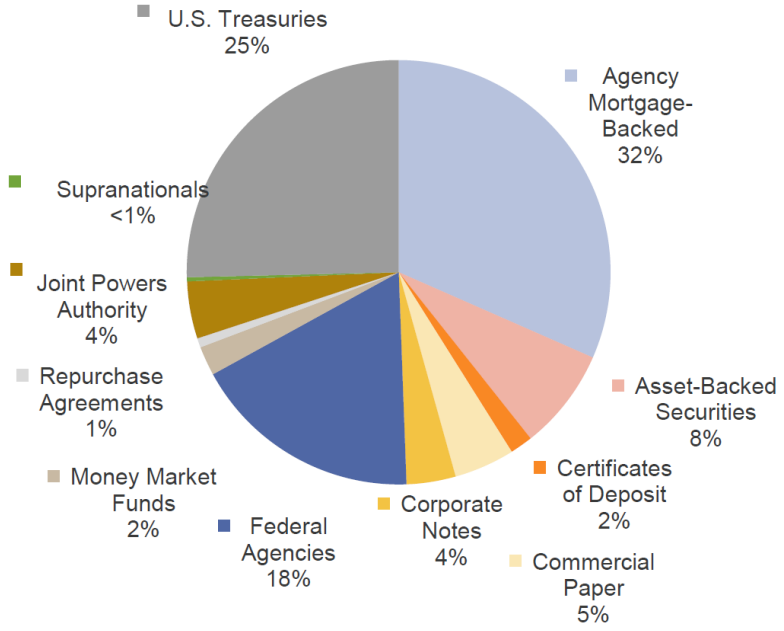
Credit Ratings

	Credit Ratings		
	S&P	Moody's	Fitch
Investment Grade	AAA	Aaa	AAA
	AA	Aa	AA
	A	A	A
	BBB	Baa	BBB
Speculative Grade	BB	Ba	BB
	B	B	B
	CCC	Caa	CCC
	CC	Ca	CC
	C	C	C
	D	D	D

Credit Risk

Portfolio Diversification (as of October 31, 2024)

Sector Distribution



Sector	Market Value
Agency Mortgage-Backed	$4,542,822,051
Asset-Backed Securities	$1,110,604,095
Certificates of Deposit	$249,717,750
Commercial Paper	$663,344,606
Corporate Notes	$539,549,187
Federal Agencies	$2,531,391,172
Money Market Funds	$321,000,000
Repurchase Agreements	$100,000,000
Joint Powers Authority	$626,000,000
Supranationals	$44,951,760
U.S. Treasuries	$3,649,180,825

Exposure (as of October 31, 2024)

Issuer Limit (in millions)	n/a	$1,443.5	$4,330.4	$5,773.8	$2,886.9	n/a	$5,773.8	$4,330.4	n/a	$2,886.9	$721.7	Compliance
Sector	Agency Mortgage-Backed	Asset-Backed Securities	Certificates of Deposit	Commercial Paper	Corporate Notes	Federal Agencies	Repurchase Agreements	Supranationals	U.S. Treasuries	Money Market Funds	Joint Powers Authority	Grand Total
Amazon.com Inc					$100.7							yes
American Express Co		$67.2										yes
Apple Inc					$30.6							yes
Bank of America Corp			$252.0	$98.8								yes
Bank of New York Mellon Corp					$54.8							yes
BMW Vehicle Lease Trust		$68.8										yes
CalTRUST											$10.0	yes
CAMP											$616.0	yes
Cantor Fitzgerald LP							$100.0					yes
Capital One Financial Corp		$50.0										yes
Citigroup Inc		$9.2		$99.4	$10.1							yes
Credit Agricole Group				$88.0								yes
Deere & Co					$69.8							yes
Discover Card Execution Note Trust		$70.1										yes
Federal Farm Credit Banks Funding Corp						$450.9						yes
Federal Home Loan Banks						$1,610.0						yes
Federal Home Loan Mortgage Corp	$4,062.1					$156.8						yes
Federal National Mortgage Association	$120.0					$328.3						yes
Federated Govt Money Market Fund										$158.0		yes
Fidelity Govt Money Market Fund										$161.0		yes
Ford Credit Auto Owner Trust		$32.0										yes
FRESB Multifamily Structured Pass Throu	$376.6											yes
GM Financial Consumer Automobile Receiv		$42.8										yes
Honda Auto Receivables Owner Trust		$107.9										yes
Hyundai Auto Receivables Trust		$101.8										yes
Inter-American Development Bank								$15.4				yes
International Bank for Reconstruction &								$10.1				yes
International Finance Corp								$19.9				yes
John Deere Owner Trust		$124.4										yes
JPMorgan Chase & Co		$65.2		$49.8								yes
Mercedes-Benz Auto Lease Trust		$35.9										yes
Mercedes-Benz Auto Receivables Trust		$65.4										yes
MetLife Inc				$131.1	$71.0							yes
Morgan Stanley Liquid Govt Inst Fund										$1.0		yes
Nestle SA					$5.0							yes
Northern Institutional US Govt Fund										$1.0		yes
Procter & Gamble Co					$10.1							yes
Toyota Auto Receivables Owner Trust		$197.1										yes
Toyota Lease Owner Trust		$23.1										yes
Toyota Motor Corp				$196.3	$81.7							yes
United States Treasury									$3,662.7			yes
Verizon Master Trust		$52.2										yes
Walmart Inc					$20.0							yes
Wells Fargo & Co					$92.4							yes
Grand Total	**$4,558.7**	**$1,113.0**	**$252.0**	**$663.3**	**$546.3**	**$2,546.0**	**$100.0**	**$45.4**	**$3,662.7**	**$321.0**	**$626.0**	**$14,434.5**
% of Portfolio	31.6%	7.7%	1.7%	4.6%	3.8%	17.6%	0.7%	0.3%	25.4%	2.2%	4.3%	
Sector Limit	100%	10%	30%	40%	20%	100%	40%	30%	100%	20%	5%	
Compliance	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	

Preliminary Analysis – New Issuer

- Does the potential issuer issue securities that fit the Treasurer's Statement of Investment Policy (IPS) and meet California Government Code?
  - **Credit Ratings:** Minimum of A-/A3/A- on LT ratings and A-1/P-1/F1 on ST ratings of programs required. Needs to be rated by at least 2 of the rating agencies (S&P/Moody's/Fitch)
  - **Asset Type:** Commercial Paper (CP), Certificate of Deposit (CDs), Medium Term Notes (MTNs), and Asset-Backed Securities (ABS)
  - **Issuance Levels:** Is there market breadth and volume in their debt securities?

Ex.: Google – Higher ratings with limited debt issuance.

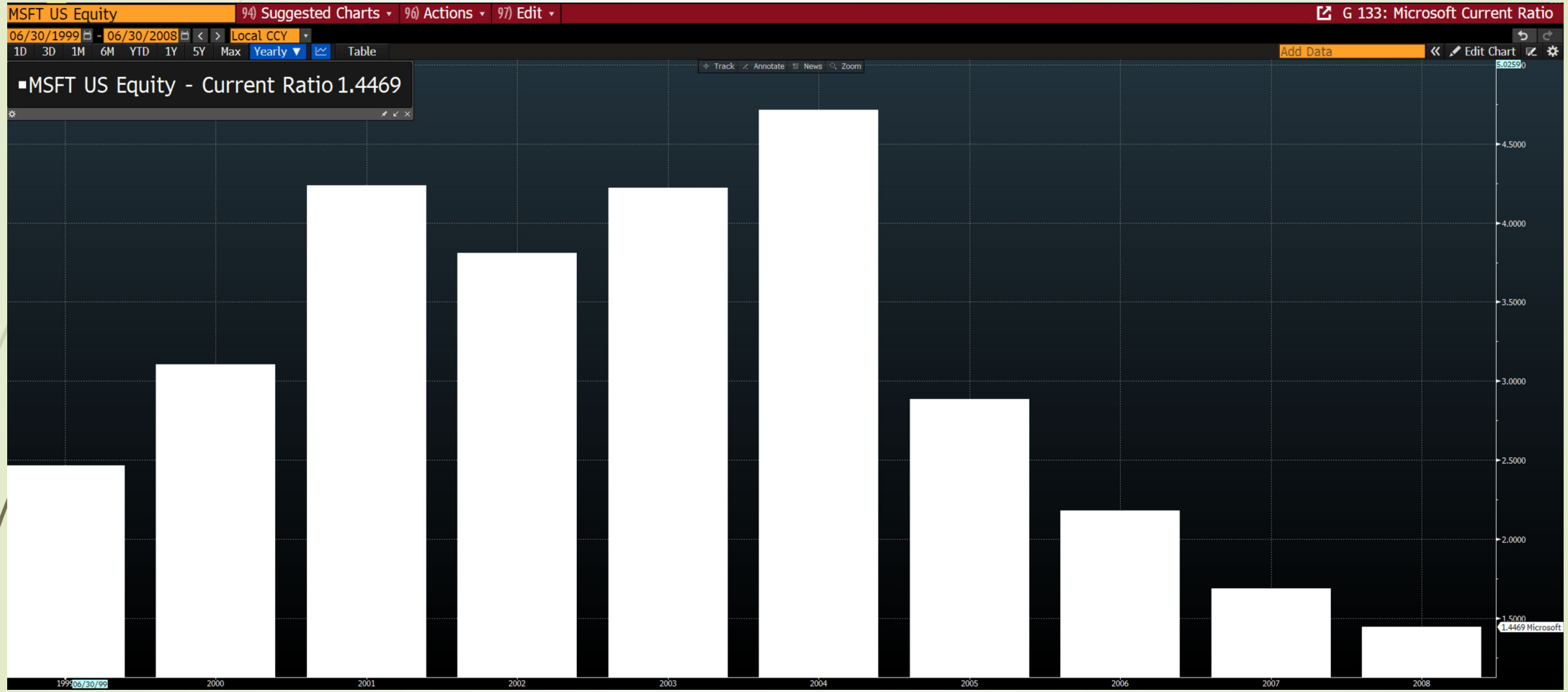
Fundamental Analysis – New Issuer

- **Credit Ratings:** Not fully relied on given that they usually lag fundamental deterioration. A full review and due diligence of company fundamentals are done on a potential issuer
- Mixture of both top-down and bottom-up approach used
- Looking through at least the last 5 years of historical financial data for trends or one-time events
  - **Material events that took place longer than 5 years ago are taken into consideration and stated in the initial report**

Ex.: Microsoft –

- In FY 05, Microsoft paid a special one-time dividend worth $37B that took retained earnings from $18.4B to a retained deficit of $12.3B
- The balance didn't return positive until FY 13. Debt balances have increased but have been well managed since accessing the bond market in 2009

Fundamental Analysis – New Issuer (cont. 2 of 9)



Fundamental Analysis (cont. 3 of 9)

- Issuer Ratings/ Economic Outlook

Company Ticker:	C US
Company Name:	Citigroup Inc
Filing Period:	2024 C1
Largest Region:	United States
Accounting Standard:	US GAAP
Currency:	USD

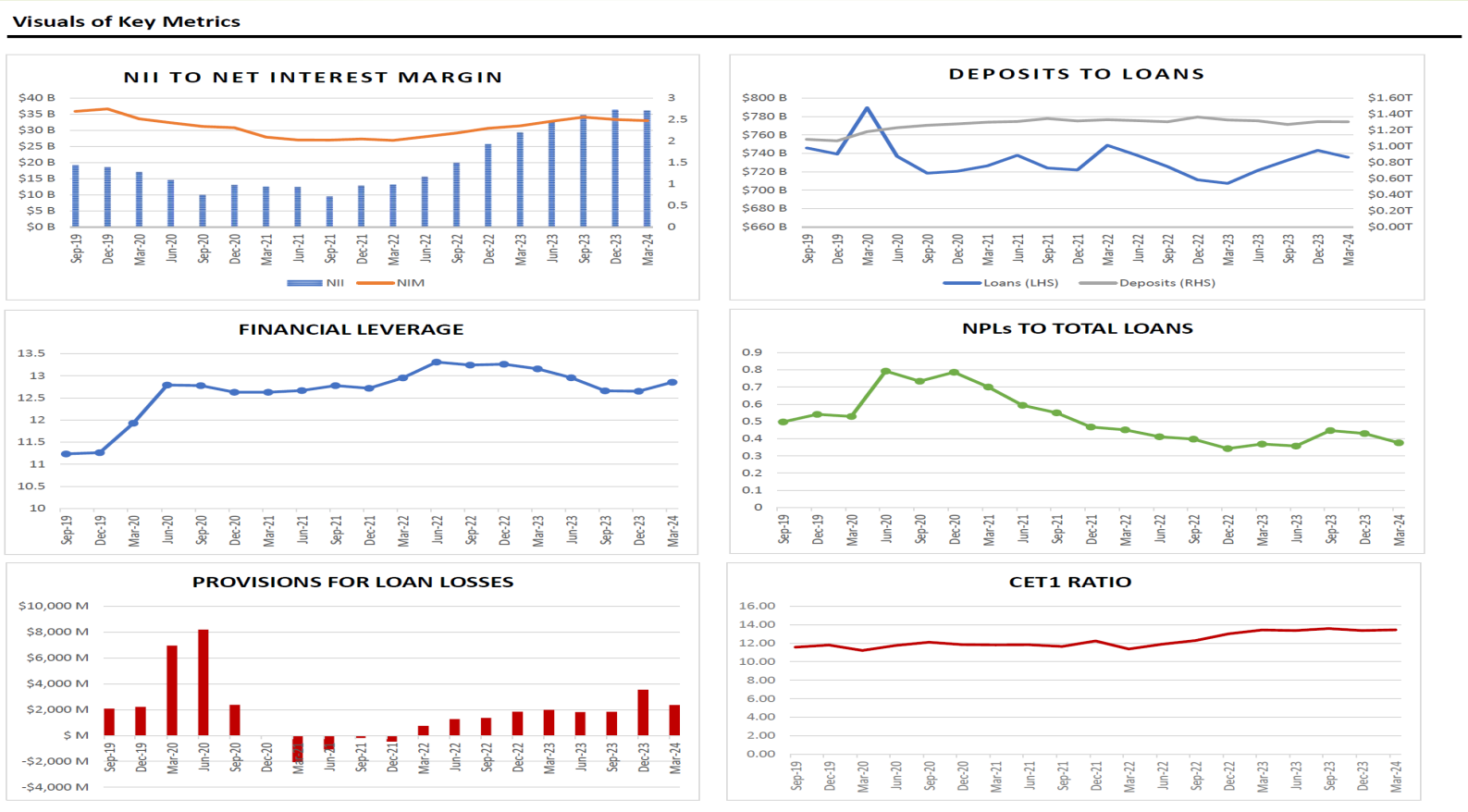
Credit Profile	Short-Term	Since	Long-Term	Outlook
S&P	A-1	2/7/2018	A+	STABLE
Moody's	P-1	12/26/1985	Aa2	NEG
Fitch	F1+	10/30/1998	AA-	STABLE

Economic Update / United States

The US economy recovered after the COVID shock in 2020, after numerous stimulus measures on the fiscal side, and accomodative monetary policy. 2021-2022 was defined by an uneven economic recovery and supply chain issues, and inflation being more entrenched than policy makers had anticipated. The Federal Reserve has raised rates in response to this, coming to the 5.25-5.5% range as of December 2023. The balance sheet is also in the process of being reduced, with rolloffs capp ing out at $95B/month, and recently revised down to $25B/month. Powell surprised the market in December by making a dovish statement that rate cuts were seen later in 2024, causing assets to rally; however strong data at tthe beginning of 2024 led cut expectations to only one or two this year. US Banks passed stress tests in June 2024, with many bank showing they could handle a severe economic decline. The recent May reading of CPI came in at 3.3% YoY, however on a MoM basis came in flat for the month of May. Core PCE came in at 2.6% YoY, slightly lower than the 2.8% readings that came in January and February. The unemployment rate in June reached 4.1% from 3.7% in December, a sign of labor market cooling while wage growth has also cooled as well; opening the doorway to rate cuts at the end of the year. Geopolitical tensions remain in the peripheral view with Russia/Ukraine and Israel/Hamas wars continuing; with fears of tension in China/Taiwan. Current market expectations are for a no landing scenario, however there are schools of thought that think there are upside risks to inflation still, with the opposite side arguing that their may be rapid deflation if the Fed doesn't cut enough. Regional banks are still being monitored given the failure of SVB back in 2023, with a few more backs like New York Community Bank experiencing stress over the quarter, with Moody's downgrading due to exposure to commercial real estate, and ultimately getting an equity injection from the private sector. Commercial real estate stress remains a concern as numerous regional banks are exposed vs. large banks, who have smaller and better managed commercial real estate portfolios. Recent political risks include a Trump victory in November, after Biden's unremarkable debate led to questions regarding his capability due to his age. Trump's policies if re-elected would be inflationary for the environment, leading to a potential bear steepening across the yield curve.

Fundamental Analysis (cont. 4 of 9)

- Industry Analysis



Fundamental Analysis (cont. 5 of 9)

- Peer Comparison

Latest Filing Metrics

Profitability Metrics	C US	JPM US	BAC US	USB US	C US	Peer Avg
Net Interest Income	$ 54,900.00	$ 89,267.00	$ 56,931.00	$ 17,396.00	$ 54,900.00	$ 54,678.80
Net Interest Margin	2.48	2.66	2.00	3.17	2.48	2.56
Market Cap	$127,245M	$593,689M	$323,920M	$62,512M	$127,245M	$246,922M
EBITDA	$ 11,411.00	$ 63,292.00	$ 29,097.00	$ 9,007.00	$ 11,411.00	$ 24,843.60
Annual Revenue	$ 78,462.00	$ 158,104.00	$ 98,581.00	$ 28,013.00	$ 78,462.00	$ 88,324.40
Annual Revenue Growth %	4.15	22.85	3.82	15.83	4.15	10.16
WACC %	5.60	6.88	7.00	7.29	5.60	6.47
Return on Invested Capital to WACC	0.39	0.79	0.38	0.73	0.39	0.53
Goodwill	$ 20,098.00	$ 52,634.00	$ 69,021.00	$ 12,489.00	$ 20,098.00	$ 34,868.00
5Y CDS Spread	51.50	40.50	50.50	-	51.50	48.50
Total Loans	$ 743,277.00	$ 1,323,706.00	$ 1,059,734.00	$ 376,036.00	$ 743,277.00	$ 849,206.00
% of bad loans	0.43	0.52	0.52	0.39	0.43	0.46
Trading Profits	$ 10,809.00	$ 21,280.00	$ 12,732.00	$ (145.00)	$ 10,809.00	$ 11,097.00
Credit Metrics						
Cash Conversion Cycle	-	-	-	-	-	-
Free Cash Flow	$ (79,999.00)	-	-	-	$ (79,999.00)	$ (79,999.00)
Short Term Debt	$ 219,539.00	$ 186,765.00	$ 413,462.00	$ 15,656.00	$ 219,539.00	$ 210,992.20
Long Term Debt	$ 288,865.00	$ 421,993.00	$ 310,039.00	$ 52,509.00	$ 288,865.00	$ 272,454.20
Interest Coverage	-	-	-	-	-	-
Debt to Equity	374.96	251.47	248.08	122.22	374.96	274.34
Liquidity Metrics						
Quick Ratio	-	-	-	-	-	-
Current Ratio	-	-	-	-	-	-
Cash Ratio	-	-	-	-	-	-
Financial Leverage	11.69	11.82	10.90	11.90	11.69	11.60
Cash and Cash Equivalents	$ 606,632.00	$ 1,100,739.00	$ 622,043.00	$ 61,192.00	$ 606,632.00	$ 599,447.60

Fundamental Analysis
(cont. 6 of 9)

Market pricing/trends of credit default swaps (CDS) on the debt of potential issuer

Multinational business – What is the main country of domicile and what other countries does the issuer operate in?

Accounting Standards – US GAAP (Generally Accepted Accounting Principles), IFRS, JP GAAP

Fundamental Analysis (cont. 7 of 9)

- Company Filings:
  - SEC filings – 10K, 10Q, 8K, 6K
  - Press releases
  - Earnings call/transcripts
  - Company presentations
  - Supplementary documents
  - Annual reports
- Secondary sources:
  - CreditSights
  - Grant's Interest Rate Observer
  - Bloomberg Intelligence (BI)
  - Rating agency commentary
  - Analyst opinions
  - Sell-side reports

Fundamental Analysis (cont. 8 of 9)

- Financial Institutions/Banks:
  - Regulatory capital levels – Basel regulations as well as regulations specific to each country
  - Liquidity – Cash levels, liquidity coverage ratio (LCR), High quality liquid assets (HQLA)
  - Leverage – Leverage ratio, amount of bail-in debt securities before capital is hit
  - Asset quality – Impaired loans, delinquencies, provisions, loan loss reserve, underwriting standards
  - Funding – Deposits, wholesale funding, laddering of debt that has been issued
  - Revenue – Does the composition of the revenue stream consist of stable sources such as net interest income or fee income, or is it largely from volatile sources such as trading revenue?
  - **Level and composition of marked to market assets on balance sheet – can the issuer handle a stress event in financial markets if they hold a large amount of marked to market securities?**

Fundamental Analysis (cont. 9 of 9)

- Industrials:
  - Revenue stream stability, accounting recognition of revenue
  - Cash flow – Has operating and free cash flow shown similar trends and stability/growth?
  - Capital Structure – What is the allocation of debt and equity in the capital structure?
  - Management – Has management historically done financial engineering or favored equity holders at the expense of creditors?
  - **Adjusted non-GAAP metrics – Does management try to get investors more focused on non-GAAP metrics when GAAP metrics show opposite trends?**
  - Leverage – How have debt levels historically been managed? How is outstanding debt laddered?
  - Cash balances and liquidity
  - Level of intangible assets on balance sheet
  - Aggressive or conservative accounting changes

Issuer Monitoring

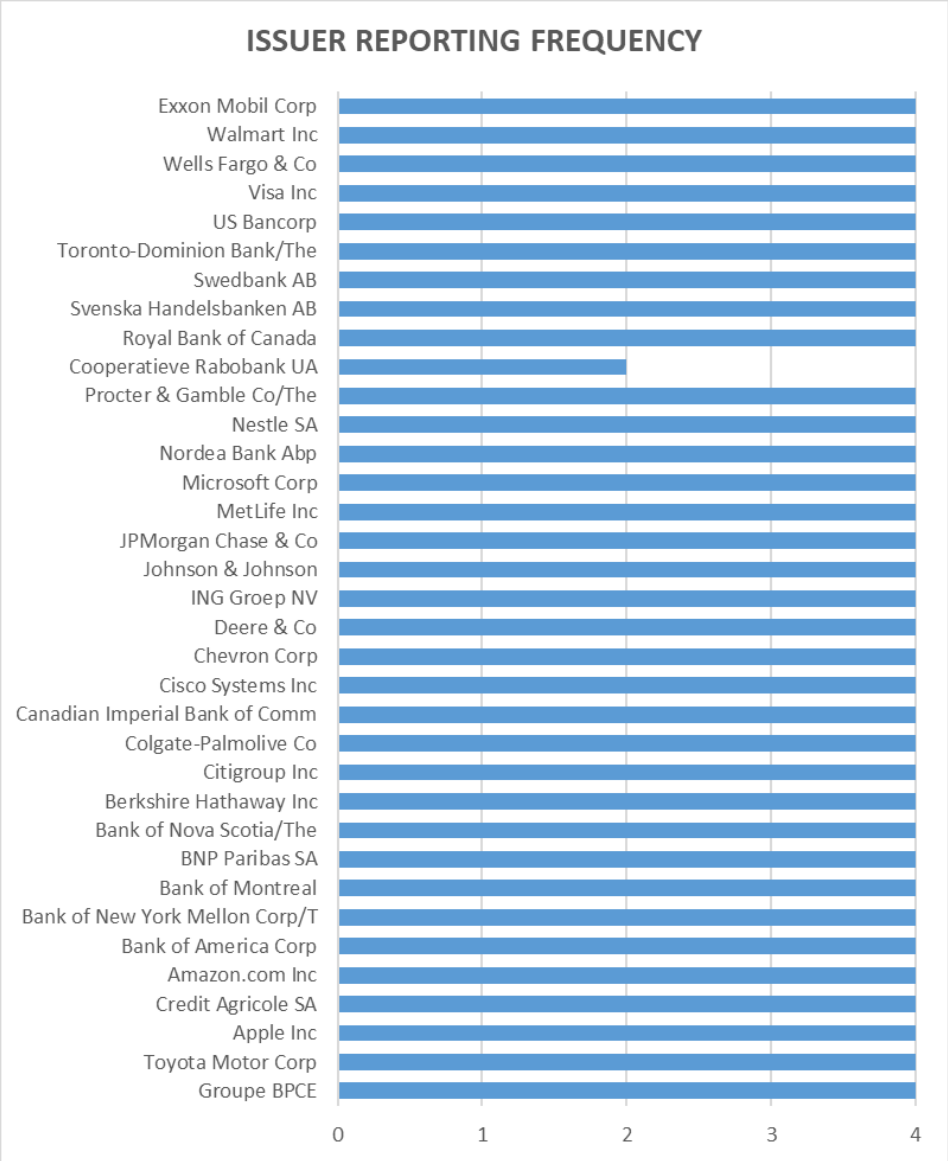
Following the approval of an issuer, the credit team continues to monitor performance and news items:

- News is followed on a daily basis, both at the issuer level and macroeconomic level
- Rating actions/commentary are also monitored daily to ensure issuers remain compliant with IPS and State code
- Issuer reports (tear sheets) are done periodically from the most recent financial release

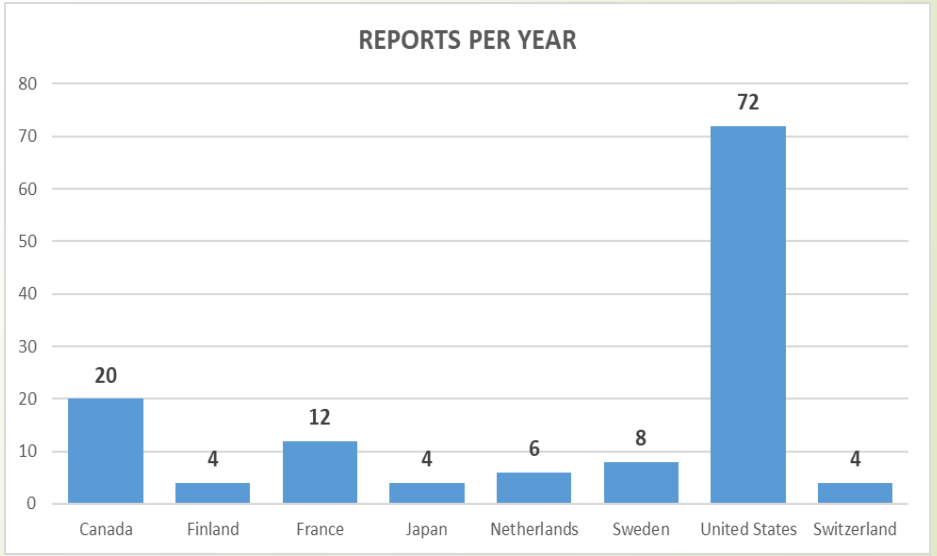
Issuer Monitoring (cont. 2 of 2)

- Following the approval of an issuer, the credit team monitors performance and financial news:
  - Income statement performance
  - Changes in the balance sheet
  - Accounting changes, regulatory changes that may affect operations, pending litigation items
  - Macroeconomic / industry trends and developments
  - Rating agency commentary or actions
  - Credit team may also hold a meeting on a specific issuer or macroeconomic issue that has come up in the news if deemed material enough
  - Ad hoc meetings are conducted with Investment Advisor (PFM)

Issuer Reporting Frequency



Issuers Country	Report Frequency	Total
Canada	Quarterly	5
Finland	Quarterly	1
France	Quarterly	3
Japan	Quarterly	1
Netherlands	Quarterly	1
	Semi-annually	1
Sweden	Quarterly	2
United States	Quarterly	20
Switzerland	Quarterly	1
Grand Total		35

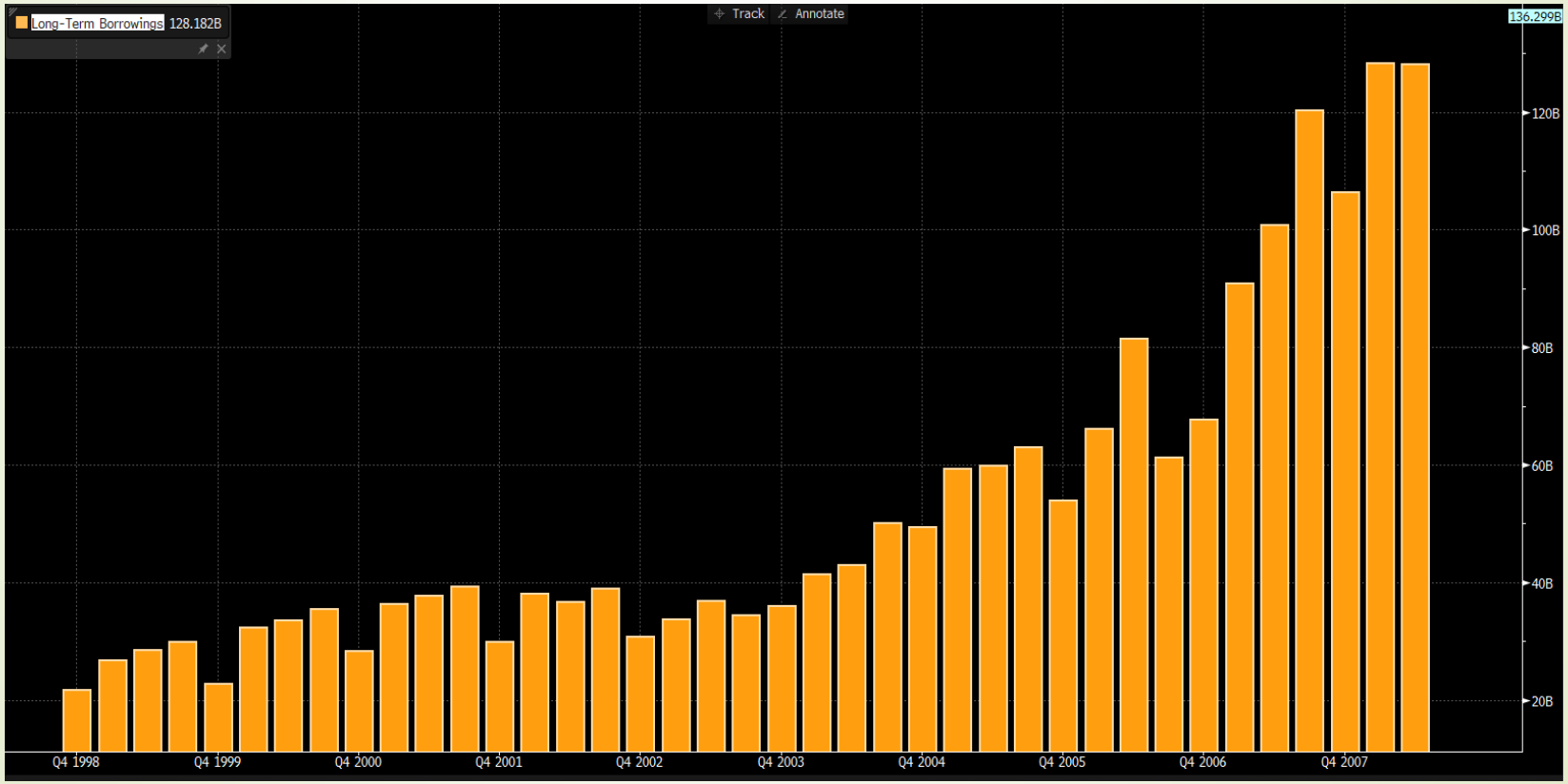


Case Study: Lehman Brothers

- **2008 Financial Crisis**
  - Lehman Brothers
    - Record earnings were reported by the brokerage firms and profitability measures were strong leading up to the financial crisis.
    - **2007:** First signs of credit stress from Bear Stearns hedge funds in June 2007. Due diligence of monitoring news on a daily basis captured Bear Stearns headline news and led to concern about the mortgage-backed securities market. Bear Stearns had to pledge $1.3B to cover losses on hedge funds backed by residential mortgages.
    - During August 2007, credit default swaps (CDS) spiked on Bear Stearns and Lehman Brothers given recent subprime loan losses reported by Bear Stearns. Bear Stearns CDS price move was noted as a concern and was placed on a "Do Not Buy" restriction and Lehman Brothers was placed on "Overnight investments only" due to market losses tied to Bear Stearns' hedge funds. Lehman Brother's CDS price also spiked, leading to restriction placed on the issuer to just overnight purchases.
    - Financial disclosures of the brokerage firms, Bear Stearns and Lehman Brothers revealed higher leverage ratios and retained interest in mortgage-related assets. Higher leverage ratios and retained interests held in concerning mortgage assets was noted in quarterly credit write-ups for Bear Stearns and Lehman Brothers. Footnotes were important pieces within financial reports.

Case Study: Lehman Brothers (cont. 2 of 6)

- Lehman Brother's long-term borrowings increased during 2006 due to higher trading balances and financing needed to accommodate mortgage-backed security transactions. This was a red flag during the 2007 period.



Case Study: Lehman Brothers (cont. 3 of 6)

- Lehman Brother's use of financing collateral is reflected below under collateralized lending agreements. This was an accounting loophole Lehman used to reduce leverage on their balance sheet. This was referred to as, "Repo 105" where Lehman lent securities for cash. The transactions were typically done at quarter end to remove the assets off of the balance sheet since it was deemed a sale.
- FASB's FAS 166 was introduced to better account for financial asset transfers. Companies were required to adopt FAS 166 on January 1, 2010.

NET ASSETS

IN MILLIONS	AT NOVEMBER 30, 2007	2006
Total assets	$ 691,063	$ 503,545
Cash and securities segregated and on deposit for regulatory and other purposes	(12,743)	(6,091)
Collateralized lending agreements	(301,234)	(225,156)
Identifiable intangible assets and goodwill	(4,127)	(3,362)
Net assets	$ 372,959	$ 268,936

Case Study: Lehman Brothers (cont. 4 of 6)

- **Lehman's Level 3 assets increased in % of total assets. Level 3 assets are defined as very illiquid with fair value calculated using estimates or risk-adjusted ranges. This was a concern given market losses reported by brokerage firms during Q406.**

	ASSETS AT FAIR VALUE AS OF NOVEMBER 30, 2007			
IN MILLIONS	LEVEL I	LEVEL II	LEVEL III	TOTAL
Mortgage and asset-backed securities[1]	$ 240	$ 63,672	$ 25,194	$ 89,106
Government and agencies	25,393	15,499	—	40,892
Corporate debt and other	324	50,692	3,082	54,098
Corporate equities	39,336	11,054	8,131	58,521
Commercial paper and other money market instruments	4,000	—	—	4,000
Derivative assets[2]	3,281	35,742	5,572	44,595
	$ 72,574	$176,659	$ 41,979	$291,212

(1) Includes loans transferred to securitization vehicles where such transfers were accounted for as secured financings rather than sales under SFAS 140. The securitization vehicles issued securities that were distributed to investors. We do not consider ourselves to have economic exposure to the underlying assets in those securitization vehicles. The loans are reflected as an asset within Mortgages and asset-backed positions and the proceeds received from the transfer are reflected as a liability within Other secured borrowings. These loans are classified as Level II assets.

(2) Derivative assets are presented on a net basis by level. Inter- and intra-level cash collateral, cross-product and counterparty netting at November 30, 2007 was approximately $38.8 billion.

Case Study: Lehman Brothers (cont. 5 of 6)

- Rating agencies' commentary fluctuated between positive and negative rating actions on brokerage firms during 2007-2008. However, rating downgrades did contribute to restrictions taken by San Bernardino County

  San Bernardino County credit actions taken:

  - On March 14, 2008, Bear Stearns was dropped as an approved issuer (restricted to "Do Not Buy" since August 6, 2007). Lehman Brothers and Merrill Lynch were restricted to "Do Not Buy" on March 14, 2008.
  - Lehman Brothers was removed from Approved Issuer List (AIL) on August 21, 2008, due to concerns about future write-downs on trading and mortgage related assets.
  - Lehman Brothers filed for bankruptcy on September 15, 2008.

Case Study: Lehman Brothers (cont. 6 of 6)

Rating agency actions taken prior to Lehman's bankruptcy.

- On July 9, 2008, Fitch rating affirmation comments: "Lehman continues to demonstrate diversity in its revenues both geographically and by business line, including equity sales and trading and investment banking, an important element in maintaining its ratings."
- On June 13, 2008, Moody's rating review placed on review for downgrade: "Moody's Investors Service has placed on review for possible downgrade the long-term ratings of Lehman Brothers Holdings Inc. Lehman's Prime-1 short-term rating was affirmed. As Moody's noted in its June 9, 2008 press release, Lehman's liquidity management and stand-alone liquidity position remain robust. Lehman ended Q2-08 with a record $45 billion of liquidity available to the holding company, and an additional $150 billion of unencumbered assets, with substantial loan value."

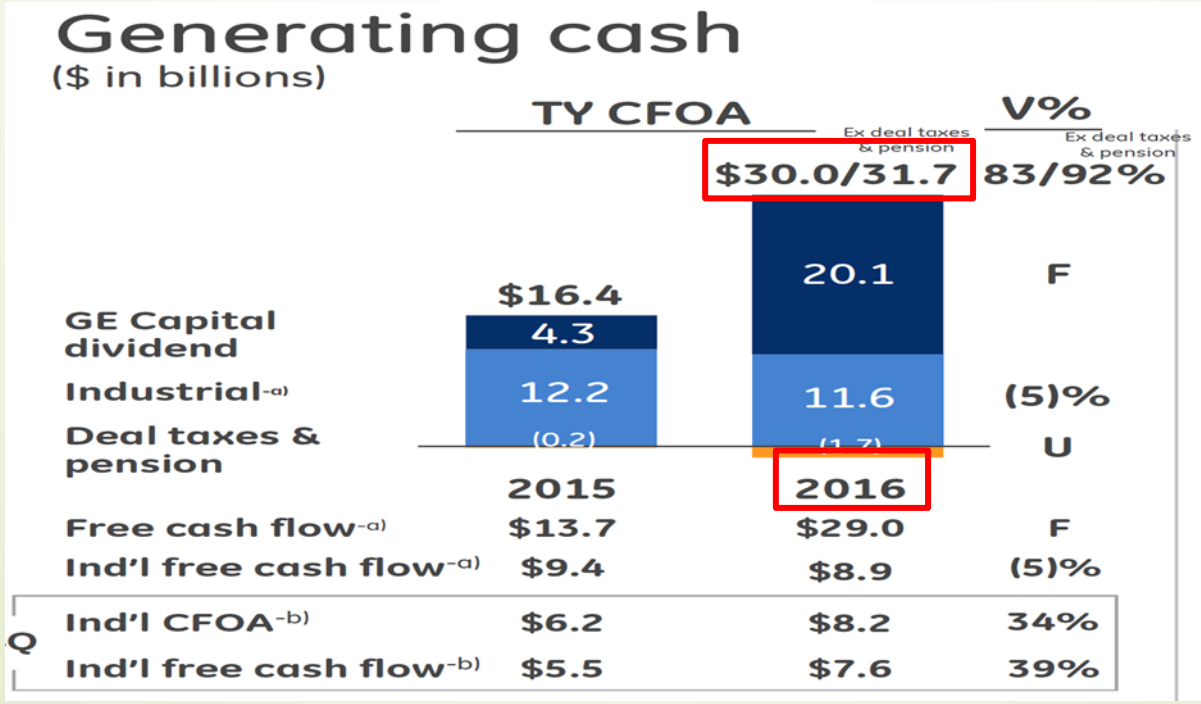
Moody's Senior Unsecured Debt

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
A3	*+	09/14/2000
A3		08/05/1999

Up / Down / No Change / Initial

Case Study (GE - 2017)

- If any significant deterioration in company fundamentals is seen in an issuer over a period time, action is taken:
  - GE was placed on hold in Nov. 2017 and eventually removed in early 2018 as fundamental deterioration was seen over time.
    - **GE's CFOA (an adjusted cash flow metric) was presented as growing between 2014-2016; whereas looking at the actual GAAP statement of cash flows between 2014-2016, it showed a decline. No reconciliation between the two was provided by management during this time.**



Case Study: GE - 2017 (cont. 2 of 6)

STATEMENT OF CASH FLOWS

For the years ended December 31 (In millions)	General Electric Company and consolidated affiliates 2016	2015	2014
Cash flows – operating activities			
Net earnings (loss)	$ 8,540	$ (5,795)	$ 15,345
Less net earnings (loss) attributable to noncontrolling interests	(291)	332	112
Net earnings (loss) attributable to the Company	8,831	(6,126)	15,233
(Earnings) loss from discontinued operations	954	7,495	(5,855)
Adjustments to reconcile net earnings attributable to the Company to cash provided from operating activities:			
Depreciation and amortization of property, plant and equipment	4,997	4,847	4,953
Earnings from continuing operations retained by GE Capital	-	-	-
Deferred income taxes	814	383	(882)
Decrease (increase) in GE current receivables	1,514	(52)	(1,913)
Decrease (increase) in inventories	(1,389)	(314)	(872)
Increase (decrease) in accounts payable	1,198	(541)	565
Increase (decrease) in GE progress collections	1,836	(996)	(515)
All other operating activities	(12,655)	7,160	5,318
Cash from (used for) operating activities – continuing operations	6,099	11,856	16,033
Cash from (used for) operating activities – discontinued operations	(6,343)	8,034	11,676
Cash from (used for) operating activities	(244)	19,891	27,709

Case Study: GE - 2017 (cont. 3 of 6)

- If any significant deterioration in company fundamentals is seen in an issuer over a period time, action is taken:
  - GE's pension plan was underfunded with questionable assumptions. The FY16 10-K reported a net pension liability of $36.8B.
  - At the time we figured that this underfunding would cause even more cash in the future to be set aside to cover the liability-leading to questions on how much liquidity was available.

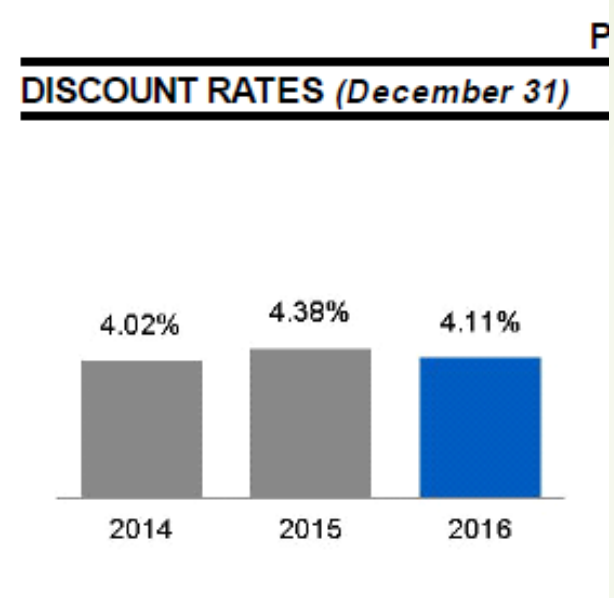
FUNDED STATUS OF PLANS

The table below presents the funded status of our benefit plans. The funded status represents the fair value of plan assets less benefit obligations.

FUNDED STATUS

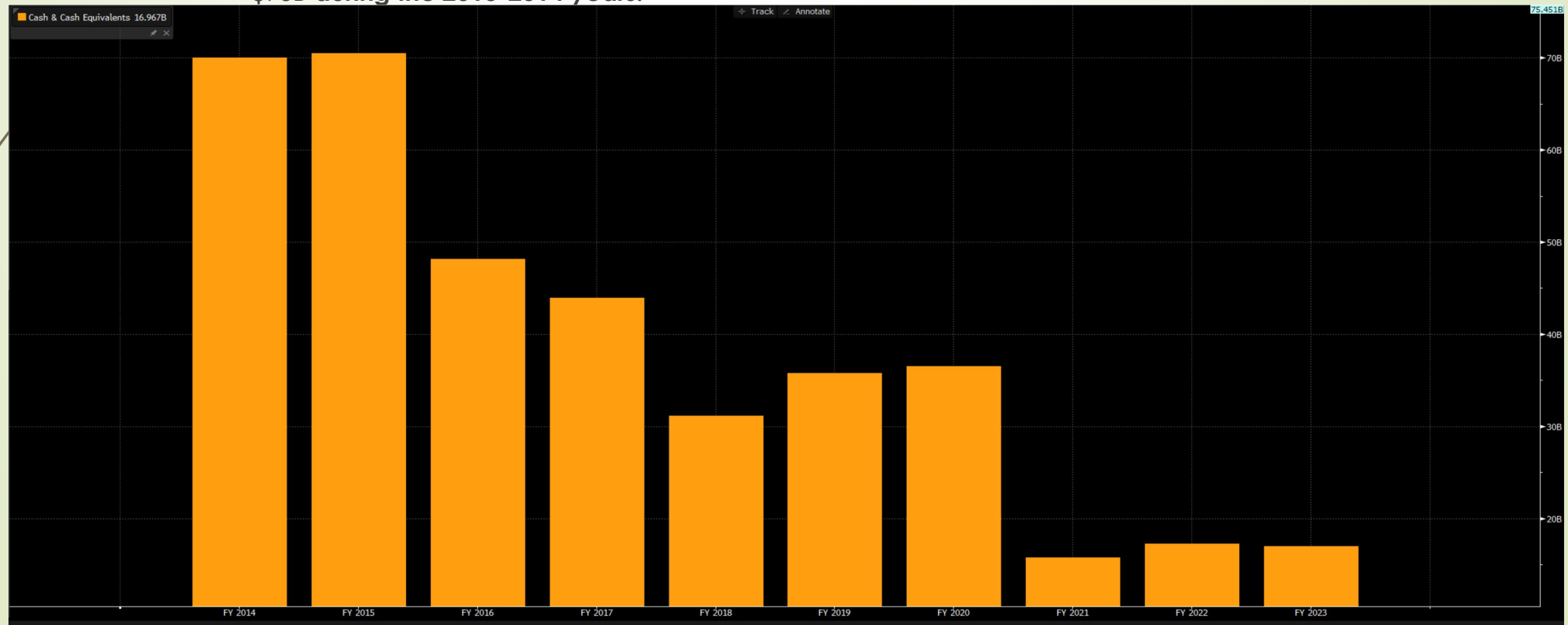
(In billions)		2016		2015
GE Pension Plan	$	(19.1)	$	(16.9)
GE Supplementary Pension Plan		(6.5)		(6.1)
Other pension plans		(5.5)		(4.3)
Principal retiree benefit plans		(5.7)		(6.1)

Case Study: GE – 2017 (cont. 4 of 6)



Case Study: GE – 2017 (cont. 5 of 6)

- Debt levels on an absolute basis dropped due to downsizing GE Capital and other restructuring activities over the last few years.
  - Total debt was reported at $136.4B as of Q317; vs. $300-$320B during 2013-2014.
  - On a ratio level, financial leverage (assets to equity) has only fallen to 4.88 from its peak of 5.6 in 2015.
  - **Liquidity balances showed a downward trend cash balance as during Q317 was at $39.9B. This compares to $70B during the 2013-2014 years.**



Case Study: GE – 2017 (cont. 6 of 6)

- GE's tangible equity (Book value of equity less intangible assets) was underwater during the time. **Tangible equity was $-11.01B as of Q317.** Tangible equity first went negative in Q316.
- Earnings reporting quality at GE was poor; numerous adjustments were constantly made, making overall results and financial health unclear and convoluted. Numerous third-party research called into question the clarity of financial statements.
- Since GE removed the SIFI (Systemically Important Financial Institution) label from their name after downsizing GECC, they immediately stopped reporting regulatory capital and liquidity ratios.
- Questionable management choices-
  - GE acquired a majority stake in oil-field equipment servicer, Baker Hughes that was announced on October 31, 2016, and completed on July 3, 2017. On November 13, 2017, they announced they may consider getting out of Baker Hughes; a little over 4 months after completing the acquisition.

Case Study: Japanese Banks

(US GAAP)

Mitsubishi UFJ Financial Group, Inc. and Subsidiaries

Consolidated Statements of Operations

(in millions of yen)	For the fiscal years ended March 31, 2009	2008
Interest income:		
Loans, including fees	2,558,361	2,790,505
Deposits in other banks	124,832	258,544
Investment securities:		
Interest	309,835	771,763
Dividends	163,492	127,076
Trading account assets	460,534	110,348
Call loans and funds sold	15,010	24,969
Receivables under resale agreements and securities borrowing transactions	263,730	283,606
Total	3,895,794	4,366,811
Interest expense:		
Deposits	736,456	1,093,956
Call money and funds purchased	24,973	45,180
Payables under repurchase agreements and securities lending transactions	349,903	402,077
Due to trust account	6,843	8,014
Other short-term borrowings and trading account liabilities	170,524	206,363
Long-term debt	310,690	331,504
Total	1,599,389	2,087,094
Net interest income	2,296,405	2,279,717
Provision for credit losses	626,947	385,740
Net interest income after provision for credit losses	1,669,458	1,893,977
Non-interest income:		
Fees and commissions	1,188,512	1,317,047
Foreign exchange gains (losses)—net	(206,153)	1,295,933
Trading account profits(losses)—net	(257,807)	398,396
Investment securities losses—net	(658,679)	(1,373,072)
Equity in losses of equity method investees	(60,051)	(34,485)
Gains on sales of loans	6,401	11,789
Other non-interest income	162,876	162,506
Total	175,099	1,778,114
Non-interest expense:		
Salaries and employee benefits	873,371	909,771
Occupancy expenses—net	171,902	173,183
Fees and commission expenses	209,750	218,088
Outsourcing expenses, including data processing	267,790	248,265
Depreciation of premises and equipment	132,121	179,567
Amortization of intangible assets	278,241	252,890
Impairment of intangible assets	126,885	78,679
Insurance premiums, including deposit insurance	113,803	112,444
Minority interest in income (loss) of consolidated subsidiaries	(36,259)	39,400
Communications	62,943	65,286
Taxes and public charges	85,743	83,439
Provision for repayment of excess interest	47,865	2,826
Impairment of goodwill	845,842	893,721
Other non-interest expenses	392,528	402,177
Total	3,572,525	3,659,736
Income (loss) from continuing operations before income tax expense (benefit)	(1,727,968)	12,355
Income tax expense (benefit)	(259,928)	553,045
Loss from continuing operations	(1,468,040)	(540,690)
Loss from discontinued operations—net		(1,746)
Net loss	(1,468,040)	(542,436)
Income allocable to preferred shareholders:		
Cash dividends paid	6,399	6,669
Beneficial conversion feature	9,478	7,909
Income allocable to preferred shareholders of Mitsubishi UFJ NICOS Co., Ltd. :		
Effect of induced conversion of Mitsubishi UFJ NICOS Co.,Ltd. Class 1 stock	7,676	-
Net loss available to common shareholders	(1,491,593)	(557,014)

Case Study: Japanese Banks (cont. 2 of 3)

1. Financial Results

MUFG Consolidated

(in millions of yen)

	For the fiscal year ended		Increase (Decrease)
	March 31, 2010 (A)	March 31, 2009 (B)	(A) - (B)
Gross profits	3,600,424	3,272,895	327,528
Gross profits before credit costs for trust accounts	3,600,424	3,272,904	327,519
Net interest income	2,177,199	1,975,902	201,296
Trust fees	103,872	119,474	(15,602)
Credit costs for trust accounts (1)	-	(9)	9
Net fees and commissions	989,806	970,077	19,729
Net trading profits	259,770	253,056	6,713
Net other business profits	69,775	(45,615)	115,391
Net gains (losses) on debt securities	49,879	80,938	(31,059)
General and administrative expenses	2,084,882	2,083,753	1,128
Amortization of goodwill	32,868	24,618	8,249
Net business profits before credit costs for trust accounts, provision for general allowance for credit losses and amortization of goodwill	1,548,411	1,213,769	334,641
Net business profits before credit costs for trust accounts and provision for general allowance for credit losses	1,515,542	1,189,150	326,391
Provision for general allowance for credit losses (2)	(66,766)	40,342	(107,109)
Net business profits*	1,448,776	1,229,484	219,291
Net non-recurring gains (losses)	(903,079)	(1,146,677)	243,598
Credit costs (3)	(758,455)	(648,791)	(109,663)
Losses on loan write-offs	(439,113)	(411,276)	(27,836)
Provision for specific allowance for credit losses	(294,750)	(226,027)	(68,722)
Other credit costs	(24,592)	(11,487)	(13,104)
Net gains (losses) on equity securities	32,489	(408,780)	441,269
Gains on sales of equity securities	179,331	106,275	73,055
Losses on sales of equity securities	(86,309)	(35,472)	(50,836)
Losses on write-down of equity securities	(60,532)	(479,583)	419,050
Profits (losses) from investments in affiliates	2,614	(38)	2,652
Other non-recurring gains (losses)	(179,727)	(89,066)	(90,660)
Ordinary profits	545,697	82,807	462,889
Net extraordinary gains (losses)	51,035	32,253	18,781
Gains on loans written-off (4)	65,048	38,267	26,781
Losses on impairment of fixed assets	(17,813)	(15,842)	(1,970)
Amortization of goodwill	(27,918)	-	(27,918)
Income before income taxes and others	596,732	115,061	481,671
Income taxes-current	101,063	85,808	15,255
Refund of income taxes	(19,099)	-	(19,099)
Income taxes-deferred	68,995	216,131	(147,135)
Total taxes	150,959	301,939	(150,979)
Minority interests	57,038	70,073	(13,035)
Net income	388,734	(256,952)	645,686

Note:

Case Study: Japanese Banks (cont. 3 of 3)

- Accounting Differences:
  - US GAAP- Impairment tested annually to see if market value lower than book; if it is lower impairment booked.
  - JP GAAP- Goodwill impairment strictly amortized over 20 years regardless of market value of assets.
    - Overall, caused large discrepancy in income statement over FY-end March 31, 2009. Distortion of interpretation between the two accounting methods may have caused analyst to misinterpret what was going on.
  - Other differences to look out between multiple accounting standards:
    - Equity method.
    - Cost accounting (LIFO, FIFO, weighted-average cost).
    - Marked-to-market assets(assets at fair value or available-for-sale; held-to-maturity.
    - Impairment of assets/reversals of impairments if allowed.
    - FX Translation.

Case Study: French Banks – 2017

- If improving fundamentals are seen, extension of tenor on security purchases are considered:
  - EX: French Banks
    - French banks (BNP Paribas, Credit Agricole, and BPCE) were reviewed and a tenor limit extension recommendation was issued to upper management.
    - All three French banks have materially improved earnings quality and transparency in the last few years.
    - Operations remain stable despite domestic retail banking showing low net interest margins.
    - Capital and funding levels have been better managed and improvement has been seen.
    - Legal structures have been simplified.
    - Rating agencies have also noted the improvement and recently upgraded Credit Agricole and BPCE.

Conclusion

- Issuer fundamentals as well as related news is watched on a daily basis.
- Fundamentals are reviewed as frequently as company reports earnings results; majority are quarterly but some issuers report only semi-annually.
- Action is taken in the event of a material deterioration seen in company fundamentals or headline and political risks are seen in the news of an issuer.
- Action may also be taken if forward looking indicators such as the macro-economic horizon (consumer trends, rising unemployment, unsustainable consumer debt levels, bubbles seen in certain asset classes such as real estate, deterioration in the general business outlook, etc.) may have a material impact on future earnings results.

QUESTIONS?

IAN CAPULE, CFA
Assistant Investment Officer
County of San Bernardino

ROBIN DIXON
Investment Officer
County of San Bernardino

15-MINUTE

BREAK

SESSION FOUR

Investment Options: Negotiable Certificate of Deposits, Commercial Paper, Corporates, and Asset-backed Securities

CARLOS OBLITES
Senior Portfolio and Investment Pool Strategist
Chandler Asset Management

MARILOU TAN
Assistant Treasurer-Tax Collector
County of Ventura

Agenda

- Introduction to credit securities
- Basic information about the asset classes
  - Negotiable CDs
  - Medium-Term Notes
  - Commercial Paper
  - Asset-Backed Securities
- Utilizing credit securities in the portfolio context
- Review of pooled investments in an investment program
- Case Study: Ventura County

- Introduction to credit-related securities

Why Use Non-Governmental Securities?

- Enhance diversification
- Increase return potential
- Relative value can be found (spreads can shift)
- Risks:
  - Market and credit risk
  - Headline risk

CA Code In Perspective

		Maturity	Credit Quality	Code Status
Short Duration Fixed Income	US Treasuries	0-5 Years	N/A	Allowed
	Federal Agencies	0-5 Years	N/A	Allowed
	Municipal Bonds	0-5 Years	N/A	Allowed
	Negotiable CDs	0-5+ Years	A-1/P-1 or A	Allowed
	U.S. Corporate Bonds	0-5 Years	A or better	Allowed
	Commercial Paper & Other Money Market Securities	0-9 Months	A-1/P-1	Allowed
	Mortgage-Backed/Asset-Backed Securities	0-5 Years	AA or better	Allowed
	Money Funds/Mutual Funds	N/A	AAA	Allowed
	Supranational Securities	0-5 Years	AA or better	Allowed
Core Fixed Income	US Treasuries	> 5 Years	N/A	Sometimes Allowed
	Federal Agencies	> 5 Years	N/A	Sometimes Allowed
	Municipal Bonds	> 5 Years	N/A	Sometimes Allowed
	U.S. Corporate Bonds	> 5 Years	= < BBB	Prohibited
	Mortgage-Backed Securities	> 5 Years	= < BBB	Prohibited
	Asset-Backed Securities	> 5 Years	= < BBB	Prohibited
	High Yield	N/A	= < BB	Prohibited
Other Investments	Income Stocks	N/A	N/A	Prohibited
	Value Stocks	N/A	N/A	Prohibited
	Growth Stocks	N/A	N/A	Prohibited
	International Stocks	N/A	N/A	Prohibited
	Emerging Market Stocks	N/A	N/A	Prohibited
	Real Estate	N/A	N/A	Prohibited
	Commodities	N/A	N/A	Prohibited
	Futures	N/A	N/A	Prohibited
	Options	N/A	N/A	Prohibited
	Precious Metals	N/A	N/A	Prohibited
	Derivatives	N/A	N/A	Prohibited
	Hedge Funds	N/A	N/A	Prohibited

Agencies are limited to investing their surplus funds in high quality fixed income securities with a primary objective of principal preservation

Source: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=2.&title=5.&part=1.&chapter=4.&article=1.

- Basic Asset Class Information

Medium-Term Corporate Notes

- **Definition**: Debt security issued by a corporation representing a contractual loan with stated interest rate and fixed payment due dates of interest and principal and whose claim to company assets is senior to equity holders
- **Issuer**: Domestic and foreign corporations
- **Credit**: Rated by NRSROs. Corporate bonds can be described as either investment grade (high grade) or non-investment grade (high yield or junk), as determined by the bond's associated credit rating
- **Maturity**: 1 year to Decades

MTN's Continued

- **Liquidity**: Widely held; moderate security
- **Yields**: Observed as higher than U.S. Treasuries and Federal Agency obligations and based on credit quality
- **California Government Code limits**:
  - Minimum credit rating category of "A" or its equivalent or better
  - Maximum allocation of 30%
  - Maximum maturity of 5 years

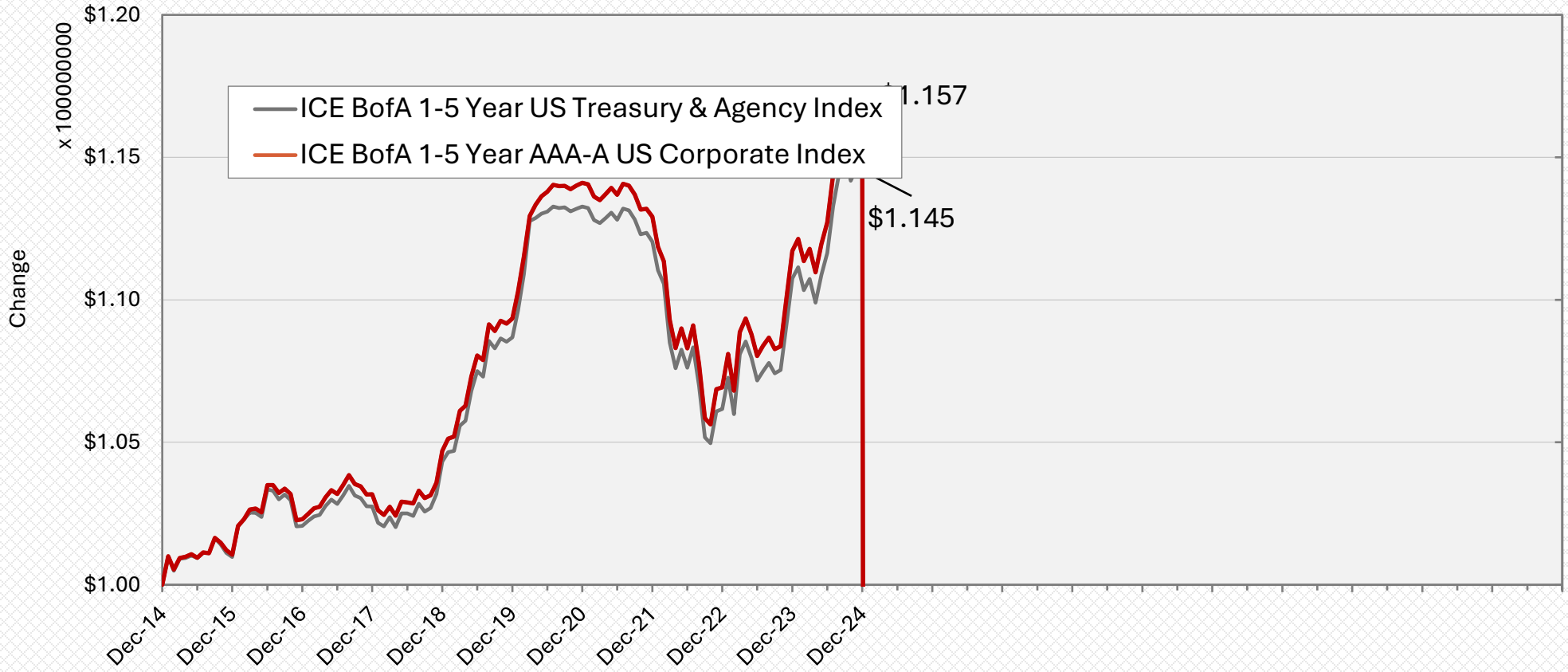
Who Is Issuing?

- **Corporate bond** issuers can be split into various sectors. The current Global Industry Classification Standards (GICS) classifications include:
  - **Telecommunications**
  - **Consumer discretionary** (Autos, Consumer Durables, Media, Retail)
  - **Consumer staples** (Food, Beverage, Household, Staples Retailing)
  - **Energy**
  - **Financials** (Banks, Diversified Financials, Insurance, Real Estate)
  - **Healthcare** (Equipment, Pharmaceuticals, Biotech, Life Sciences)
  - **Industrials** (Capital Goods, Comm & Prof. Services, Transportation)
  - **Materials**
  - **Information Technology** (Software, Hardware, Semiconductors)
  - **Utilities**

Make-Whole Call Provisions

- Bondholder “made-whole” if called
- Bond holder is paid a lump sum which equals present value of all payments that will not be made as a result of the call
  - Discount rate based on comparable U.S. Treasury + premium
  - Minimum = par value of bond
- Many corporate bonds are issued with make-whole call provisions

Advantage of Owning Corporates



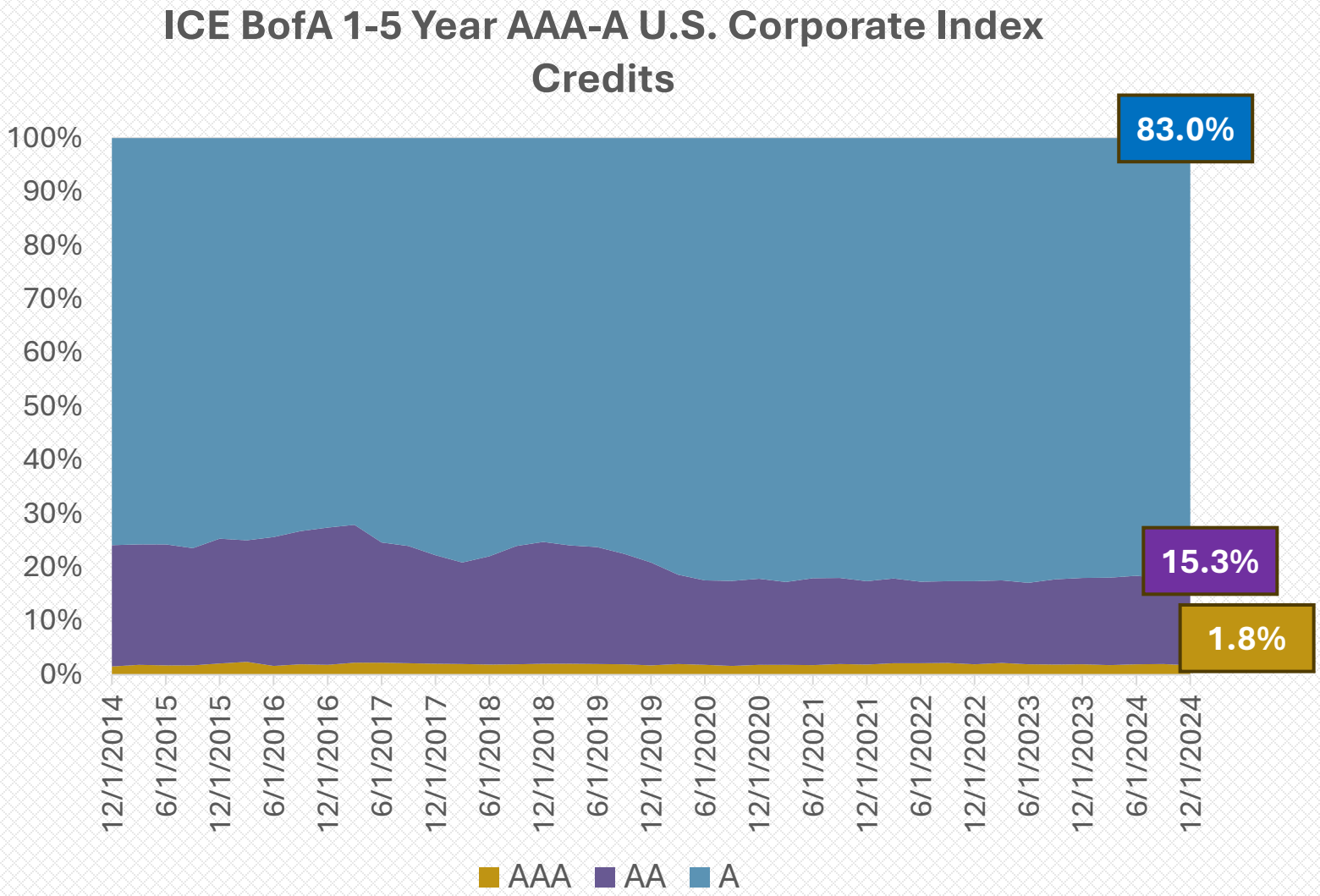
Value on 12/31/2024 of $100 million invested 12/31/2014

	12/31/2024	Annualized Return	Outperformance
ICE BofA 1-5 Year US Treasury & Agency Index	$114,536,876	1.37%	
ICE BofA 1-5 Year AAA-A US Corporate Index	$115,724,942	1.47%	$ 1,188,066

Source: Bloomberg

Credits Eligible For Purchase By CA Local Governments

- *Credits are slim for investors limited to rating category AA or higher!*



Source: Bloomberg

Negotiable Certificates of Deposit

- **Definition:** Obligations of banks, savings and loans, and other financial institutions.
- **Issuer:** Corporations organized and operating within the United States or by depository institutions licensed by the United States or any state and operating within the United States
- **Credit:** Based on bank rating
- **Maturity:** Typically to 5 years

NCD's Continued

- **Liquidity:** Traded in large lots—money market mutual funds purchase these but can also be purchased in smaller sizes.
- **Yields:** Depends on environment; generally observed as higher than U.S. Treasuries and Federal Agency obligations and based on credit quality
- **California Government Code limits:**
  - No credit quality requirement
  - Maximum allocation of 30%
  - Maximum maturity of 5 years without pre-approval

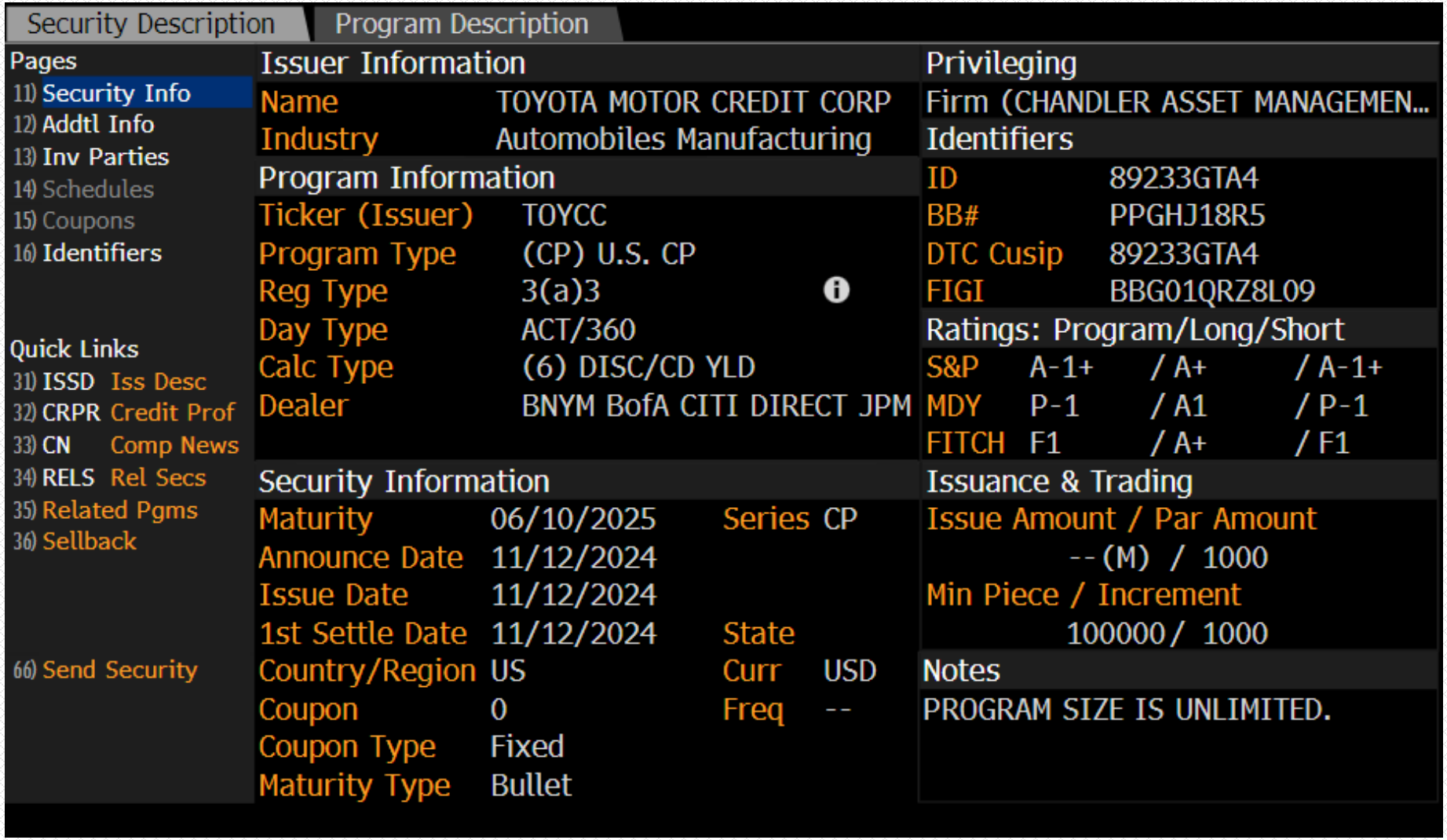
Commercial Paper

- **Definition**: Unsecured, US Dollar denominated promissory notes issued by corporations and financial institutions to raise funds on a short-term basis
- **Issuer**: Domestic and foreign corporations organized and operating in the United States
- **Credit**: Investment grade: A-1/A-1+, P1, F-1
- **Maturity**: 1 to 270 days generally

CP Continued

- **Liquidity**: Widely held but usually held to maturity
- **Yields**: Higher than U.S. Treasury and Federal Agency obligations
- **California Government Code limits:**
  - Minimum rating of "A-1" or "A" or its equivalent or better
  - Maximum allocation of 25% OR 40% maximum if an entity has over $100 million in AUM (Sunsets 01/01/2026)
  - Maximum allocation of 40% for counties
  - Maximum maturity of 270 days
  - OID Security (Discounted)
  - Additional issuer requirements apply for Asset-Backed Commercial Paper (ABCP)

Commercial Paper Description



Source: Bloomberg

Asset-Backed Commercial Paper

- A Type Of CP Where Repayment Is Based On the Cash Flows Of the Underlying Assets
- Special Purpose Entity (Conduit) – Created To House the Assets and Issue the Commercial Paper
- Enhancements
  - Liquidity facilities provided by third party financial institutions

ABCP Continued

Collateral

Collateralized by a pool of assets such as credit card or trade receivables, or mortgages

Repayment

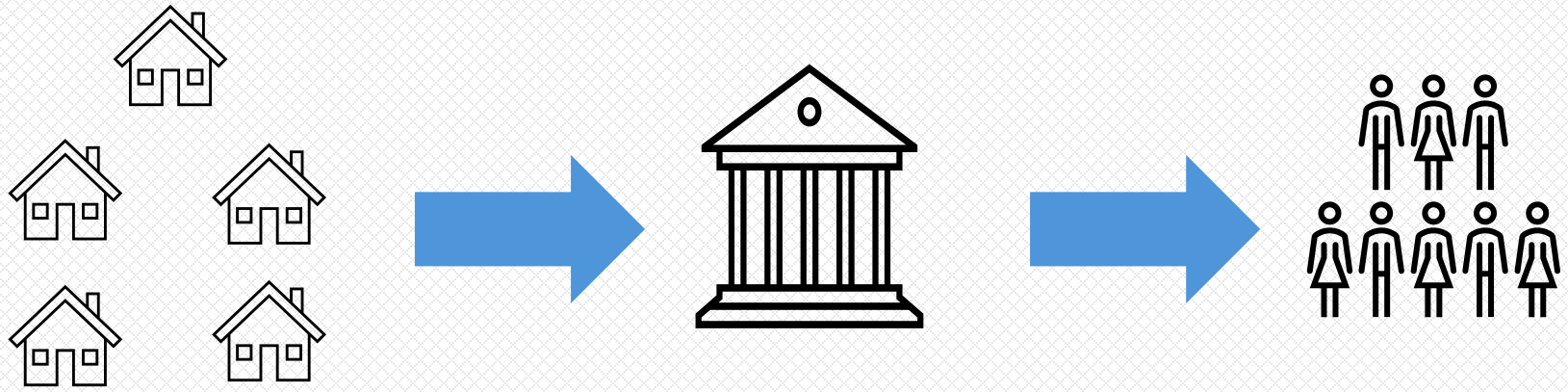
Cashflow from underlying assets and issuance of new ABCP make repayment

Liquidity Facilities

If there is a cashflow shortfall, conduit may use liquidity facilities to repay

- Benefits
  - ABCP allows banks to use existing receivables to provide funding
  - ABCP allows banks to remove assets from their balance sheet while retaining some economic interest
- Risks
  - The composition of the underlying assets is important during market stress

Basics of Securitization



Groups of Underlying Assets

Securitization Into Passthrough Security

Security Purchased by Investors

Asset-Backed Securities

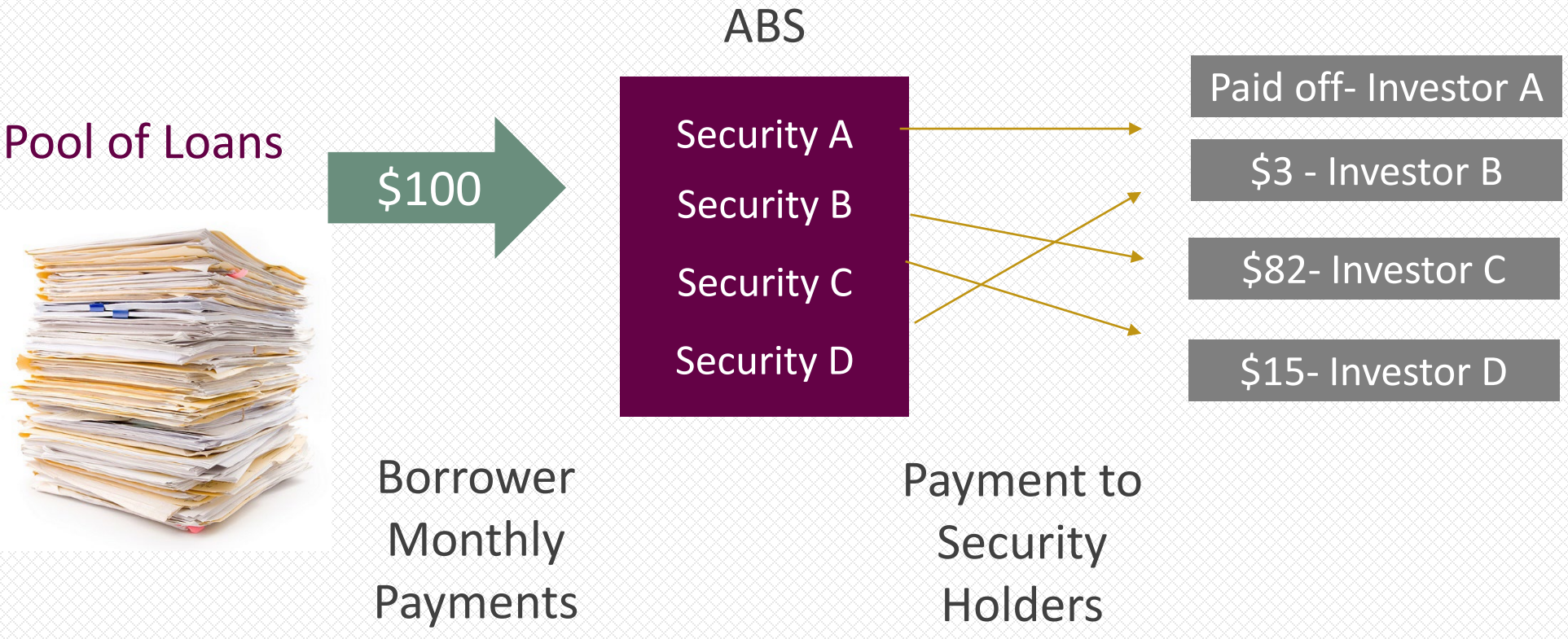
- **Definition**: Pools of receivables where bond holders are paid from debt service payments made by debtors in the pool.
- **Issuer**: Sponsoring company/trust
- **Credit**: Rated by NRSROs, often with credit enhancements like subordination, credit tranching, overcollateralization, reserve accounts, excess spread, letter of credit, and insurance
- **Maturity**: Typically up to 10 years

ABS Continued

- **Liquidity**: Moderate
- **Yields**: Higher than U.S. Treasuries and Federal Agency obligations
- **California Government Code limits:**
  - Minimum credit rating of “AA” or its equivalent or better
  - Maximum allocation of 20%
  - Maximum remaining maturity of 5 years

Generic Structure of ABS

- **Flow of payments**



Understanding ABS Risk

Prepayment risk - uncertainty around the timing of receiving interest and principal cash flows

- **Extension risk** - receiving cash flows later than initially planned
- **Contraction risk** - receiving cash flows earlier than initially planned

Default risk - the chance a borrow fails to pay interest and principal on their outstanding obligation

- **Loss risk** - potential to experience a loss when liquidating distressed collateral
  - **Severity** - the discount given to the value of liquidated collateral

Understanding ABS Risk Continued

Servicer/Sponsor risk - the chance the party who is involved with collecting funds from borrowers becomes financially or operationally compromised

- If an issue arises there may be a disruption or difficulty collecting and processing payments

Liquidity risk - inability to sell a security at reasonable price

Regulatory risk - regulations may change altering performance of the security

Pop Quiz #1

Of the asset classes presented, California Government Code allows only one with maturities longer than 5 years. Which is it?

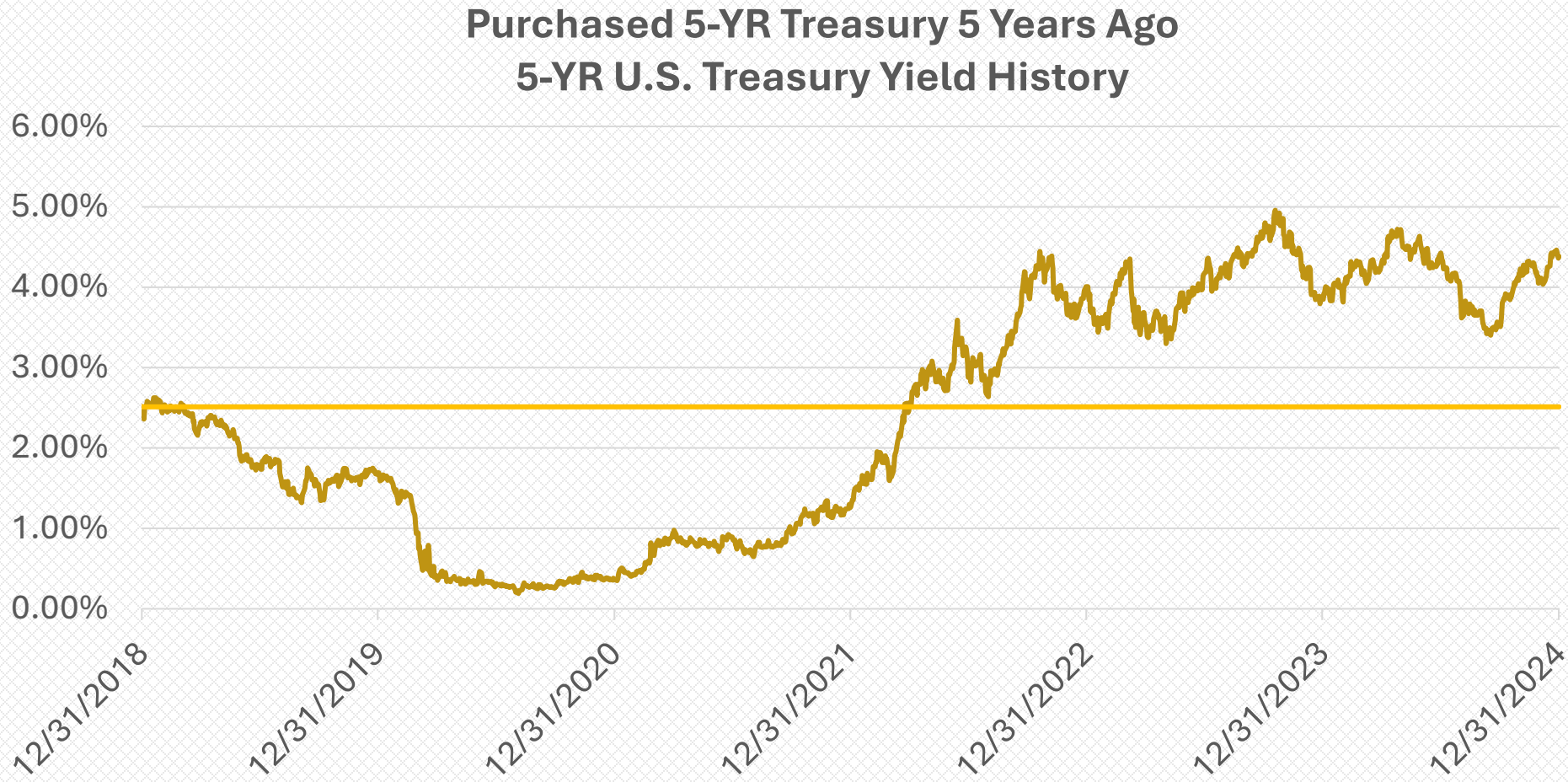
Corporate Notes

Asset-Backed Securities

Negotiable Certificates of Deposit

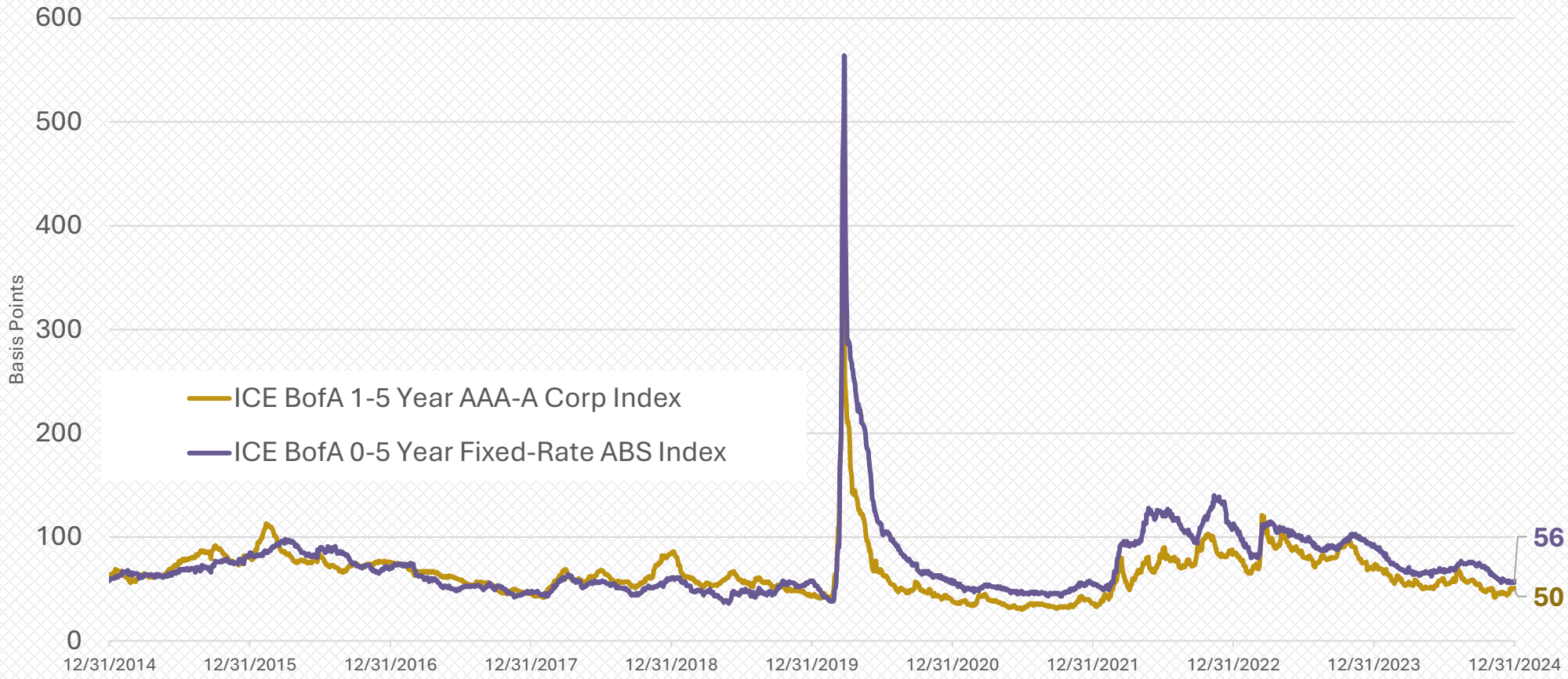
- Utilizing credit securities in the portfolio context

Buy-And-Hold: Insensitive to Interest Rate Changes



Source: Bloomberg

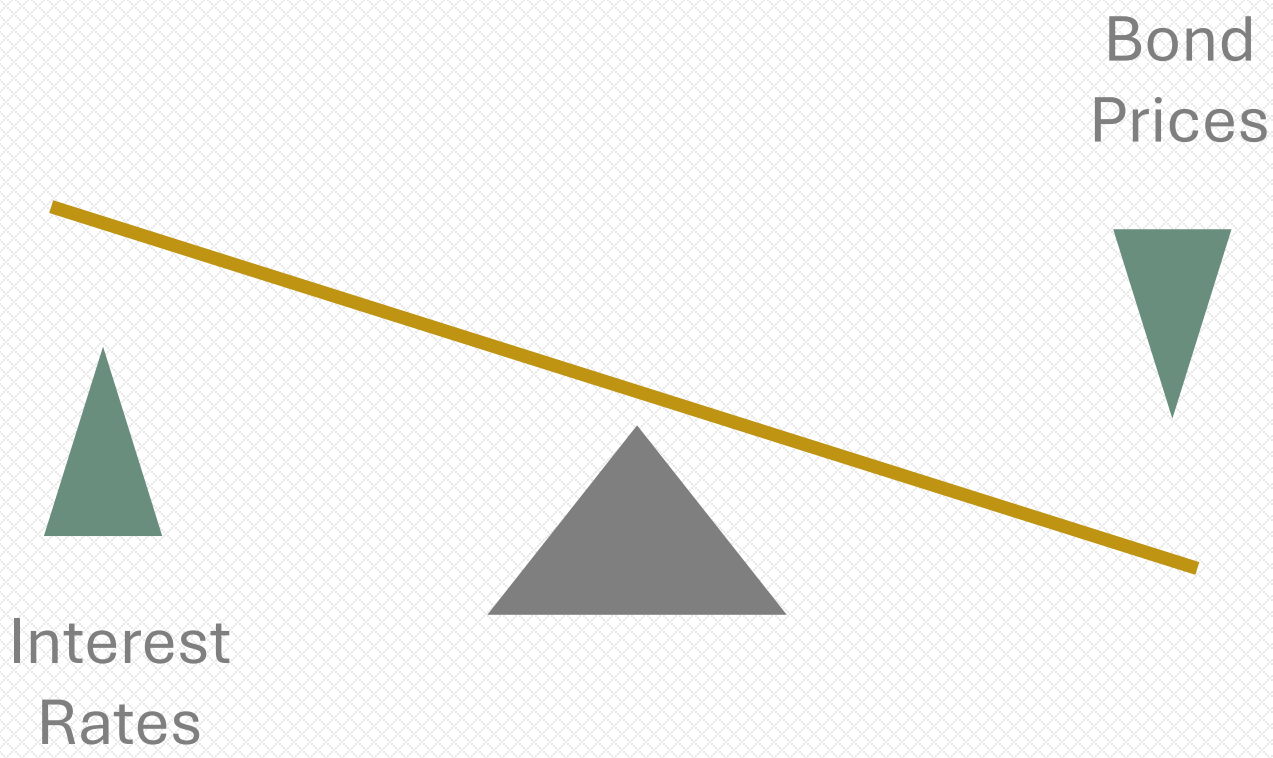
Historical Spreads to U.S. Treasuries



Source: Bloomberg

Prices and Rates Move Opposite One Another

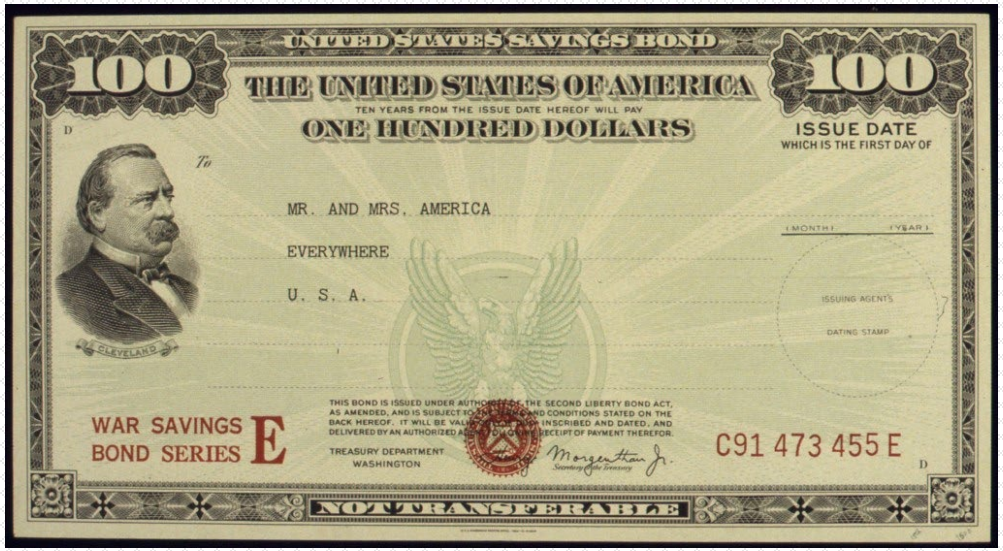
Bond prices and interest rates have an inverse relationship



How Does This Work?

You purchase on 12/31/2024:

Par	Credit Quality	Coupon	Maturity	Income	Yield	Price
$1 million	AAA	5%	12/31/2025	$50,000	5%	100.000



How Does This Work? (cont. 2 of 2)

Rates rise on 1/1/2025, and someone else purchases a newly-issued security similar to yours, but with a higher coupon:

Your Bond	Credit Quality	Coupon	Maturity	Income	Yield	Price
$1 million	AAA	5%	12/31/2025	$50,000	5%	100.000

Their Bond	Credit Quality	Coupon	Maturity	Income	Yield	Price
$1 million	AAA	6%	12/31/2025	$60,000	6%	100.000

Impact of Rising Rates

Here's some math to contemplate:

	Par	Income	Yield
Their Bond	$1 million	$60,000	6%
Your Bond	$1 million	- $50,000	5%
		= $10,000	

Your security would have to be sold at approximately $990K to make up for the rise in interest rates

$1,000,000
-$10,000
$990,000

Active Management

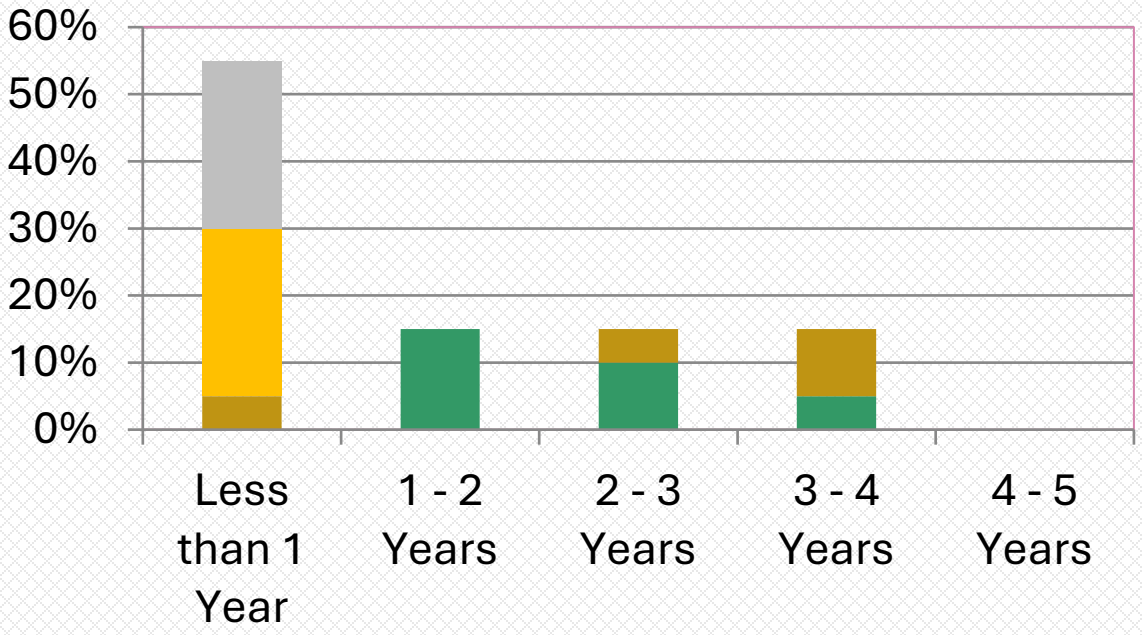
- Buy with intent to hold to maturity
- May sell before maturity to
  - Enhance earnings/returns
  - Reduce risk
  - Adapt to changing cash flows or market conditions

- Active Strategies
  - Sector trades
  - Duration trades
  - Roll down

What is a Sector Trade?

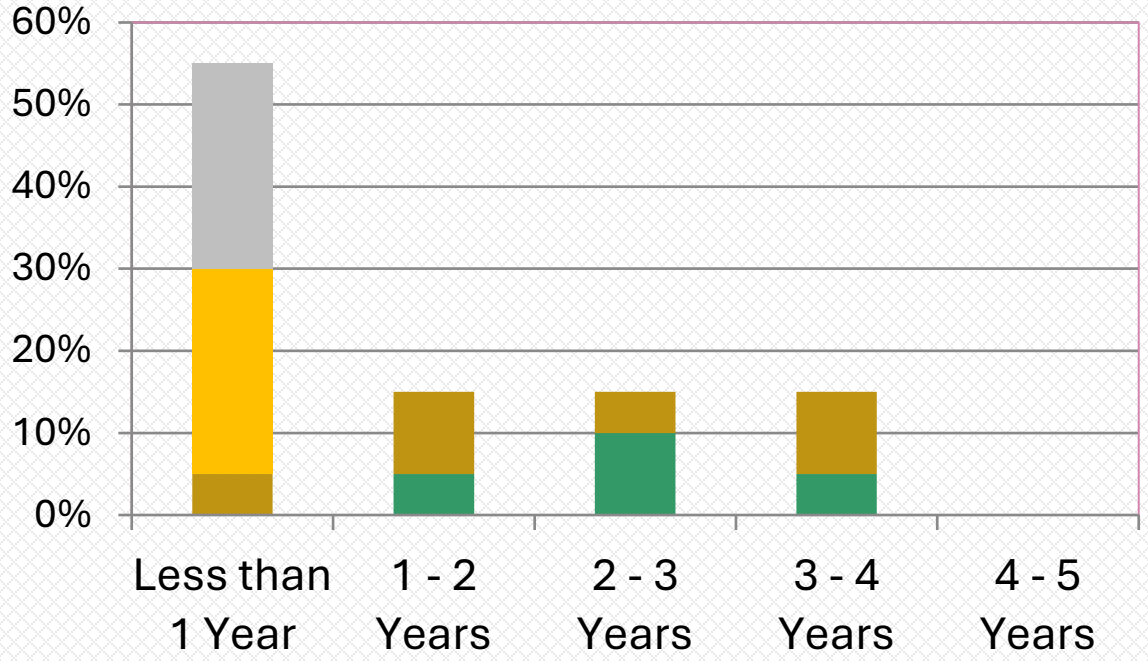
U.S. Treasury note

Sell



Corporate note

Buy



Sample Sector Trade

- Example

Trade Type	Date	Sector	Issuer	Credit Rating	Par	Maturity	Yield at cost	Yield at market
Sell	8/14/23	Treasury	U.S. Treasury Notes	AA+	$10,000,000	7/31/26	3.02%	2.90%
Buy	**8/14/23**	**Corporate**	**Corporate Issuer**	**AA+**	**$10,000,000**	**7/28/26**	**2.98%**	**2.98%**

- Benefit calculation

Earnings giving up	**($895,243)**
Earnings gaining	**$880,936**
Gain on sale	**$35,573**
Benefit of trade:	**$21,266**

- Trade will create incremental earnings of more than $21,000 over the life of the bond.

Benefit Calculation

Settle Date	Trade	Security	Par	Maturity	Yield at cost
8/14/2023	Sell	U.S. Treasury	10,000,000	7/31/2026	3.02%
8/14/2023	Buy	Corp Note	10,000,000	7/28/2026	2.98%

Earnings on Corp you are buying

=(par*yield at cost)*((maturity date-settle date)/365)

=(10,000,000*2.98%)*((7/28/26-8/14/23)/365)

=880,936

Remaining earnings on Treasury you are selling

=(par*yield at cost)*((maturity date-settle date)/365)

=(10,000,000*3.02%)*((7/31/26-8/14/23)/365)

=895,243

Earnings

$880,936

- $895,243

- $14,307

Benefit Calculation (cont. 2 of 3)

Settle Date	Trade	Security	Par	Maturity	Yield at cost	Expected yield at market
8/14/2023	Sell	U.S. Treasury	10,000,000	7/31/2026	3.02%	2.90%
8/14/2023	Buy	Corporate Note	10,000,000	7/28/2026	2.98%	2.98%

Earnings on Treasury based on yield at cost

=(par*yield at cost)*((maturity date-settle date)/365)

=(10,000,000*3.02%)*((7/31/26-8/14/23)/365)

=895,243

Earnings on Treasury based on yield at market

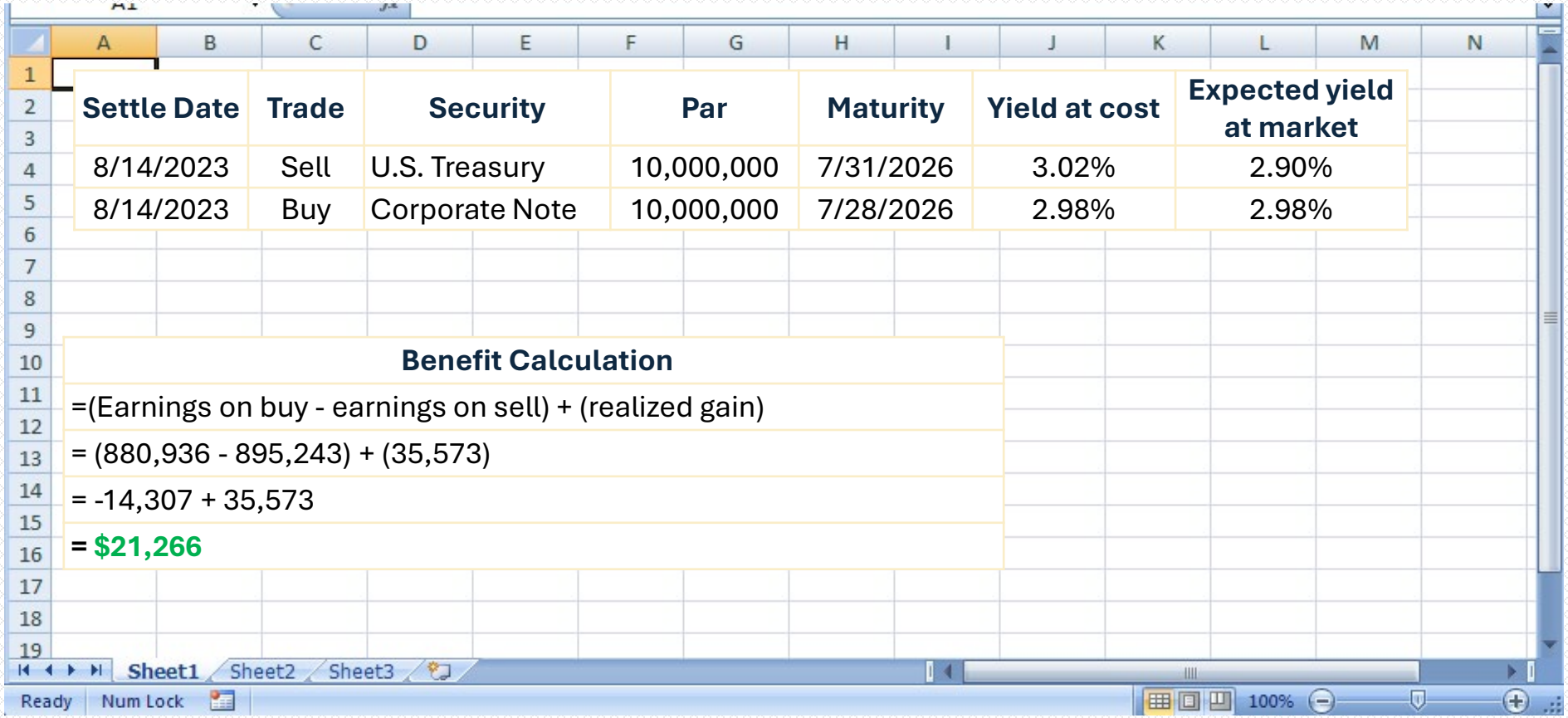
=(par*yield at market)*((maturity date-settle date)/365)

=(10,000,000*2.90%)*((7/31/26-8/14/23)/365)

=859,671

Earnings
$895,243
- $859,671
$35,573

Benefit Calculation (cont. 3 of 3)



Settle Date	Trade	Security	Par	Maturity	Yield at cost	Expected yield at market
8/14/2023	Sell	U.S. Treasury	10,000,000	7/31/2026	3.02%	2.90%
8/14/2023	Buy	Corporate Note	10,000,000	7/28/2026	2.98%	2.98%

Benefit Calculation
=(Earnings on buy - earnings on sell) + (realized gain)
= (880,936 - 895,243) + (35,573)
= -14,307 + 35,573
= $21,266

Pop Quiz #2

True or False??

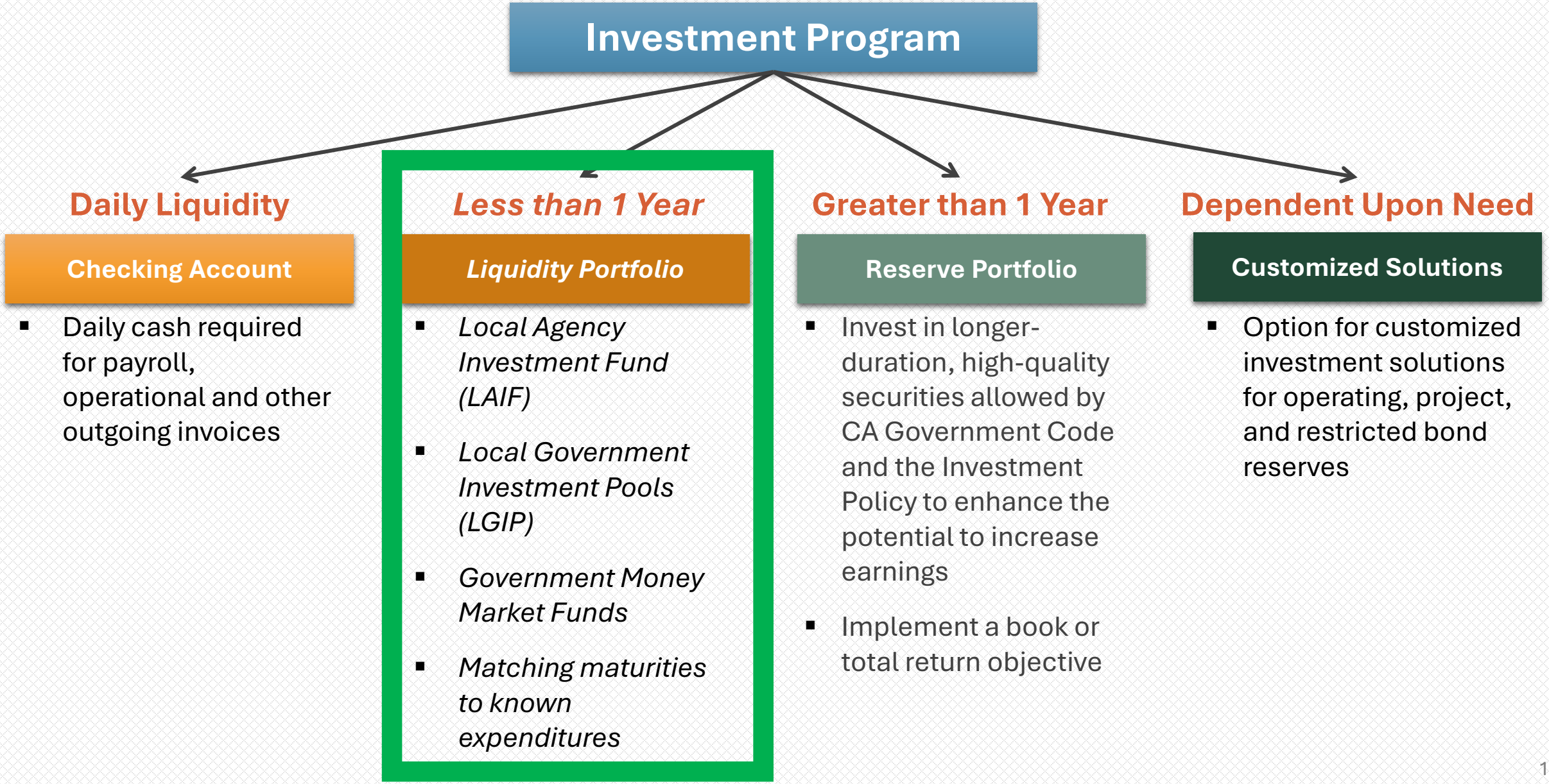
Values rise when rates rise

A sector trade is an example of active management

Active management is superior to buy-and-hold

- Review of pooled investments in an investment program

Sample Investment Program Structure



Money Market Funds

- **Definition:** SEC-registered open-end investment company that pools money from many investors and pools money in short-term money market instruments
- **Managed By:** SEC-Registered Investment Advisor
- **Credit:** Generally, AAA equivalent
- **Maturity:** N/A
- **Liquidity:** Moderate to High
- **Yields:** Higher than U.S. Treasury and Federal Agency obligations

Money Market Mutual Funds

- Money market mutual funds
  - 20% of investment program
  - AAA by 2+ NRSROs or Advisor requirements
  - Net asset value (NAV) vs. variable NAV

Local Government Investment Pools

- **Definition**: Funds created by pooling the assets of various local governments to benefit from shared liquidity, strategy and economies of scale.
- **Managed By**: State/County or Professional Money Manager in accordance with local permitted investment statutes
- **Issuer**: Holds securities of various issuers, depending on stated investment strategy
- **Credit**: May or may not be rated

Local Government Investment Pools Continued

- **Maturity**: Generally same day liquidity
- **Liquidity**: Very high
- **Yields**: Depending on permitted investments and investment strategy, can be similar to money market funds
- **California Government Code limits:**
  - Advisor requirements
  - Underlying investments must be same as Code

- Practitioner Perspective

Disclosures

This report is being provided for informational purposes only. No investment decision should be made based solely on the information provided herein. All investments involve risk, including loss of principal invested. The strategies referenced may not be suitable for all investors. The information contained herein is based on internal research derived from various sources and does not purport to be statements of all material facts relating to the strategies. While not guaranteed as to accuracy or completeness, some of the information has been obtained from sources we believe to be reliable. Opinions expressed herein are subject to change without notice. There can be no assurance that an account or specific investment product will be able to achieve its investment objective. No guarantee of investment performance is being provided and no inference to the contrary should be made.

Any forecasts, forward-looking statements and assumptions are inherently limited and should not be relied upon as an indicator of future results. Any opinions and views constitute judgments made by the author at the date of this presentation and may become outdated or superseded at any time without notice. Any statements concerning financial market trends are based on current market conditions, which will fluctuate.

Economic factors, market conditions and investment strategies will affect the performance of any portfolio and there are no assurances that it will match or outperform any particular benchmark. The data contained in this presentation is the property of those providers, which were obtained from sources believed to be reliable, but are subject to change at any time at the provider's discretion. Unless otherwise noted, Chandler is the source of data contained in this presentation.

Fixed Income investments are subject to interest, credit and market risk. Interest rate risk: the value of fixed income investments will decline as interest rates rise. Credit risk: the possibility that the borrower may not be able to repay interest and principal. Low rated bonds generally must pay higher interest rates to attract investors willing to take on greater risk. Market risk: the bond market in general could decline due to economic conditions, especially during periods of rising interest rates.

References to specific securities are examples of securities held in a portfolio and are not intended to be, and should not be interpreted as an offer, solicitation, or recommendation to purchase or sell any financial instrument, an indication that the purchase of such securities was or will be profitable, or representative of the composition or performance of the portfolio. The information contained in this sample presentation was obtained from sources we believe to be reliable, but we do not guarantee its accuracy. Past performance is not indicative of future success.

Where listed, certain performance shown is hypothetical and does not represent actual trading in a client's account. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFIT OR LOSSES SIMILAR TO THOSE SHOWN. THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK AND DOES NOT TAKE INTO ACCOUNT THAT MATERIAL AND MARKET FACTORS MAY HAVE IMPACTED THE ADVISER'S DECISION MAKING IF THE ADVISER WERE ACTUALLY MANAGING CLIENT'S MONEY. NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS. It should not be assumed that investors who invest in Chandler Asset Management's Portfolios will be profitable or achieve the hypothetical performance results reflected or any corresponding index presented. Actual performance of and holdings and investment implementation in Chandler Asset Management's client accounts can materially differ from that of the hypothetical models presented herein and performance can be higher or lower than the results shown. Investors may have experienced investment results during the corresponding time periods that were materially different from those portrayed. The opinions referenced are as of the date of publication and are subject to change. Chandler Asset Management has discretion in the timing of trade execution and selection of securities traded and utilized in any client account, which can and will materially differ from the hypothetical simulated performance based upon a variety of factors, including the adviser's discretion to not follow any trading signal generated and to determine the timing and implementation of a trade (which can include securities other than those listed). There is a possibility of loss on all investments and investor principal is not guaranteed. Performance information provided should not be used in making investment decisions.

Local Agency Investment Fund (LAIF)

The California State Local Agency Investment Fund (LAIF) is an investment portfolio managed by the State Treasurer. All securities are purchased under the authority of Government Code Section 16430 and 16480.4 and include securities issued by entities of the US Government, including the US Treasury and Agencies, Corporate debt, Certificates of Deposit, Mortgage Backed Securities and certain loans to the State and state agencies. The average maturity of the Fund will be between 120 days and 18 months.

ICE BofA 1-5 Year US Treasury & Agency Index

The ICE BofA 1-5 Year US Treasury & Agency Index tracks the performance of US dollar-denominated sovereign debt publicly issued by the US government and government sponsored enterprises in its domestic market. Qualifying securities must have at least one year remaining term to final maturity and less than five years remaining term to final maturity, a fixed coupon schedule, and a minimum amount outstanding of $1 billion. Qualifying securities must have at least 18 months to final maturity at the time of issuance.

ICE BofA 1-5 Year AAA-A US Corporate Index

ICE BofA US Corporate Index tracks the performance of US dollar denominated investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of $250 million.

ICE BofA 0-5 Year AAA US Fixed Rate Asset Backed Securities Index

ICE BofA US Fixed Rate Asset Backed Securities Index tracks the performance of US dollar denominated investment grade fixed rate asset backed securities publicly issued in the US domestic market. 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 a fixed rate coupon (including callable fixed-to-floating rate securities), at least one year remaining term to final stated maturity, at least one month to the last expected cash flow, an original deal size for the collateral group of at least $250 million, a current outstanding deal size for the collateral group greater than or equal to 10% of the original deal size and a minimum outstanding tranche size of $50 million for senior tranches and $10 million for mezzanine and subordinated tranches.

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County of Ventura Investment Pool

Ventura County TTC

- Elected Official – Sue Horgan
- Investment Structure –
  - TTC is the de facto CIO
  - Investment resides in Treasury – not separate
  - Investment tasks are performed by TTC, ATTC, Treasury Manager, Supervisor, and Senior Accounting Technician
  - Assessing the current structure

Ventura County Investment Pool

- Standard & Poor's highest rating AAAf/S1+
- 50/50 – Ventura County and Schools/Colleges
- Treasury Oversight Committee –
  - Meet twice a year
  - Review Investment pool performance and IPS
  - Members – TTC, ACO, BOS, Deputy School Superintendent

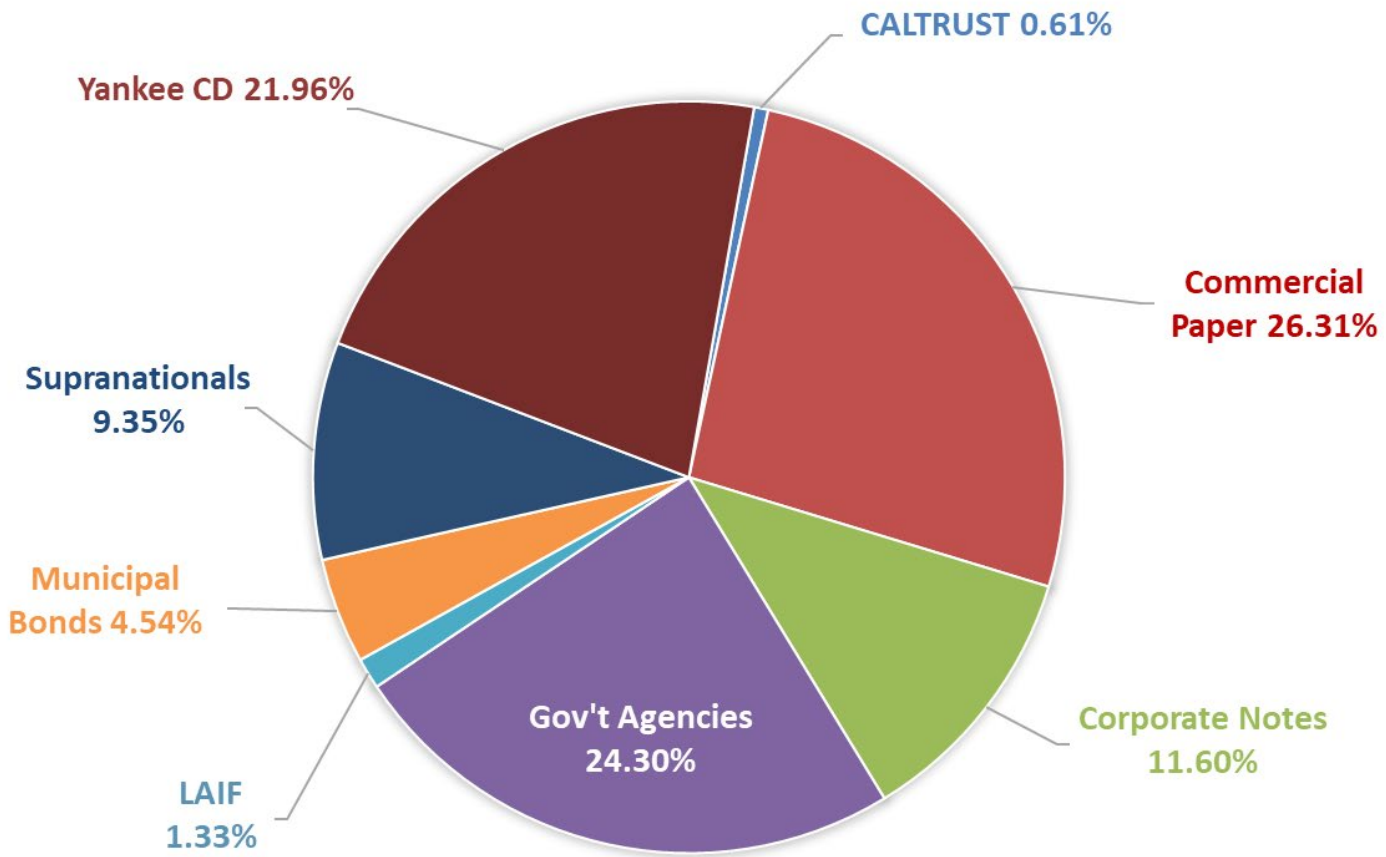
Ventura County Investment Pool (cont. 2 of 2)

- Size of Pool
  - $2B in 2011 to $4.8B as of 1/10/25
  - Increase due to higher tax collections, state apportionments and grants, and investment earnings
- Buy and hold approach
- Focus on shorter term for liquidity
  - Average days to maturity – 326 days. Max is 375 days
- No more than three-year maturity
- Use of approved issuer list

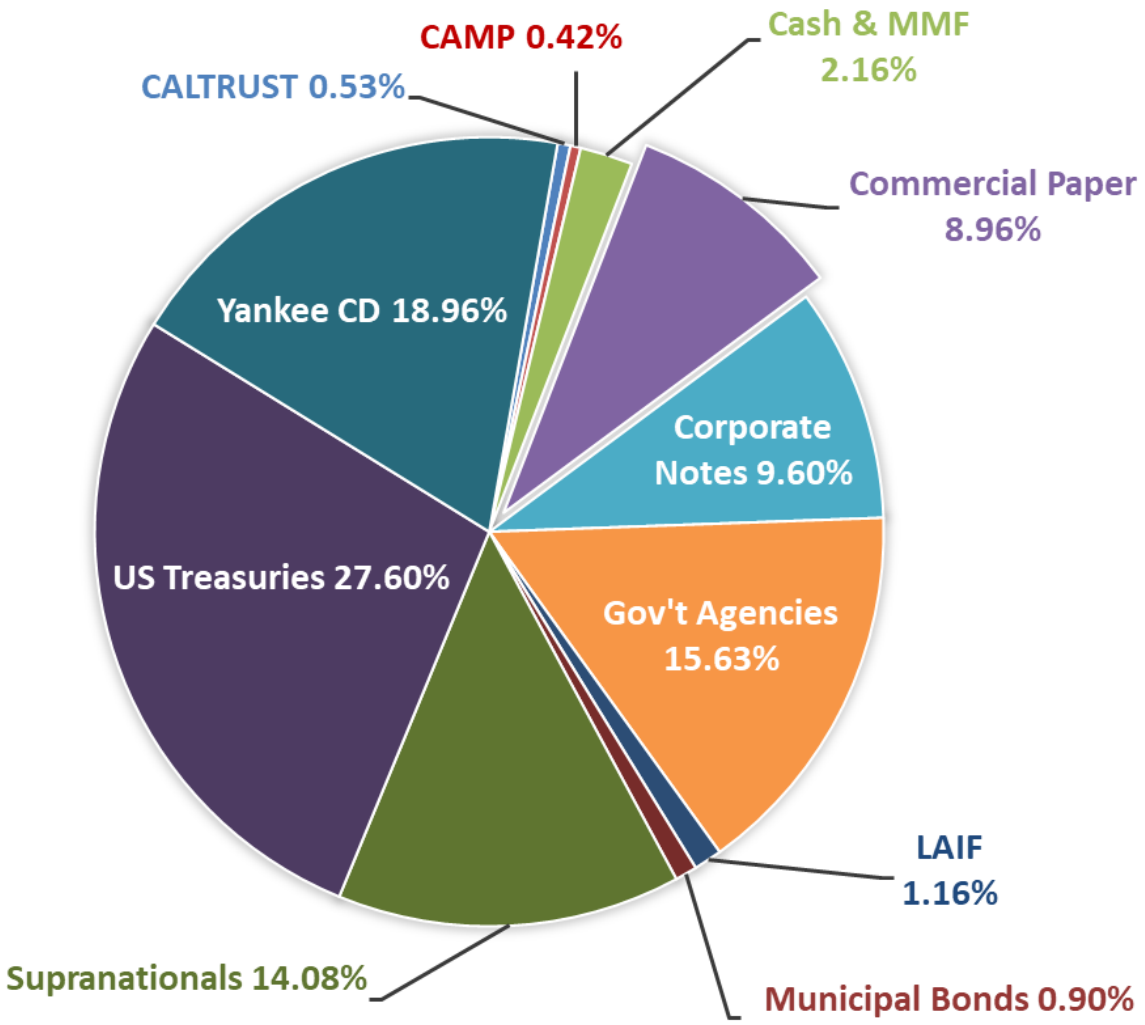
Ventura County Investment Pool
Recent Changes Since January 2023

- Allspring 100% Treasury MMF
- US Treasuries
- Buy larger deals/issuances
- Reduce concentration limit to 5% except Treasuries, Supras, and GSEs
- Reduce GSEs callable bonds
- Invest in longer maturities

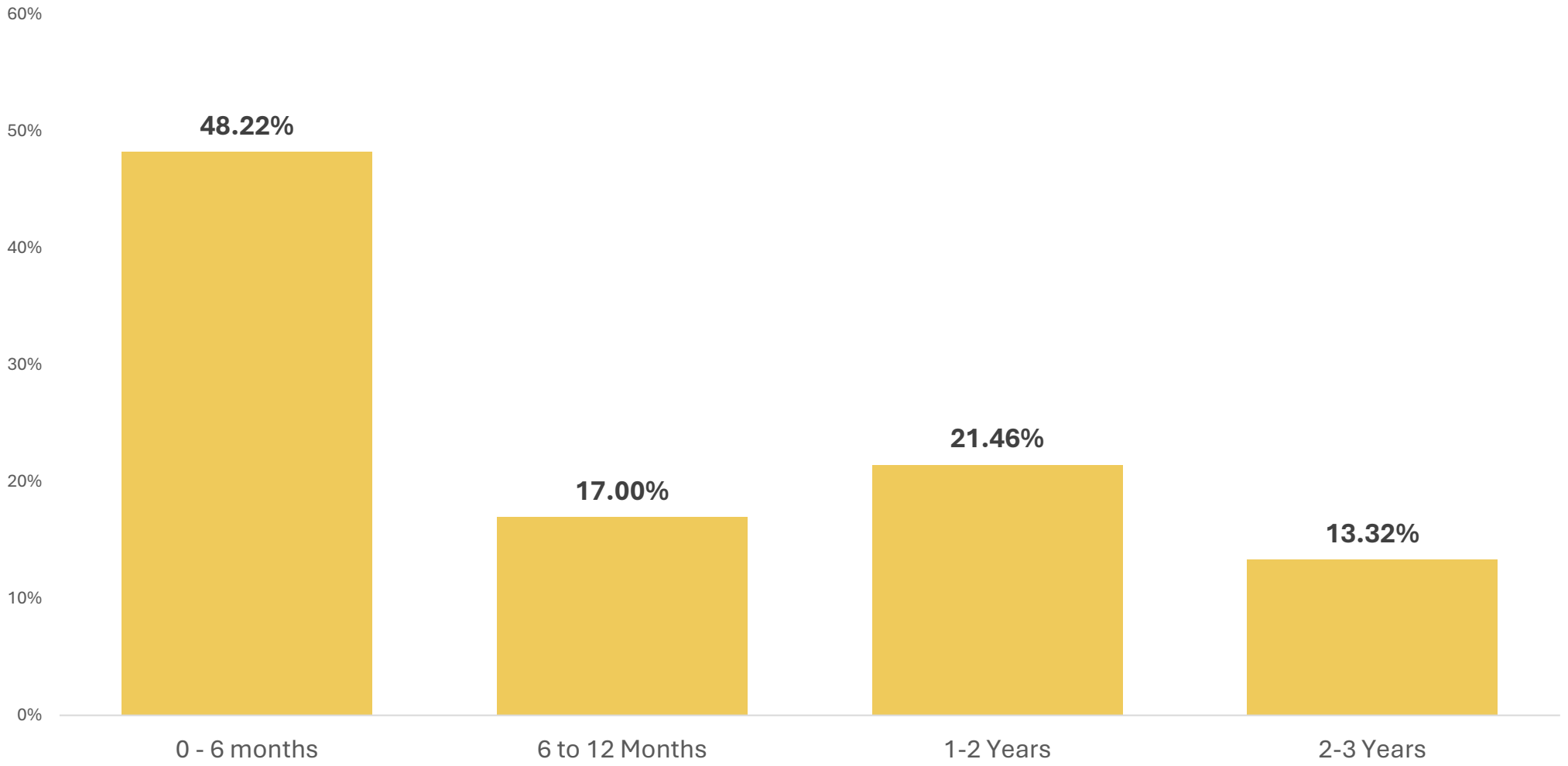
Ventura County Investment Pool Sector Distribution as of December 2022



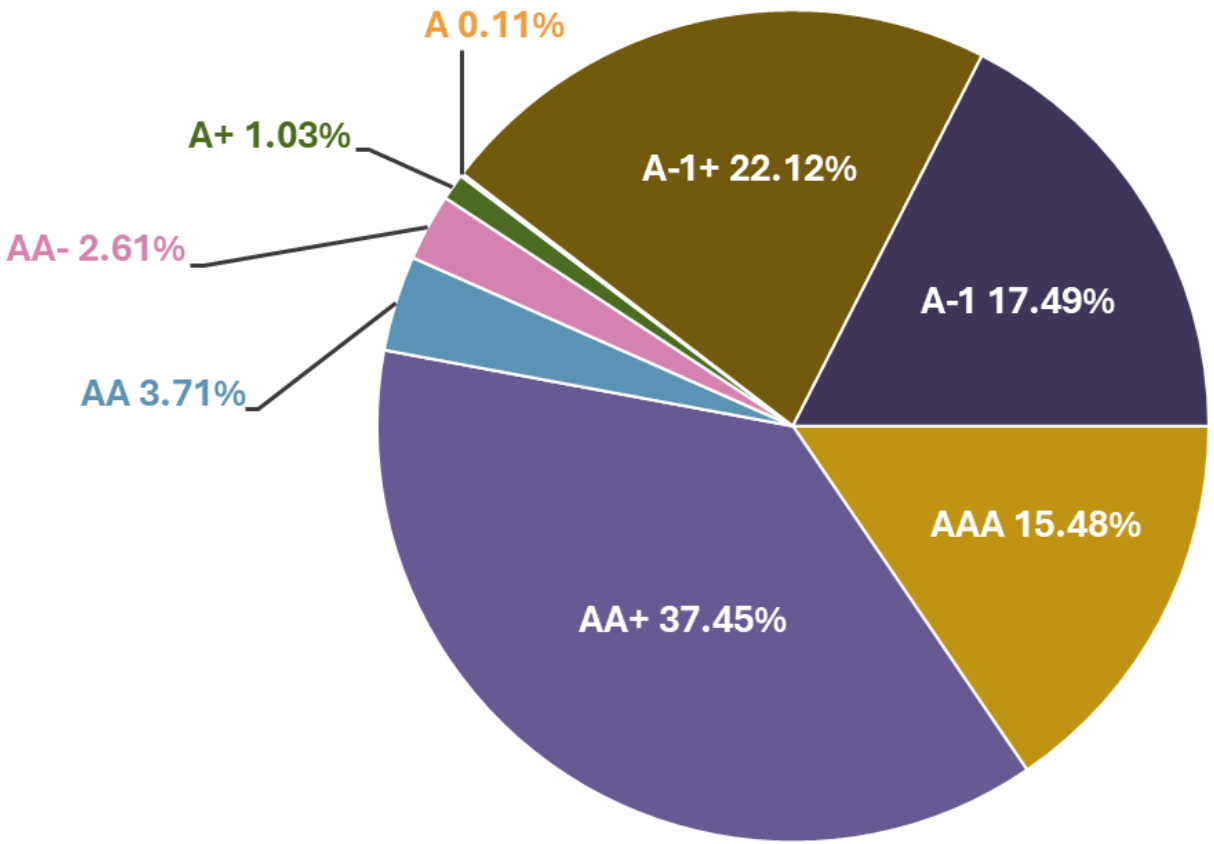
Ventura County Investment Pool Sector Distribution as of December 2024



Ventura County Investment Pool Maturity Distribution as of December 2024



Ventura County Investment Pool S&P Ratings as of December 2024



Summary

- Focus on diversification
- Implemented changes in how we invest
- Room to grow and improve – it only gets better!
  - Area of focus

QUESTIONS?

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Assistant Treasurer-Tax Collector
County of Ventura

SESSION 5

Guided Tutorial for Bloomberg and Other Investment Databases

VISHAL THACKER
Assistant Treasurer/
Chief Investment Officer
County of Alameda

HUBIE WHITE, CFA, CTP
Chief Investment Officer
Office of the Treasurer & Tax Collector
City & County of San Francisco

Bloomberg Tutorial

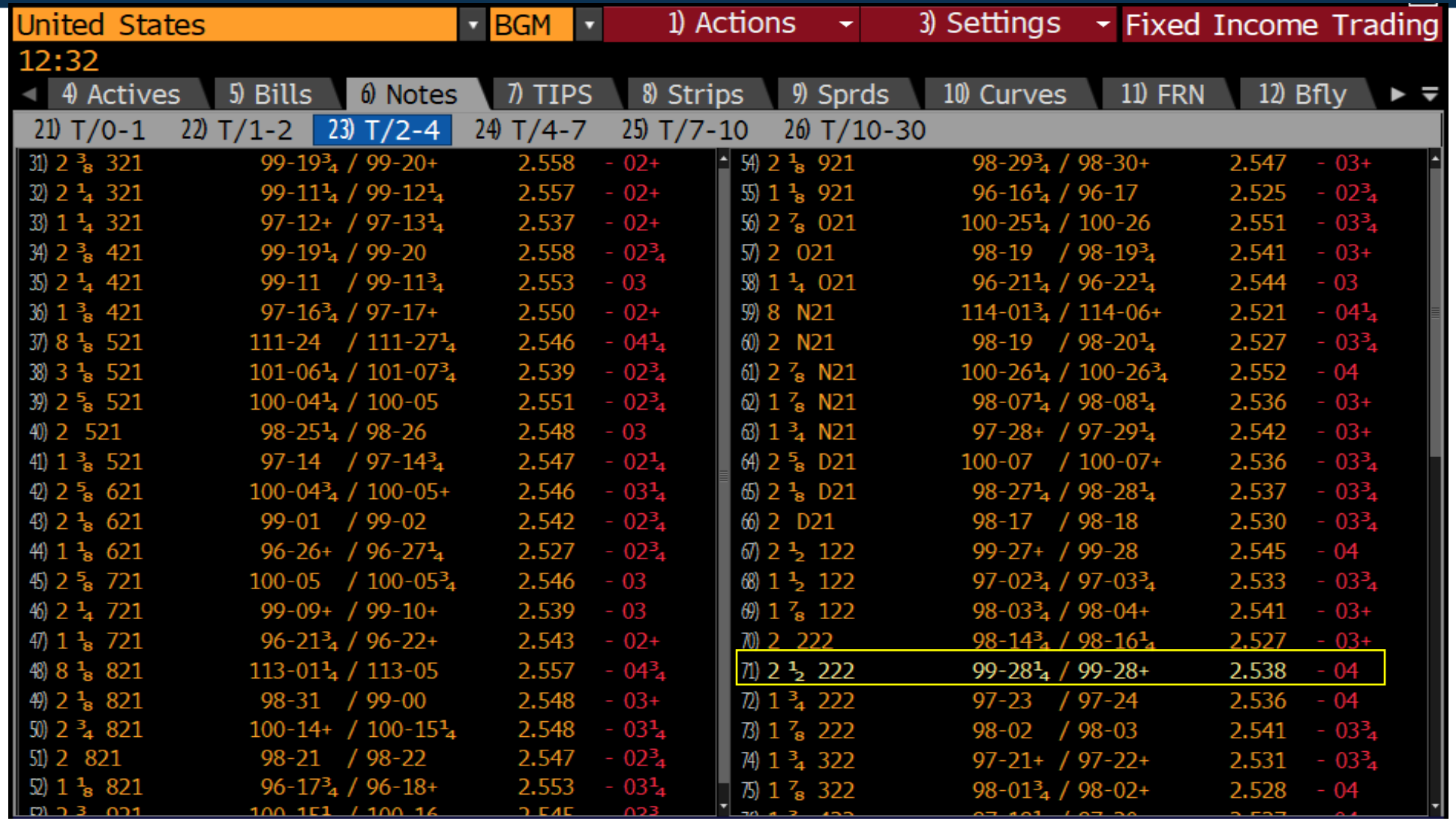
- BTMM
- FED
- WIRP
- NIM2/NIM3
- DES
  - ✓INV Parties
  - ✓ALLQ
  - ✓Trade History
  - ✓Schedules
- YAS
- OAS1
- FIT
- BOOM
- BANK
- IMGR
- DCX/CDR
- Launchpad
- SPDL
- BXT/SXT
- ADN
- PICK
- TOP
- ECO
- SWPM
- HELP

Electronic Trading – Overview

- Extremely efficient for transacting liquid fixed income instruments such as US Treasuries, Federal Agency bonds, Commercial Paper, Municipal Commercial Paper, and Corporate notes
- Examples of available platforms: Bloomberg FIT and BOOM, TradeWeb, and Market Access
- Increased market transparency
- Ease of best execution

TRADING AND PRICE DISCOVERY

Electronic Trading – FIT on Bloomberg



United States | BGM | 1) Actions | 3) Settings | Fixed Income Trading

12:32

4) Actives | 5) Bills | 6) Notes | 7) TIPS | 8) Strips | 9) Sprds | 10) Curves | 11) FRN | 12) Bfly

21) T/0-1 | 22) T/1-2 | 23) T/2-4 | 24) T/4-7 | 25) T/7-10 | 26) T/10-30

31)	2 3/8	321	99-19 3/4 / 99-20+	2.558	- 02+	54)	2 1/8	921	98-29 3/4 / 98-30+	2.547	- 03+
32)	2 1/4	321	99-11 1/4 / 99-12 1/4	2.557	- 02+	55)	1 1/8	921	96-16 1/4 / 96-17	2.525	- 02 3/4
33)	1 1/4	321	97-12+ / 97-13 1/4	2.537	- 02+	56)	2 7/8	021	100-25 1/4 / 100-26	2.551	- 03 3/4
34)	2 3/8	421	99-19 1/4 / 99-20	2.558	- 02 3/4	57)	2	021	98-19 / 98-19 3/4	2.541	- 03+
35)	2 1/4	421	99-11 / 99-11 3/4	2.553	- 03	58)	1 1/4	021	96-21 1/4 / 96-22 1/4	2.544	- 03
36)	1 3/8	421	97-16 3/4 / 97-17+	2.550	- 02+	59)	8	N21	114-01 3/4 / 114-06+	2.521	- 04 1/4
37)	8 1/8	521	111-24 / 111-27 1/4	2.546	- 04 1/4	60)	2	N21	98-19 / 98-20 1/4	2.527	- 03 3/4
38)	3 1/8	521	101-06 1/4 / 101-07 3/4	2.539	- 02 3/4	61)	2 7/8	N21	100-26 1/4 / 100-26 3/4	2.552	- 04
39)	2 5/8	521	100-04 1/4 / 100-05	2.551	- 02 3/4	62)	1 7/8	N21	98-07 1/4 / 98-08 1/4	2.536	- 03+
40)	2	521	98-25 1/4 / 98-26	2.548	- 03	63)	1 3/4	N21	97-28+ / 97-29 1/4	2.542	- 03+
41)	1 3/8	521	97-14 / 97-14 3/4	2.547	- 02 1/4	64)	2 5/8	D21	100-07 / 100-07+	2.536	- 03 3/4
42)	2 5/8	621	100-04 3/4 / 100-05+	2.546	- 03 1/4	65)	2 1/8	D21	98-27 1/4 / 98-28 1/4	2.537	- 03 3/4
43)	2 1/8	621	99-01 / 99-02	2.542	- 02 3/4	66)	2	D21	98-17 / 98-18	2.530	- 03 3/4
44)	1 1/8	621	96-26+ / 96-27 1/4	2.527	- 02 3/4	67)	2 1/2	122	99-27+ / 99-28	2.545	- 04
45)	2 5/8	721	100-05 / 100-05 3/4	2.546	- 03	68)	1 1/2	122	97-02 3/4 / 97-03 3/4	2.533	- 03 3/4
46)	2 1/4	721	99-09+ / 99-10+	2.539	- 03	69)	1 7/8	122	98-03 3/4 / 98-04+	2.541	- 03+
47)	1 1/8	721	96-21 3/4 / 96-22+	2.543	- 02+	70)	2	222	98-14 3/4 / 98-16 1/4	2.527	- 03+
48)	8 1/8	821	113-01 1/4 / 113-05	2.557	- 04 3/4	71)	2 1/2	222	99-28 1/4 / 99-28+	2.538	- 04
49)	2 1/8	821	98-31 / 99-00	2.548	- 03+	72)	1 3/4	222	97-23 / 97-24	2.536	- 04
50)	2 3/4	821	100-14+ / 100-15 1/4	2.548	- 03 1/4	73)	1 7/8	222	98-02 / 98-03	2.541	- 03 3/4
51)	2	821	98-21 / 98-22	2.547	- 02 3/4	74)	1 3/4	322	97-21+ / 97-22+	2.531	- 03 3/4
52)	1 1/8	821	96-17 3/4 / 96-18+	2.553	- 03 1/4	75)	1 7/8	322	98-01 3/4 / 98-02+	2.528	- 04

TRADING AND PRICE DISCOVERY

Electronic Trading – FIT on Bloomberg (cont. 2 of 3)

TRADING AND PRICE DISCOVERY

Electronic Trading – FIT on Bloomberg (cont. 3 of 3)

TRADING AND PRICE DISCOVERY

Electronic Trading – BOOM on Bloomberg

Discount Notes | Trading Access | Searches | Export | Settings | Money Market Offerings

93) Refine Search DEFAULT | Prim & Sec | Group by None | 88) Sellback | 89) Chart

Table RateRun

AskSz (M)	Issuer	Maturity	SD	Dsc/Cpn	AskYld	Dlr	Pgm	Ticker	DTM	Time
3,000,000	FHLB DISC CORP	03/04/19		2.300	2.300	SUN	AGD	FHDN	3	05:25
999,999	FHLB DISC CORP	03/04/19		2.300	2.300	CITI	AGD	FHDN	3	12:11
100,000	INTL FINANCE	03/05/19		2.320	2.353	UBS	AGD	IFCD	4	05:16
1,000,000	FNMA DISCOUNT	03/05/19	1	2.280	2.312	UBS	AGD	FNDN	4	05:15
500,000	INTL FINANCE	03/05/19 - 03/07/19		2.310	2.311	JPM	AGD	IFCD	4 - 6	07:04
50,000	INTL FINANCE	03/05/19		2.310	2.310	BARC	AGD	IFCD	4	12:32
800,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	WLMS	AGD	FNDN	4	07:00
100,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	SNC	AGD	FNDN	4	07:00
100,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	LOOP	AGD	FNDN	4	07:00
500,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	WFS	AGD	FNDN	4	07:00
500,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	TD	AGD	FNDN	4	07:00
500,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	PIPJ	AGD	FNDN	4	07:00
500,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	JPM	AGD	FNDN	4	07:00
850,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	JEFF	AGD	FNDN	4	07:00
500,000	FNMA DISCOUNT	03/05/19	1	2.280	2.280	DIWA	AGD	FNDN	4	07:00
25,000	IADB DISCOUNT	03/07/19	1	2.330	2.330	BARC	AGD	IADN	6	12:32
25,000	IADB DISCOUNT	03/08/19 - 03/15/19		2.310	2.311	TD	AGD	IADN	7 - 14	06:28
75,000	FHLB DISC CORP	03/14/19		2.360	2.362	CITI	AGD	FHDN	13	12:23
100,000	INTL FINANCE	03/18/19		2.330	2.365	UBS	AGD	IFCD	17	05:16
25,000	IADB DISCOUNT	03/18/19 - 03/22/19		2.320	2.323	TD	AGD	IADN	17 - 21	06:28
500,000	INTL FINANCE	03/18/19 - 03/19/19		2.320	2.323	JPM	AGD	IFCD	17 - 18	07:04
50,000	INTL FINANCE	03/18/19		2.320	2.320	BARC	AGD	IFCD	17	12:32
245,000	FHLB DISC CORP	03/21/19		2.340	2.376	UBS	AGD	FHDN	20	10:44

TRADING AND PRICE DISCOVERY

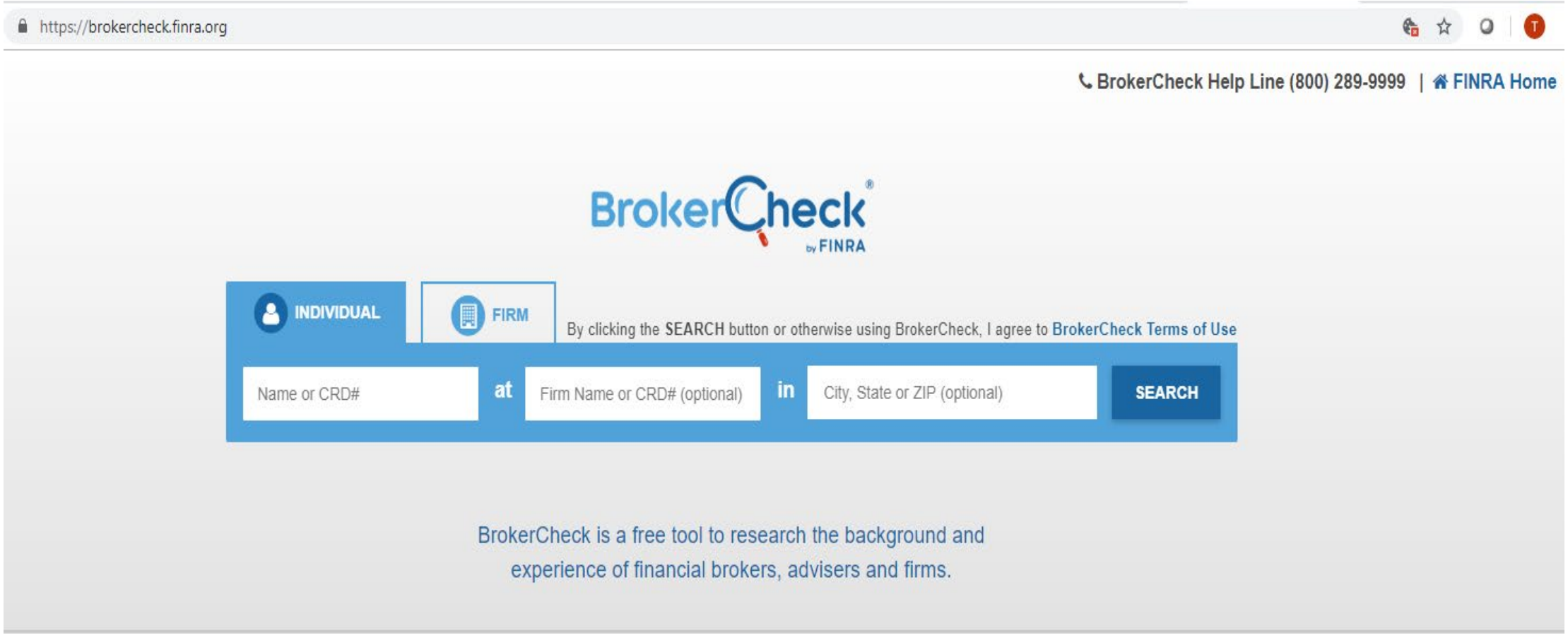
Electronic Trading – BOOM on Bloomberg (cont. 2 of 2)

FINRA – Financial Industry Regulatory Authority

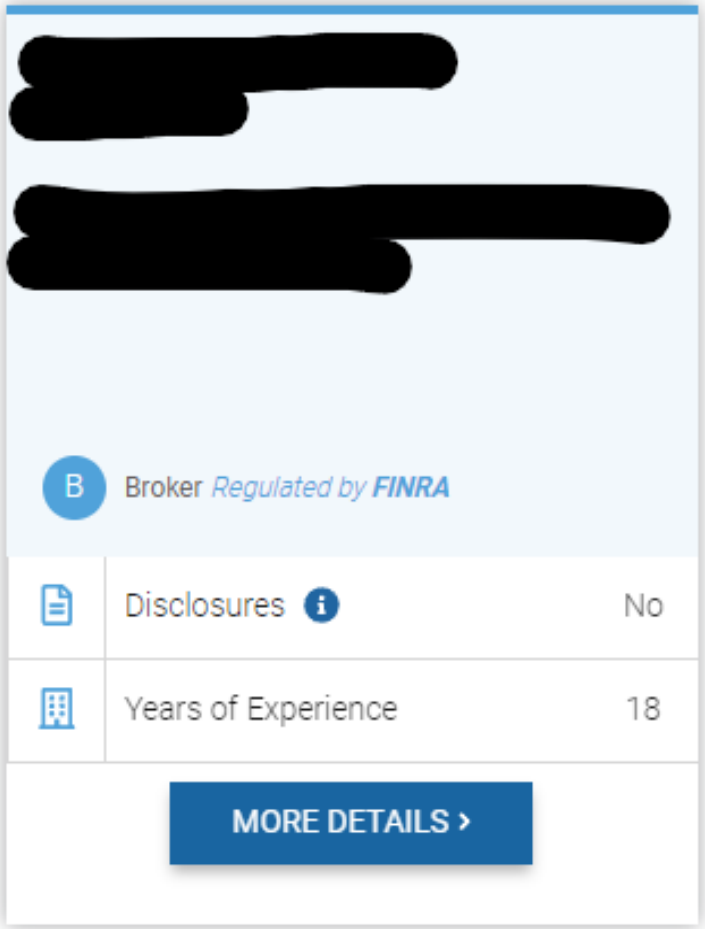
- www.finra.org
- Dedicated to investor protection and market integrity through effective regulation of broker-dealers
- A not-for-profit authorized by Congress
- Great resource for market and broker-dealer information
- Has authority to fine, suspend, or bar brokers for rule infractions

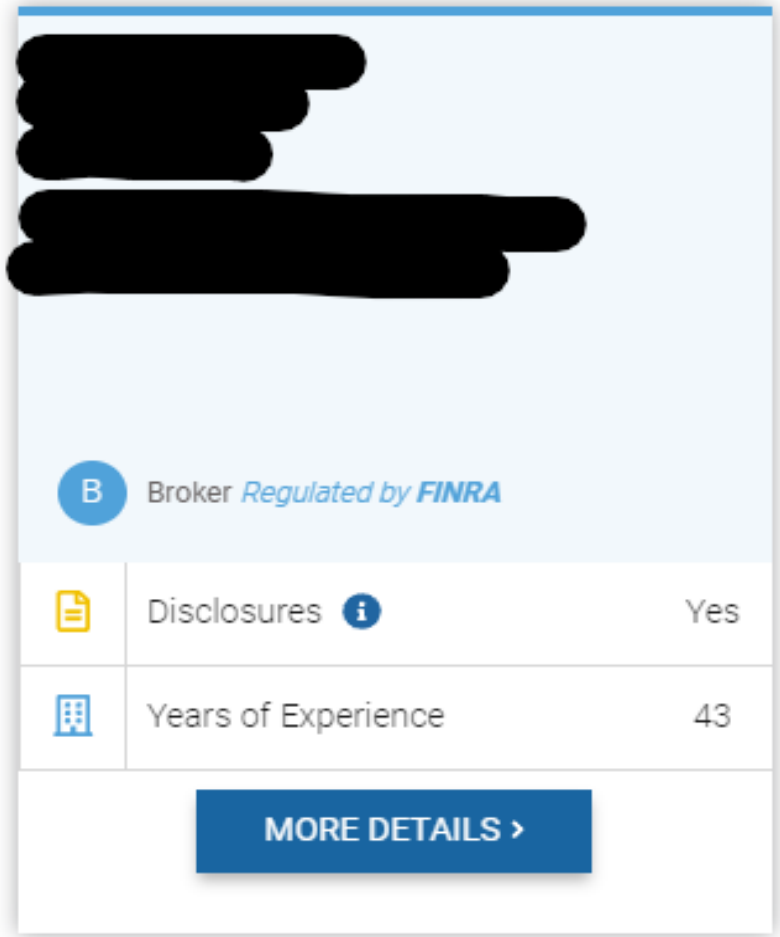
FINRA – BrokerCheck

https://brokercheck.finra.org



FINRA – Broker Check (cont. 2 of 2)





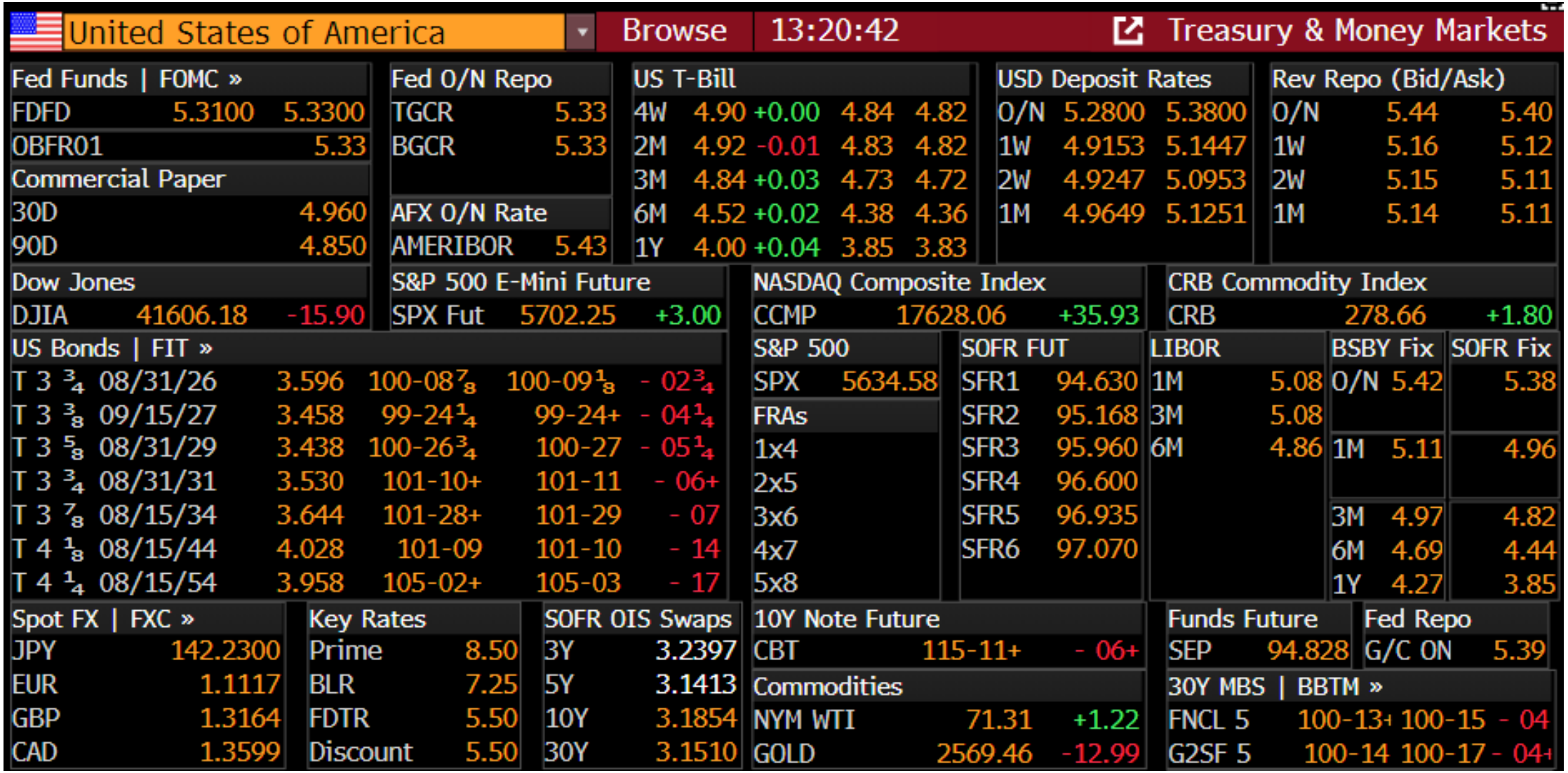
Understanding and Evaluating Trading Costs

- It is part of a public funds manager's fiduciary duty to understand and control trading costs
- Broker/Dealers typically work for a predetermined concession on new bullet issues
- Trades should be done on a competitive basis
- Trading costs are typically the difference between the bid/ask spread on secondary issues
- Costs are a function of trade size, issue's liquidity, and trade type (broker vs dealer)
- Pricing supplements and TRACE are good sources
- No rule on just asking

Considerations in Evaluating Trade Opportunities

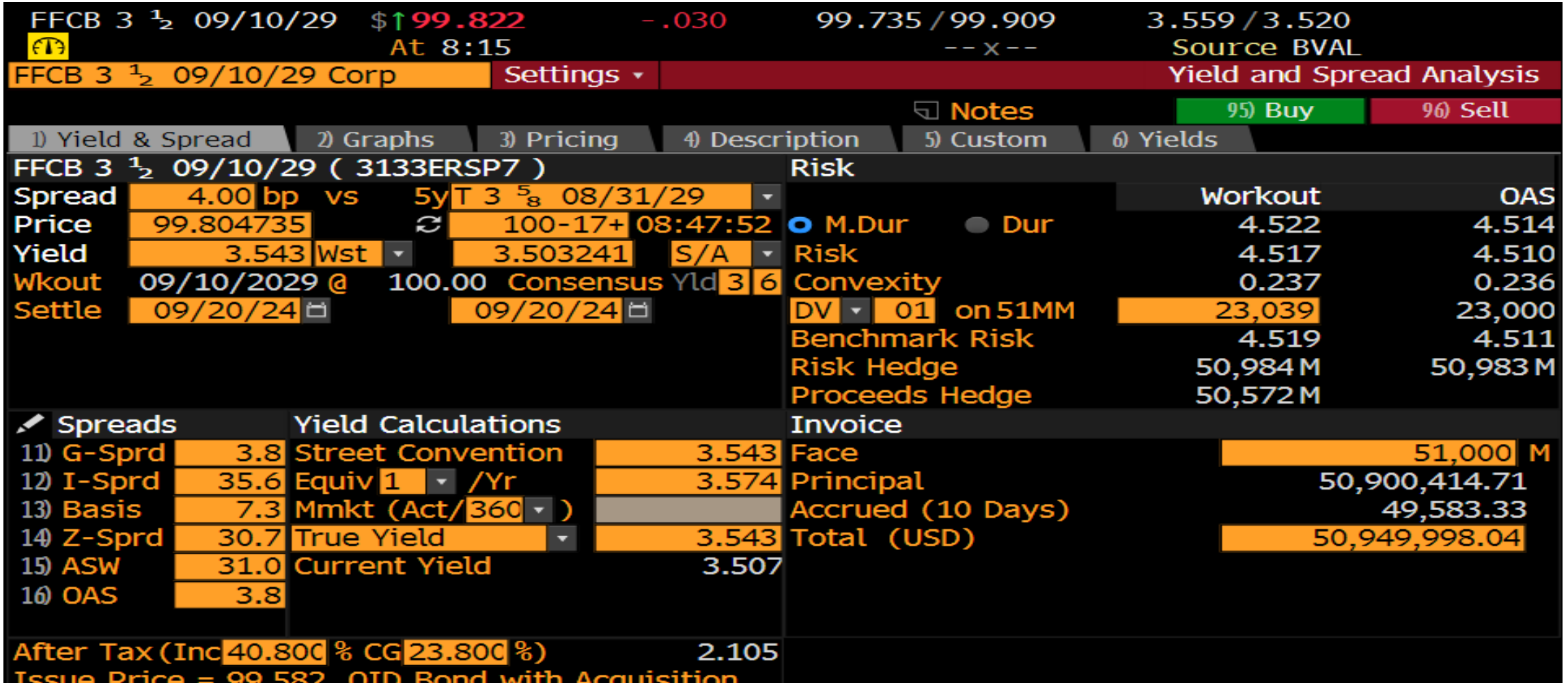
- Relative value – the spread over the risk-free rate to compensate for additional risks of the investment opportunity
- MMT = matched maturity treasury
- G-spread – intended to reflect MMT spread but often not a true representation due to interpolation issues
- Yield comparisons – understand the differences due to differences in day count conventions
- The offering spread is not necessarily the MMT
- Bad Day Consideration

Trading off the Treasury On-the-Run Curve



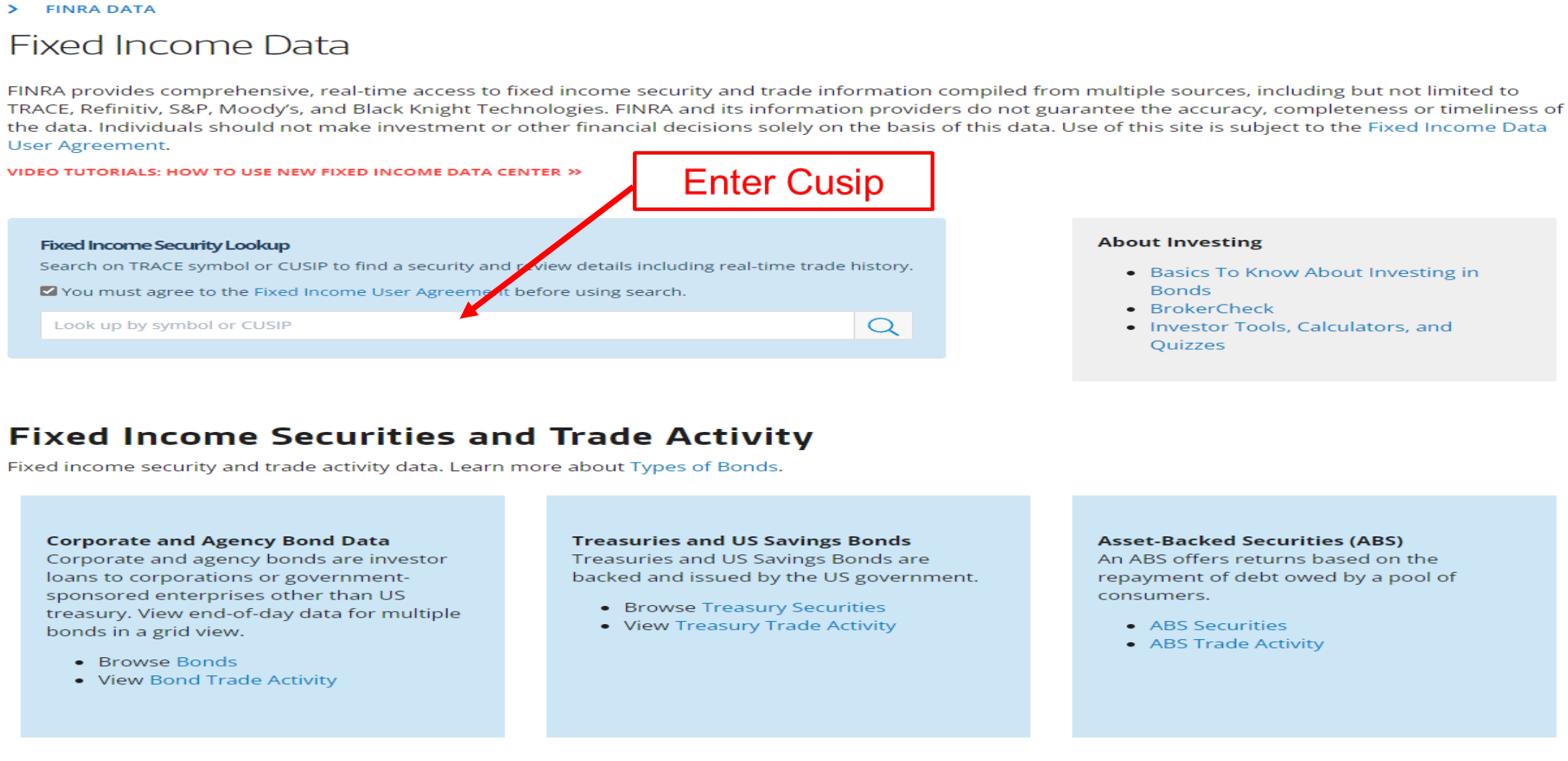
Offering Example – MMT .008

ISSUE	CPN	MAT	SIZE	SPREAD	REF	TYPE	CUSIP
FFCB	3.500	12/23/26	15MM+	-2.50	2YR	MTN	3133ERUE9
FFCB	3.500	9/10/29	51MM+	+4.00	5YR	MTN	3133ERSP7

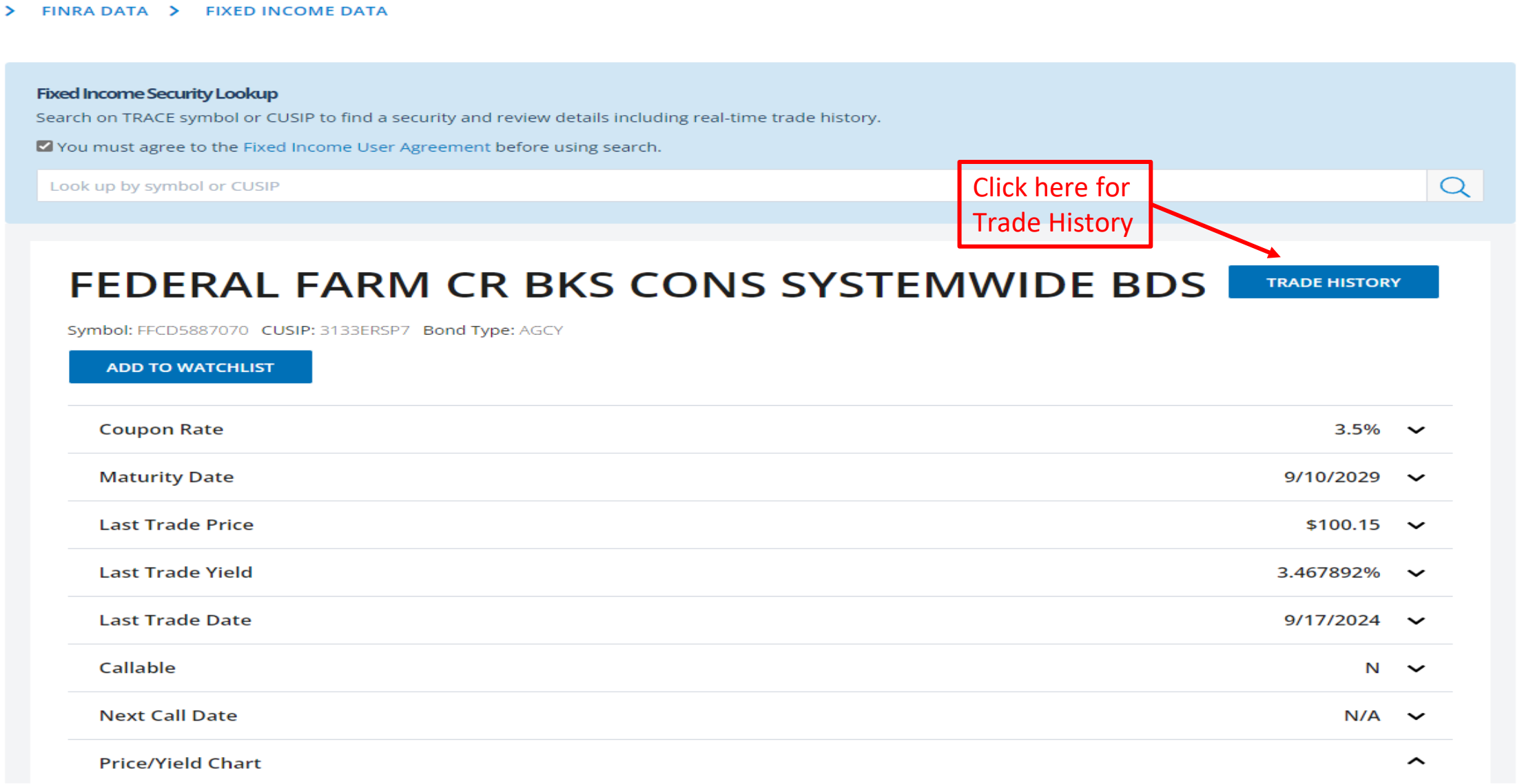


FINRA – Trade and Price Discovery (TRACE)

- FINRA – www.finra.org, For Investors, Tools & Calculators, FINRA Fixed Income Data



FINRA – Trade and Price Discovery (TRACE) (cont. 2 of 3)



FINRA – Trade and Price Discovery (TRACE) (cont. 3 of 3)

Trade History

Real-time trade history for up to three calendar years. For up to 10 years of end of day pricing, see Trade Activity.

Symbol: FFCD5887070 **Issuer Name:** FEDERAL FARM CR BKS CONS SYSTEMWIDE BDS **Coupon Rate:** 3.5 **Maturity Date:** 9/10/2029

Start Date 09/16/2024

End Date 09/17/2024

SHOW RESULTS

Total Count: 87

Columns Filter

Symbol	Issuer Name	Date	Quantity	Price	Yield	Time	Side	Contra Party Type
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	1000000	100.145	3.467892	13:44:45	S	C
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	800000	100.5901	3.370019	13:43:22	S	C
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	250000	100.0923	3.479504	13:42:36	S	D
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	800000	100.0958	3.478705	13:41:38	S	D
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	1000000	100.0802	3.482171	13:41:10	S	D
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	5000000	100.063	3.485963	11:55:04	S	C
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	5000000	100.0997	3.477873	11:14:53	S	C
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	53000	100.063	3.485963	10:16:52	S	C
FFCD5887070	FEDERAL FARM CR ...	2024-09-17	1000000	100.03	3.49324	10:10:20	S	D

FINRA – Excessive Commission Execution Example

Bond Trade Activity Search Results

From 11/09/2016 to 11/13/2017 GO | Glossary of Terms

Issue: **UBS4154104** Description: **UBS AG STAMFORD BRH MEDIUM TERM SR DEP N** Coupon Rate: **2.375** Maturity Date: **08/14/2019**

Execution														
Date	Time	Settlement	Status	Quantity	Price	Yield	Remuneration	ATS	Modifier	2nd Modifier	Special	As-Of	Side	Reporting Party Type	Contra Party Type
11/13/2017	16:36:00	11/15/2017	T	1150000	100.463	2.103	M		_	_	-	-	B	D	C
11/13/2017	13:48:32	11/15/2017	T	2000000	100.590	2.029	M		_	_	-	-	S	D	C
11/13/2017	13:40:37	11/15/2017	T	2000000	100.504	2.079			_	_	-	-	S	D	D
11/13/2017	13:29:17	11/15/2017	T	351000	100.418	2.129			_	_	-	-	S	D	D
11/13/2017	13:15:19	11/15/2017	T	250000	100.393	2.144	N		_	_	-	-	S	D	A
11/10/2017	16:00:46	11/14/2017	T	250000	100.535	2.061	M		_	_	-	-	S	D	C
11/10/2017	15:00:50	11/14/2017	T	300000	100.503	2.08	N		_	_	-	-	S	D	C
11/10/2017	12:01:38	11/14/2017	T	250000	100.489	2.088			_	_	-	-	S	D	D
11/10/2017	09:21:12	11/14/2017	T	5000000	100.947	1.822	M		_	_	-	-	S	D	C
11/10/2017	09:02:00	11/14/2017	T	5000000	100.507	2.078			_	_	-	-	S	D	D
11/10/2017	09:01:00	11/14/2017	T	5000000	100.527	2.066			_	_	-	-	S	D	D
11/9/2017	13:41:51	11/13/2017	T	700000	100.620	2.012	M		_	_	-	-	S	D	C
11/9/2017	13:41:00	11/13/2017	T	700000	100.569	2.042			_	_	-	-	S	D	D
11/9/2017	13:09:33	11/13/2017	T	5000000	100.528	2.066			_	_	-	-	S	D	D
11/9/2017	12:04:00	11/13/2017	T	5MM+	100.554	2.051	M		_	_	-	-	B	D	C
11/8/2017	15:47:24	11/10/2017	T	1200000	100.566	2.045	M		_	_	-	-	S	D	C
11/8/2017	15:01:43	11/13/2017	T	300000	100.547	2.055	M		_	_	-	-	B	D	C
11/8/2017	14:41:39	11/10/2017	T	100000	100.568	2.044	M		Z	_	-	-	S	D	C
11/7/2017	12:06:19	11/9/2017	T	5MM+	100.592	2.031	M		_	_	-	-	S	D	C
11/7/2017	10:55:46	11/9/2017	T	350000	100.579	2.038	N		_	_	-	-	B	D	C

1 2 3 4 5 6 7 8 9 10 Next 1 of 45 GO

FINRA – Excessive Commission Execution Example (cont. 2 of 2)

Last Updated: 03/06/2019

Bond Trade Activity Search Results

From 03/06/2018 to 03/06/2019 GO | Glossary of Terms

Issue: **FHLN4465601** Description: **FEDERAL HOME LN BKS** Coupon Rate: **1.375** Maturity Date: **03/18/2019**

Execution															
Date	Time	Settlement	Status	Quantity	Price	Yield	Remuneration	ATS	Modifier	2nd Modifier	Special	As-Of	Side	Reporting Party Type	Contra Party Type
3/6/2019	09:29:03	3/7/2019	T	225000	99.965	2.505	M		_	_	-	-	B	D	C
3/6/2019	09:11:21	3/7/2019	T	225000	99.965	2.505			_	_	-	-	S	D	D
3/6/2019	09:09:30	3/7/2019	Cancel	225000	99.965	2.505	M		_	_	-	-	B	D	C
3/6/2019	09:09:30	3/7/2019	Cancel	225000	99.965	2.505	M		_	_	-	-	B	D	C
3/4/2019	13:33:45	3/6/2019	T	300000	99.966	2.381	M		_	_	-	-	B	D	C
3/4/2019	12:24:11	3/4/2019	T	1000000	99.961	2.364	M		_	_	-	-	B	D	C
3/1/2019	12:48:07	3/4/2019	T	2540000	99.960	2.402	M		_	_	-	-	S	D	C
2/28/2019	10:25:03	2/28/2019	T	750000	99.955	2.178	M		_	_	-	-	B	D	C
2/27/2019	16:28:07	2/28/2019	T	5MM+	99.955	2.173	M		_	_	-	-	B	D	C
2/27/2019	16:24:29	2/28/2019	T	400000	99.950	2.262	N		_	_	-	-	S	D	C
2/27/2019	16:24:29	2/28/2019	T	95000	99.950	2.262	N		_	_	-	-	S	D	C
2/27/2019	16:24:29	2/28/2019	T	30000	99.950	2.262	N		_	_	-	-	S	D	C
2/27/2019	16:23:23	2/28/2019	T	525000	99.950	2.262			_	_	-	-	S	D	D
2/27/2019	15:22:25	2/28/2019	T	1740000	99.957	2.137	M		_	_	-	-	B	D	C
2/27/2019	12:40:00	2/28/2019	T	250000	99.956	2.155					-	-	S	D	D
2/27/2019	12:40:00	2/28/2019	T	250000	100.073	0.061	M		_	_	-	-	S	D	C
2/27/2019	12:40:00	2/28/2019	T	250000	99.956	2.155		Y	_	_	-	-	S	D	D
2/26/2019	15:40:08	2/27/2019	T	300000	99.954	2.151		Y	_	_	-	-	S	D	D
2/26/2019	15:40:08	2/27/2019	T	300000	99.954	2.151	N		_	_	-	-	S	D	C
2/26/2019	14:31:58	2/28/2019	T	5MM+	99.957	2.137	M		_	_	-	-	B	D	C

Treasury Curve Resources (No cost)

www.cnbc.com/bonds/

U.S. Treasurys

SYMBOL	YIELD	CHANGE
US 1-MO	4.928	-0.064 ▼
US 2-MO	4.936	-0.052 ▼
US 3-MO	4.869	+0.006 ▲
US 4-MO	4.795	-0.006 ▼
US 6-MO	4.581	+0.026 ▲
US 1-YR	4.02	+0.043 ▲
US 2-YR	3.599	+0.044 ▲
US 3-YR	3.458	+0.043 ▲
US 5-YR	3.438	+0.033 ▲
US 7-YR	3.53	+0.028 ▲
US 10-YR	3.644	+0.023 ▲
US 20-YR	4.028	+0.025 ▲
US 30-YR	3.957	+0.02 ▲

Treasury Curve Resources (No cost) (cont. 2 of 2)

www.bloomberg.com/markets/rates-bonds/government-bonds/us

Treasury Yields

NAME	COUPON	PRICE	YIELD	1 MONTH	1 YEAR	TIME (EDT)
GB3:GOV **3 Month**	0.00	4.71	4.83%	-38	-62	4:12 PM
GB6:GOV **6 Month**	0.00	4.43	4.52%	-43	-97	4:12 PM
GB12:GOV **12 Month**	0.00	3.83	4.00%	-48	-142	4:12 PM
GT2:GOV **2 Year**	3.75	100.28	3.60%	-45	-144	4:12 PM
GT5:GOV **5 Year**	3.63	100.84	3.44%	-32	-103	4:12 PM
GT10:GOV **10 Year**	3.88	101.89	3.65%	-24	-69	4:12 PM
GT30:GOV **30 Year**	4.25	105.08	3.96%	-18	-46	4:12 PM

SOURCES FOR ECONOMIC DATA: FEDERAL RESERVE BANK OF NEW YORK
WWW.NEWYORKFED.ORG/RESEARCH/DATA_INDICATORS

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home > economic research >

Data and Indicators

The Research and Statistics Group provides the following links to online sources of economic data produced by the New York Fed and other Reserve Banks.

KEY DATA FROM THE NEW YORK FED

Business Leaders Survey

A monthly survey of service firms in New York State, northern New Jersey and southwestern Connecticut, conducted by the New York Fed.

Empire State Manufacturing Survey

A monthly survey of manufacturers in New York State, conducted by the New York Fed.

Supplemental Survey Report

Summary of responses to topical questions from the *Empire State Manufacturing Survey* and the

DYNAMIC DATA AND MAPS FROM THE NEW YORK FED

Eight Different Faces of the Labor Market

New monthly release provides timely updates on national labor market conditions. Dynamic charts depict trends in eight key categories: unemployment, employment, hours, labor demand, job availability, job loss rate, wages, and mismatch.

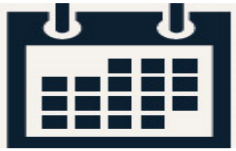
The Labor Market for Recent College Graduates

This interactive web feature presents a wide range of job market metrics for recent college graduates, including trends in unemployment rates, underemployment rates, and wages. Data are updated regularly and available for download.

For-Profits in the Higher Education Landscape

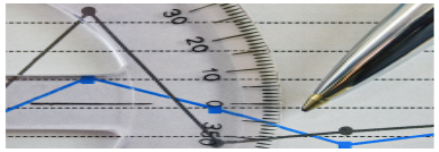
Interactive maps and charts shed light on the unprecedented growth, market share, student loans, tuition pricing, federal grants, and more for for-profit

TOOLS AND INDICATORS FROM THE NEW YORK FED



Economic Indicators Calendar

A calendar showing the date and time of key economic data releases. Links to data sources are provided when available.



Underlying Inflation Gauge (UIG)

The New York Fed Staff UIG measures capture sustained movements in inflation from information contained in a broad set of price, real activity, and financial data. We share estimates and downloadable data on a monthly basis.

FROM OTHER RESERVE BANKS

FRED (Federal Reserve Economic Data) OFFSITE

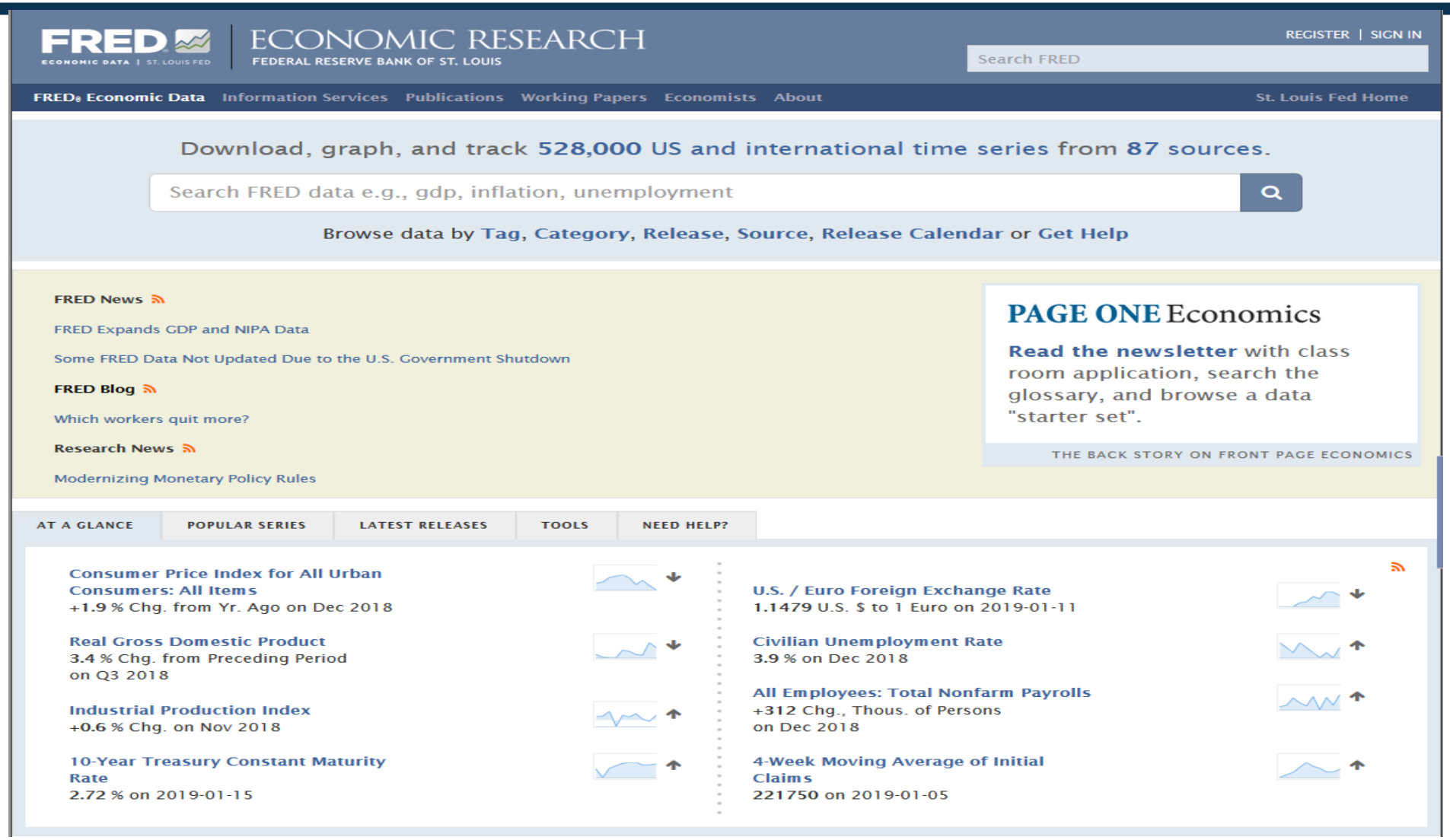
A database developed by the St. Louis Fed that consists of more than 213,000 U.S. and international economic time series. Users can download and interact with the data.

Real-Time Data Set for Macroeconomists OFFSITE

A data set developed by the Philadelphia Fed that consists of vintages, or snapshots, of time series of major macroeconomic variables.

SOURCES FOR ECONOMIC DATA: FEDERAL RESERVE BANK OF ST LOUIS

WWW.STLOIUSFED.ORG FRED ECONOMIC DATA



QUESTIONS?

VISHAL THACKER
Assistant Treasurer/
Chief Investment Officer
County of Alameda

HUBIE WHITE, CFA, CTP
Chief Investment Officer
Office of the Treasurer & Tax Collector
City & County of San Francisco

THANK YOU

Please complete the seminar evaluation and leave it on your table.

UPCOMING CDIAC EVENTS

Municipal Market Disclosure
April 8 – 9, 2025 | Costa Mesa, CA

For more information, visit:
treasurer.ca.gov/CDIAC/seminars

UPCOMING STATE TREASURER'S OFFICE EVENTS

2025 Local Agency Investment Fund (LAIF) Webinar
February 13, 2025 | Webinar

For more information, visit:
https://tinyurl.com/25LAIFWeb