

Back to Basics

Approaches to Developing Cash Flow Projections, Diversified Investment Strategies, and Earnings Projections

Government Finance Officers Association of Arizona

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About This Session



Over the last few years, municipalities have experienced major changes to their cash flows due to the pandemic, stimulus funds, and economic changes. During this session, we will introduce and explore key considerations in developing cash flow projections, investment strategies for different types of funds (including bond proceeds), and earnings projection analyses.

When you complete this session, you should be able to:

- List factors affecting cash flow projections.
- Describe differences between active and passive management styles.
- Explain the purpose of earnings projections.



Agenda

- ▶ **Cash Flow Projections**
- ▶ **Diversified Investment Strategies**
- ▶ **Earnings Projections**

Key Investment Objectives for Municipalities

1

Safeguard
Principal



2

Meet Liquidity
Needs

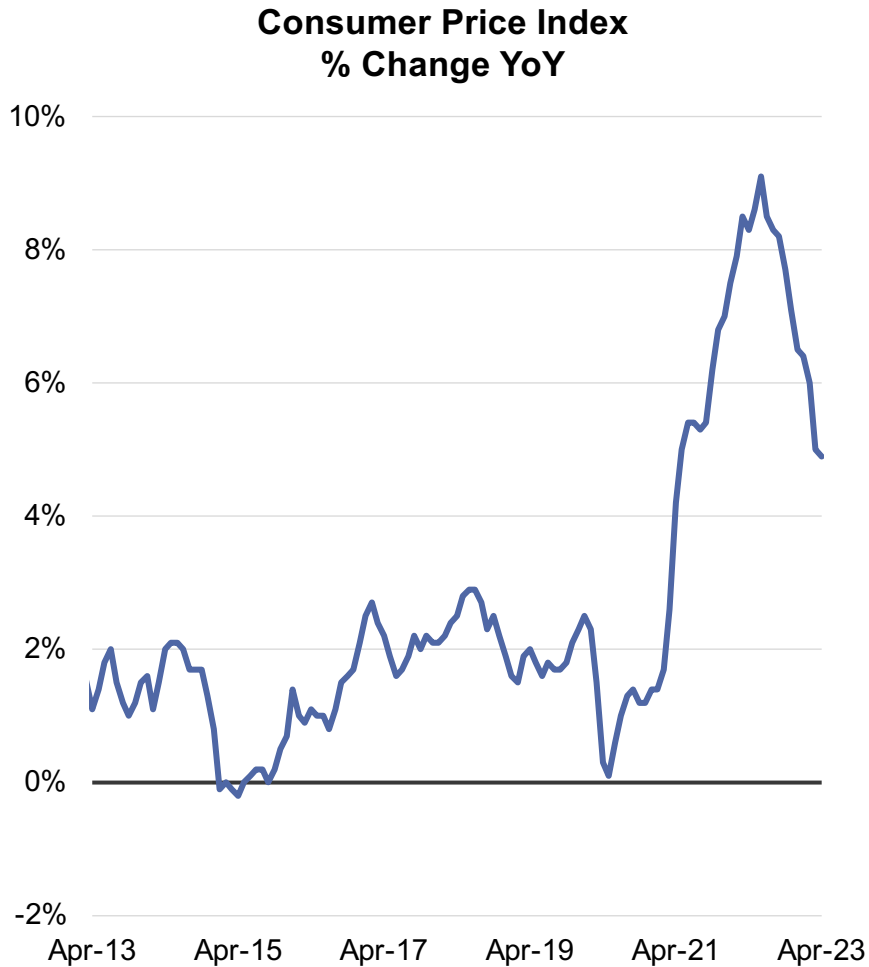


3

Achieve a Market
Return/Yield



Purchasing Power Falls as Inflation Rises



\$1 in April 2013

*has the same
purchasing power as*

\$1.33 in April 2023



Careful planning and well-informed stewardship can help minimize inflation's adverse effects on municipal finances

Source: Bloomberg, as of April 2023.
U.S. Bureau of Labor Statistics CPI Inflation Calculator.

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What is the effect of inflation?

- a. Erosion of purchasing power
- b. Higher prices of goods and services
- c. Potential for higher interest rates
- d. All of the above

Pop Quiz



Cash Flow Projections



Expectations



Reality



Cash Flow Projections – The Basics

Determines your liquidity needs

- ▶ Identifies short term vs. long term
- ▶ Short-term assets are the primary source of near-term disbursements
- ▶ Core assets are designed for long-term growth

Helps to enhance cash management

- ▶ Facilitates planning around inflows/outflows
- ▶ Reflects seasonality of revenues/expenses
- ▶ Forecasts potential deficits

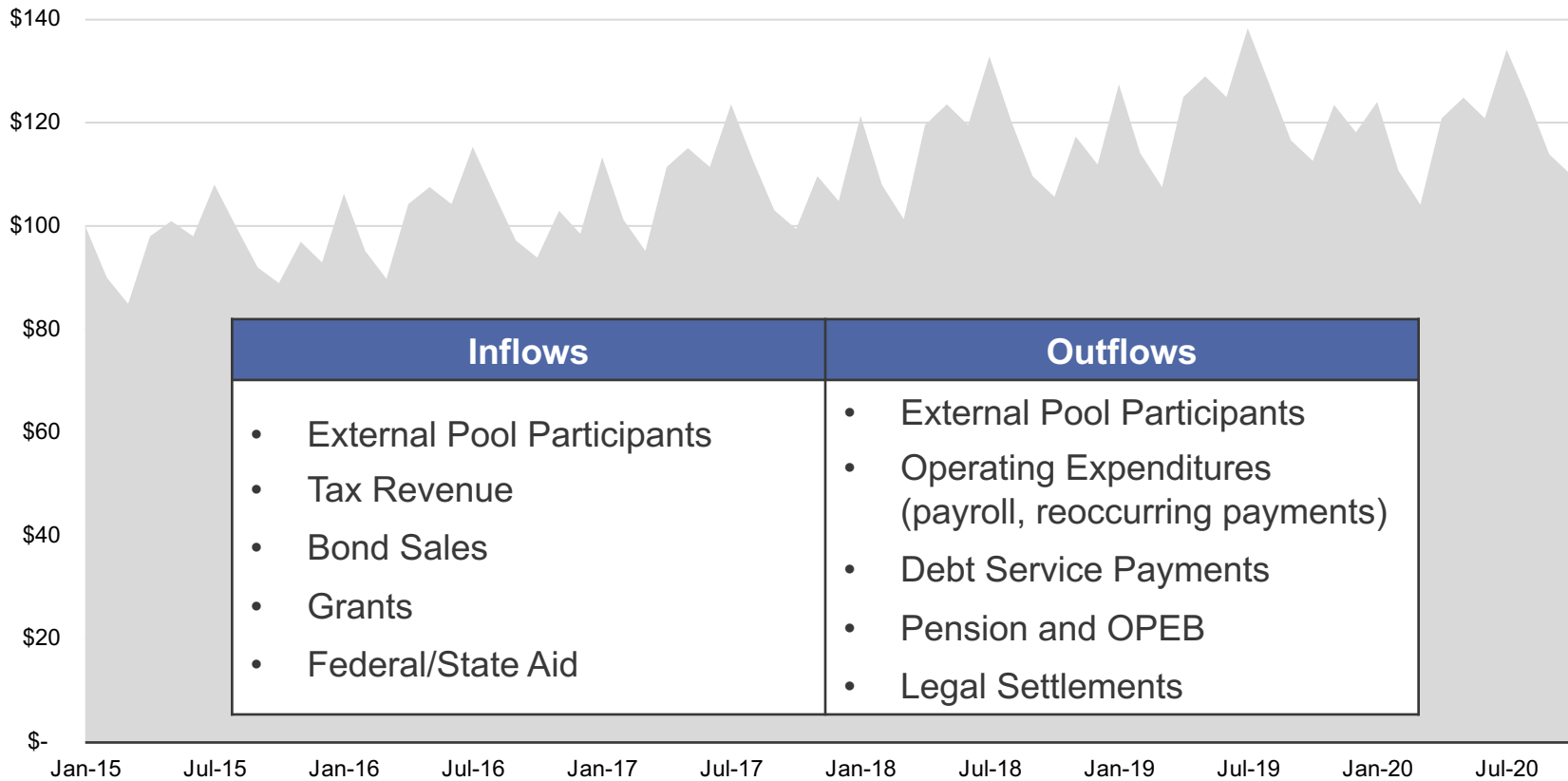
Seeks to identify an optimal allocation of funds to help maximize investment income

- ▶ Investment selection
- ▶ Diversification

Cash Flow Data

- ▶ Step #1 in developing a projection: **compile historical cash flow data**

Historical Cash Flow



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Typical Sources for Cash Flow Data

- ▶ Bank statements
- ▶ General ledger balances
- ▶ Budgets
- ▶ Capital project spending
- ▶ Schedule of investments



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Future Cash Flow Factors

Economic Conditions

- ▶ Inflation
 - ▶ Sales tax
 - ▶ Jobs
 - ▶ Housing
-

Capital Projects

- ▶ Debt issuance vs. Cash funding
-

Acquisitions

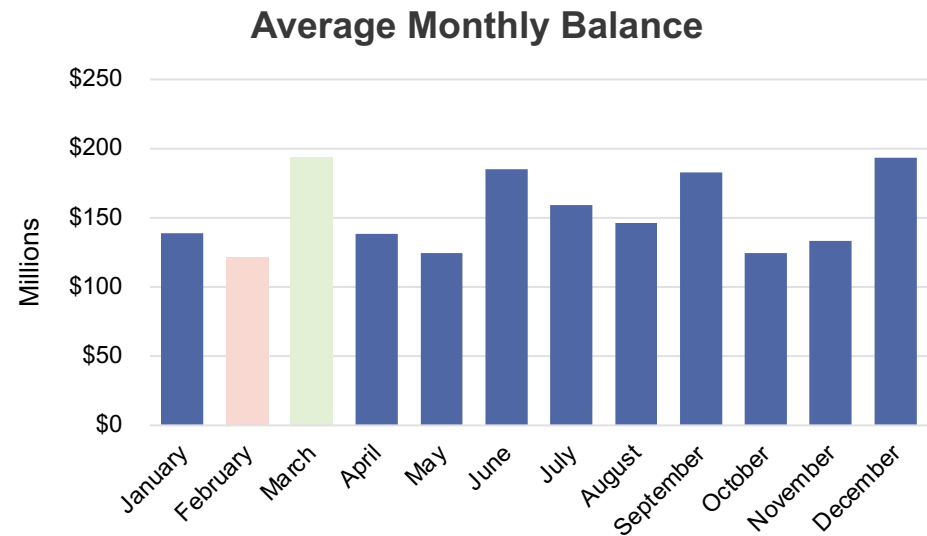
- ▶ Property
 - ▶ Facilities/Buildings
-

Strategy

- ▶ Pension funding

Municipal Cash Flow Seasonality

Month	Average Monthly Balance	Historical Factor
Average	\$153,453,491	100.00%
January	\$138,682,181	90%
February	\$121,668,728	79%
March	\$194,123,532	127%
April	\$138,231,692	90%
May	\$124,329,242	81%
June	\$184,928,402	121%
July	\$159,164,691	104%
August	\$146,095,212	95%
September	\$182,948,393	119%
October	\$124,292,328	81%
November	\$133,427,543	87%
December	\$193,549,953	126%



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True or False: Seasonality tends to be the same across entities and locations

a. True

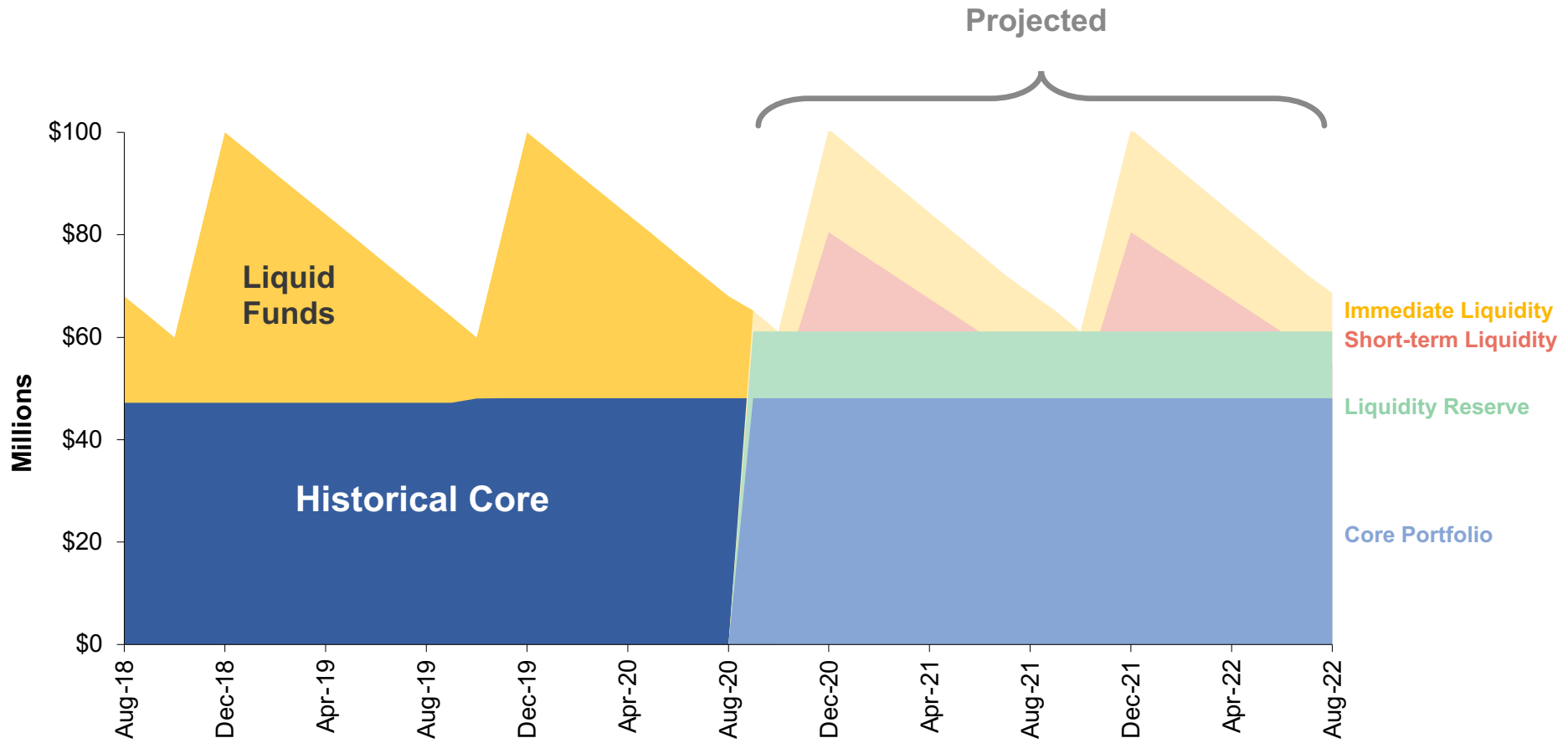
→ b. False

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Optimizing Portfolio Segmentation

Seasonality may be visible in cash flow analysis.



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Bond Proceeds Cash Flow Projections

- ▶ General Obligation Bonds typically have one major fund
 - ▶ Project fund

- ▶ Revenue Bonds may have multiple funds

- ▶ Project Fund
- ▶ Capitalized Interest (Cap-I) Fund
- ▶ Debt Service Reserve Fund



Debt-Funded

- ▶ Debt Service (P&I) Funds
- ▶ Revenue Fund
- ▶ Other Reserve Funds



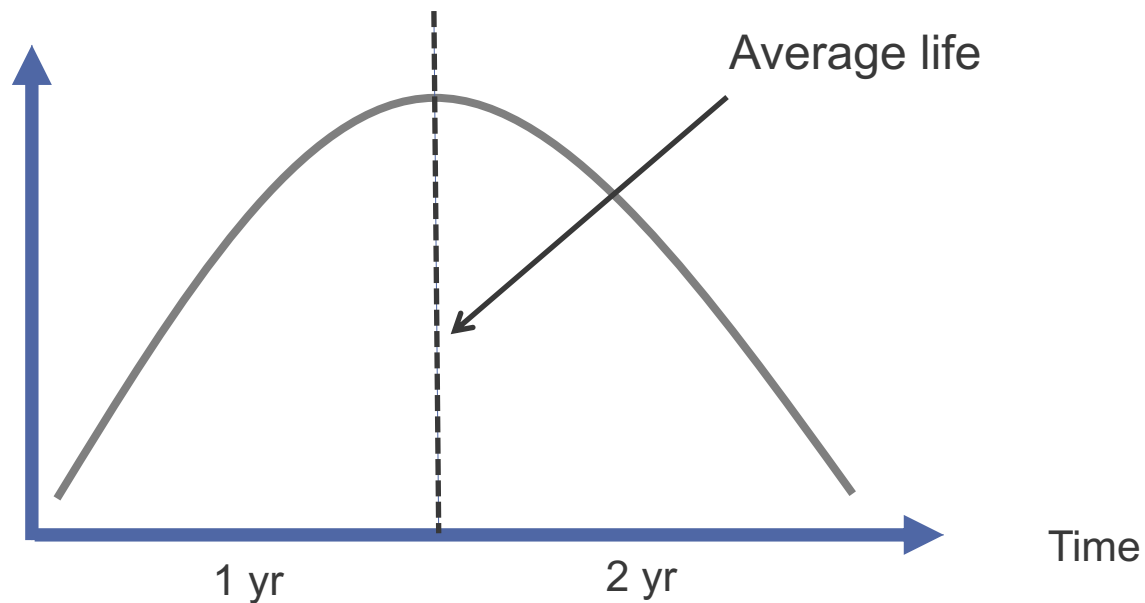
Funded by project revenues or other sources



General Project Fund Structure

- ▶ Project proceeds typically spent within 3 years
- ▶ Average life of approximately 1–1 ½ years

“Typical” Project Fund Expenditure Pattern



Project Fund Cash Flow Factors

Strength of Draw Schedule

- ▶ Number of projects
 - ▶ Estimated completion
 - ▶ Ability to update projections
-

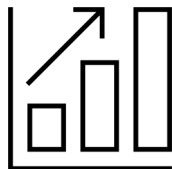
Payment Approach

- ▶ Invoiced
 - ▶ Reimbursement
-

Liquidity Cushion (if any)

- ▶ Predictability of needs

Key Takeaways: Cash Flow Analysis



Cash Flow Analysis Benefits

- ▶ Helps ensure adequate liquidity
- ▶ Aids in financial planning
- ▶ Opens investment opportunities across the yield curve
- ▶ Has potential to increase investment income



How to Develop a Strong Process

- ▶ Utilize various data sources
- ▶ Update analysis regularly
- ▶ Identify historical trends and patterns
- ▶ Avoid getting bogged down in forecasting “exact” amounts

Diversified Investment Strategies



Identifying Investable Funds

Liquidity

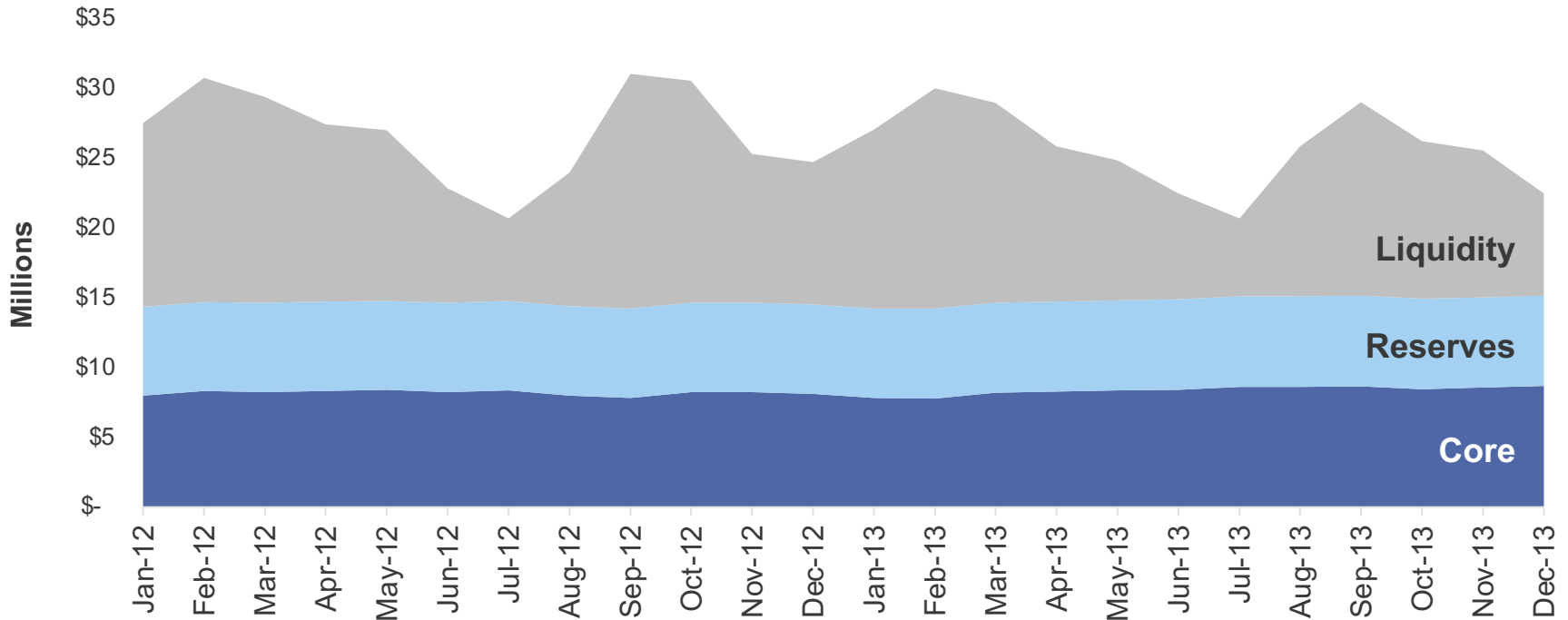
- ▶ Tailored to liquidity needs
- ▶ Lower risk
- ▶ Lower expected earnings
- ▶ Cash and equivalents

Reserves

- ▶ Supplement to liquidity funds
- ▶ Highly liquid
- ▶ Matched to potential liabilities
- ▶ High-quality, intermediate-term fixed income

Core

- ▶ Funds not expected to be spent in foreseeable future
- ▶ More volatile
- ▶ High-quality, longer-term fixed income



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Portfolio Segmentation and Strategy Considerations

Immediate Liquidity

Daily Liquidity | Cash, MMF, LGIP

Short-Term Liquidity

Maturity Matched to Expenditures (3-12 Months) | Commercial Paper, LGIP

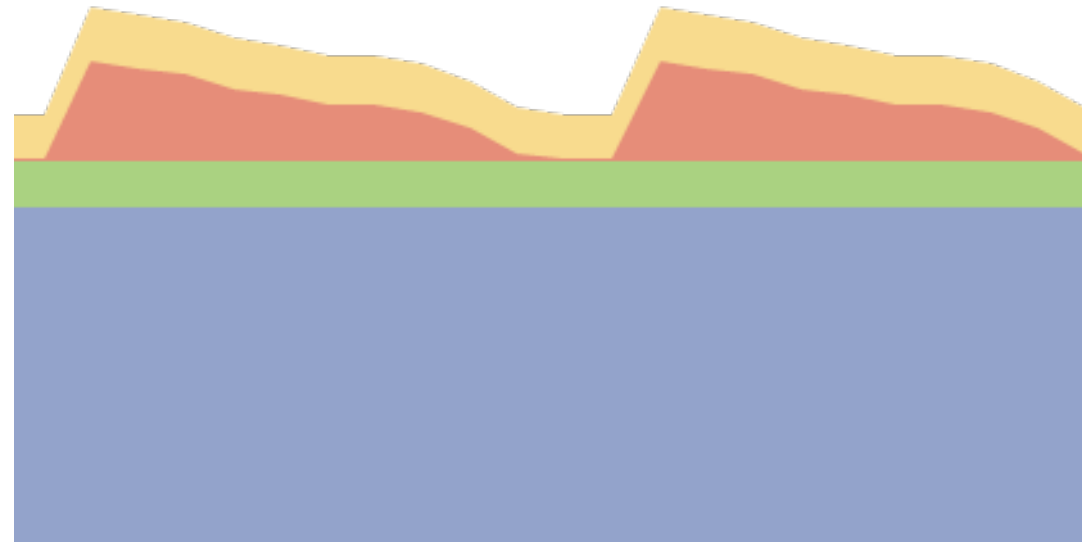
Liquidity Reserve

Short Duration Target (6 Months -2 Years) | Commercial Paper, Corporate Notes

Core Portfolio

Longer Duration Target (1-3, 1-5 Years) | High-quality Diversification | Corporate Notes, MBS, Federal Agencies

Sample Segmented Portfolio



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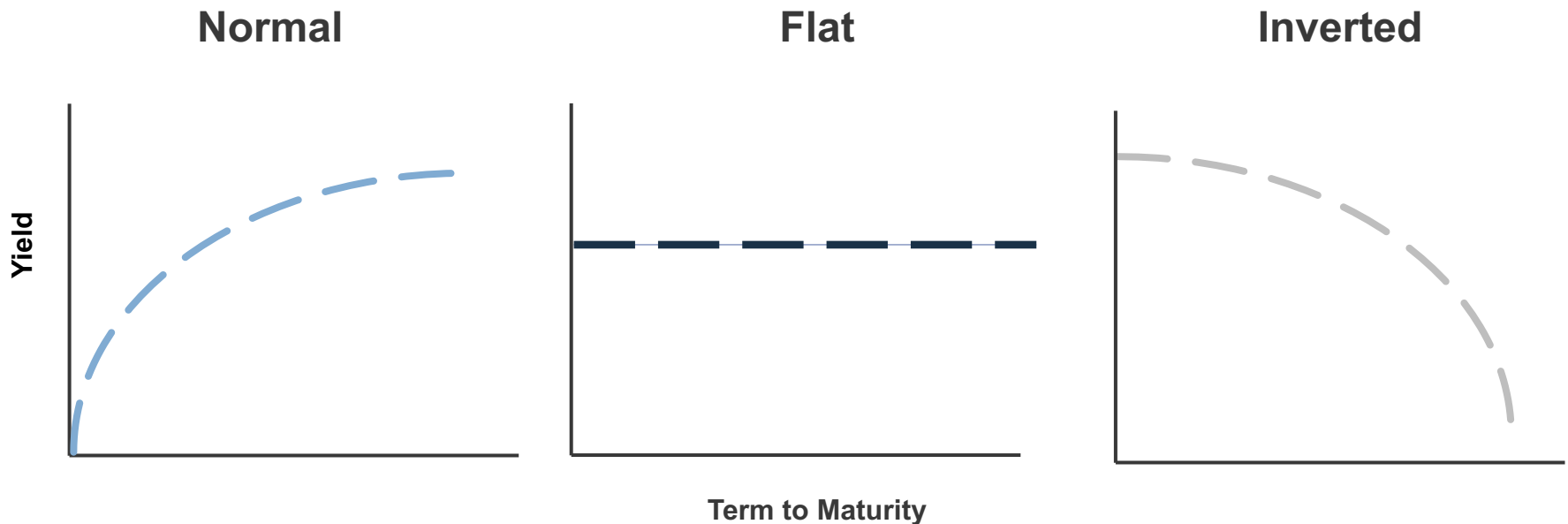
Compared to a segmented portfolio, a portfolio solely invested in immediate liquidity vehicles is likely to:

- a. Have a lower risk profile
- b. Generate less income over time
- c. Experience less volatility
- d. All of the above

Pop Quiz

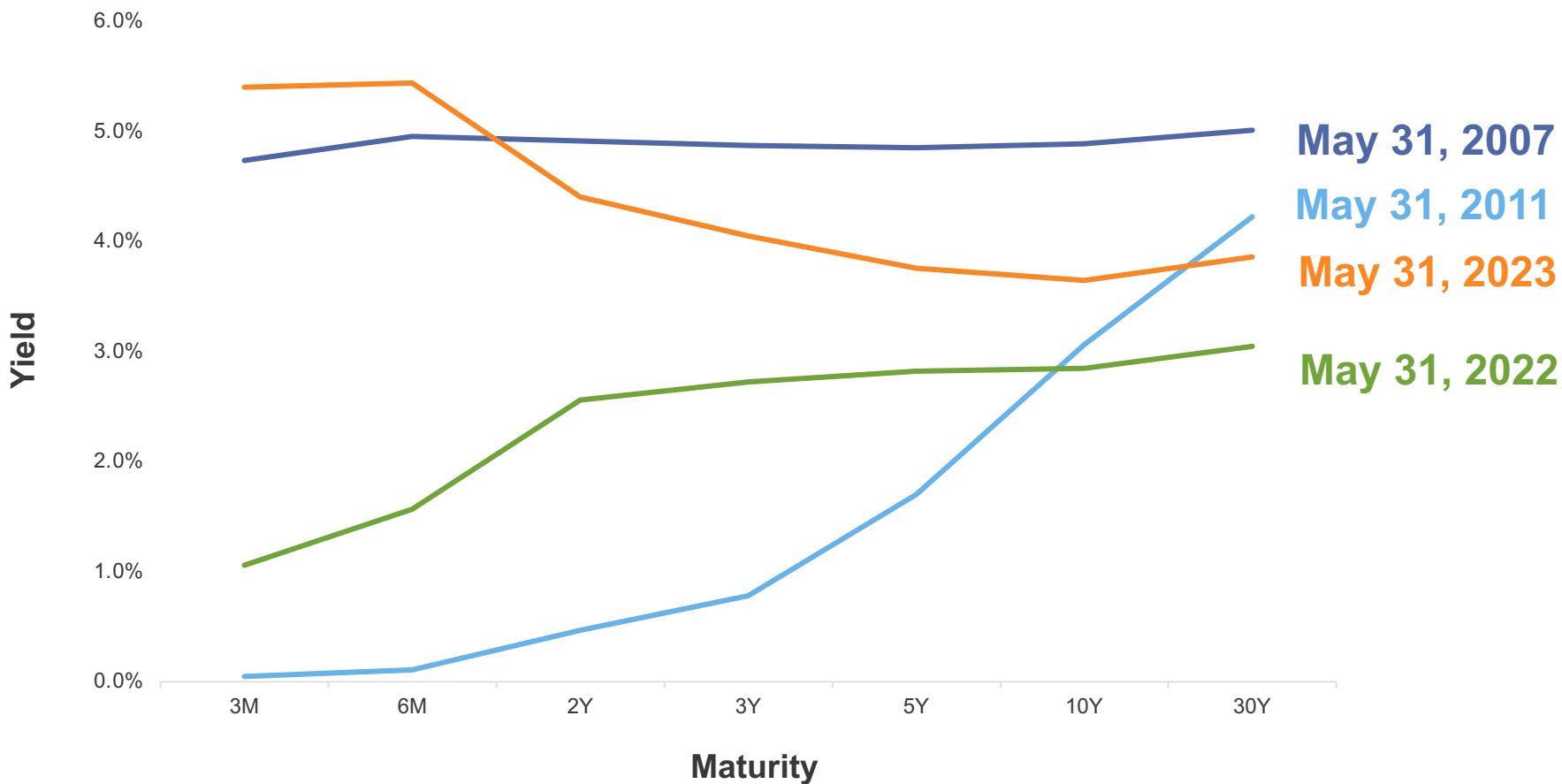


- ▶ Show the relationship between yield and maturity
- ▶ Short end of the curve (under 1 year) is directly correlated to the **federal funds rate** established by the Federal Open Market Committee
- ▶ Longer end of the curve typically reflects **investor expectations**



Yield Curve Shifts

U.S. Treasury Yield Curves 2007, 2011, 2022, and 2023

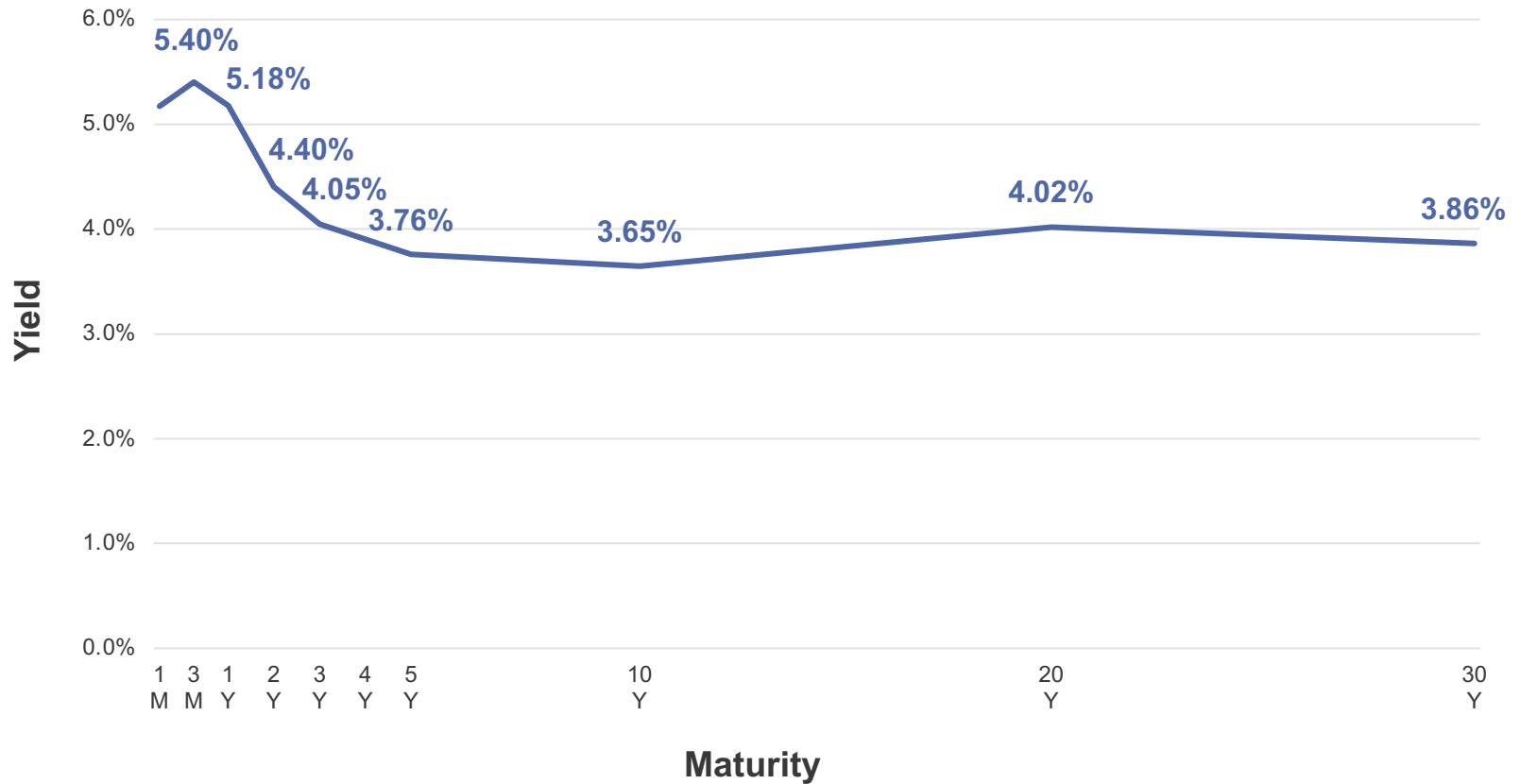


Source: Bloomberg.

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Current Yield Curve

U.S. Treasury Yield Curve May 31, 2023



Source: Bloomberg, as of May 31, 2023.

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When the yields on short-term bonds rise above those on long-term bonds, the yield curve is said to be:

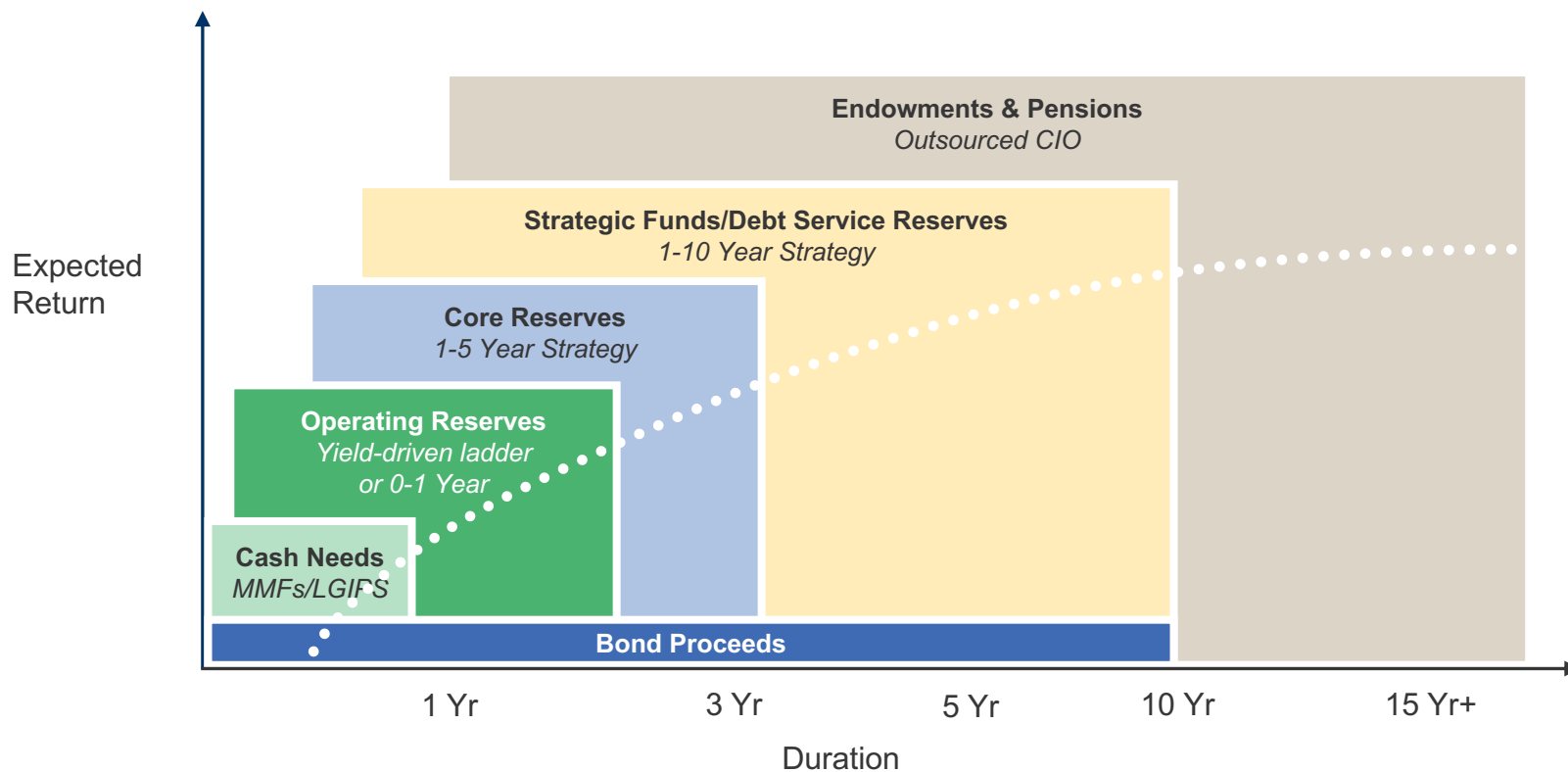
- a. Normal
- b. Flat
- c. Inverted

Pop Quiz



Optimizing Value of the Yield Curve

Typical Investment Time Horizons



Active vs. Passive Management Styles

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
- ▶ Strategies:
 - ▶ Sector trades
 - ▶ Duration trades
 - ▶ Roll down

Passive/Buy and Hold Strategy

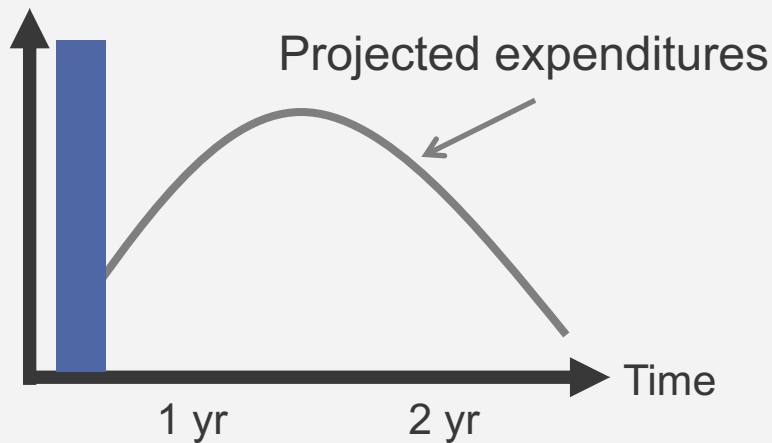
- ▶ Static approach
- ▶ Purchases made when securities mature or are called
- ▶ Representative options include:
 - ▶ Bank deposits/MMFs/LGIPs
 - ▶ Laddered purchase of fixed-income securities
 - ▶ Structured investments



Bond Proceeds Strategy Options

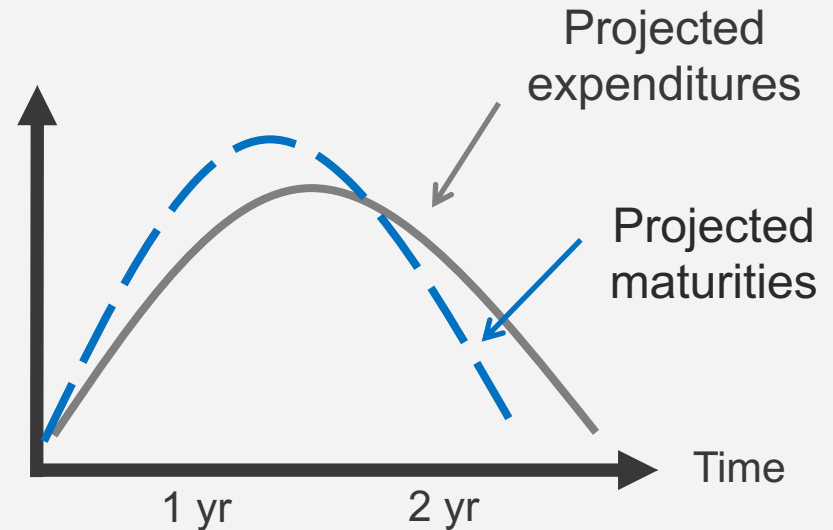
Liquidity Strategy

- ▶ Convenient
- ▶ Typically **overnight** liquidity
- ▶ Rate-dependent
- ▶ Inherently taking view that rates **will** rise during construction period



Portfolio Strategy

- ▶ **Laddered** to match fund schedule
- ▶ Fixed interest rate for securities
- ▶ Inherently taking view that rates **will not** rise *quickly* during construction period
- ▶ Reinvestment risk if delay in draw schedule
- ▶ Interest rate risk if security sold prior to maturity



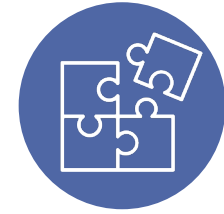
Key Takeaways: Investment Strategy



Analyzing **cash flow data and the current investment environment** is foundational to a diversified investment strategy



Develop a **specific investment plan** for each type of funds



Using a **combination of active/passive and short-term/long-term** can increase investment earnings

Earnings Projections



Earnings Projections – The Basics

- ▶ Tool for budgeting and cash flow projections
- ▶ Key factors: holdings, cash flows, reinvestment assumptions, projection timeline
- ▶ Provides expectation of monthly/quarterly/annual earnings
- ▶ Compares projected to actual earnings at regular intervals
- ▶ Provides an additional performance metric
- ▶ Helps municipal finance officers monitor achievement of investment income goals



Reinvestment Assumptions

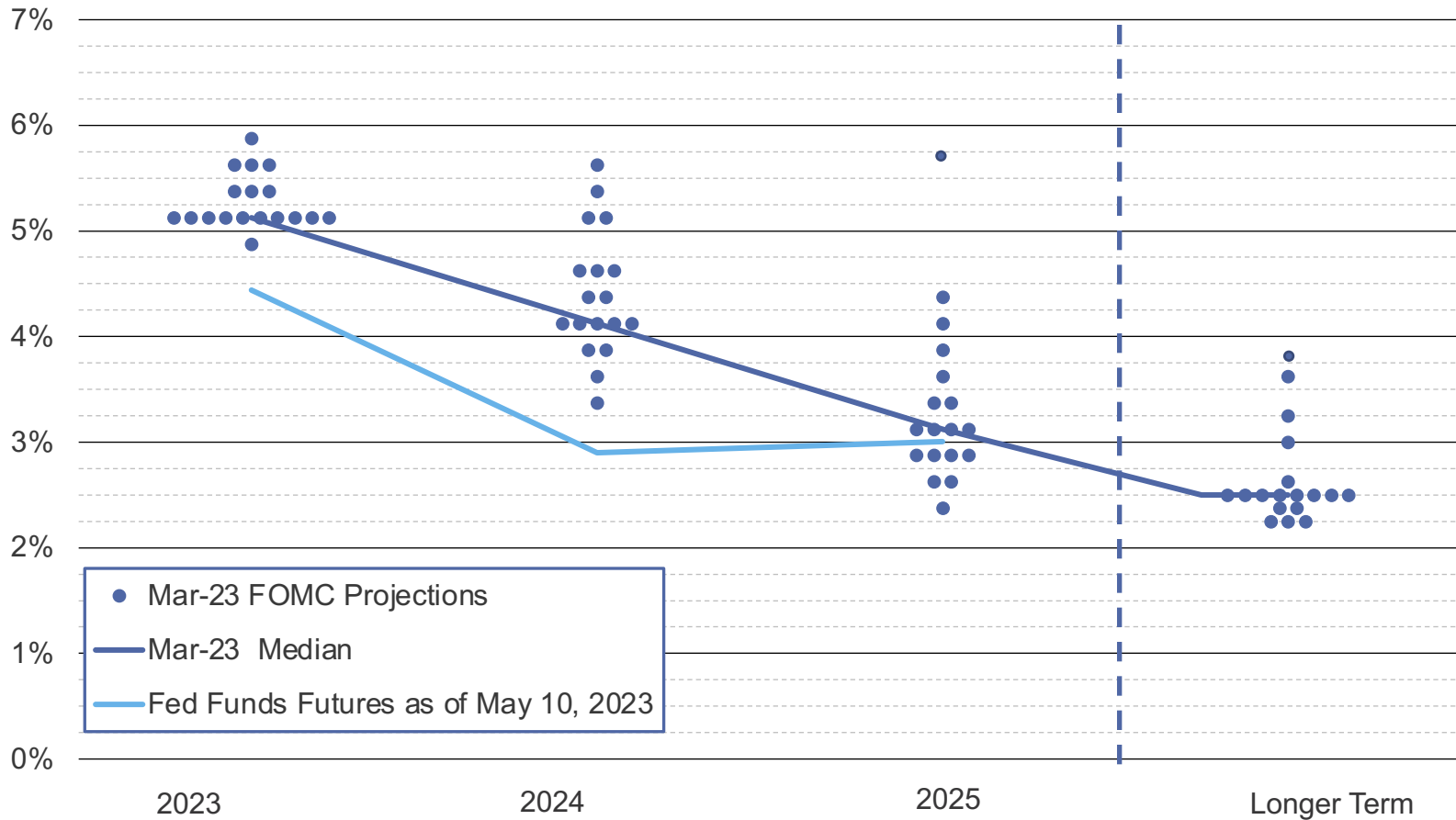
- ▶ Many sources of reinvestment assumptions, including:
 - ▶ Forward rates
 - ▶ Fed's Quarterly Estimates (Dot Plot)
 - ▶ Economist surveys
 - ▶ Fed Funds Futures
 - ▶ Current rates + spread
 - ▶ Historic averages of indices/securities
- ▶ Considerations for choosing reinvestment assumptions:
 - ▶ Type of funds (investment horizon)
 - ▶ Alignment with portfolio permitted investments
 - ▶ Time horizon of earnings projection

The longer the time horizon of an earnings projection, the more influence reinvestment assumptions have on its results



Fed's Quarterly Dot Plot

Fed Participants' Assessments of "Appropriate" Monetary Policy



Source: Federal Reserve and Bloomberg. Individual dots represent each Fed members' judgement of the midpoint of the appropriate target range for the federal funds rate at each year-end.

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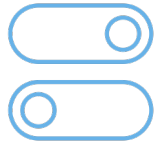
Which of the following is NOT a benefit of earnings projections?

- a. They can help gauge performance
- b. They can be useful in budgeting
- c. They provide a guarantee of future earnings

Pop Quiz



Key Takeaways: Earnings Projection



Determine appropriate earnings model methodology

Ensure reinvestment assumptions align with portfolio strategy

Use projection as tool in financial planning

Thank you!
Questions?

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Basic Earnings Calculation

Portfolio Holdings

- ▶ Earnings projections use the actual starting portfolio composition as a baseline for projections by fiscal year.

Earnings

- ▶ For each security, the par amount and original yield-to-maturity are used to determine monthly earnings.

Callable securities

- ▶ Callable securities trading at a premium are assumed to be called/mature on their next call date. Those trading at a discount are assumed to be held to maturity.

SECURITY TYPE	PAR AMOUNT	ORIGINAL YTM	MATURITY DATE	INVESTMENT PERIODS					
				Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
				MONTHLY EARNINGS	MONTHLY EARNINGS	MONTHLY EARNINGS	MONTHLY EARNINGS	MONTHLY EARNINGS	MONTHLY EARNINGS
U.S. Treasury Note	780,000	0.40%	12/31/2013	263	237	263	254	263	254
U.S. Treasury Note	460,000	1.90%	3/31/2014	742	670	742	718	742	718

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An Approach for Municipalities

Portfolio holdings are used to project monthly interest earnings (accrual basis)

Historical net cash flows can be used to adjust expected monthly earnings

Securities that are called/matured and cumulative net cash flows (if applicable) are reinvested at assumed rates

Assumes no deposits or withdrawals from portfolio

Fiscal Year Earnings Estimates

Month	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
January	1,626	39,202	40,202	41,502	43,402
February	1,470	35,402	37,602	37,502	39,202
March	1,655	39,202	40,402	41,502	43,402
April	1,467	38,002	39,102	40,202	42,002
May	1,487	39,202	40,402	41,702	43,902
June	1,496	38,002	39,102	40,402	42,502
July	1,534	39,202	40,402	41,702	43,902
August	1,534	39,202	41,002	41,702	43,902
September	1,534	38,002	40,202	40,802	42,502
October	39,202	39,702	41,502	42,202	43,902
November	38,002	38,802	40,202	41,002	42,502
December	39,202	40,102	41,502	42,302	43,902
Total	130,209	464,024	481,624	492,524	515,024

Sample Earnings Projection

Month End	Earnings Rate	Earnings	Reinvestment Rate Assumption
Jul-23	2.02%	\$37,482	3.85%
Aug-23	2.13%	\$39,446	3.80%
Sep-23	2.13%	\$38,174	3.75%
Oct-23	2.37%	\$43,950	3.70%
Nov-23	2.37%	\$42,532	3.64%
Dec-23	2.37%	\$43,950	3.61%
Jan-24	2.40%	\$44,394	3.59%
Feb-24	2.40%	\$41,530	3.56%
Mar-24	2.50%	\$46,277	3.53%
Apr-24	2.52%	\$45,192	3.51%
May-24	2.56%	\$47,371	3.48%
Jun-24	2.56%	\$45,843	3.46%
Average Earnings Rate:	2.36%		
Total Projected Earnings:		\$516,142	

Assumptions

1. Portfolio yield to maturity (YTM) at cost from July – March based on actual portfolio YTM at cost.
2. Accrual basis earnings from July – March based on actual portfolio earnings; periods thereafter are projected.
3. Projected portfolio earnings assume accrual basis earnings at the "Assumed Reinvestment Rate" for that particular month.
4. The "Assumed Reinvestment Rates" reflect estimates of the forward rates of the 2-Year U.S. Treasury Note as of April produced by Bloomberg.
5. Actual yields could vary significantly in the future.