



Investment Strategies for CA Agencies

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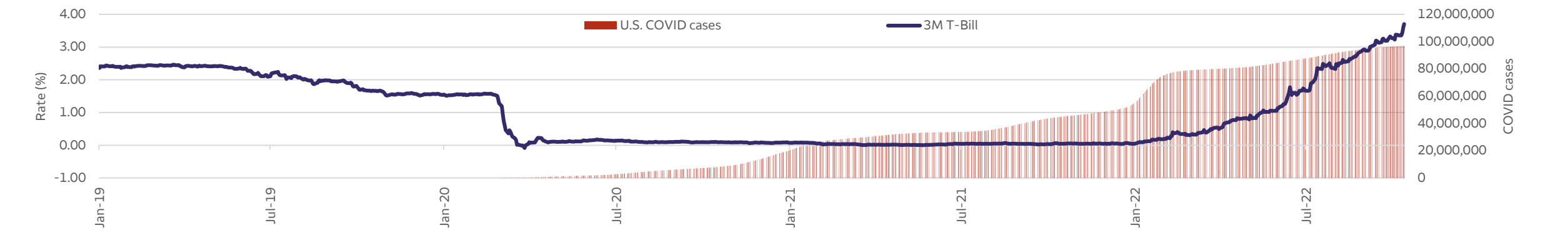


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Market Update

2020 - 2022: The COVID Years



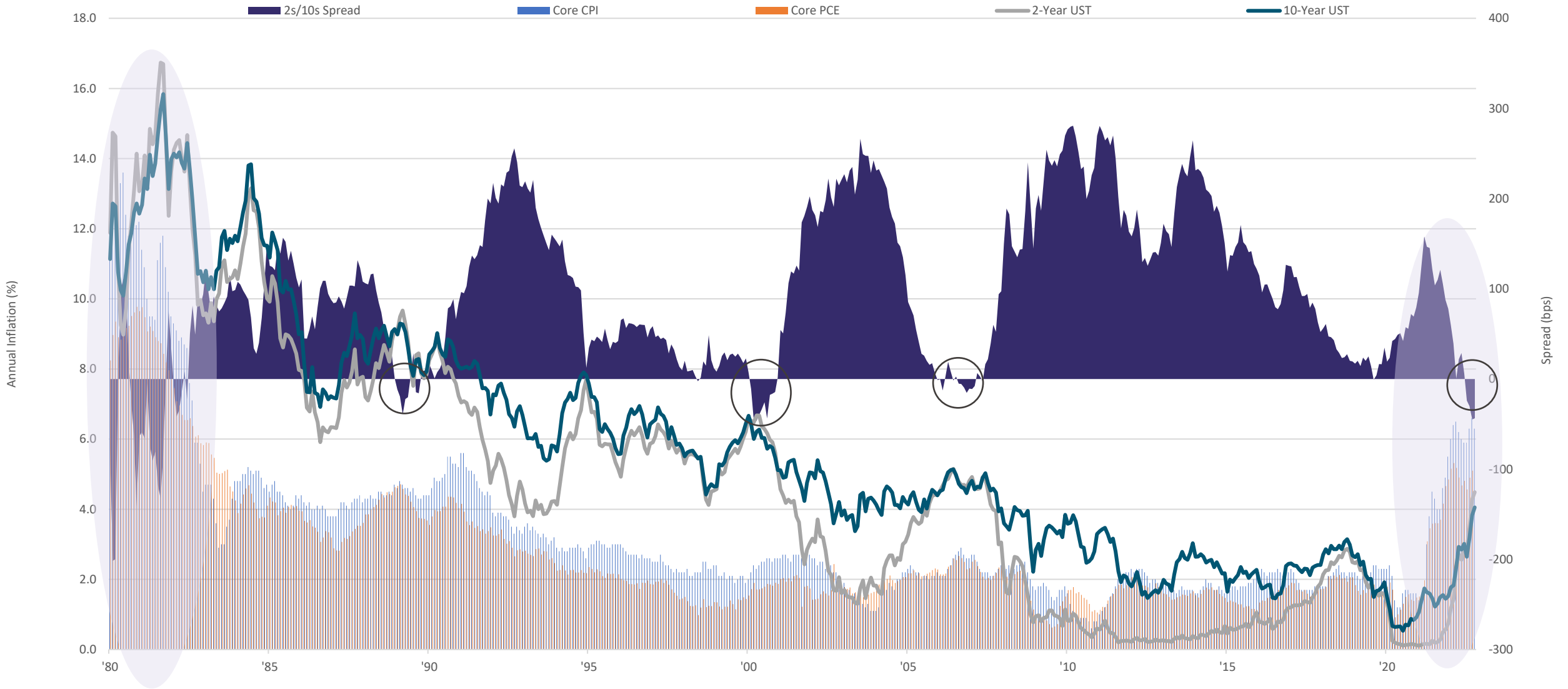
Fed Policy	2019	2020		2021		2022		
	Easing begins	Extreme accommodation		Still very accommodative		Full on tightening		
	2019	2020		2021		2022		
Drivers	Economic outlook becomes more negative & the Fed begins to lower rates.	COVID fears escalate fast, prompting the shutdown of global economies. COVID worries persist.	Organizations focus on cash build and remaining liquid.	Confirmed COVID cases ramp up around various points in the year, causing continued apprehension and uncertainty.	Fed keeps monetary policy extremely accommodative because it argues inflation is <i>transitory</i> .	Inflation reaches heights not seen since the early 1980s.	Front-end rates increase, driven by a pickup in supply (particularly in front-end credit markets like CP and YCDs), wider spreads, Russia invades Ukraine, and the FOMC hikes the Federal Funds rate for the first time by 25bps.	The Federal Reserve embarks on a quick and aggressive tightening cycle. Economic indicators are mixed. Recession concerns grow and the Treasury curve inverts.
Impact	Organizations already impacted by easier monetary policy in 2019.	Organizations begin a liquidity crisis ¹ . Draw down on revolvers, cut capital expenditures, increase access to capital markets and flock to safe-haven investments (bank deposits, MMFs, gov’t securities, etc.).	Government MMF assets reach an all-time high of \$2.95 trillion in May and remain above \$2.50 trillion for the rest of the year	Organizations prefer to remain liquid as the future is still uncertain.	ESG conversation picks up across organizations, investors, issuers and society.	Organizations explore solutions/opportunities to allocation historically large cash balances [in most cases].	Organizations make opportunistic fixed income investments. Government MMF assets fall and continue to decline through year-end.	Organizations are more “duration” focused, desiring to invest in shorter maturities.

Source: Wells Fargo Corporate and Investment Banking, Bloomberg

¹AFP Liquidity Survey, Data as of December 19th, 2022

Inflation is at Levels Not Seen Since the 80s...

○ Inverted yield curve

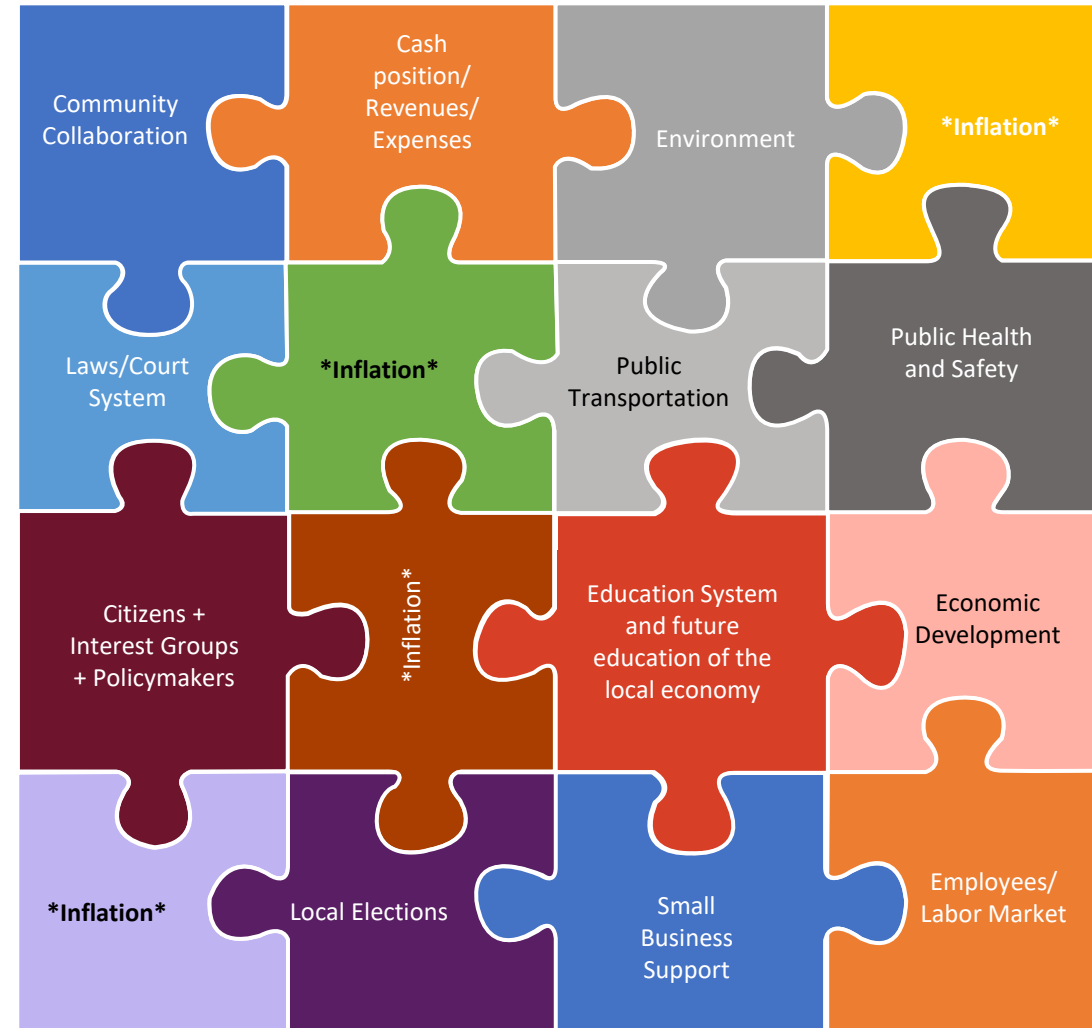


Source: Wells Fargo Corporate & Investment Banking, Bloomberg

Data as of November 30th, 2022

Inflation is in Every Decision Local Governments Make

- While strategies for Treasury groups are generally consistent, the current environment warrants re-evaluation and potential adjustments.
- There are three areas whereby an assessment could benefit local government organizations in this high inflationary environment:
 - **Liquidity** – Reassessing liquidity needs and deploying reasonable excess liquidity to term investments to earn income on cash balances not needed for current operations. Alternatively, it may behoove local governments to assess cash needs for expected projects and invest based on these anticipated outflows or draws.
 - If there are **current funding needs**, consider terming out debt to the parts of the yield curve whereby rates are lower versus shorter maturities.
 - **Organizational strategies** – There may be opportunities to realign priorities or consider non-cash alternatives (e.g., recognizing loyal employees or delaying cash expenditures)



California Investment Statutes

CA Investment Statutes

Local agencies are permitted to invest in a cross section of asset classes in fixed income markets, including both government and credit options.

FIGURE 1

ALLOWABLE INVESTMENT INSTRUMENTS PER STATE GOVERNMENT CODE (AS OF JANUARY 1, 2022)^a APPLICABLE TO ALL LOCAL AGENCIES^b

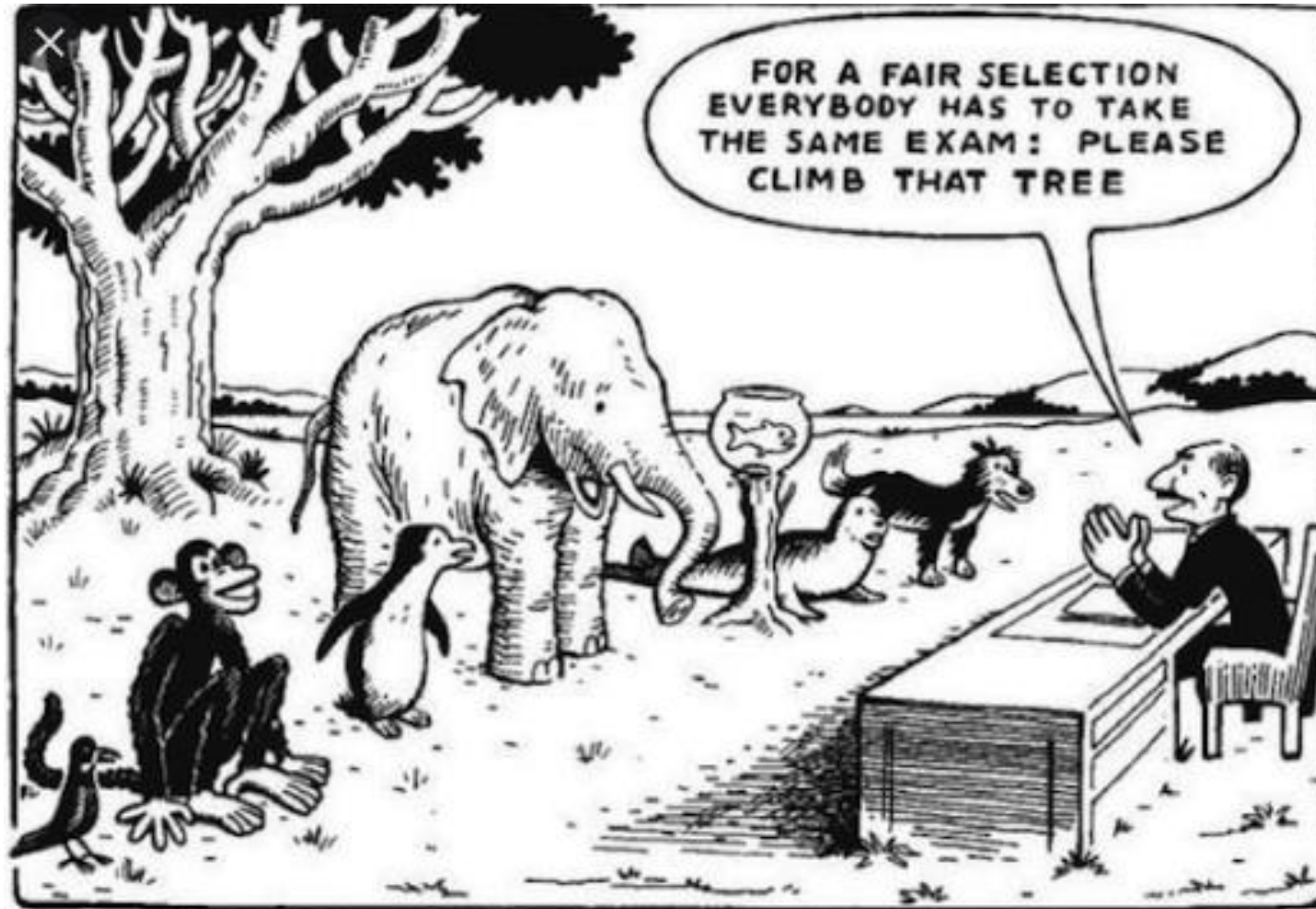
See "Table of Notes for Figure 1" on the next page for footnotes related to this figure.

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 (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 ^f	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% ⁱ	None	53601(i)
Non-negotiable Certificates of Deposit	5 years	None	None	53630 et seq.
Placement Service Deposits	5 years	50% ^k	None	53601.8 and 53635.8
Placement Service Certificates of Deposit	5 years	50% ^k	None	53601.8 and 53635.8
Repurchase Agreements	1 year	None	None	53601(j)
Reverse Repurchase Agreements and Securities Lending Agreements	92 days ^l	20% of the base value of the portfolio	None ^m	53601(j)
Medium-Term Notes ⁿ	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%	Multiple ^o	53601(l) and 53601.6(b)
Collateralized Bank Deposits ^q	5 years	None	None	53630 et seq. and 53601(n)
Mortgage Pass-Through and Asset-Backed Securities	5 years or less	20%	"AA" rating category or its equivalent or better	53601(o)
County Pooled Investment Funds	N/A	None	None	27133
Joint Powers Authority Pool	N/A	None	Multiple ^s	53601(p)
Local Agency Investment Fund (LAIF)	N/A	None	None	16429.1
Voluntary Investment Program Fund ^t	N/A	None	None	16340
Supranational Obligations ^v	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

Source: Wells Fargo Corporate and Investment Banking, CA Treasurer: *Local Agency Investment Guidelines*

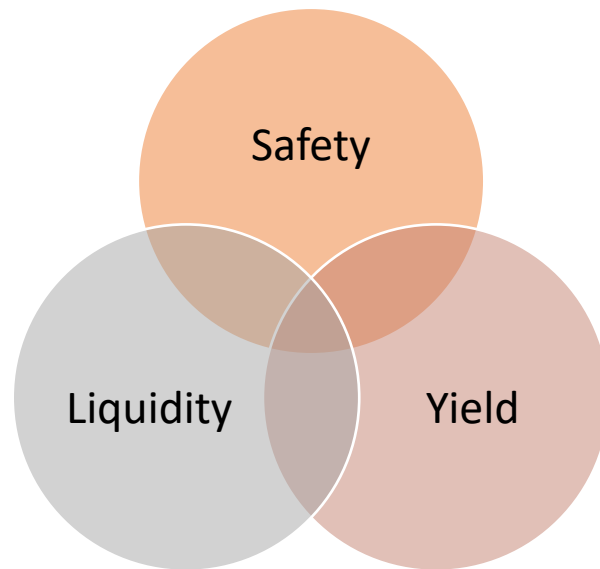
Cash Investment Strategy with a Public Focus

Different organizations, similar investment goals



Creating an Investment Strategy

There is no one size fits all approach to cash investing but there are strategies more closely aligned with the foremost goals of safety and liquidity.

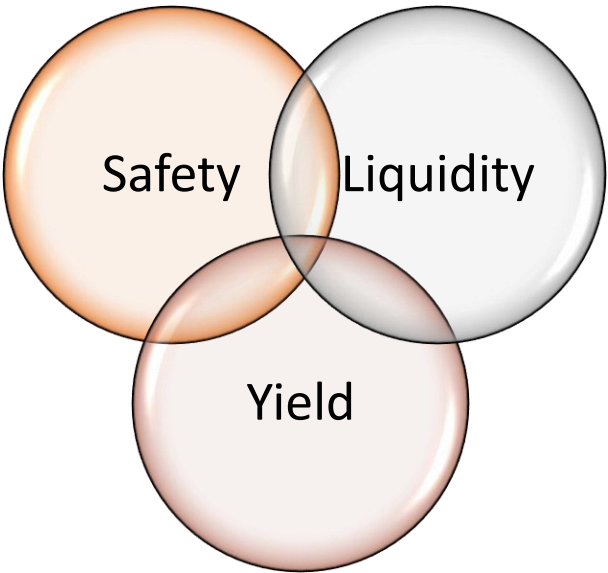


Income Centered Investing: Focuses on the generating cash flow from bond interest, which is either reinvested or used to fund cash outflows



Cash Management Investment Goals

Despite rate or market environment, these are the investment objectives for cash managers:
safety AND liquidity first, followed by earning a market appropriate yield second.



The order of priority of these goals can change, but the goals themselves remain the same.

- 1
- The order of priority can change depending on the specific cash balance in consideration.

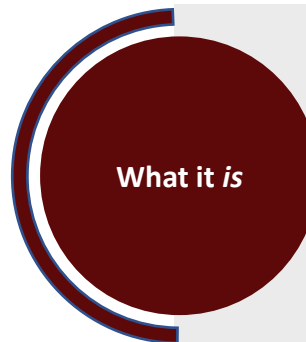
Operational		vs.	Strategic	
1.	Safety/Liquidity		1.	Yield
2.	Yield		2.	Safety/Liquidity

- 2
- An investment strategy can change based on rate and market environment or entity specific considerations.

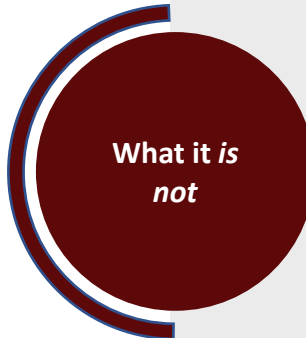
Recession		Flight-to-quality	Potential acquisition
Monetary policy		High excess cash balances	



Safety or preservation of capital can be measured by **default risk**.



Safety, or capital preservation, is investing cash in a manner whereby it is reasonably expected to receive par at redemption or maturity.



Safety is not avoidance of investing.

Safety is not overconcentration - For example, allocating cash to one issuer, or one sector, or one term. Overconcentration exposes investors to additional risk.

Maximization of Safety*								
Short-Term Investments			Issuer Limitations			Specific Instruments		
May limit:			Methods of evaluation:			Such as:		
Interest-rate risk	Credit/Default Risk	Option-Embedded Risk	Ratings Agencies	Concentration/Diversification	Backed, Secured, or Collateralized	Money-Market Funds	Government-Related	Credit-Related

Liquidity

Liquidity can be measured by **tenor/maturity** and/or **ease of redemption**.

What it is

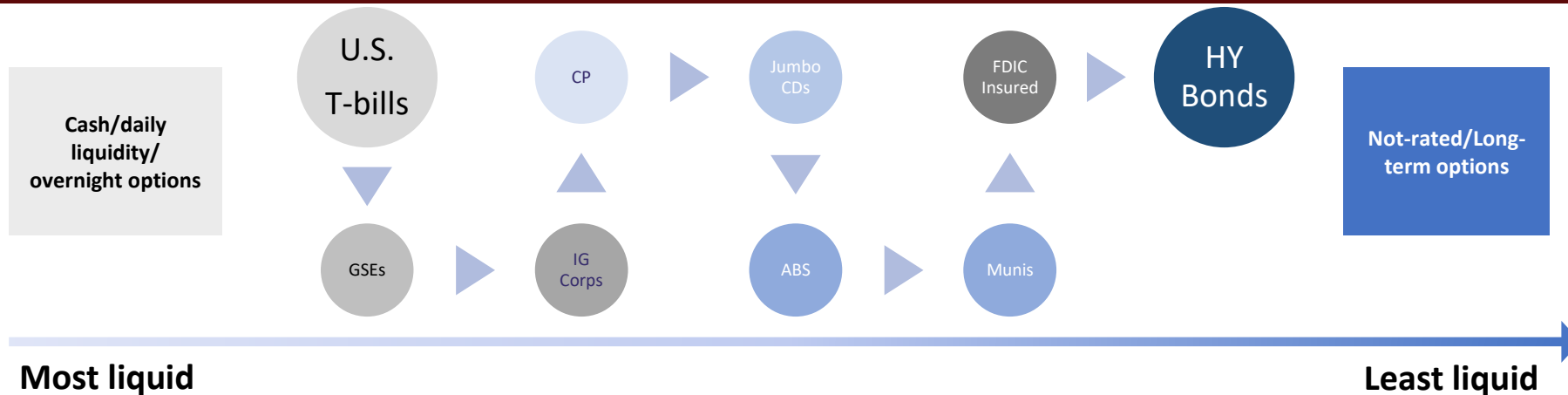
Liquidity relates to how quickly a security is **converted into cash at par** – whether through investor redemption or maturity.

Liquidity can also **be measured** by the generation of consistent income.

What it is not

Liquidity is **not a guarantee**, and it is not static. – it can change.

Liquidity Scale*



Defining Liquidity

- Bank deposits are not the only source of “liquidity” for institutional cash managers.
- Cash managers face “risk” no matter where an organization’s liquid cash is held.

Liquidity - Maturity

- Intra-day/same-day liquidity
- Overnight
- 7-day or longer (up to 90-days)

Even though there are some general similarities for “liquid” fixed income options for cash, liquidity is not defined exactly the same for every organization.

Liquidity – Ease of Redemption

- Immediate redemption (assuming within operable hours)
- Subject to “conditions”

Yield

Yield is a measure of the **rate of return** on an investment which encompasses the value of **coupon payments**, the **price of the instrument**, and **reinvestment rate**.

Cash investors are typically more concerned with book yield than total return.

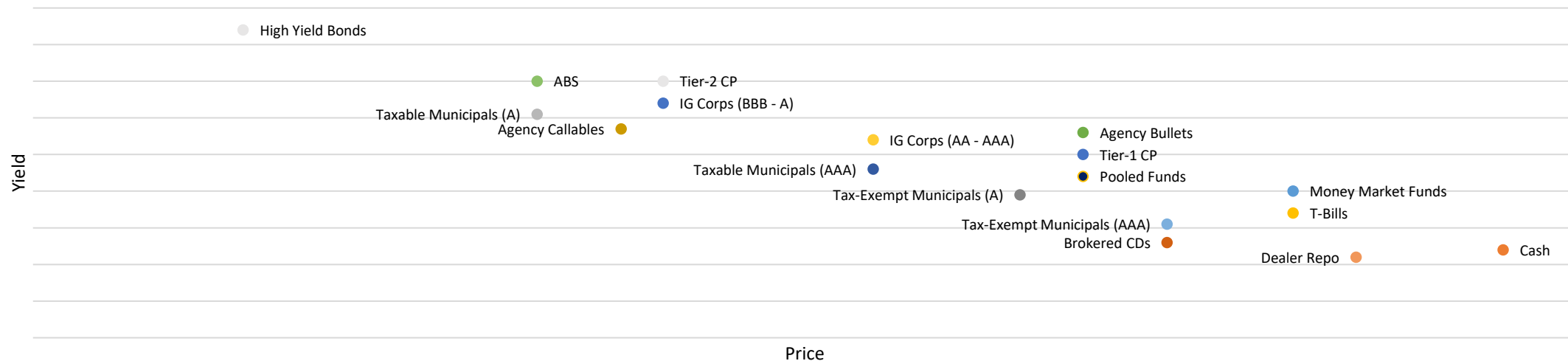
What it is

Yields compensate investors for their willingness to loan cash.
Yields and bond prices have an ***inverse*** relationship in fixed income markets.

What it is not

A higher yield does not necessarily indicate a security itself is extremely risky; it can be a measure of relative risk or a function of the market. e.g., yields for *all* securities are currently rising. However, higher yields aren't always the most safe and liquid cash management appropriate options either.

Yield also isn't measured in only one way. *Discount*, *bond equivalent*, and *money market yields* evaluate short term securities; *yield to worst* is for securities with embedded options; *tax equivalent yields are used for certain* municipal securities. *Yield-to-maturity* is used most frequently.



Fixed Income Instruments

U.S. Treasury Securities

U.S. Treasuries

This stacked bar chart illustrates the growth of U.S. government debt from 1980 to 2021, categorized by seven types of securities. The y-axis represents the amount in billions of dollars, ranging from 0 to 60,000. The x-axis lists the years from 1980 to 2021. The categories are: Municipal (dark blue), Treasury (red), Mortgage-Related (purple), Corporate Debt (grey), Federal Agency Securities (light purple), Asset-Backed (light grey), and Money Markets (black). A dashed box highlights the 'Treasury' category in the legend.

Year	Municipal	Treasury	Mortgage-Related	Corporate Debt	Federal Agency Securities	Asset-Backed	Money Markets
1980	1,000	1,000	0	0	0	0	0
1981	1,000	1,000	0	0	0	0	0
1982	1,000	1,000	0	0	0	0	0
1983	1,000	1,000	0	0	0	0	0
1984	1,000	1,000	0	0	0	0	0
1985	1,000	1,000	0	0	0	0	0
1986	1,000	1,000	0	0	0	0	0
1987	1,000	1,000	0	0	0	0	0
1988	1,000	1,000	0	0	0	0	0
1989	1,000	1,000	0	0	0	0	0
1990	1,000	1,000	0	0	0	0	0
1991	1,000	1,000	0	0	0	0	0
1992	1,000	1,000	0	0	0	0	0
1993	1,000	1,000	0	0	0	0	0
1994	1,000	1,000	0	0	0	0	0
1995	1,000	1,000	0	0	0	0	0
1996	1,000	1,000	0	0	0	0	0
1997	1,000	1,000	0	0	0	0	0
1998	1,000	1,000	0	0	0	0	0
1999	1,000	1,000	0	0	0	0	0
2000	1,000	1,000	0	0	0	0	0
2001	1,000	1,000	0	0	0	0	0
2002	1,000	1,000	0	0	0	0	0
2003	1,000	1,000	0	0	0	0	0
2004	1,000	1,000	0	0	0	0	0
2005	1,000	1,000	0	0	0	0	0
2006	1,000	1,000	0	0	0	0	0
2007	1,000	1,000	0	0	0	0	0
2008	1,000	1,000	0	0	0	0	0
2009	1,000	1,000	0	0	0	0	0
2010	1,000	1,000	0	0	0	0	0
2011	1,000	1,000	0	0	0	0	0
2012	1,000	1,000	0	0	0	0	0
2013	1,000	1,000	0	0	0	0	0
2014	1,000	1,000	0	0	0	0	0
2015	1,000	1,000	0	0	0	0	0
2016	1,000	1,000	0	0	0	0	0
2017	1,000	1,000	0	0	0	0	0
2018	1,000	1,000	0	0	0	0	0
2019	1,000	1,000	0	0	0	0	0
2020	1,000	1,000	0	0	0	0	0
2021	1,000	1,000	0	0	0	0	0

U.S. Treasury Securities

U.S. Treasury Securities

Debt obligations of the United States Government

Moody's	Standard & Poor's	Fitch
Aaa	AA+	AAA

- Offered in the primary market via auction and traded daily in the secondary market.
- Considered a risk-free rate and risk-free security.
- Considered a “flight-to-quality” during periods of heightened market risk.

Benefits

Credit	Backed by the full faith and credit of the U.S. government.
Liquidity	Largest and most broadly traded fixed income asset class in the market.
Flexibility	Treasury securities are offered in tenors ranging from 4-weeks to 30-years, as well as in a variety of structures including: discount, fixed-rate, floating-rate, and inflation protected.
Investment Strategy	Treasury securities are used by investors for many different strategies.

Treasury Structures

Treasury Bills

4, 8, 13, 17, 26, and
52-Week

Treasury Notes

2, 3, 5, 7, and
10-Year

Treasury Bond

20 and 30-Year

Floating-rate Note

2-Year

Treasury Inflation Protected Securities

5, 10, and 30-Year

STRIPs


Considerations

- Supply is subject to U.S. debt limit restrictions, government appropriations and taxation.
- Treasury securities are subject to changes in interest rates.
- Yields are generally lower than other fixed income asset classes.


U.S. Treasury Securities -- Structures

There are two subsets of Treasury securities: those issued at a discount and those being issued as coupon-bearing securities.

Discount

- Securities issued at a discount pay a fixed amount at maturity, otherwise known as face value or par value.
 - There are no intermediate interest payments prior to maturity.
 - Issued with a final maturity of one year or less.
- 
- Treasury Bills are issued at a discount (or at par, if the interest rate is zero) and an investor is paid par at maturity.
 - Interest accrues and is paid ONLY at maturity.

Coupon

- Securities issued with a coupon pay a stated rate of interest semi-annually.
 - Securities are redeemed at par at maturity.
 - Issued with a final maturity greater than one year.
- 
- Treasury Notes and Bonds are issued with a stated interest rate that is applied to the par amount
 - Interest on the bonds is paid semi-annually.

U.S. Treasury Securities -- Default

As a U.S. Treasury investor, which headline can impact your ability to be repaid?

Government Shutdown

- Federal Agencies must discontinue all non-essential discretionary functions until new funding legislation is passed and signed into law.
 - However, essential services and mandatory programs continue to function regardless.

Debt Ceiling

- The debt ceiling is the legal limit on the total amount of Federal debt the government can accrue.
 - Since 1960, Congress has acted over 80 separate times to permanently raise, temporarily extend, or revise the definition of the debt limit.
 - When the debt limit is reached, the Treasury can no longer issue debt and will likely soon run out of cash, however before this happens, the Treasury can use a variety of extraordinary measures to avoid default.

An unresolved debt ceiling can cause

- Uncertainty in global capital markets
- Significant and abrupt changes in T-Bill supply
- Opportunity

Agencies/GSEs

U.S. Agency and GSE Securities

U.S. Agency Securities

Debt obligations of the U.S. Agencies and Government-Sponsored Enterprises

Moody's	Standard & Poor's	Fitch
Aaa	AA+	AAA

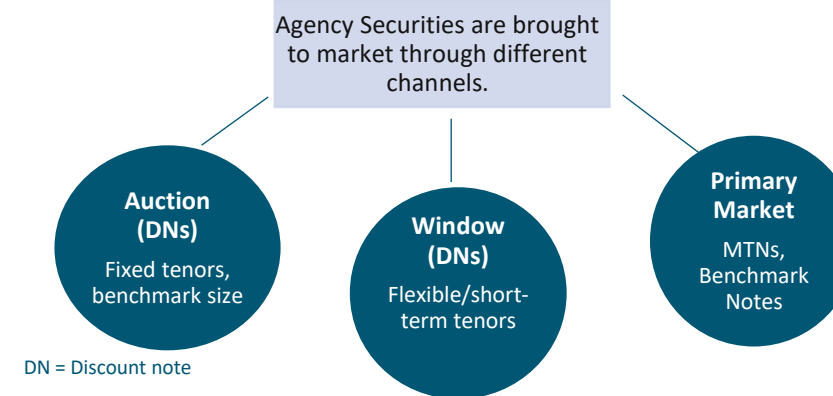
- U.S. Agencies collectively refers to issuers that are explicitly backed by the United States government as well as GSEs that are not explicitly backed by the United States government.

*Not all Agencies/GSEs are rated

Benefits

Credit	Limited credit risk; some issuers are explicitly backed by the United States government, but others are not.
Liquidity	Large fixed income asset class. Liquidity is dependent on size, issuer, and structure, though generally considered a highly liquid asset class.
Flexibility	Agency securities are offered in tenors ranging from 4-weeks to 30-years, as well as in a variety of structures including: discount, fixed-rate, floating-rate, callable, zero coupon, structured notes. Reverse inquiry is often used in this market.
Investment Strategy	Like Treasury securities, a variety of investors can purchase Agency securities. Investors will typically receive a spread premium over like-maturity Treasuries.

Agency Supply



Considerations

- Incremental credit risk for issuers not explicitly backed by the United States government.
- Agency securities are subject to both market and interest rate risk.
- Callable securities are used by many agency issuers and are subject to prepayment and reinvestment risk.
- Issuance by Fannie Mae and Freddie Mac has continued to decline since the financial crisis. Supply has been heavily concentrated in Federal Home Loan Bank and Federal Farm Credit Bank issuance in recent years.


U.S. Agencies vs GSEs

U.S. Federal Agencies are issuers whose debt obligations are explicitly backed by the U.S. government.

Government Sponsored Enterprises are issuers whose debt obligations are not explicitly backed the U.S. government.

U.S. Agency

Government-Sponsored Enterprise



Explicitly backed
by the U.S.
government

The diagram consists of two large, dark blue arrows pointing in opposite directions. The left arrow points towards the left and contains the text 'Explicitly backed by the U.S. government'. The right arrow points towards the right and contains the text 'NOT explicitly backed by the U.S. government'. Above the left arrow is a dark red box labeled 'U.S. Agency', and above the right arrow is a dark red box labeled 'Government-Sponsored Enterprise'.

NOT explicitly
backed by the
U.S. government

Agency and GSE Snapshot

Entity Name	Explicit U.S. Guarantee	Other Guarantee	Debt Ratings	Type of Debt Issuance
Federal National Mortgage Association	No		Aaa, P-1 AA+, A-1+ AAA, F1+	Callable securities Discount notes (up to 1y) Benchmark bills (3m, 6y and 1y) Benchmark Notes (2y, 3y, 5y and 10y)
Federal Home Loan Mortgage Corporation	No		Aaa, P-1 AA+, A-1+ AA, F1+	Callable securities Discount notes (1 day to 1y) Medium-term notes Reference bills (<1y)
Ginnie Mae	Yes		NR	Amortizing securities
Federal Home Loan Bank	No		Aaa, P-1 AA+, A-1+ NR	Callable securities Discount notes (1 day to 1y) Medium-term notes (up to 30y) Globals (benchmark size)
Tennessee Valley Authority	No		Aaa AA+ AAA	Discount notes (<1y) Power bonds (1y to 50y)
Farmer Mac	No		NR NR NR	Discount notes (<1y days) Medium-term notes (3m to 15y)
Federal Farm Credit Banks	No		Aaa, P-1 AA+, A-1+ AAA, F1+	Discount notes (5d to 2m) Designated bonds (2 to 10y) Floating-rate bonds (1 to 5y) Fixed-rate bonds (1 to 5y)
Private Export Funding Corporation	Yes (indirect)	Export-Import Bank of the U.S. (Ex-Im)*	Aaa / A-1 NR AAA / F1	Commercial paper Long-term secured notes (>5y)
The U.S. International Development Finance Corporation	Yes		NR	Certificates of participation (COPs)
Small Business Administration	Yes		NR	7 (a) (7y to 25y) SBAP (10y to 20y) SBIC (10y)

Source: Wells Fargo Corporate and Investment Banking, Issuer Websites

*Backed by the full faith and credit of the United States

U.S. Agencies – Debt Structures

Type	Short Name	Tenors
Discount Notes	DNs	1-day to 52-Weeks
Fixed-rate Bullets	Bullets	2-Year to 30-Years
Callable Securities	Callables	2-Year to 30-Years
Floating-rate Securities	FRN	2-Year to 30-Years
Zero Coupon Bonds	Zeros	2-Year to 30-Years
Structured Notes (e.g., step up/step down)		2-Year to 30-Years
Amortizing*	COPs	1-Year to 30-Years

*Specific to DFC's COPs

Supranationals, Sovereigns, and Agencies

As GSE Issuance Falls, Some Investors Use SSAs as Substitutes

SSAs

Supranational (Supras)

A quasi-government entity that is owned by a consortium of participating official entities (typically nations).

Sovereign

For U.S. domiciled investors, a Sovereign is defined as an official, non-U.S. government borrower.

Agency

Foreign agencies that have quasi-government or full-government support in their respective home countries.

Treasury Structures

Supras

- World Bank
- Inter-American Development Bank

Sovereigns

- Germany
- Canada

Agencies

- CADES
- KfW
- Export Development Canada

Benefits

Credit

Limited credit risk; particularly for SSAs that are rated AAA/Aaa.

Liquidity

Depending on the issuer and size of issuance, liquidity may be more or less robust. However, generally considered highly liquid.

Flexibility

SSA securities are offered in a variety of structures including discount, fixed-rate, floating-rate, Green, and callable.

Investment Strategy

Monetary authorities tend to be the largest investors in the SSA market. Investors will typically receive a yield premium over like-maturity Treasuries.

Considerations

- Limited credit risk but varies depending on the issuer. The largest issuers are rated AAA/Aaa.
- SSA securities are subject to liquidity and interest rate risks.
- Callable securities are subject to prepayment and reinvestment risk.
- SSAs are a distinct asset class and are usually treated as such in investment policies.

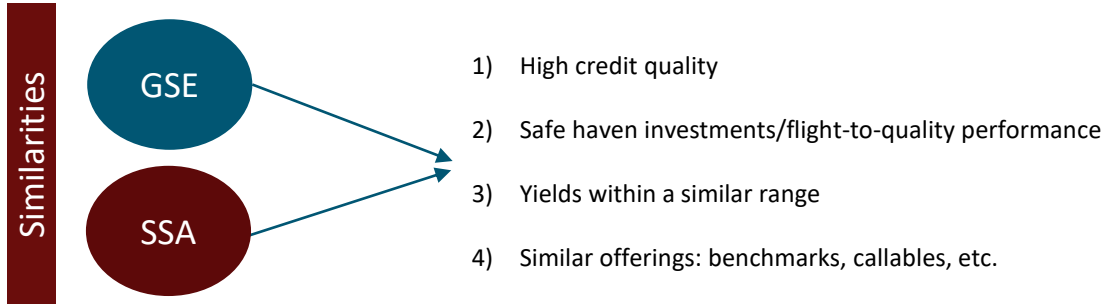
Summary of Select SSA Issuers

Supranationals		Agencies	
Entity Name	Debt Ratings	Entity Name	Debt Ratings
The World Bank	Aaa/AAA/AAA	Export Development Canada	Aaa/AAA
International Finance Corporation	Aaa/AAA/AAA	Kreditanstalt Fuer Wiederaufbau (KfW)	Aaa/AAA/AAA
Inter-American Development Bank	Aaa/AAA/AAA	Nederlandse Waterschapsbank	Aaa/AA+
European Bank for Reconstruction and Development	Aaa/AAA/AAA	Oesterreichische Kontrollbank	Aaa/AA+
African Development Bank	Aaa/AAA/AAA	Rentenbank	Aaa/AAA/AAA
Asian Development Bank	Aaa/AAA/AAA	Swedish Export Credit Corporation	Aa1/AA+
European Investment Bank	Aaa/AAA/AAA	Korean Development Bank	Aaa/AAA/AAA
Nordic Investment Bank	Aaa/AAA/AAA	Caisse d'Amortissement	Aa2/AA
Sovereigns			
Entity Name		Debt Ratings	
Germany		Aaa/AAA/AAA	
Province of Ontario		Aa2/AA-	

Source: Wells Fargo Corporate and Investment Banking, Issuer Websites

SSAs vs GSEs

Similarities and Differences



		Mission	Leverage	Sponsorship	Call on Capital	Oversight
Differences	GSE	U.S Residential	Preferred stock purchase program bridges equity gap	U.S. Government	U.S. Treasury	FHFA
	SSA	International, regional, multi-sector economic development and poverty reduction	Capped by capital (in most cases to 1x leverage or less)	Multi-government	Member Nations	Resident board with reps. From all members who approve all activities

Commercial Paper

Commercial Paper

Commercial Paper

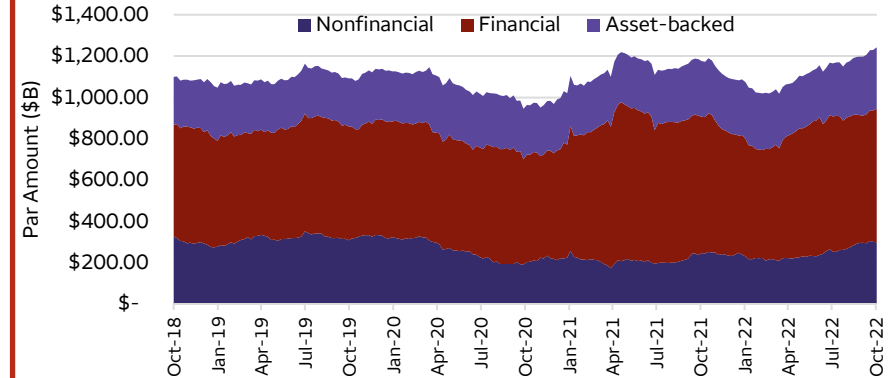
Short-term promissory note that is generally issued at a discount and matures at par.

Moody's	Standard & Poors'	Fitch
P-1	A-1+ A-1	F1+ F1

Benefits

Credit	Investors are exposed to the underlying credit of the issuer. CP programs maintain lines of credit that support the CP program.
Liquidity	There is a secondary market, though it is not as robust as other markets, as most CP is held to maturity.
Flexibility	CP is offered in tenors ranging from overnight to 397 days. Reverse inquiry is frequently used by investors to target specific maturity dates.
Investment Strategy	CP is purchased by a variety of investors including money managers, corporations, public entities, banks, and insurance companies.

Commercial Paper Outstanding (SA)



Considerations

- Subject to the underlying risk of the issuer.
- Supply is dependent upon issuer funding needs and can be inconsistent.
- Disruptions in short-term markets can impact supply and demand.
- Subject to market risk, interest rate risk, and roll-over risk.

Commercial Paper: All Rating Transitions

Credit rating stability is high for both P-1 and P-2 commercial paper, while jump-to-default risk is very low.

Commercial Paper Ratings Transitions, 1972-H1 2017*							
Horizon (Days)	Begin Rating	P-1	P-2	P-3	NP	WR	Default
30	P-1	99.2102%	0.3797%	0.0043%	0.0075%	0.3960%	0.0024%
	P-2	0.3678%	98.4903%	0.4277%	0.0955%	0.6158%	0.0030%
	P-3	0.0369%	1.2848%	95.2454%	1.7376%	1.6744%	0.0211%
	NP	0.0046%	0.0551%	0.4638%	97.5110%	1.8185%	0.1470%
60	P-1	98.4208%	0.7528%	0.0109%	0.0147%	0.7957%	0.0051%
	P-2	0.7335%	97.0031%	0.8060%	0.2088%	1.2403%	0.0083%
	P-3	0.0739%	2.5506%	90.8803%	3.1526%	3.3057%	0.0370%
	NP	0.0092%	0.1197%	0.9119%	95.1548%	3.5280%	0.2763%
90	P-1	97.6342%	1.1177%	0.0197%	0.0238%	1.1966%	0.0080%
	P-2	1.0946%	95.5380%	1.1483%	0.3329%	1.8737%	0.0125%
	P-3	0.1112%	3.8079%	86.8075%	4.3004%	4.9200%	0.0530%
	NP	0.0139%	0.1801%	1.3580%	92.9004%	5.1457%	0.4019%

*Includes issuers that held rated CP on the cohort formation date and defaulted on CP or filed for bankruptcy by the end of the time horizon, regardless of whether or not they had CP outstanding at the time of default (some did not).

Corporate Notes

Corporate Notes

Corporate Notes

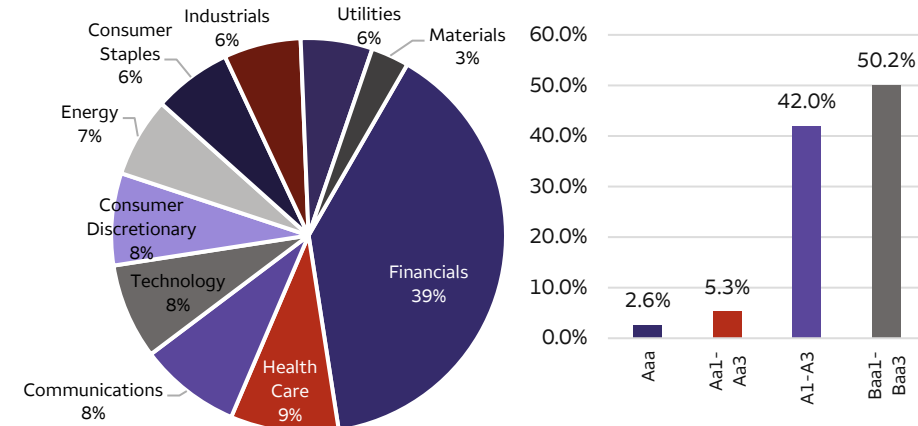
Debt obligations issued by corporations.

	Moody's	Standard & Poors'	Fitch
	Aaa	AAA	AAA
	Aa	AA	AA
	A	A	A
Investment Grade ↑	Baa	BBB	BBB
Non-Investment Grade ↓	Ba	BB	BB

Benefits

Credit	An investor is exposed to the underlying credit of the issuer.
Liquidity	The corporate bond market is actively traded (particularly the high-grade market).
Flexibility	Corporate bonds are offered in a variety of tenors. Securities are offered with either fixed-rate or floating-rate coupons.
Investment Strategy	Corporate bonds are purchased by a wide variety of investors including money managers, corporations, public entities, insurance companies, and banks.

IG Bond Market Issuance (Q3)



Considerations

- Subject to underlying credit risk of issuer.
- Corporate notes issued with a make-whole call are subject to prepayment risk and reinvestment risk.
- Corporate notes generally have more price volatility than shorter credit securities like commercial paper.
- Subject to market risk and interest rate risk.

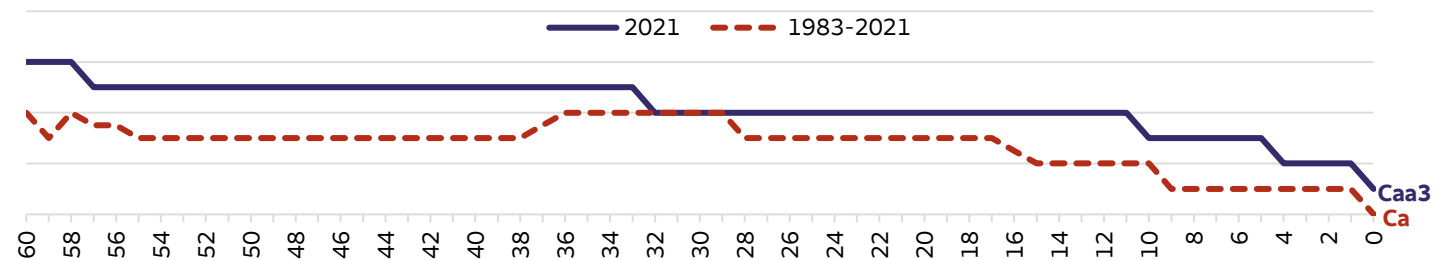
Corporate Note Ratings and Average Time to Default

It has historically taken an issuer about 60 months to default, after being downgraded below investment grade.

Long-Term Rating Scale

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

Median Ratings Before Default, 2021 vs Long-Term Average (Moody's)



Corporate Note Ratings

Numbers 1-3 or + / - may accompany a bond to denote its relative riskiness within a rating category, with 1 / + as a better rating than a 2 or 3 / -.

Rating Watch

- A rating **watch** indicates a heightened probability of a rating change and the likely direction of such a change, defined as
 - Positive
 - Negative
 - Evolving
- A rating watch is typically event-driven and generally resolved over a relatively short period of time
- A rating watch may also exist to communicate implications for certain events should they occur, or otherwise known as *triggering events* (e.g., shareholder or regulatory approval)
- A rating change **may not always** be precipitated by a rating watch change

Rating Outlook

- A rating **outlook** indicates the direction that a rating is likely to move over a one to two-year period and reflects trends that have not yet triggered a rating action, but that may do so if the trend continues.
- Outlooks can be defined as
 - Stable
 - Positive
 - Negative
- Outlooks are associated with long-term ratings
- An outlook change does not necessarily mean that a bond rating will change nor does a stable outlook mean that the rating will not change

Average One-Year Letter Rating Migration Rates

One-year letter rating migration rates have been relatively stable over the past 40+ years.

One-year Letter Rating Migration Rates, 1970 - 2021

Moody's	Aaa	Aa	A	Baa	Default
Aaa	87.94%	7.69%	0.56%	0.07%	0.00%
Aa	0.75%	85.50%	8.35%	0.40%	0.02%
A	0.05%	2.44%	87.34%	5.02%	0.05%
Baa	0.03%	0.13%	3.77%	86.63%	0.14%

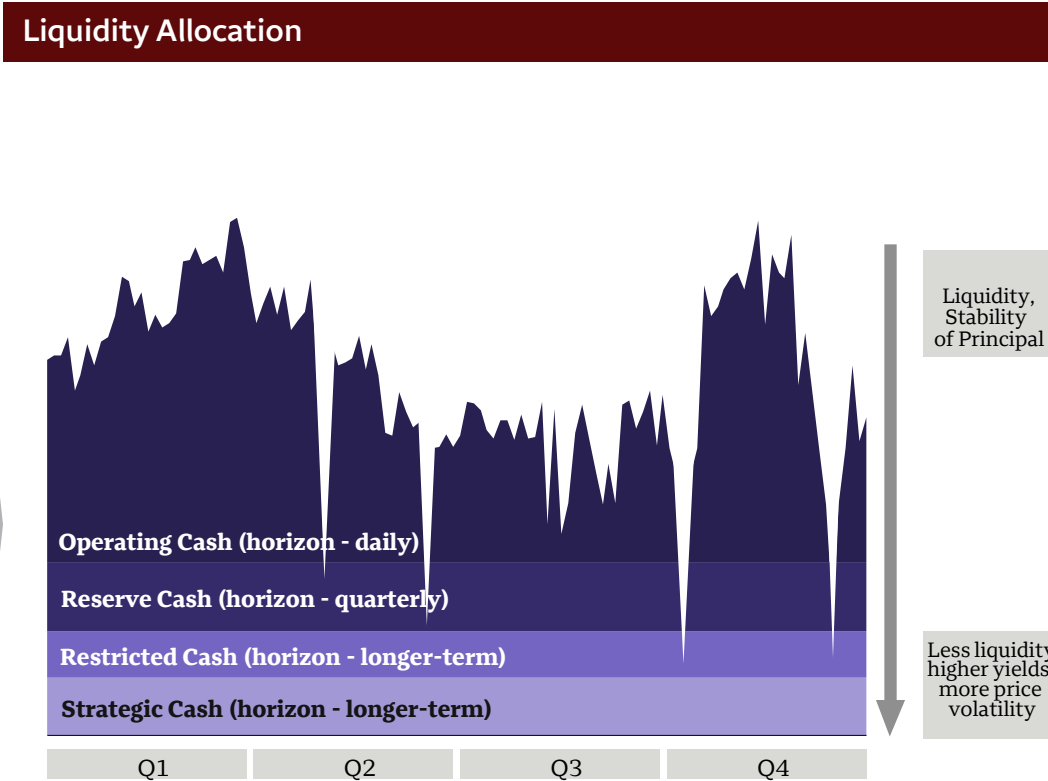
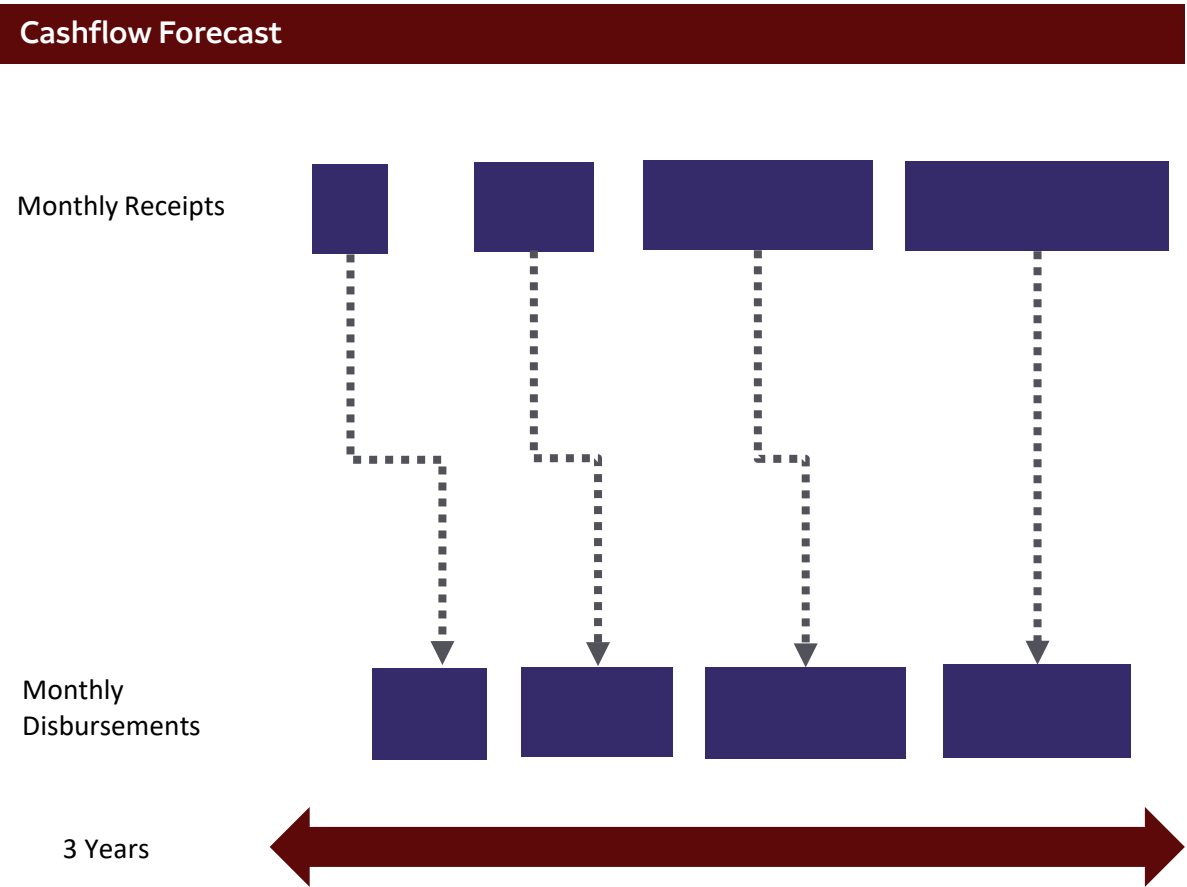
One-Year Letter Rating Migration Rates, 2021

Moody's	Aaa	Aa	A	Baa	Default
Aaa	97.96%	0.00%	0.00%	0.00%	0.00%
Aa	0.31%	91.05%	6.48%	0.00%	0.00%
A	0.00%	0.54%	93.69%	2.38%	0.00%
Baa	0.00%	0.05%	1.87%	92.94%	0.00%

Cashflow Forecasting: Informing Investment Decisions

Informing Investment Decisions

Liquidity investors' top priority is managing cash in such a way as to ensure that outflows are funded. How is this accomplished?



Liquidity During a Period of High Cash Balances

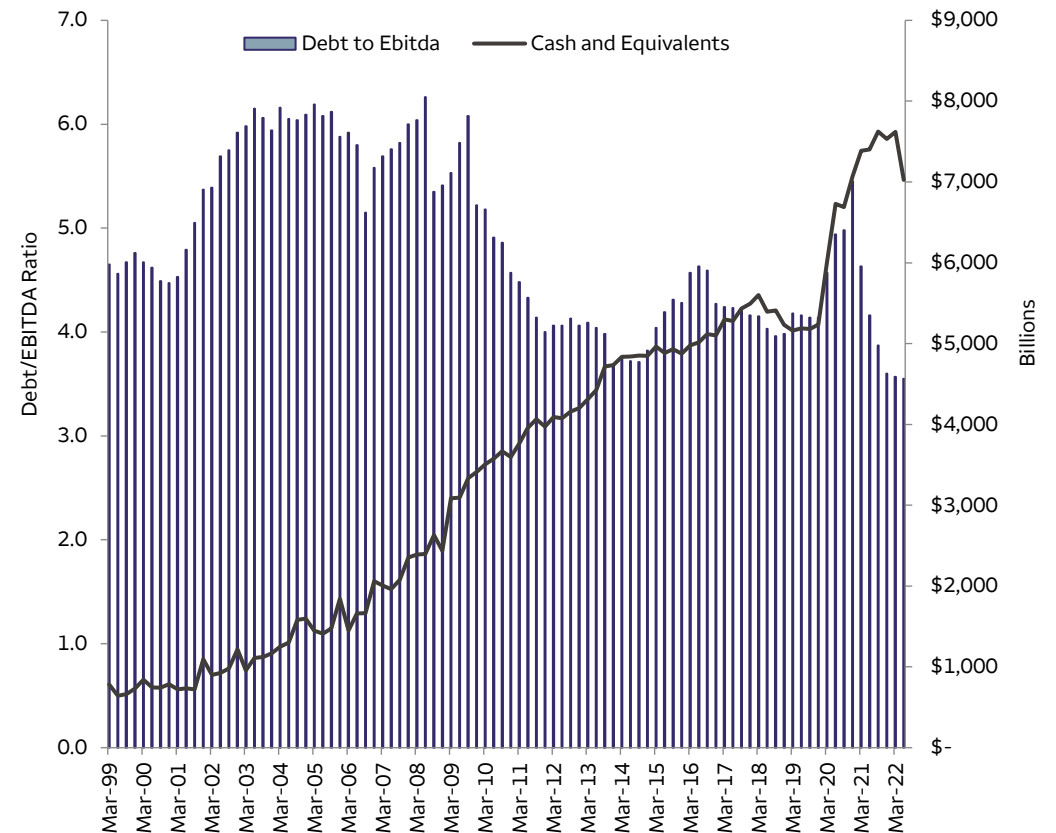
Cash Balances

- Since the start of the COVID pandemic, cash balances for many organizations remain historically high. Initially the balances rose due to:
 - Federal stimulus
 - Pandemic planning and contingencies
 - Changes (decrease) in capital expenditures
 - Increased access to capital markets
- While there is always a need for readily available cash, there are likely opportunities to strategically allocate a portion of balances, while not comprising liquidity.
- **Do the events over the past 2 years shape our perception of liquidity?**
 - COVID
 - Headlines
 - Disruption
 - Uncertainty

Yes, but...

Inflation and higher rates have propelled many organizations to rethink cash balances and fixed income allocations.

Cash on S&P 500 Balance Sheets



Bringing It All Together

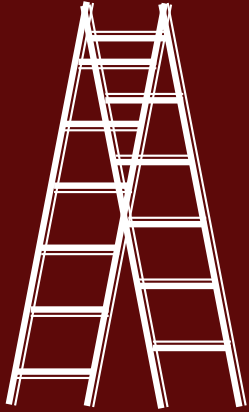
Diversify Amongst Structure Substitutes

U.S. Treasuries	U.S. Agencies/ GSEs	CDs	CP	Corporate Notes/ Bonds	Municipals	ABS	MBS
Fixed Rate	Fixed Rate	Fixed Rate	Fixed Rate	Fixed Rate	Fixed Rate	Fixed Rate	Fixed Rate
Floating Rate	Floating Rate	Floating Rate		Floating Rate	Floating Rate	Floating Rate	Floating Rate
STRIPs	Zero Coupon	Zero Coupon	Zero Coupon	Zero Coupon	Zero Coupon	Zero Coupon	Zero Coupon
Discount Note/ Bills	Discount Note/ Bill	Discount Note	Discount Note				
Bullet	Bullet	Bullet	Bullet	Bullet	Bullet	Bullet	Bullet
	Callable	Callable		Callable	Callable	Callable	Callable
	Amortizing			Amortizing	Amortizing	Amortizing	Amortizing
	Puttable	Puttable		Puttable	Puttable	Puttable	Puttable
	Step Up	Step Up		Step Up			
	Step Down	Step Down		Step Down			
Structured Note	Structured Note	Structured Note		Structured Note	Structured Note	Structured Note	Structured Note

Source: Wells Fargo Corporate & Investment Banking

Investment Strategy: Laddered Portfolio

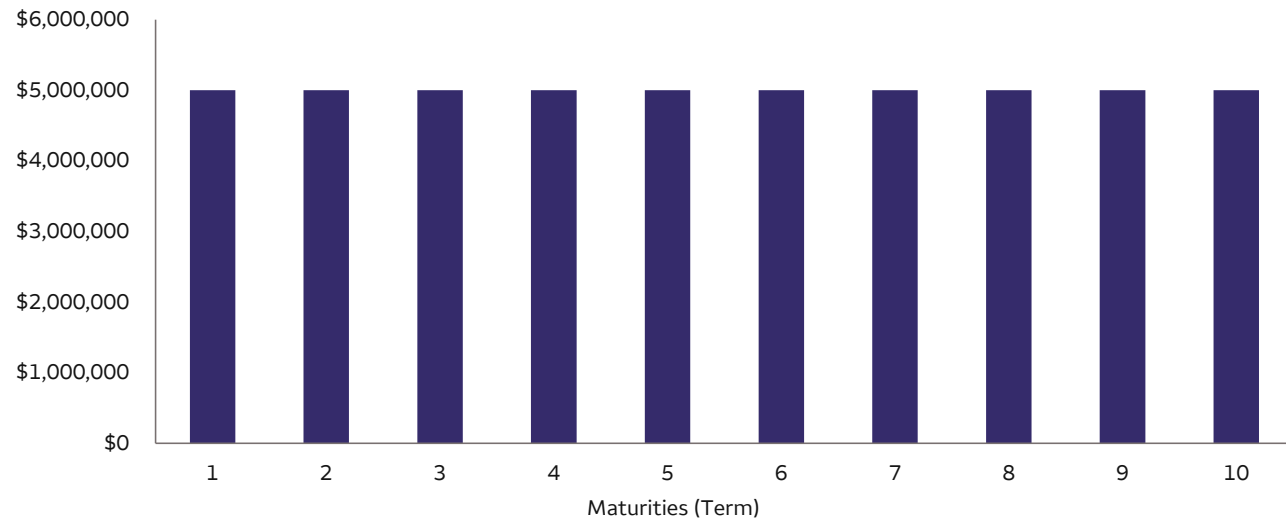
Bond Ladder 101



A bond ladder is a strategy in which investments (usually equal in par amount) are made at consistent intervals (e.g., monthly, quarterly, etc.)

- There are multiple risks to evaluate in fixed income markets. A bond ladder investment strategy is one way to enhance portfolio performance while operating within an investor's specific risk parameters.
- With a portfolio ladder, securities are selected to meet specific cash outflows or to provide consistent liquidity.
- Individual investments are selected to mature at equal intervals along the yield curve, according to desired time horizon.
 - This strategy is repeated and can be used through changing interest rate cycles.

Ladder Example



Bond Ladder 101: Benefits

A laddered investment strategy provides rate, cashflow and general ease of use benefits to investors.

Rates

- A bond ladder allows investors to manage interest rate risk as new Investments are always made at prevailing interest rates.
- A ladder is a “rate agnostic” strategy;
 - As rates rise, the shorter securities that mature in the near-term can be reinvested at the higher interest rates.
 - As rates fall, longer term securities are locked in at the prior higher interest rates (assuming fixed-rate).

Cashflows

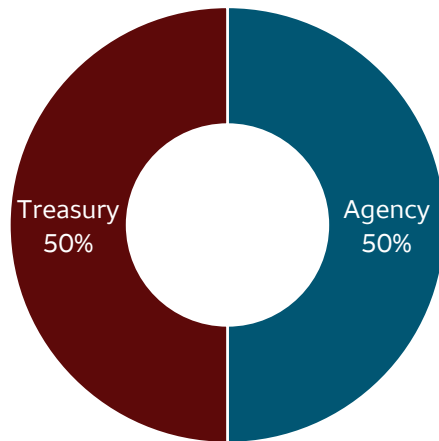
- A bond ladder provides consistent liquidity through ongoing maturities. If securities are matched appropriately to cash outflows, this reduces price (principal) volatility by minimizing the need to sell securities prior to maturity.

Sustainability

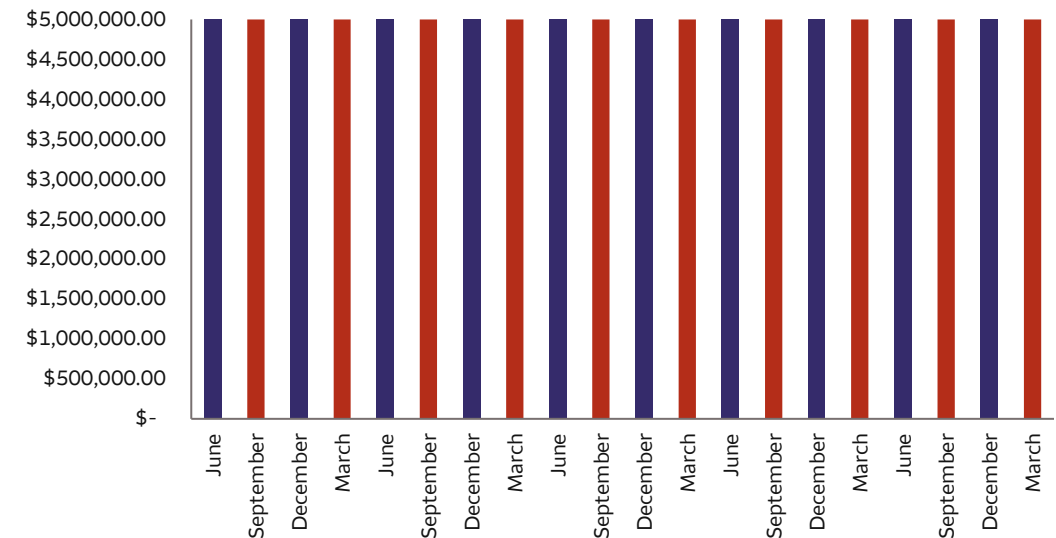
- A laddered investment strategy is relatively low-maintenance. Once the strategy is tailored to an investor’s individual risk tolerance, it can be replicated through interest rate cycles and across similar structured asset classes.

Bond Ladder Example 1 (Illustrative Purposes Only)

Investment Mix



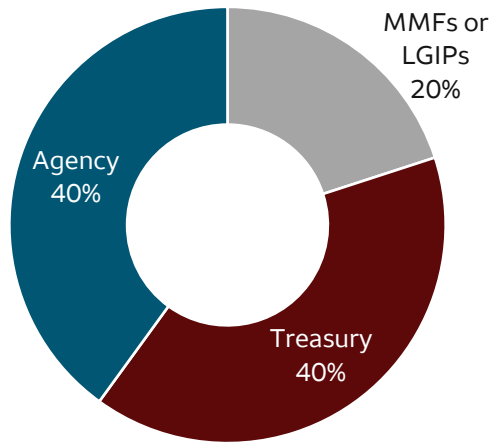
Treasury/Agency Ladder



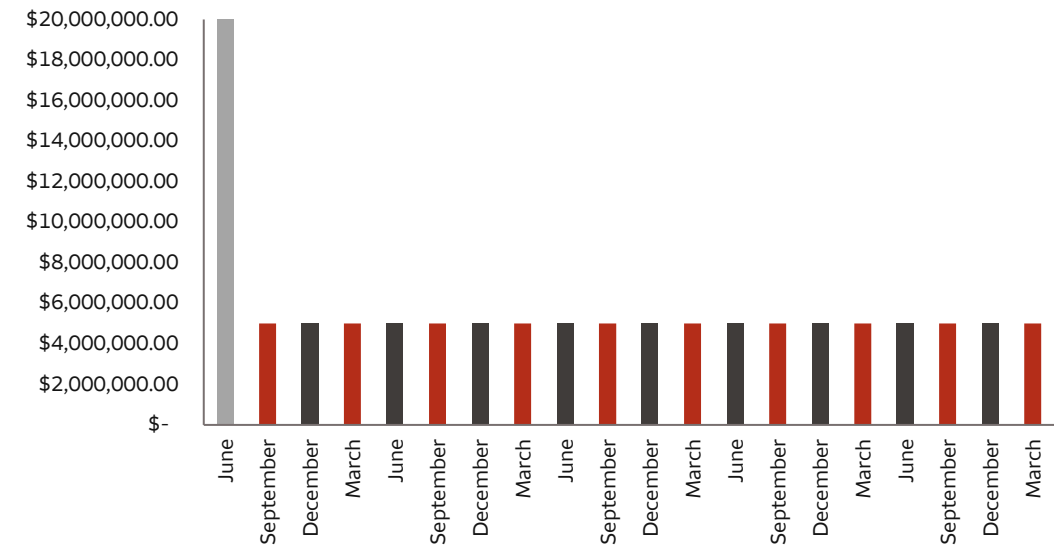
- The bond ladder example on this page is a demonstration of a government ladder implemented with discount notes and bullet securities, staggered evenly over a 5-year horizon.

Bond Ladder Example 2 (Illustrative Purposes Only)

Investment Mix



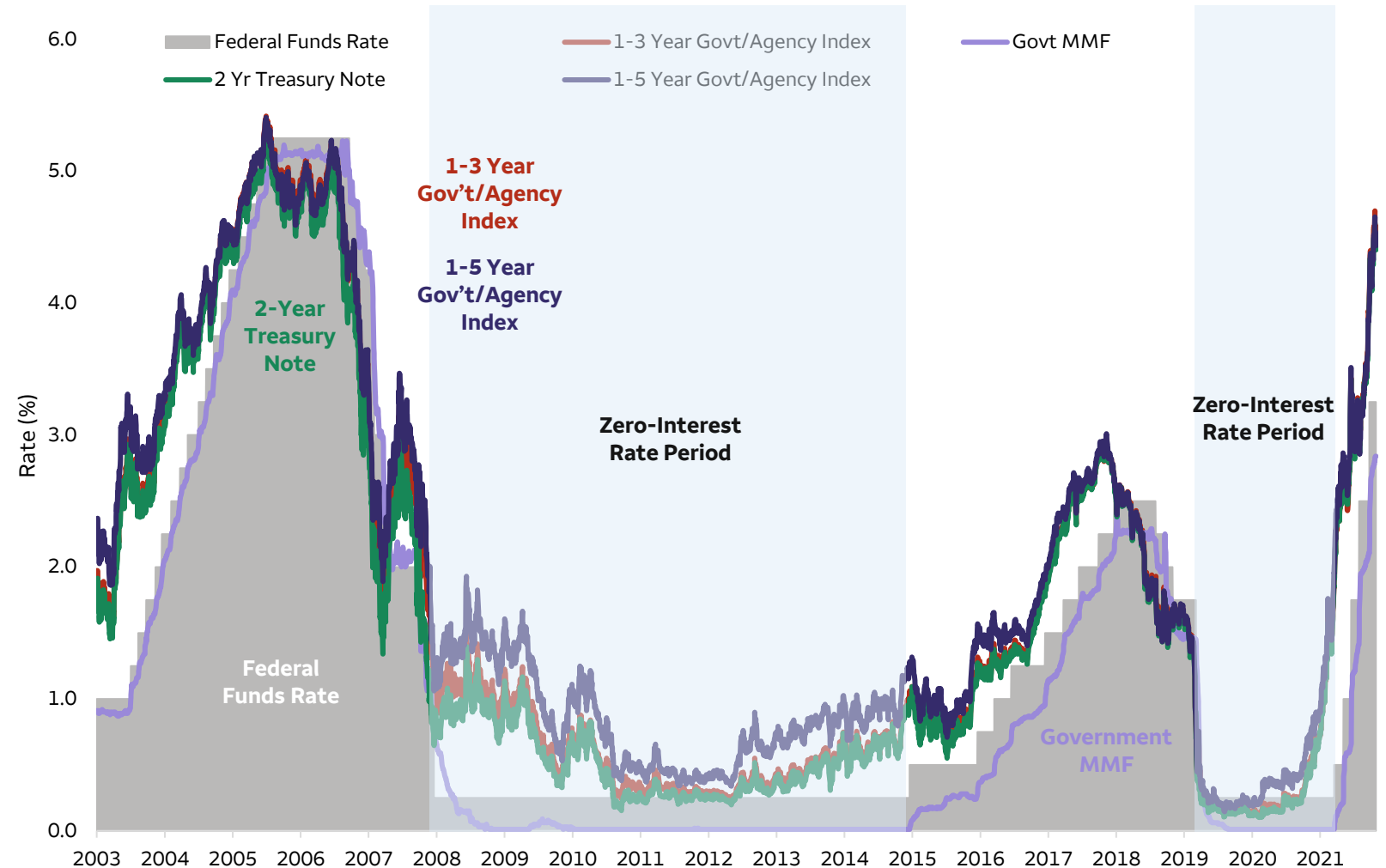
Money Market/Treasury/Agency Ladder



- An investor can implement a ladder in conjunction with other investment strategies. For example, a portion of cash can be held in overnight instruments like money market funds, bank deposits or a Local Government Investment Pool, with some (or all) of the remainder of cash invested in a ladder strategy.
- Not only does an investor have ongoing liquidity returning every 3 months in the form of security maturities in this example, but there is an added liquidity “cushion” with the money maintained in a daily liquid account like MMFs, bank deposits or LGIPs.

Higher Rates + Portfolio Structure = Ongoing Income Generation

Investors who allocate some cash to term fixed income instruments tend to pick up more income, all else equal, through interest rate cycles.



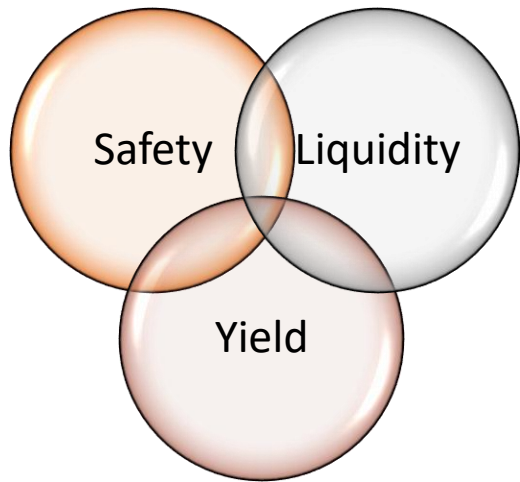
Source: Wells Fargo Corporate and Investment Banking, Bloomberg

Data as of October 27th, 2022

Why Does Ongoing Income Generation Matter?

Income generation is becoming a REAL consideration once again – due to the Fed's aggressive tightening.

Consistent Income is One Way to Measure Liquidity



Income Generation Has Real World Consequences

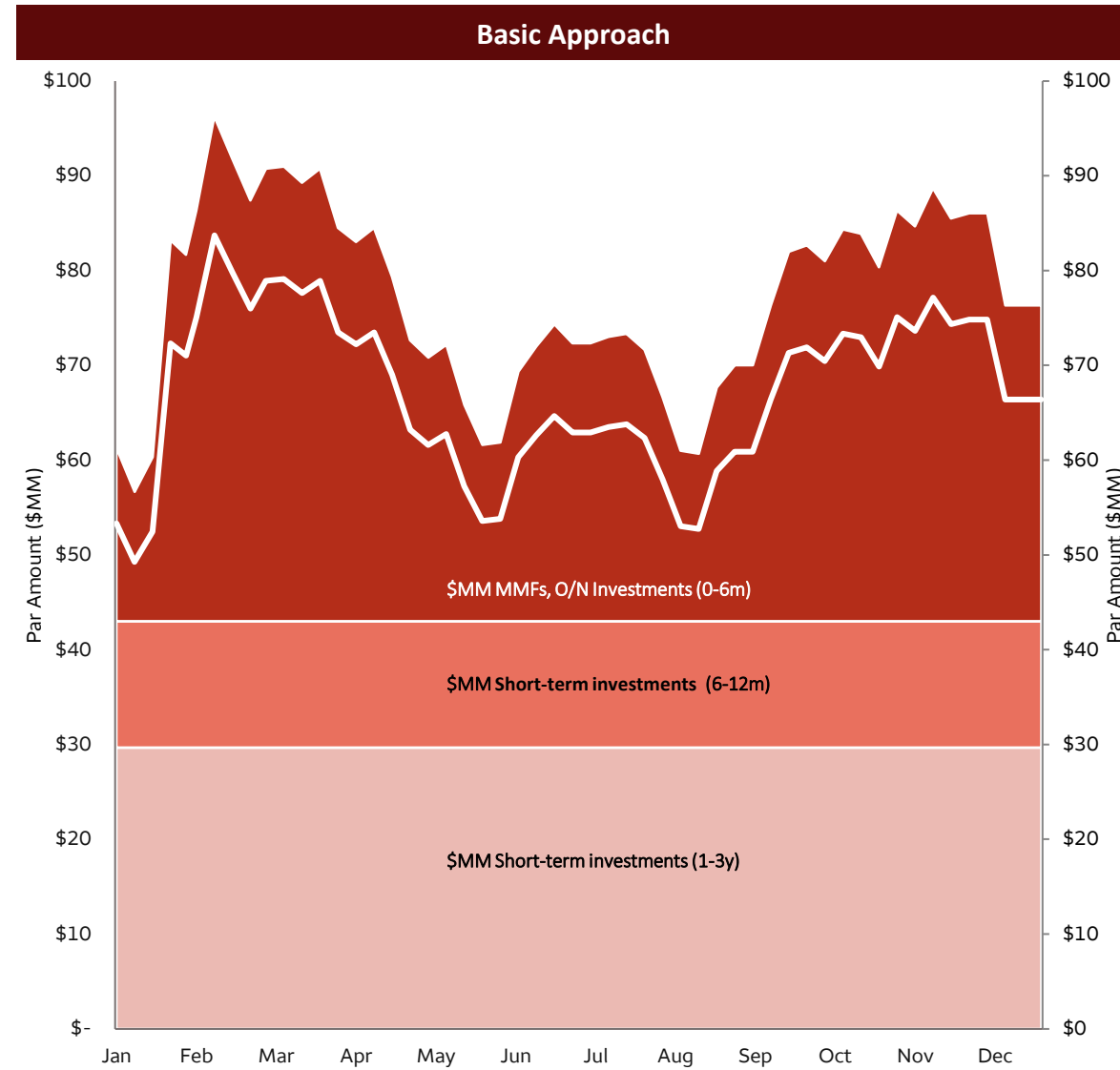
What could your organization do with additional income?

- Invest in additional part-time or full-time employees
- Apply income to additional public services
- Use income to subsidize periods of lower taxes receipts. Stabilize taxes received.
- Support general operations with additional funds...

Investment Strategy: Average Cash Balances/Segmenting

The basic approach manages all expected cash outflows through existing cash balances, represented by the red area.

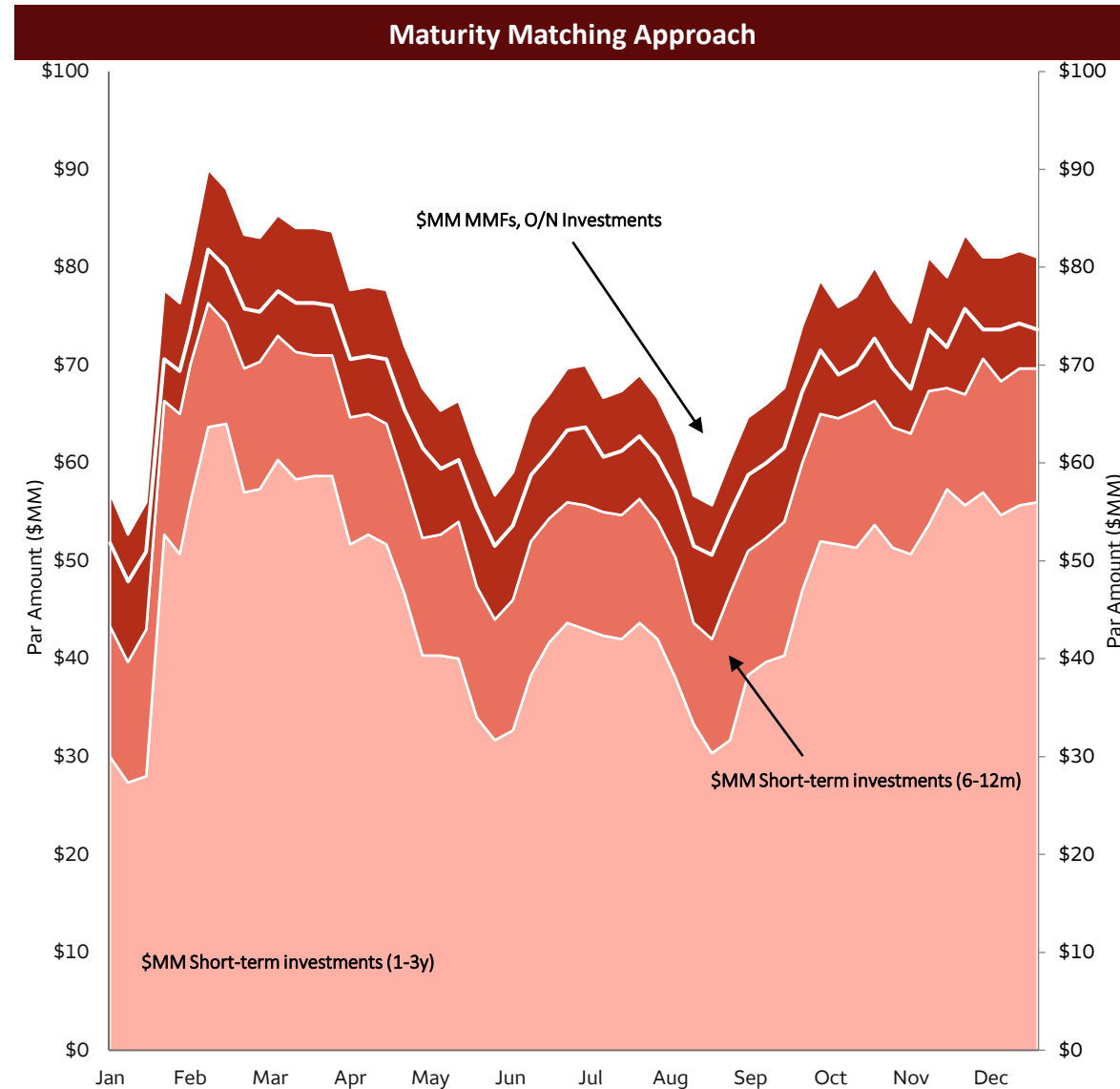
The cash balances represented by the light and dark orange areas are not anticipated to be used immediately and can be invested further out the curve to augment yield.



Investment Strategy: Maturity Matching

The maturity matching approach identifies the sizes and dates of known cash outflows and invests an equivalent amount of cash to those dates.

Liquidity is partially managed through maturity matching, allowing short-term investments to constitute a larger part of the overall portfolio.



Final Thoughts

- CA governmental organizations are permitted to invest in a wide mix of fixed income instruments that can meet safety, liquidity and yield goals.
- Safety and liquidity can be defined in a variety of ways.
- There are similarities amongst permitted fixed income investment options that can help to diversify across not only asset classes, but issuers, maturities, and ratings, etc.
- A cashflow forecast is instrumental for managing cash investment decisions.
- Interest rate cycles are not static thus maintaining portfolio structure can help an organization generate consistent income on cash throughout over time.

Thank you for joining the session today!

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