



Investing in a Rising Rate Environment

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Fixed Income Strategy



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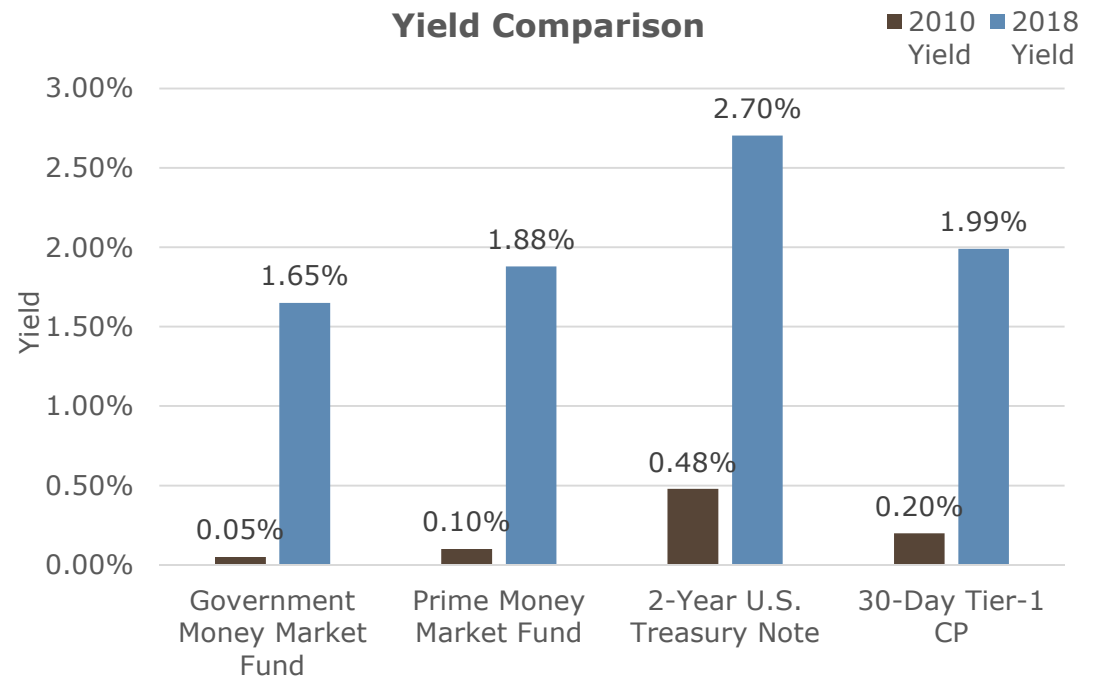
Current Market Environment and Rate Expectations

2010 – 2018: How the Environment has Changed...

The market environment has changed significantly over the past 8 years.

Asset Class	2010 Yield	2018 Yield	Estimated Annual Income Pickup
Government Money Market Fund	0.05%	1.65%	\$160,000
Prime Money Market Fund	0.10%	1.88%	\$178,000
2-Year U.S. Treasury Note	0.48%	2.70%	\$222,460
30-Day Tier-1 CP	0.20%	1.99%	\$179,000
Fed Funds (Upper Bound)	0.25%	2.00%	

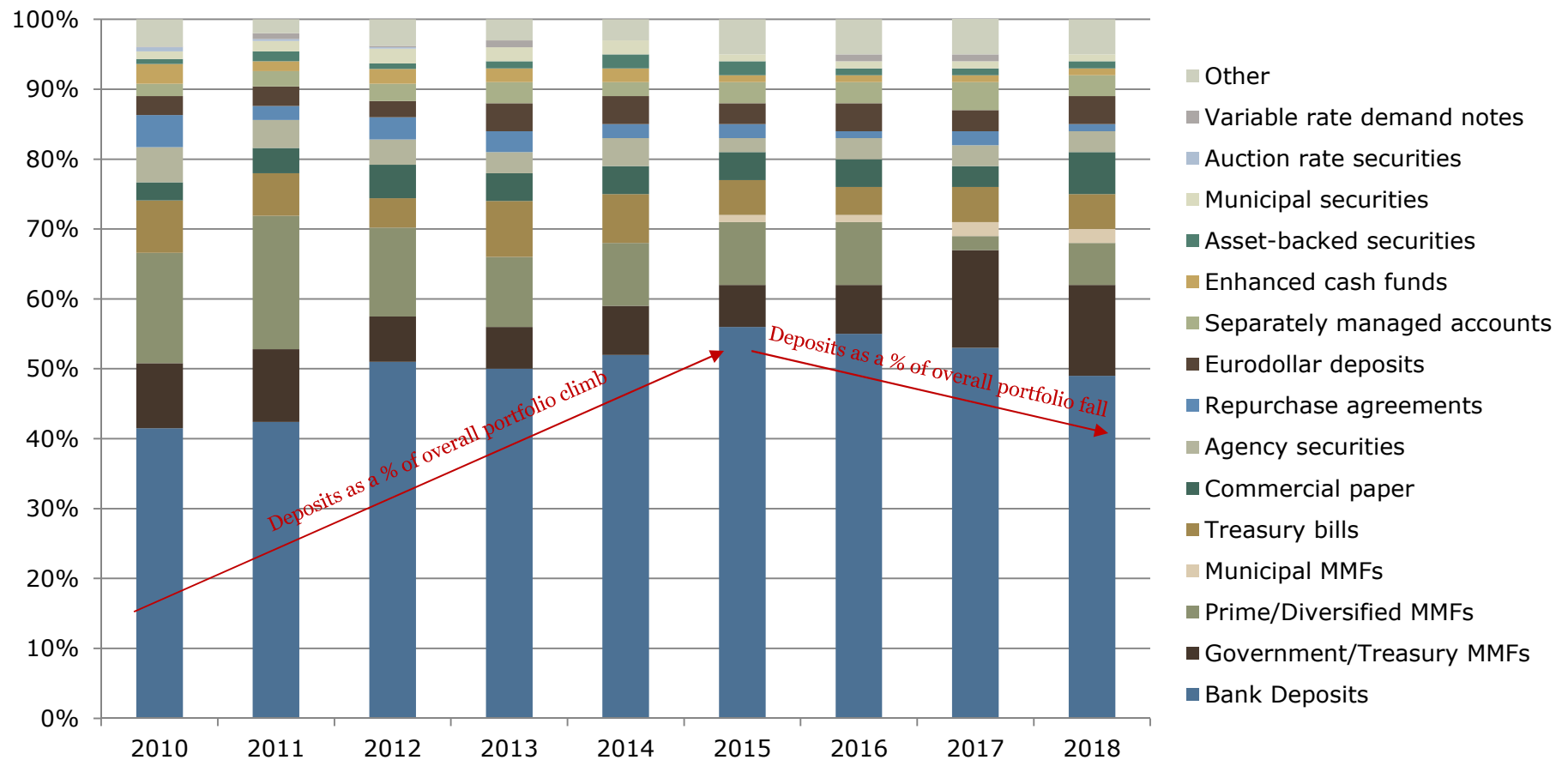
Assumes \$10MM Investment



Source: Wells Fargo Securities, LLC, Federal Reserve, Bloomberg, iMoneyNet

2010 – 2018: What are Others Doing?

During the ZIRP after the financial crisis and throughout 2015, deposits continued to climb as a percentage of overall portfolio allocation. This allocation has since fallen since the Fed began hiking the Fed funds rate as portfolio investments become more diversified.

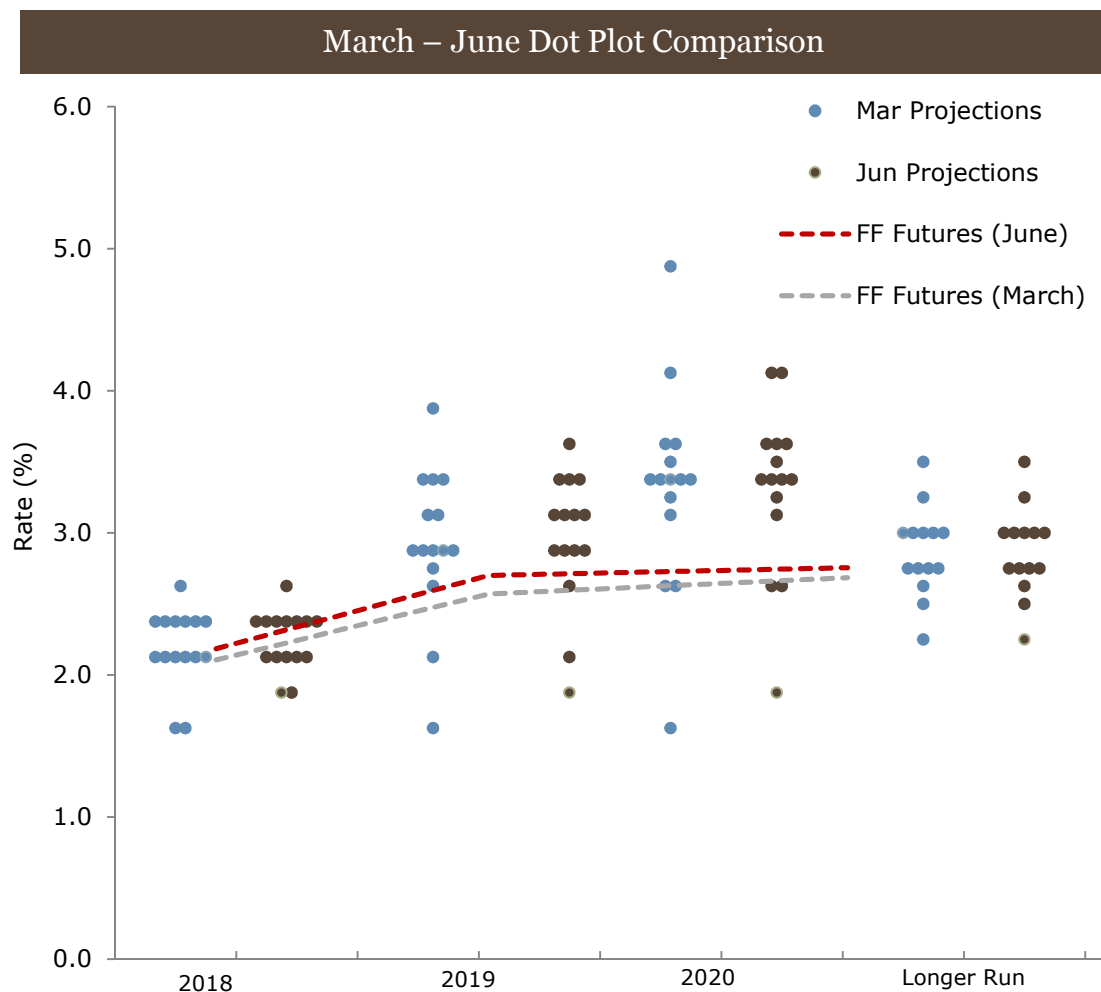


Source: Wells Fargo Securities, LLC, Association for Finance Professionals

Rate Expectations: According to the Fed

The 2018 median *appropriate* Fed funds rate rose to 2.38 percent from 2.13 percent. The 2019 median appropriate rate also shifted higher to 3.13 percent from 2.88 percent.

Fed Fund futures are pricing at the lower end of the 2019 and 2020 forecasts.



Source: Wells Fargo Securities, LLC, Federal Reserve, Bloomberg

Rate Expectations: According to the Market

Bloomberg Implied Probabilities

Current Implied Probabilities

3) Add/Remove Rates ▾

Dates

☒ Meeting ☐ Calculation

Calculated 09/12/2018

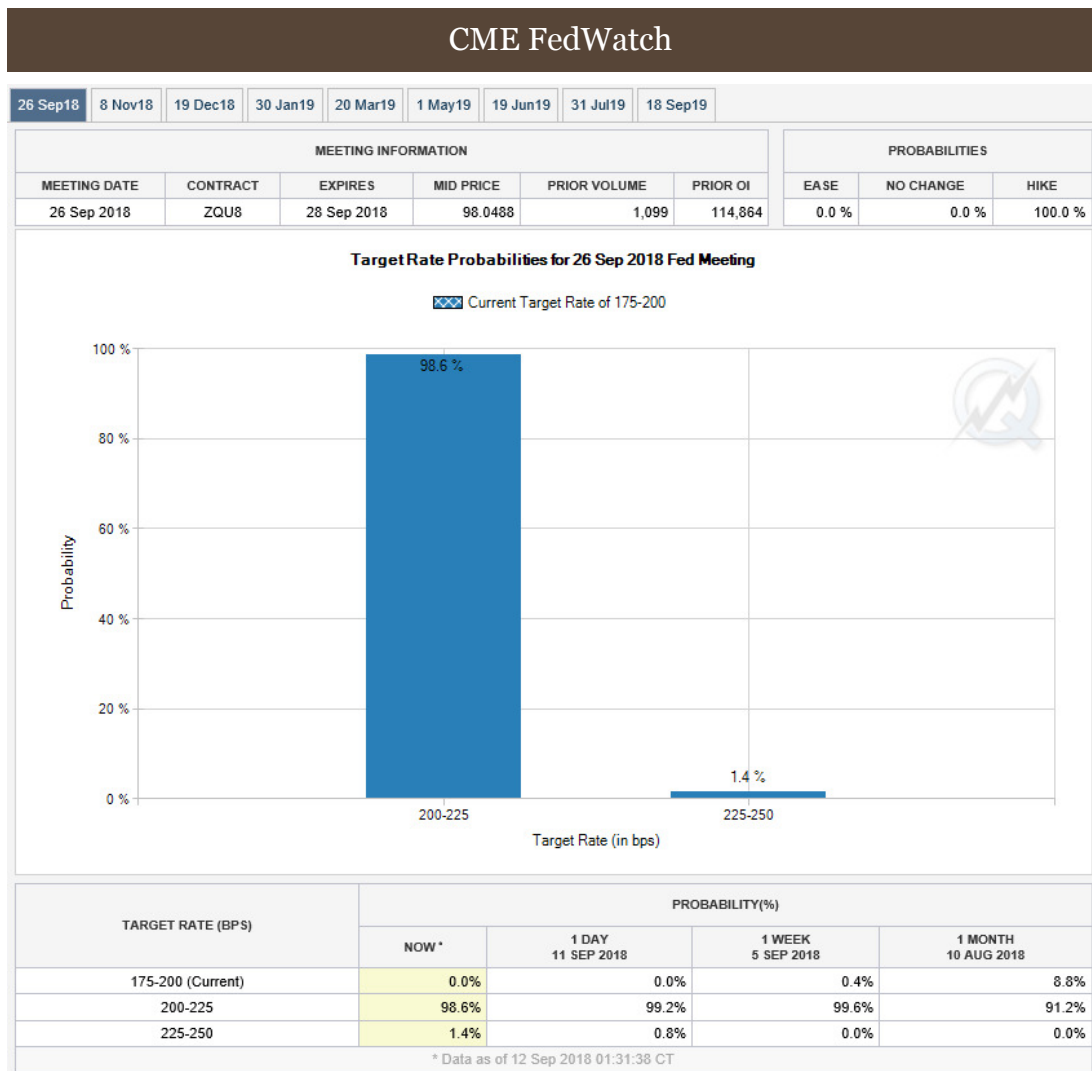
Based on rate 1.75-2.00

Meeting	Hike Prob	Cut Prob	1.75-2	2-2.25	2.25-2.5	2.5-2.75	2.75-3	3-3.25	3.25-3.5	Fwd Rate
09/26/2018	97.5%	0.0%	2.5%	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.16
11/08/2018	97.5%	0.0%	2.5%	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.16
12/19/2018	99.4%	0.0%	0.6%	23.9%	75.6%	0.0%	0.0%	0.0%	0.0%	2.36
01/30/2019	99.5%	0.0%	0.5%	22.4%	72.4%	4.7%	0.0%	0.0%	0.0%	2.37
03/20/2019	99.8%	0.0%	0.2%	8.9%	41.4%	46.6%	2.9%	0.0%	0.0%	2.53
05/01/2019	99.8%	0.0%	0.2%	7.6%	36.7%	45.9%	9.2%	0.4%	0.0%	2.56
06/19/2019	99.9%	0.0%	0.1%	4.5%	24.4%	42.0%	24.8%	4.2%	0.2%	2.67
07/31/2019	99.9%	0.0%	0.1%	4.1%	22.8%	40.6%	26.1%	5.8%	0.5%	2.69
09/18/2019	99.9%	0.0%	0.1%	3.1%	18.1%	36.1%	29.7%	10.9%	1.8%	2.75

The market, as measured by Bloomberg implied probabilities, is expecting two additional rate hikes for the remainder of 2018.

Rate Expectations: According to the Market

The CME FedWatch Tool also calculates market implied probabilities and is anticipating the Fed to raise the Fed funds target interest rate range by 25 basis points at the September meeting.



<https://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html>

Source: Wells Fargo Securities, LLC, CME Group

Rate Expectations: According to Wells Fargo Economists

Wells Fargo Economic Forecast																
	Actual								Forecast							
	2017				2018				2019				2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Real Gross Domestic Product ¹	1.8	3.0	2.8	2.3	2.2	4.2	3.1	2.8	2.6	2.9	2.6	2.4	2.2	2.0	1.9	1.8
Personal Consumption	1.8	2.9	2.2	3.9	0.5	3.8	2.9	2.8	2.2	2.9	2.6	2.5	2.1	2.2	1.8	1.7
Business Fixed Investment	9.6	7.3	3.4	4.8	11.5	8.5	6.8	5.1	4.7	4.9	4.4	4.0	3.7	3.6	2.9	2.8
Equipment	9.1	9.7	9.8	9.9	8.5	4.4	6.9	4.3	3.8	4.2	3.7	3.1	2.7	2.6	2.1	2.0
Intellectual Property Products	8.0	6.6	1.7	0.7	14.1	11.0	7.1	5.2	4.8	5.3	4.7	4.6	4.7	4.6	3.7	3.6
Structures	12.8	3.8	-5.7	1.3	13.9	13.2	7.0	7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.5
Residential Construction	11.1	-5.5	-0.5	11.1	-3.4	-1.6	2.0	4.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0
Government Purchases	-0.8	0.0	-1.0	2.4	1.5	2.4	3.4	2.9	2.2	1.4	0.8	0.7	0.7	0.5	0.3	0.1
Net Exports ²	-0.1	0.1	0.0	-0.9	0.0	1.2	-1.2	-0.6	-0.3	-0.5	-0.3	-0.2	0.0	-0.2	0.1	0.1
Inventories ²	-0.8	0.2	1.0	-0.9	0.3	-1.0	1.2	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Nonfarm Payroll Change ³	177	190	142	221	218	217	179	180	170	170	160	160	150	140	100	90
Unemployment Rate	4.7	4.3	4.3	4.1	4.1	3.9	3.9	3.8	3.7	3.6	3.6	3.5	3.4	3.3	3.3	3.3
Consumer Price Index ⁴	2.6	1.9	2.0	2.1	2.3	2.6	2.6	2.4	2.2	2.4	2.6	2.7	2.6	2.5	2.3	2.4
Quarter-End Interest Rates ⁵																
Federal Funds Target Rate	1.00	1.25	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.25	3.25	3.25	3.25	3.00
Conventional Mortgage Rate	4.20	3.90	3.81	3.94	4.44	4.57	4.60	4.80	4.95	5.05	5.15	5.20	5.15	5.15	5.10	5.05
2 Year Note	1.27	1.38	1.47	1.89	2.27	2.52	2.75	2.90	3.05	3.10	3.20	3.20	3.15	3.15	3.10	3.00
10 Year Note	2.40	2.31	2.33	2.40	2.74	2.85	3.00	3.20	3.35	3.45	3.55	3.60	3.55	3.55	3.50	3.45

Forecast as of: September 12, 2018

¹ Compound Annual Growth Rate Quarter-over-Quarter

² Percentage Point Contribution to GDP

³ Average Monthly Change

⁴ Year-over-Year Percentage Change

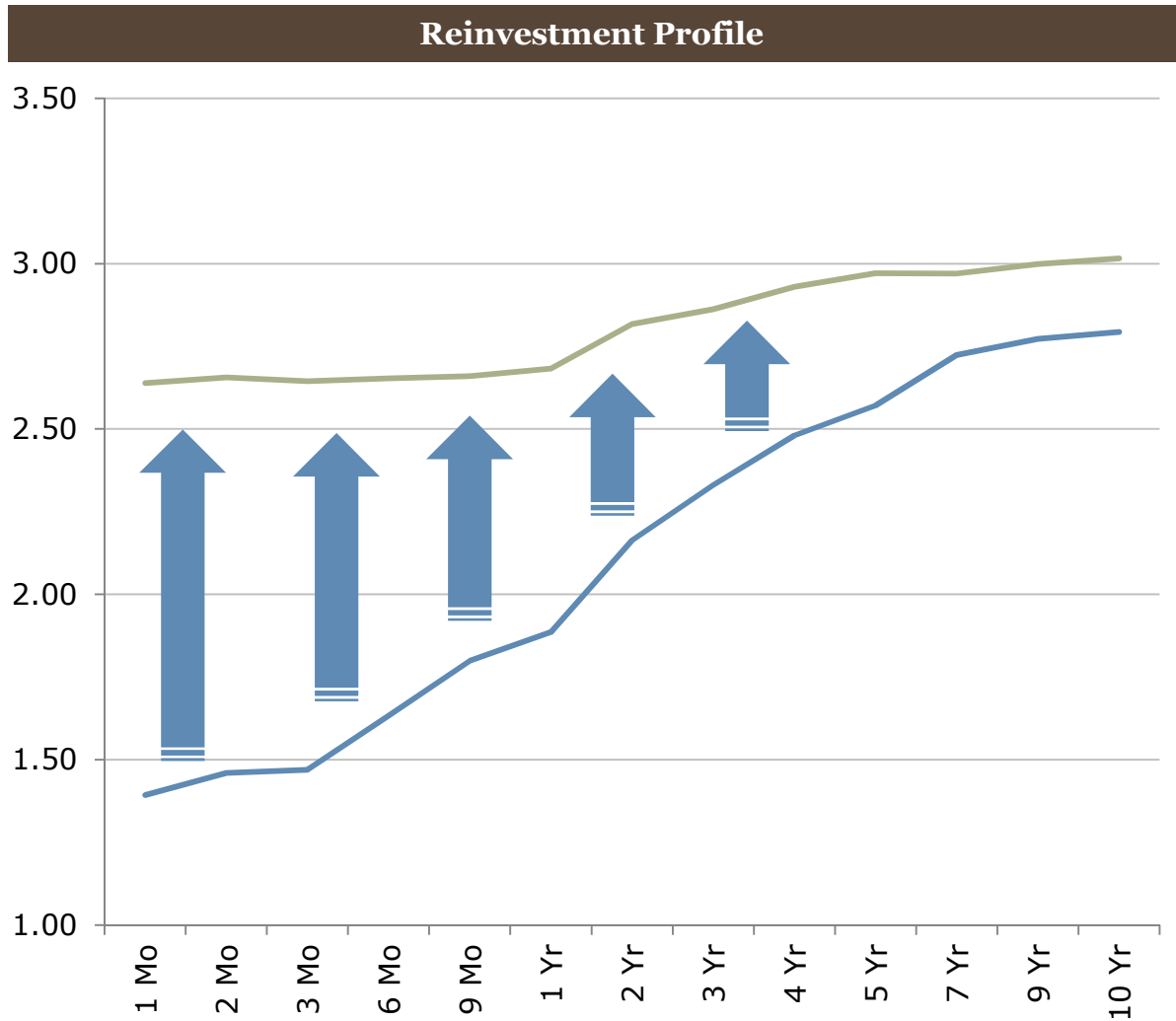
⁵ Annual Numbers Represent Averages

Wells Fargo Economists are forecasting two additional Fed fund rate hikes in 2018 and two in 2019 as well.

Higher Rates: *A Blessing and a Curse*

Higher Rates: A Blessing...

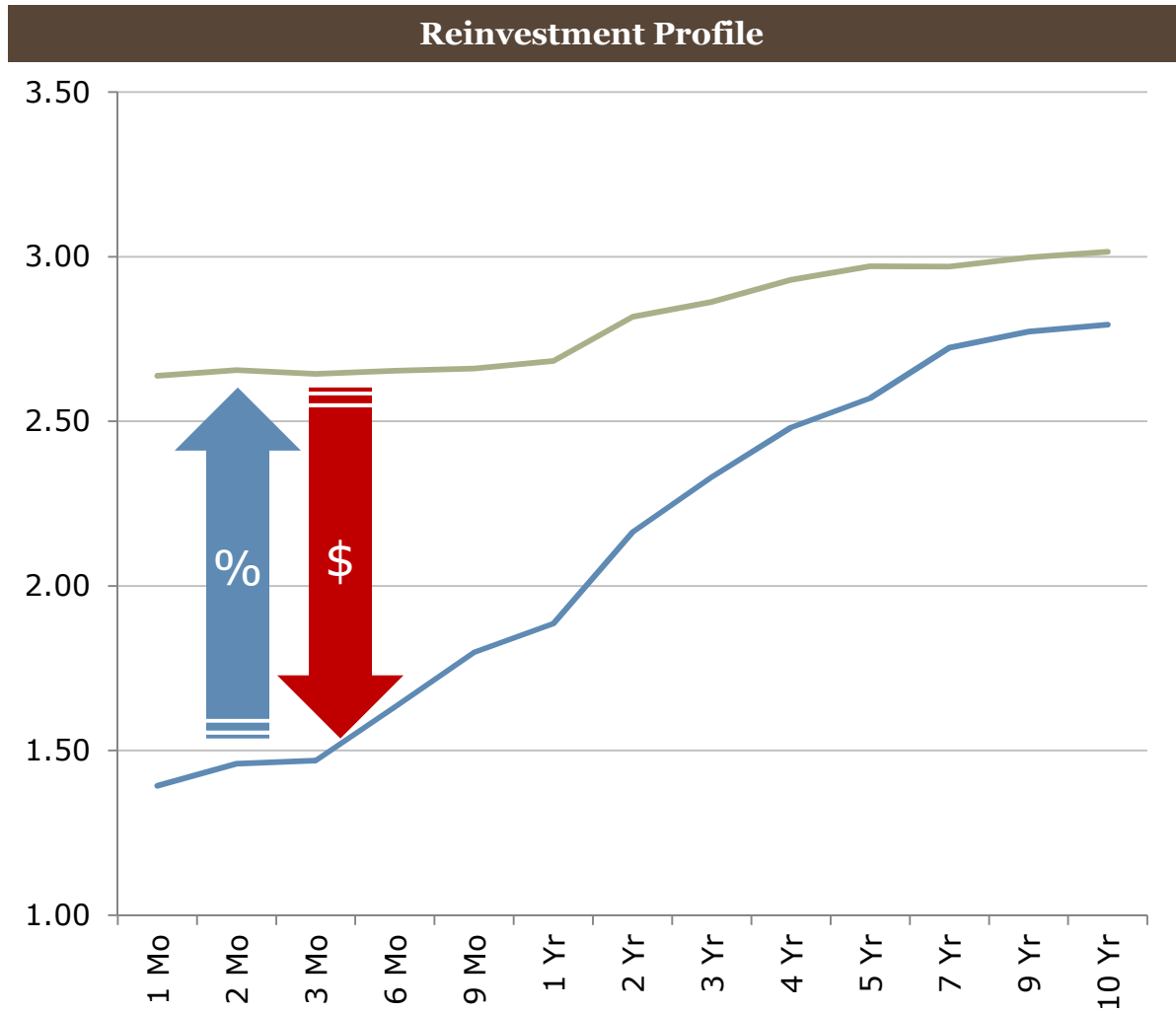
Rising interest rates allow investors to generate more income as maturing cash is redeployed at higher yields.



Source: Federal Reserve Bank, Wells Fargo Securities, LLC

Higher Rates: ...and a Curse

As reinvestment rates rise, the dollar value of the existing portfolio decreases.



Source: Federal Reserve Bank, Wells Fargo Securities, LLC

The Price/Income Face-Off?

Treasury Investing: *The Price/Income Faceoff*

Income investing does not ignore price volatility, but is not completely restricted by it.

Income-Centered Investing...

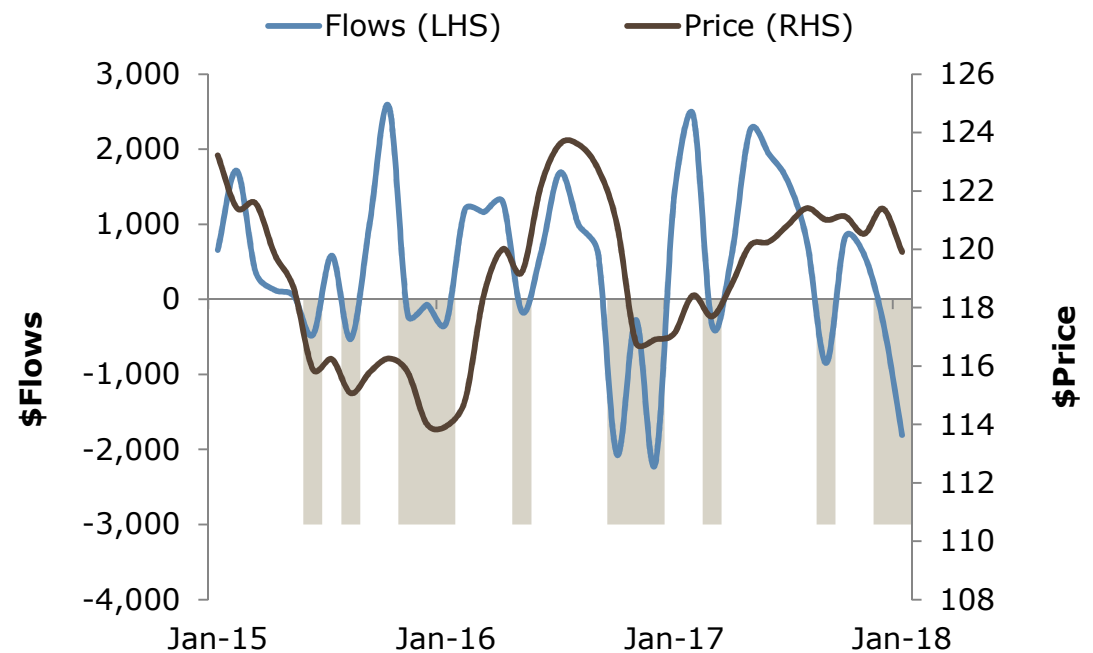
- Focuses on the generating cash flow from bond interest, which is either reinvested or used to fund cash outflows.



Portfolio price-sensitivity increases with the probability that losses may be *realized*.

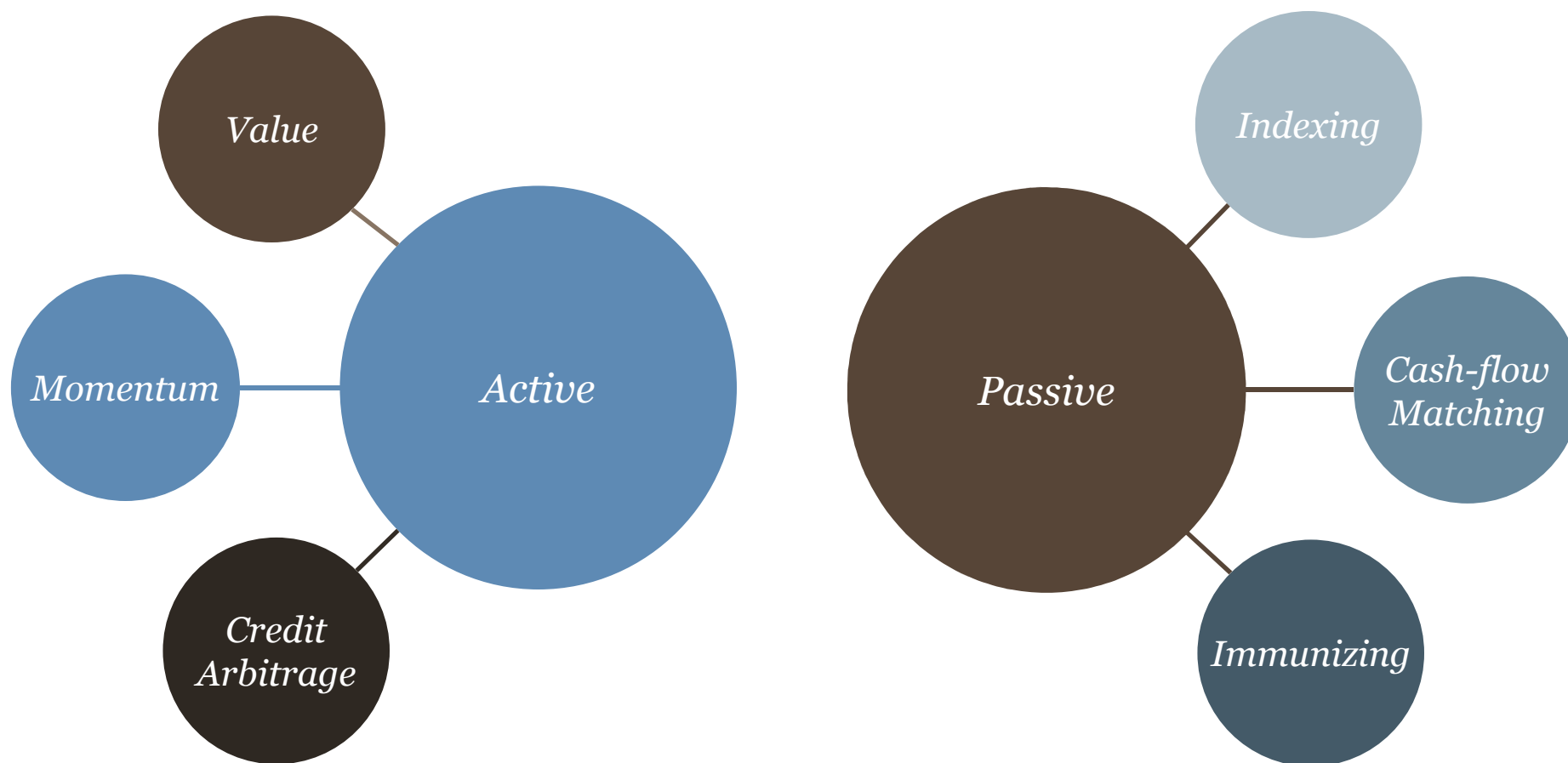
Price-Sensitive Investing...

- Fund managers are generally more price sensitive, as price volatility flows through to the NAV of the fund, which may turn unrealized into realized losses.



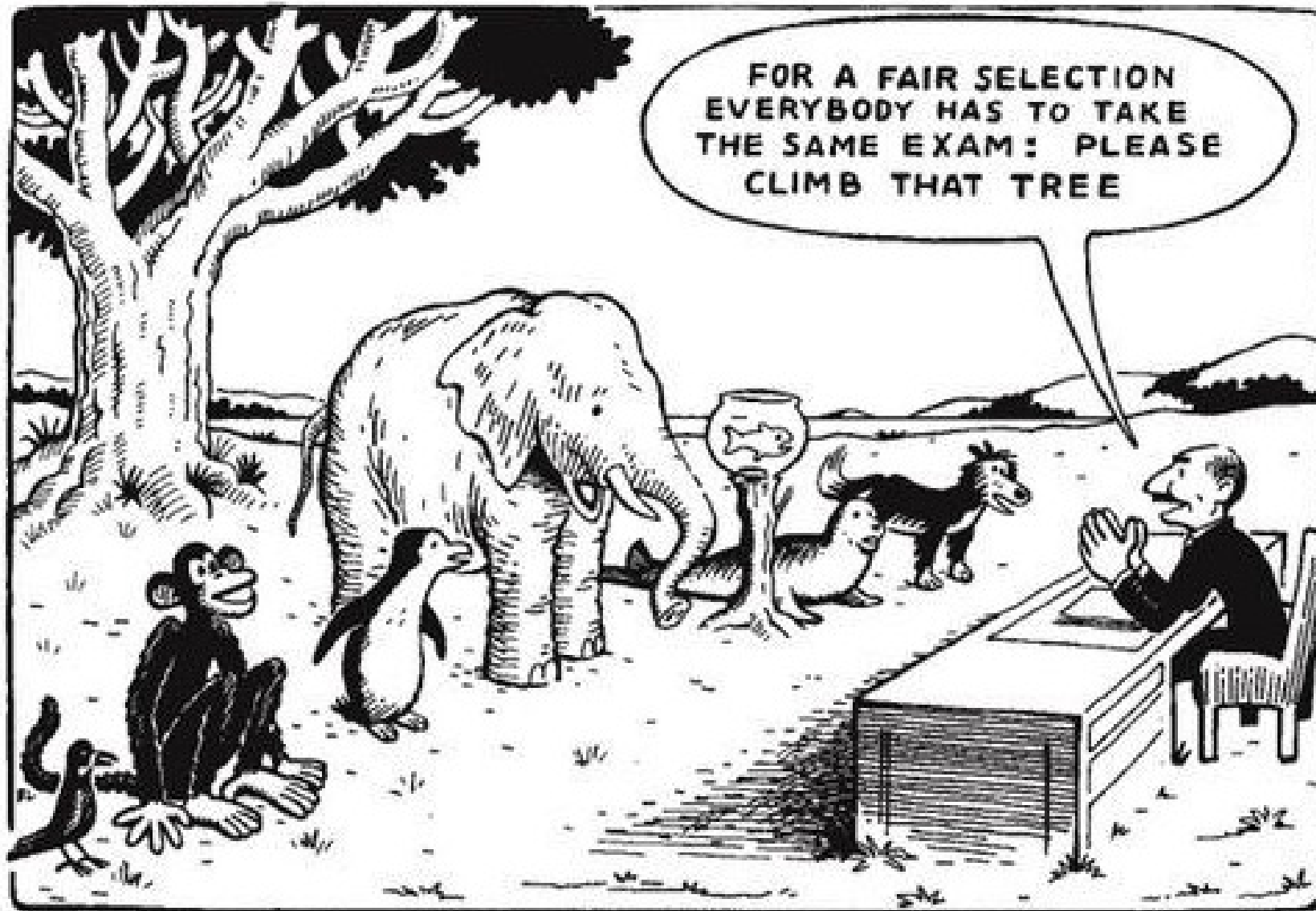
Treasury Investing: *Who am I?*

Investor types vary based on the purpose of the invested funds and the risk tolerances of the investment manager



Source: Wells Fargo Securities, LLC

Treasury Investing: *Who am I?* A Visual



Source: Wells Fargo Securities, LLC, the coolcatteacher

Why does it matter what type of investor I am?

Why does it Matter how I Define Myself?

- Investment horizons
- Risk tolerances
- Cash flows
- Investment guidelines

These Influence an Investor's Perceptions of:

- Value
- Suitability
- Performance
- Liquidity

Risk is as Risk Does

Treasury Investing: *Risk is as Risk Does...*

There is significant time spent
on a source of risk that is
generally quite low: *Default
Risk...*

Average One-year Letter Rating Migration Rates 1970 - 2015

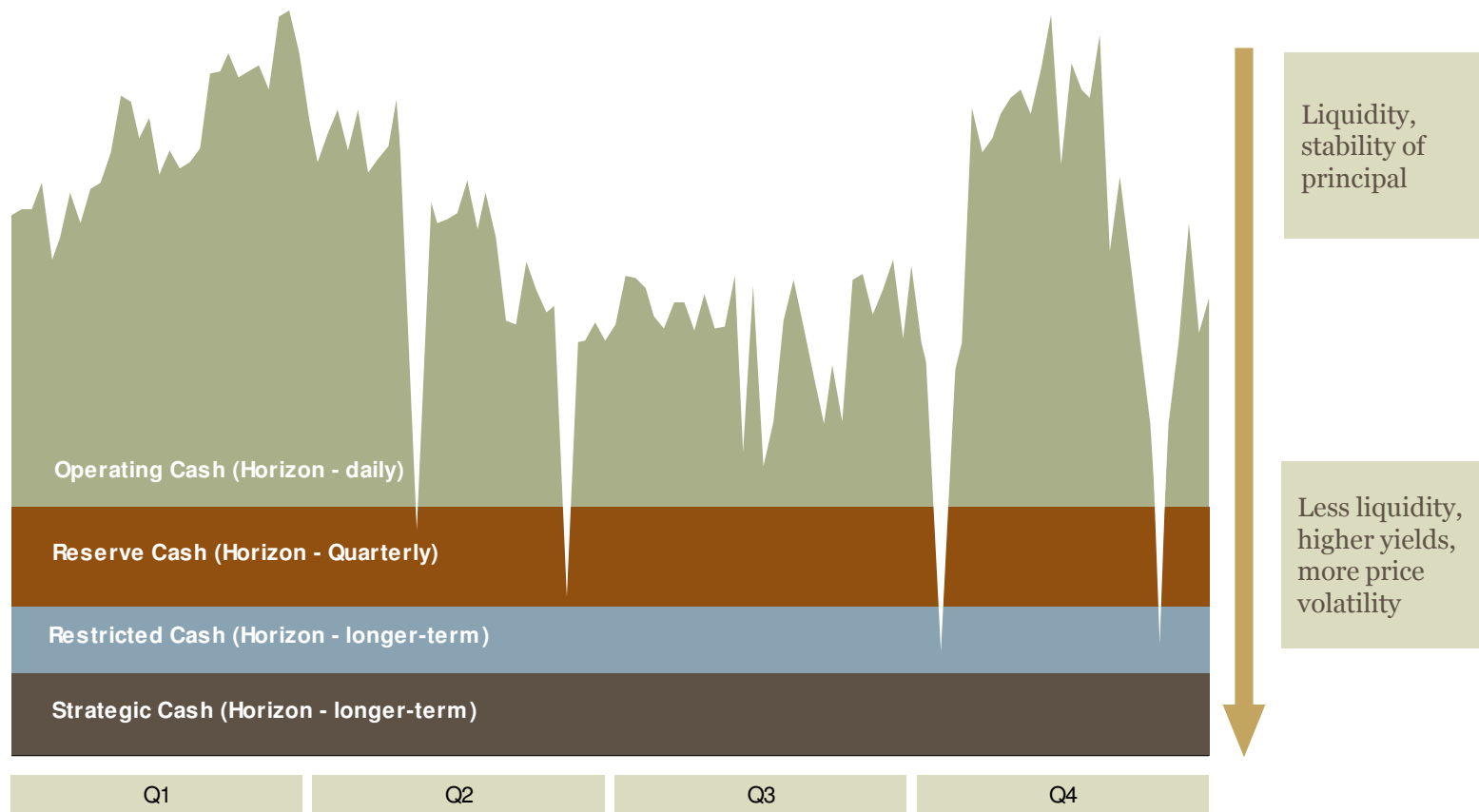
	Aaa	Aa	A	Baa	Default
Aaa	87.48%	8.14%	0.59%	0.06%	0.00%
Aa	0.83%	85.15%	8.45%	0.44%	0.02%
A	0.06%	2.57%	86.60%	5.37 %	0.06%
Baa	0.04%	0.16%	4.30%	85.44%	0.18%

Source: Wells Fargo Securities, LLC, Moody's

Treasury Investing: *Risk is as Risk Does...*

...And much less time spent on a more frequent source of risk: *Insufficient liquidity.*

Segmentation of the Treasury Cash Portfolio

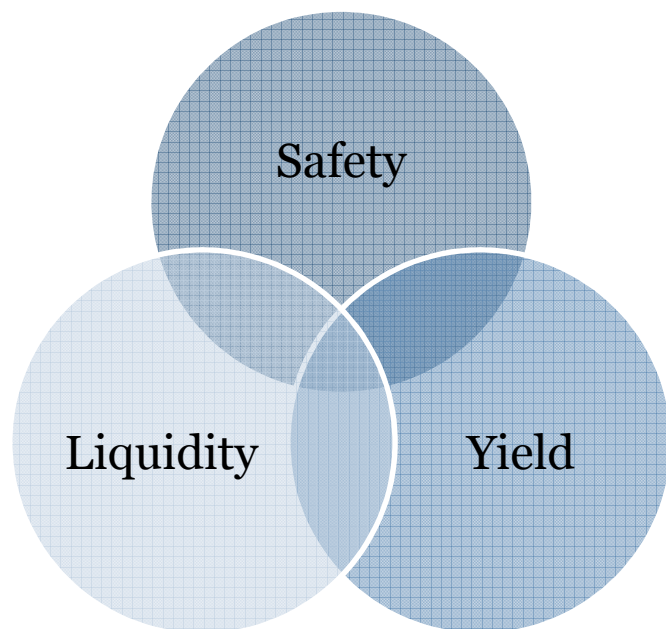


Source: ICI, Wells Fargo Securities, LLC, for illustrative purposes only

Bringing it all Together: ABCs of Cash Investing

Triad of Short-term Investing

- Cash managers are responsible for managing an organization's investment needs within the triad of short-term investing whereby the predominant goals are:
 - *Safety*: preservation of capital
 - *Liquidity*: ability to generate cash from maturing positions and/or sale of securities
 - *Yield*: suitable returns, based on current market



Source: Wells Fargo Securities, LLC

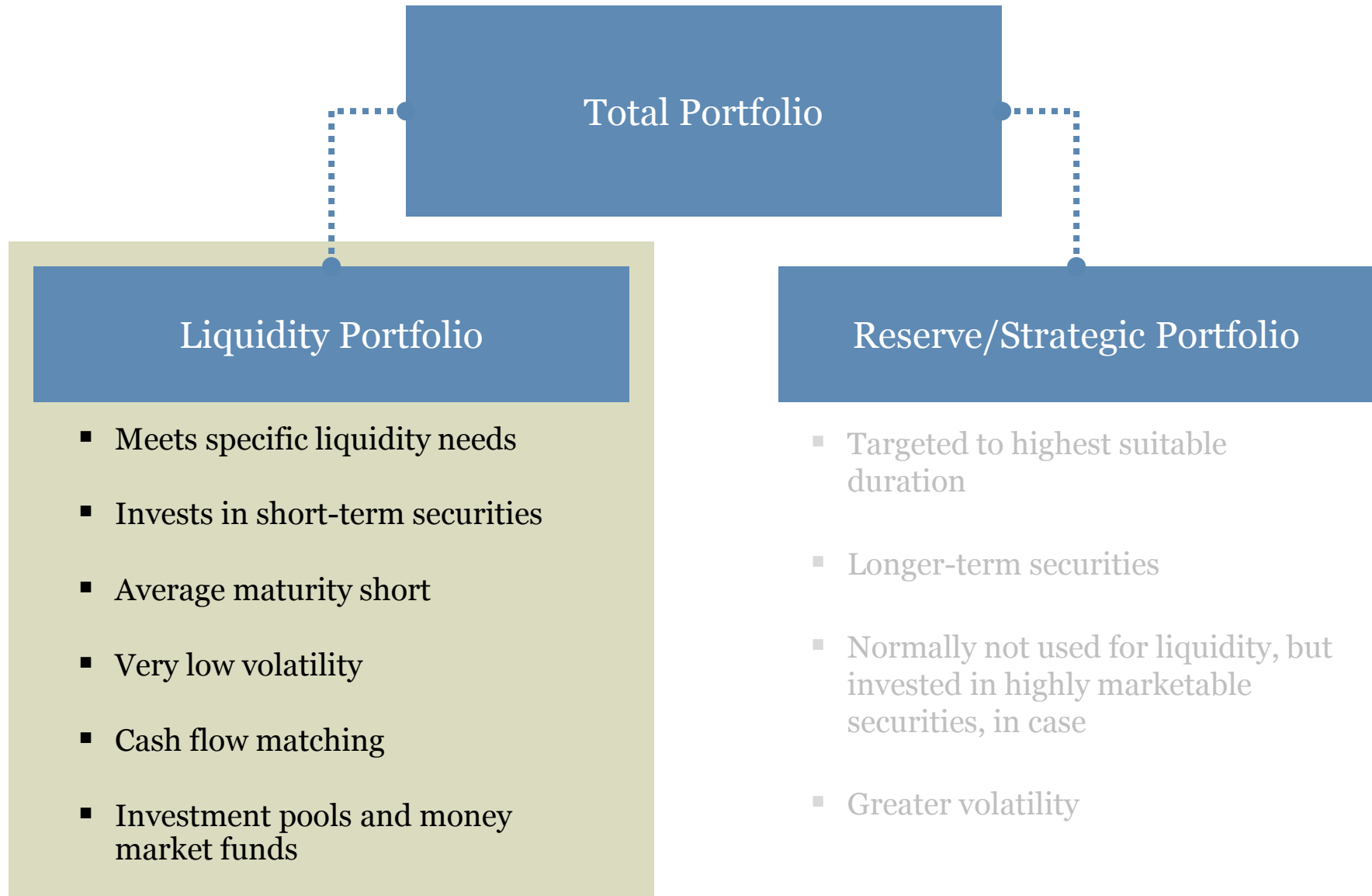
Investment Framework

- The investment process can be broken down into small, manageable steps:
- **Cash segmentation**
 - **Our sample portfolio has two segments:**
 - **Liquidity portfolio**
 - **Long-term (Strategic) portfolio**
- Assessing risk thresholds and suitability
- Investment policy development ¹/ revision
- Execution and monitoring

¹Wells Fargo Securities does not offer this service. Clients should consult an investment professional to develop their investment policy.

Liquidity Portfolios: *Cash Flow is King*

Longer-term Portfolios: *Maximizing Income and Stability*



Source: Wells Fargo Securities, LLC

Liquidity Portfolios: Cash Flow Is King

A historical review of monthly net cash flows approximates *expected* liquidity needs.

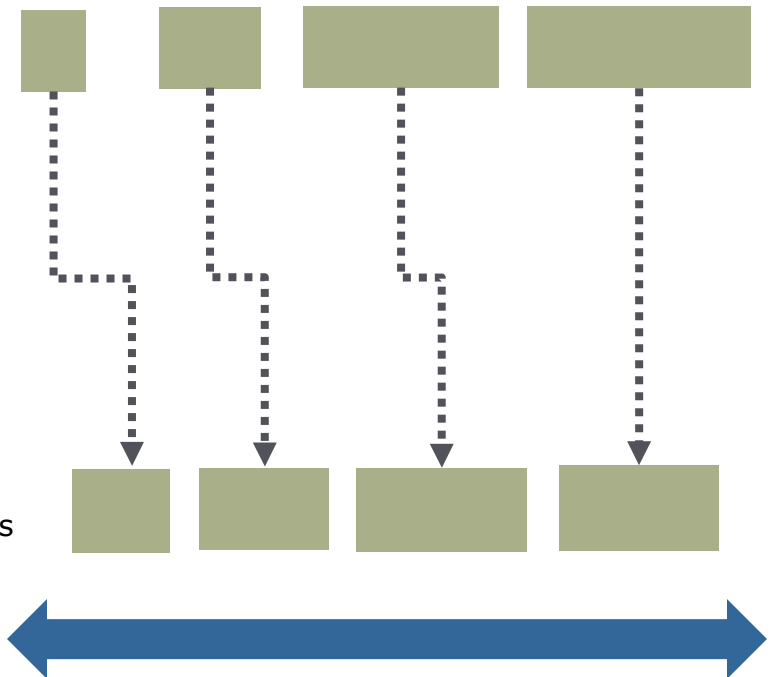
Additionally, the forecast should be modified to account for expected cash flow changes from historical experience.

Cash Flow Forecasting Informs Liquidity Investment Decisions

Monthly Receipts

Monthly Disbursements

3 Years



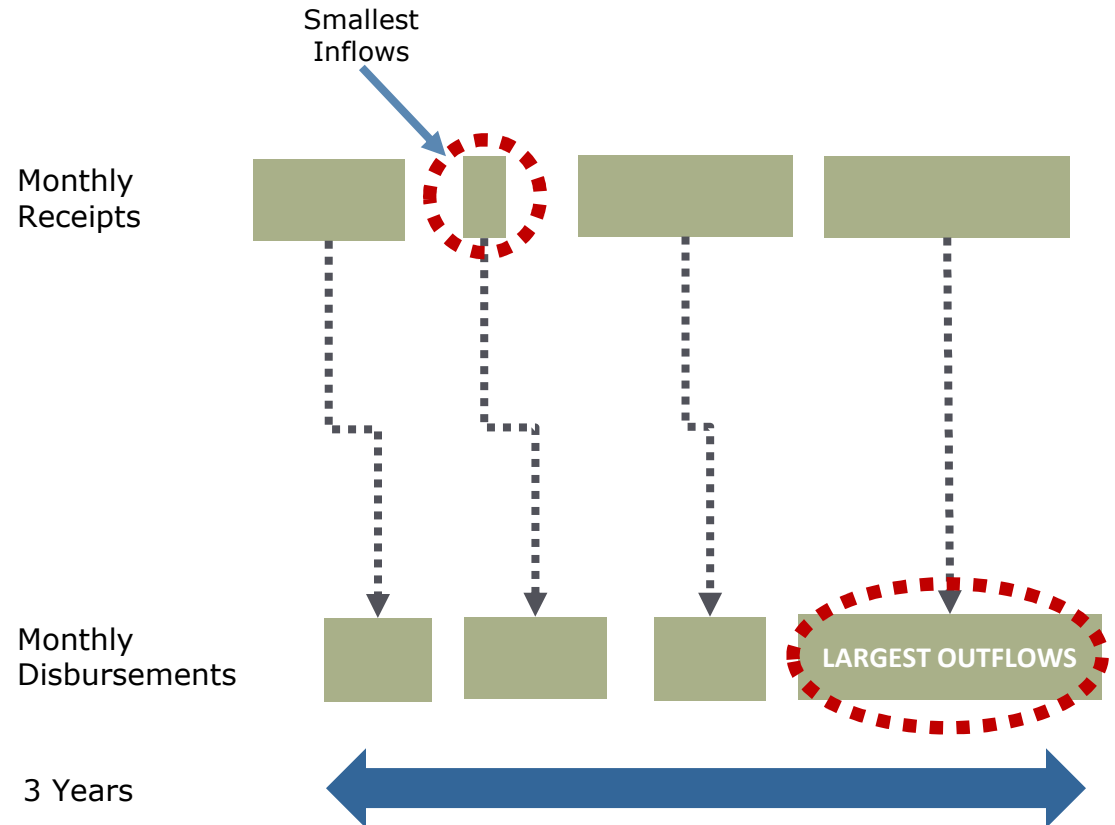
Liquidity Portfolios: Cash Flow Is King

Worst case scenario of *expected* liquidity needs for the past year:

- Lowest monthly cash balance
- + Smallest monthly cash inflows
- Largest monthly cash outflows

Worst case liquidity need

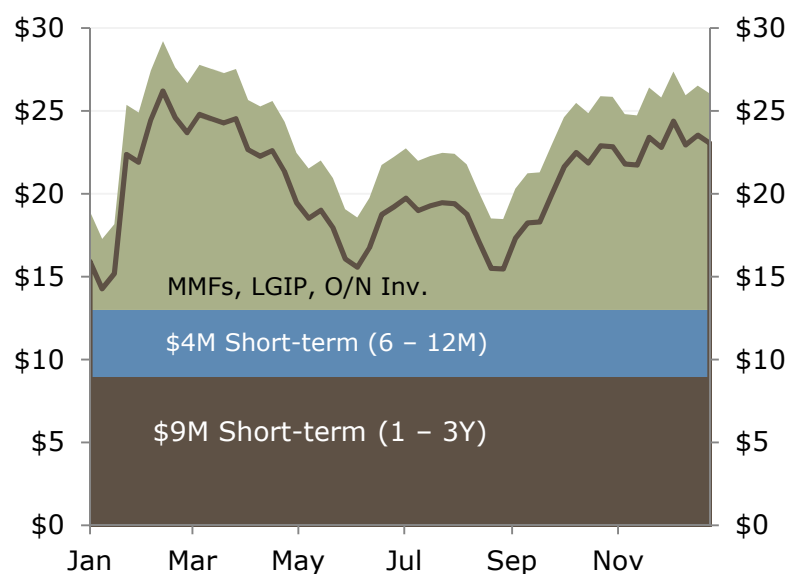
Worst Case Scenario Liquidity Need



Liquidity Portfolios: Cash Is King!

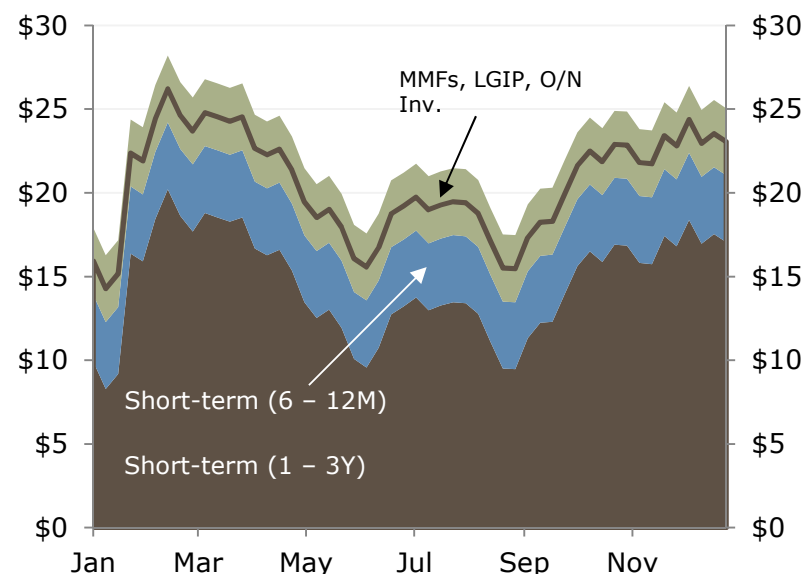
The cash forecast allows the portfolio manager to segment cash into liquidity and income components.

Basic Approach



Look historically at cash balances and find a “low point” in cash

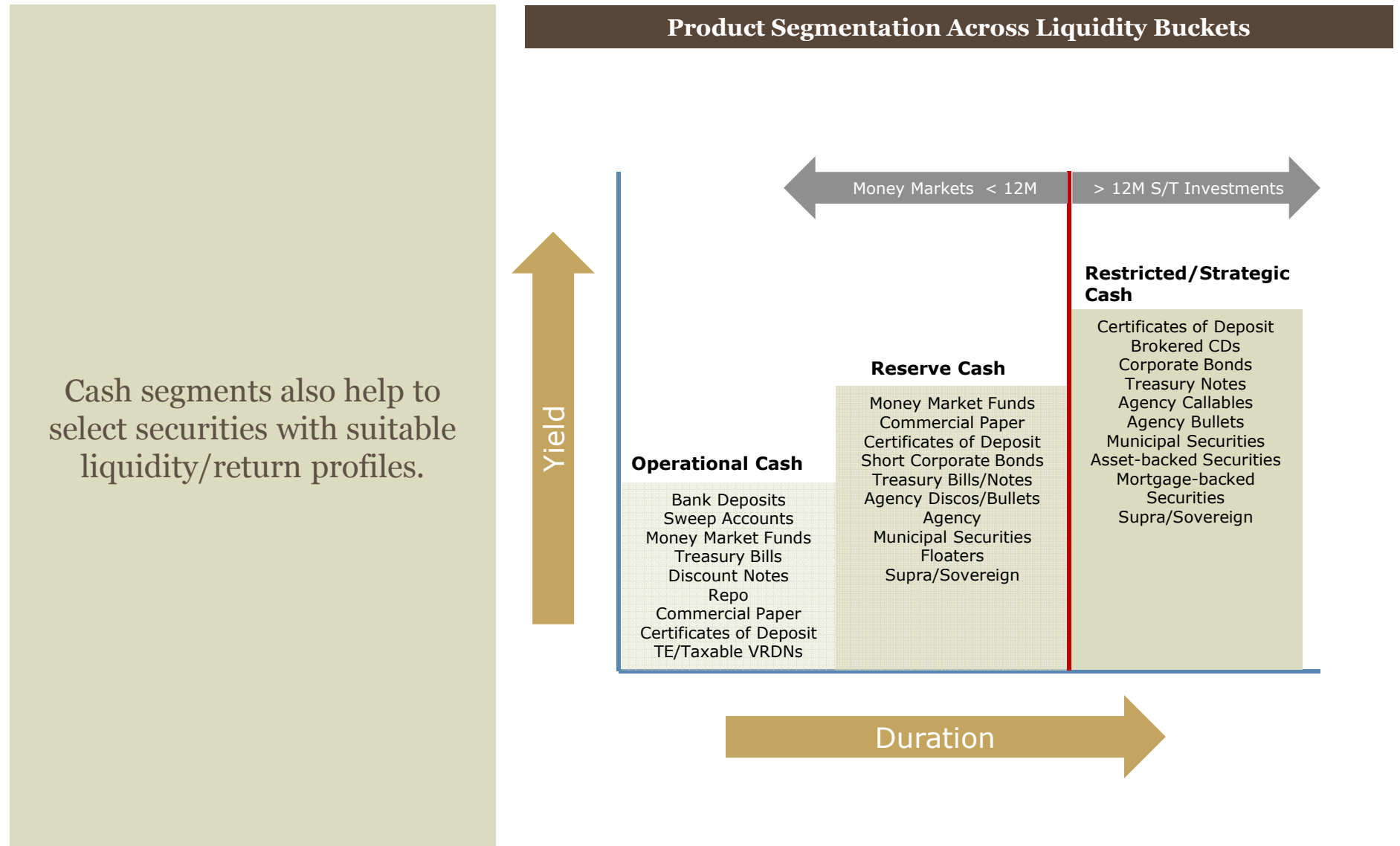
Maturity-Matching Approach



Think known or “large” cashflows, such as:

- Payrolls
- Debt service payments
- Tax payments
- Dividend payments

Liquidity Portfolios: Cash Is King!



Source: Wells Fargo Securities, LLC

Longer-Term Portfolios: *Maximizing Income and Stability*

Longer-term Portfolios: *Maximizing Income and Stability*

Once liquidity needs have been satisfied, does income really matter?

“We are not in the business of investing...”

“I need to reward my credit facility partners.”

“I have never invested before, I don’t know where to start.”

“With so much I have to do, I don’t have time to think about investments.”





“As long as we can get a little extra while not having any losses, I’ve done my job.”

“We are not trying to beat the market.”





Longer-term Portfolios: *Maximizing Income and Stability*

What does income optimization mean in real-world terms?

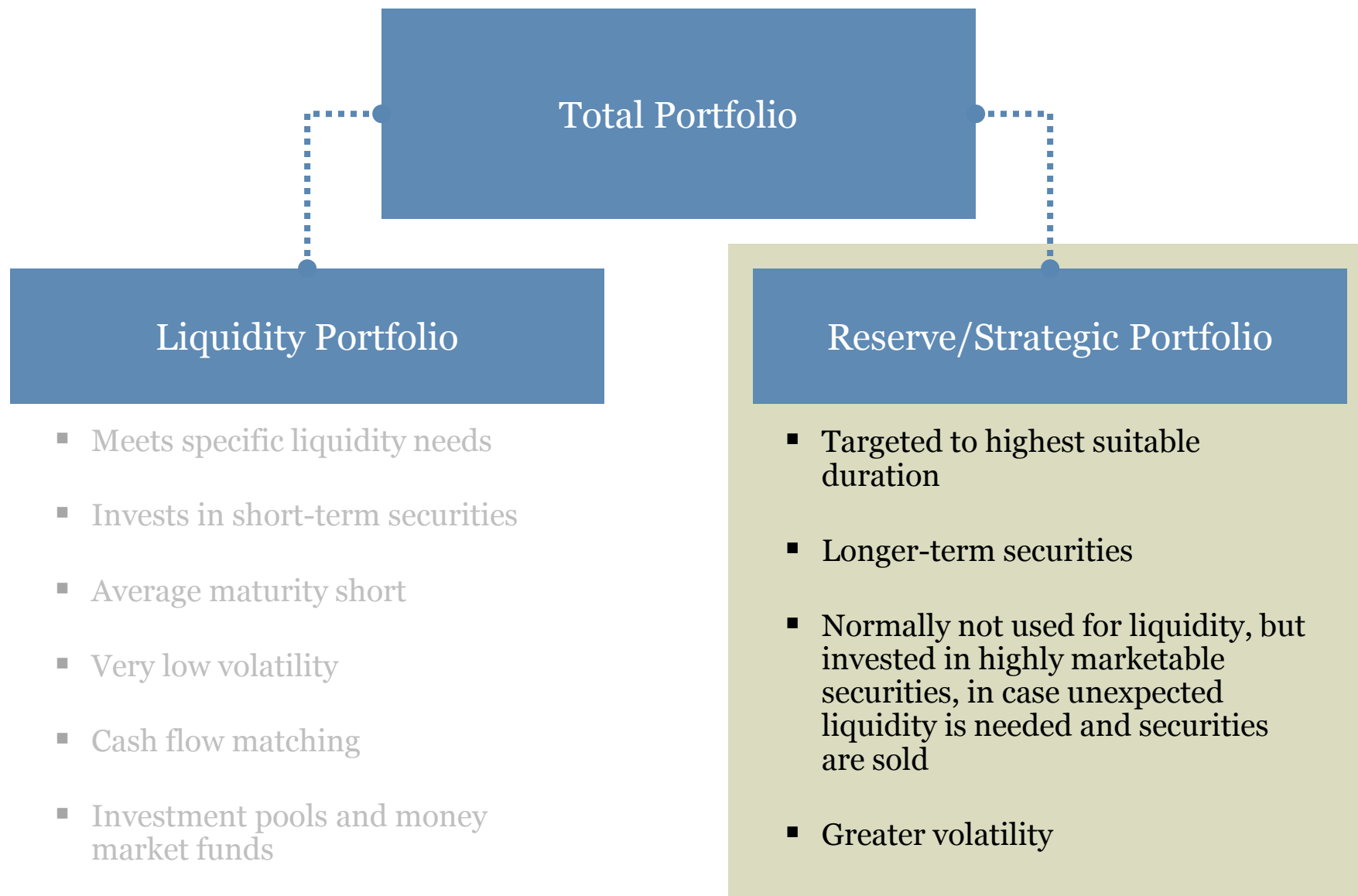
Government Budgets

- ✓ Invest in FTE employees 
- ✓ Increased public services 
- ✓ Lower/stable taxes 
- ✓ Support operations 

Corporate Balance Sheet

- ✓ Invest in FTE employees 
- ✓ Higher EPS 
- ✓ Investment in PP&E 
- ✓ Investment in R&D 

Longer-term Portfolios: *Maximizing Income and Stability*

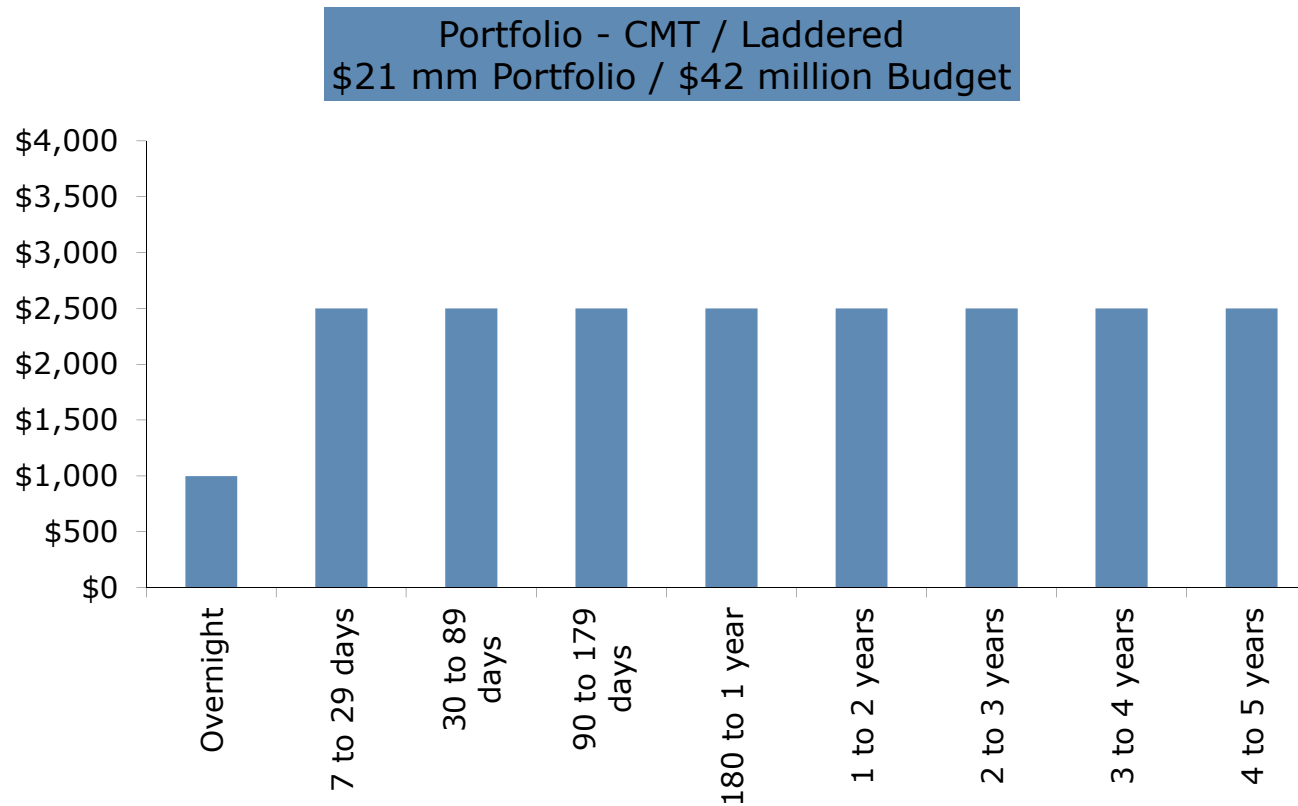


Source: Wells Fargo Securities, LLC

Longer-term Portfolios: *Passive Strategy*

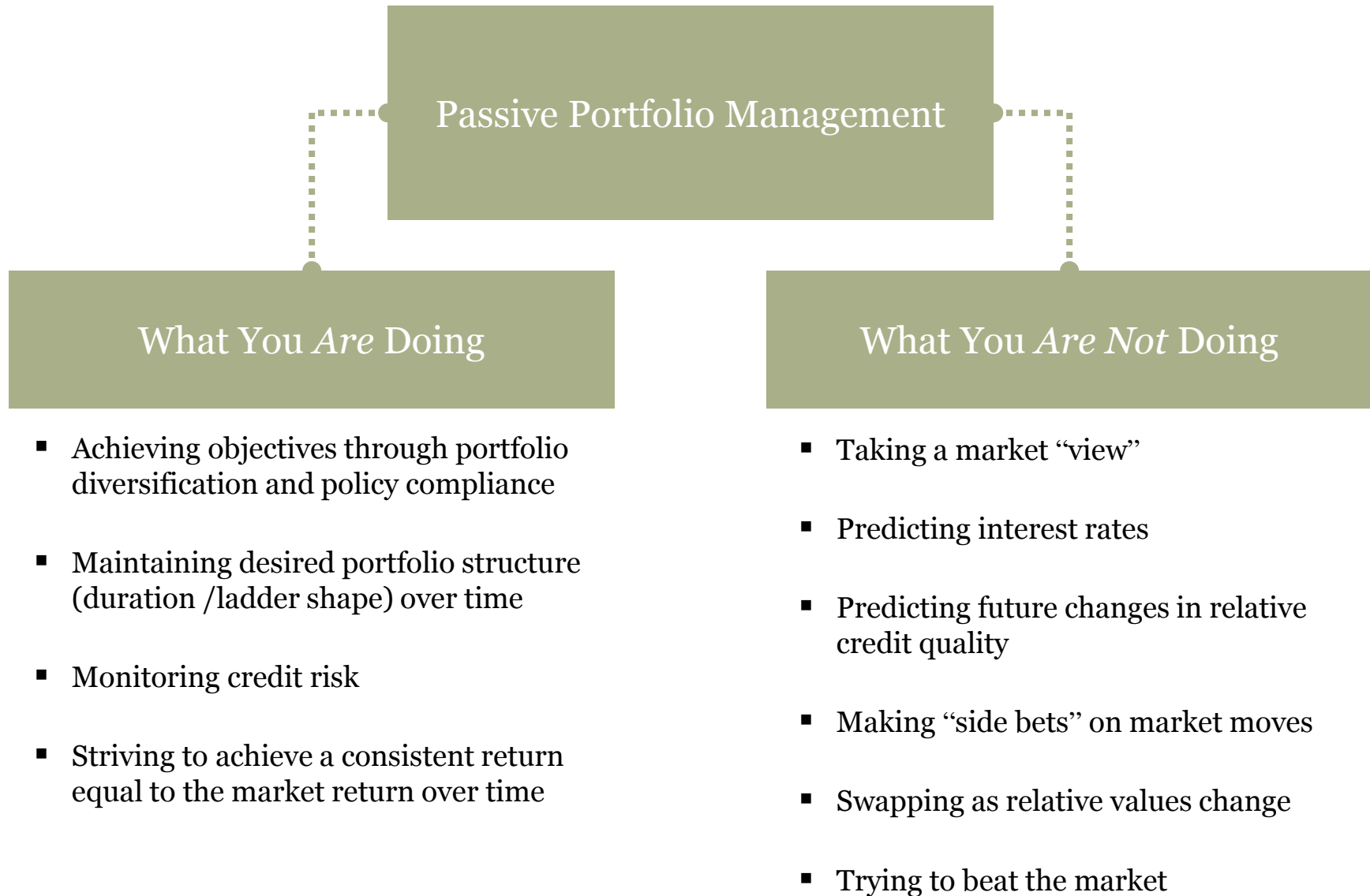
Portfolio Ladder

- Portfolio Holdings are 'laddered' in a Constant Maturity Profile
- Buy and Hold investment technique



Source: Wells Fargo Securities, LLC, GFOA

Longer-term Portfolios: *Maximizing Income and Stability*



Summary

Investing in a Rising Rate Environment

Constructing a portfolio begins and ends with knowing what you want, and communicating that to other decision makers.

Develop a Framework

- Remember what kind of investor you are.
- Understand the difference between *recognized* and *realized*.
- Understand how performance is defined for your investor type.
- Understand the true sources of loss in the portfolio.
- Develop a robust cash flow forecast .

Execute the Framework

- Develop an investment policy statement.
- Develop an investment plan separate from the policy.
- Decide between passive/laddering and active/benchmarking makes more sense.
- Keep decision makers informed of your investment plan.

Source: Wells Fargo Securities, LLC

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