2024 WICPA FINANCIAL INSTITUTIONS CONFERENCE

YOUR SOURCE FOR KEY UPDATES & INSIGHTS ON TIMELY ISSUES

HIGHLIGHTED TOPICS:

ECONOMIC OUTLOOK

Find out how to make sense out of and maneuver through the mixed 2024 economic data

REGULATORY UPDATE

Get the current perspectives from FDIC examiners on a variety of financial reporting topics and policy developments

TAX UPDATE FOR FINANCIAL INSTITUTIONS

Learn about the most recent tax law changes that impact you and your financial institution

TUESDAY, MAY 14 | WICPA OFFICE & WICPA CPE LIVESTREAM

CONFERENCE AT A GLANCE

TUESDAY, MAY 14

WICPA Office & WICPA CPE Livestream

7 – 8 a.m.
Registration & Networking
Lower Level Foyer

8 – 8:10 a.m.
Welcome & Opening Remarks
Lower Level Conference Center

8:10 – 9:20 a.m.
GENERAL SESSION
Economic Outlook: How to Make Sense Out of & Maneuver Through the Mixed 2024 Economic Data
Lower Level Conference Center

9:20 – 9:30 a.m.
Networking Break
Lower Level Foyer

9:30 – 10:20 a.m.
BREAKOUT SESSIONS
Data as an Asset
WICPA Training Center

Getting Ahead of CECL Volatility Through Stress-Testing & Model Validation
Lower Level Conference Center

10:20 – 10:30 a.m.
Networking Break
Lower Level Foyer

10:30 – 11:45 a.m.
GENERAL SESSION
Tax Update for Financial Institutions
Lower Level Conference Center

11:45 a.m. – 12:20 p.m.
Networking Lunch
Lower Level Foyer

12:20 – 1:10 p.m.
GENERAL SESSION
Cybersecurity
Lower Level Conference Center

1:10 – 1:20 p.m.
Networking Break
Lower Level Foyer

1:20 – 2:20 p.m.
GENERAL SESSION
Regulatory Update: FDIC Examiners Share Their Perspectives
Lower Level Conference Center

2:20 – 2:40 p.m.
Networking Break
Lower Level Foyer

2:40 – 3:30 p.m.
GENERAL SESSION
Managing Your Balance Sheet Through Uncertainty
Lower Level Conference Center

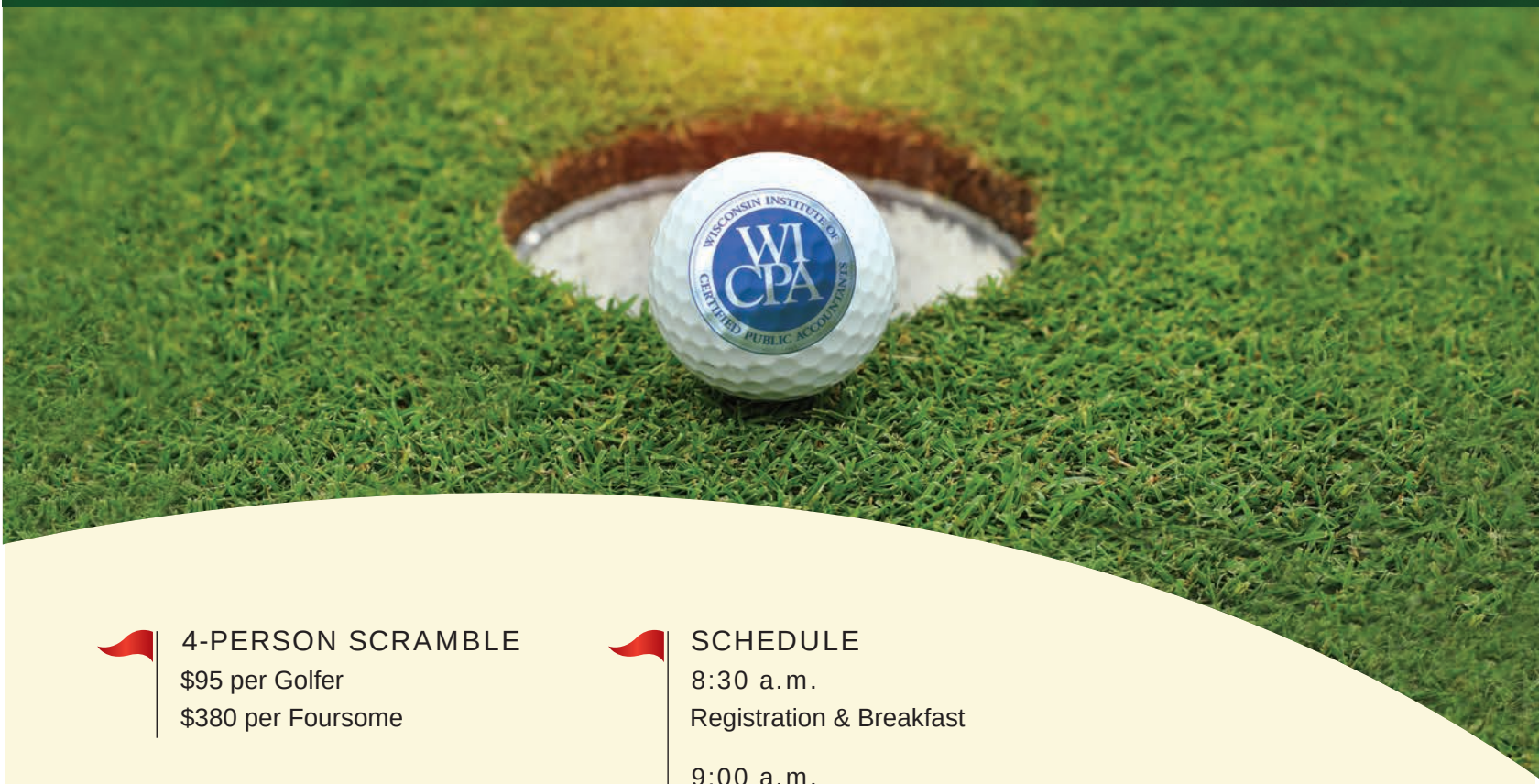
3:30 – 3:40 p.m.
Networking Break
Lower Level Foyer

3:40 – 4:55 p.m.
GENERAL SESSION
Current Issues in Business Ethics
Lower Level Conference Center

4:55 p.m.
Closing Remarks & Prize Drawings
Lower Level Conference Center

2024 WICPA GOLF OUTING

FRIDAY, SEPT. 20 – Ironwood Golf Course, Sussex



4-PERSON SCRAMBLE

$95 per Golfer
$380 per Foursome

REGISTRATION INCLUDES

18 Holes of Golf With Cart
Practice Greens & Driving Range
Continental Breakfast & Lunch
Beverage Vouchers
Hole & Event Contests
Entry in Prize Drawings

SCHEDULE

8:30 a.m.
Registration & Breakfast

9:00 a.m.
Practice Greens
& Driving Range

10:00 a.m.
Shotgun Start

4:00 p.m.
Reception & Appetizers

HOLE & EVENT PRIZES

$1,000+ in Drawing Prizes
$500+ in Individual Prizes
$500+ in Team Prizes
$500 Inside the Circle Contest

Scan the QR code or visit wicpa.org/GolfOuting to register.

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WICPA Connect is your exclusive members-only networking and knowledge base designed to connect you with WICPA members and resources.

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- **Post questions** to find out from fellow members who have the expertise or may have been in the same situation.
- **Personalize your profile** by adding your interests, education, experience, honors and even your photo.
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8:10 – 9:20 a.m.

Economic Outlook: How to Make Sense Out of & Maneuver Through the Mixed 2024 Economic Data

Jordan Jackson, *Executive Director, Global Market Strategist, J.P. Morgan Asset Management*

Market Insights

CELEBRATING 20 YEARS

Economic Outlook: How to Make Sense Out of & Maneuver Through the Mixed 2024 Economic Data

Jordon Jackson, Executive Director, Global Market Strategist,
J.P. Morgan Asset Management

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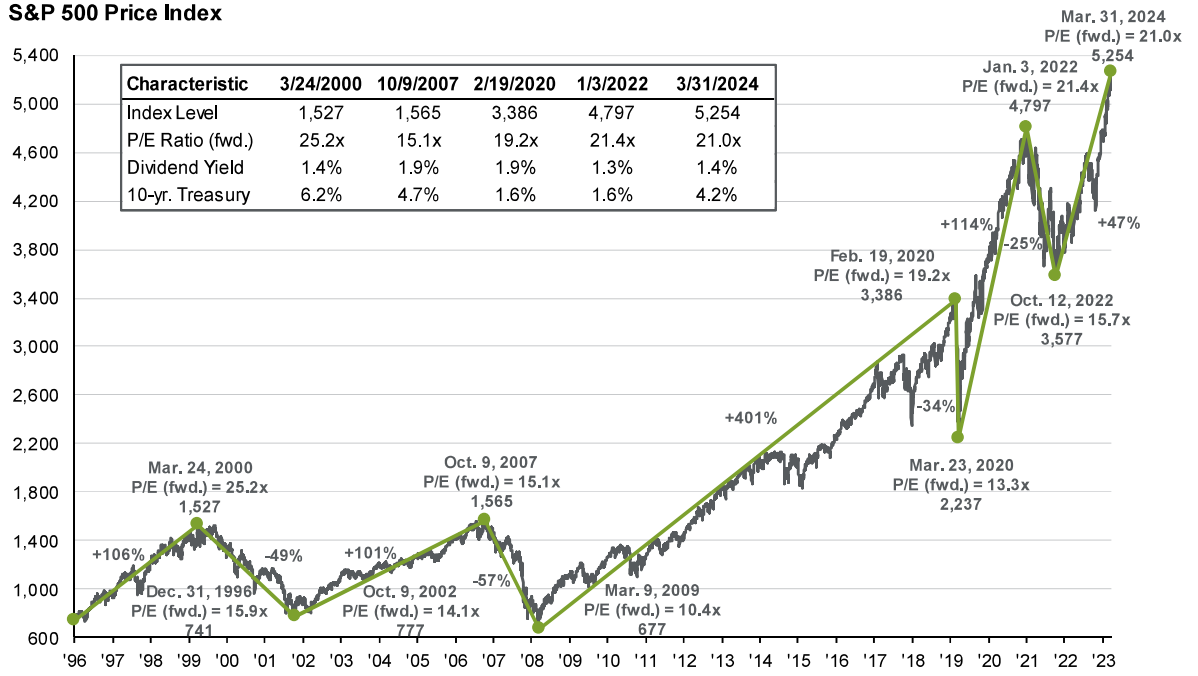
Equities

S&P 500 Index at inflection points

GTM | U.S. | 4

S&P 500 Price Index

Characteristic	3/24/2000	10/9/2007	2/19/2020	1/3/2022	3/31/2024
Index Level	1,527	1,565	3,386	4,797	5,254
P/E Ratio (fwd.)	25.2x	15.1x	19.2x	21.4x	21.0x
Dividend Yield	1.4%	1.9%	1.9%	1.3%	1.4%
10-yr. Treasury	6.2%	4.7%	1.6%	1.6%	4.2%



Source: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price-to-earnings ratio is a bottom-up calculation based on I/B/E/S estimates and FactSet estimates since January 2002. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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S&P 500 valuation measures

S&P 500 Index: Forward P/E ratio

Valuation measure	Description	Latest	30-year avg.*	Std. dev. over/under-valued
P/E	Forward P/E	20.96x	16.62x	1.34
CAPE	Shiller's P/E	34.75x	27.65x	1.16
Div. Yield	Dividend yield	1.43%	2.00%	1.65
P/B	Price to book	4.23x	3.12x	1.40
P/CF	Price to cash flow	15.92x	11.17x	2.10
EY Spread	EY minus Baa yield	-0.97%	0.04%	0.55

Source: FactSet, FRB, Refinitiv Datastream, Robert Shiller, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since February 1994 and by FactSet since January 2022. Current next 12 months consensus earnings estimates are $245. Average P/E and standard deviations are calculated using 30 years of history. Shiller's P/E uses trailing 10 years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12 months consensus dividend divided by most recent price. Price-to-book ratio is the price divided by book value per share. Price-to-cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over/under-valued is calculated using the average and standard deviation over 30 years for each measure. *Averages and standard deviations for dividend yield and P/CF are since November 1995 due to data availability.
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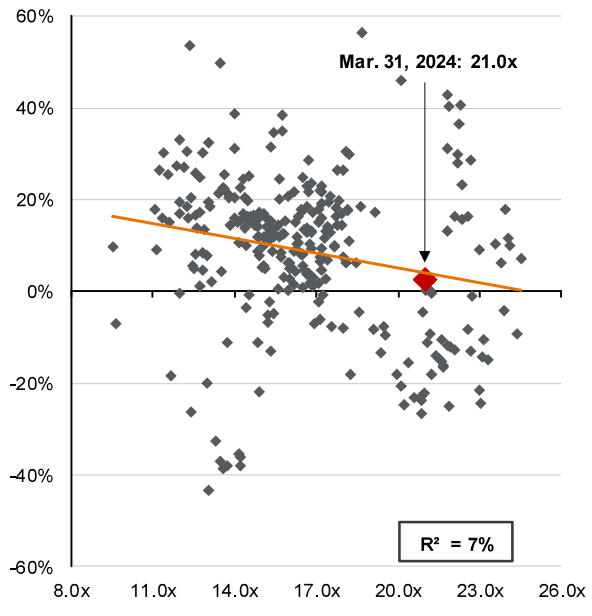
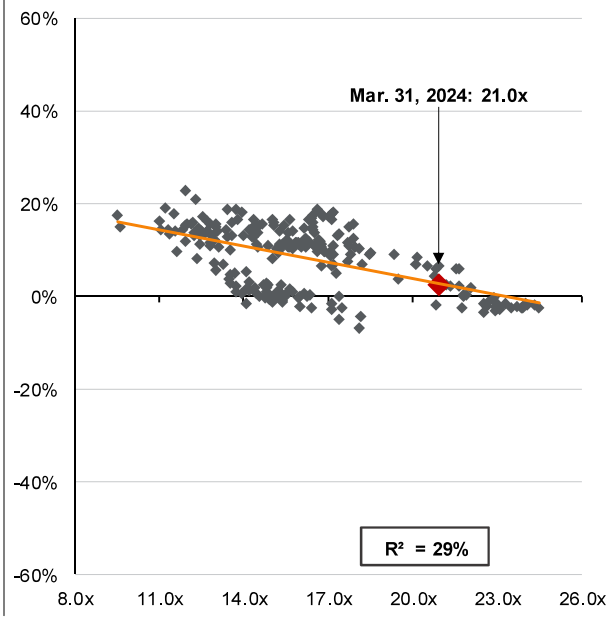
P/E ratios and equity returns

Forward P/E and subsequent 1-yr. returns
S&P 500 Total Return Index



Forward P/E and subsequent 5-yr. annualized returns
S&P 500 Total Return Index



Source: FactSet, Refinitiv Datastream, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
Returns are 12-month and 60-month annualized total returns, measured monthly, beginning 1/31/1999. R^2 represents the percent of total variation in total returns that can be explained by forward price-to-earnings ratios. Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since February 1998 and by FactSet since January 2022.
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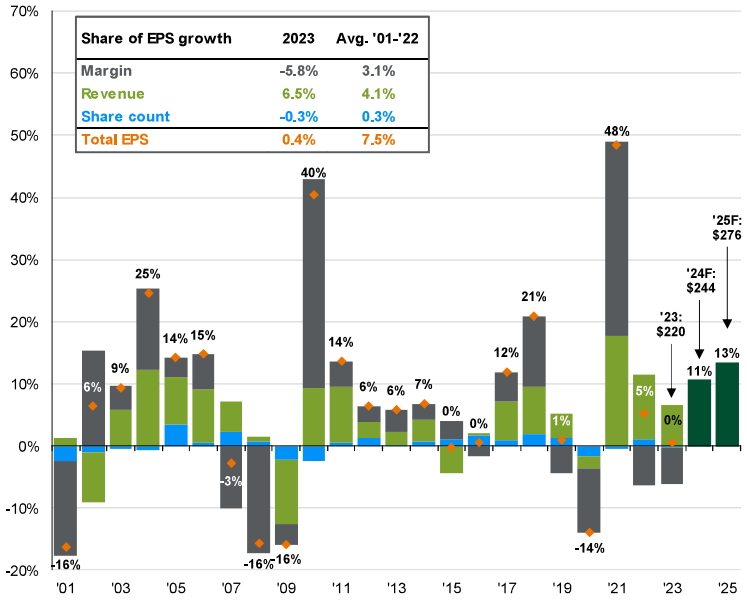
Sources of earnings growth and profit margins

S&P 500 year-over-year pro-forma EPS growth

Annual growth broken into changes in revenue, profit margin and share count



S&P 500 profit margins

Quarterly earnings/sales

Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
Historical EPS levels are based on annual pro-forma earnings per share. *2024 and 2025 EPS growth are based on consensus analyst estimates for each calendar year. Past performance is not indicative of future returns.
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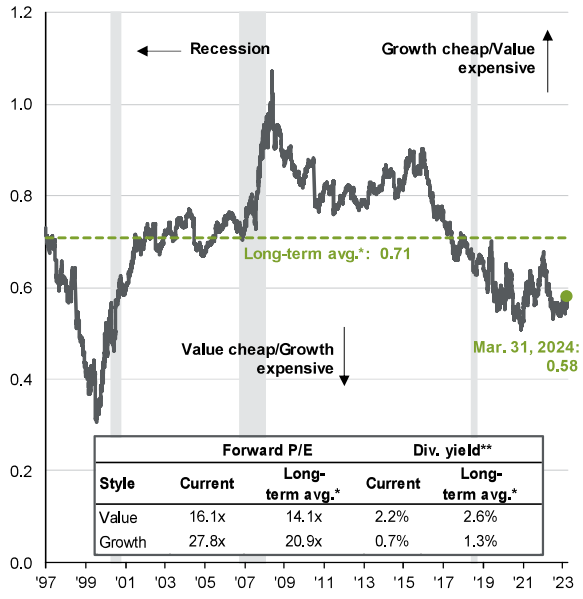
Value vs. Growth: Valuations and interest rates

Value vs. Growth relative valuations

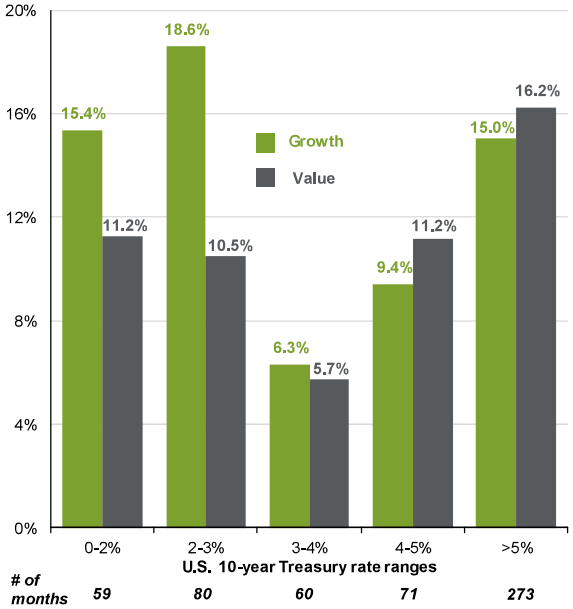
Rel. fwd. P/E ratio of Value vs. Growth, 1997 - present



	Forward P/E		Div. yield**	
Style	Current	Long-term avg.*	Current	Long-term avg.*
Value	16.1x	14.1x	2.2%	2.6%
Growth	27.8x	20.9x	0.7%	1.3%

Value vs. Growth in different interest rate environments

Annualized total return by 10-year Treasury rate ranges, 1979 - present



Source: FactSet, FTSE Russell, NBER, J.P. Morgan Asset Management.
Growth is represented by the Russell 1000 Growth Index and Value is represented by the Russell 1000 Value Index. (Left) *Long-term averages are calculated monthly since December 1997. **Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. (Right) Returns are calculated by annualizing the average monthly performance during each interest rate range.
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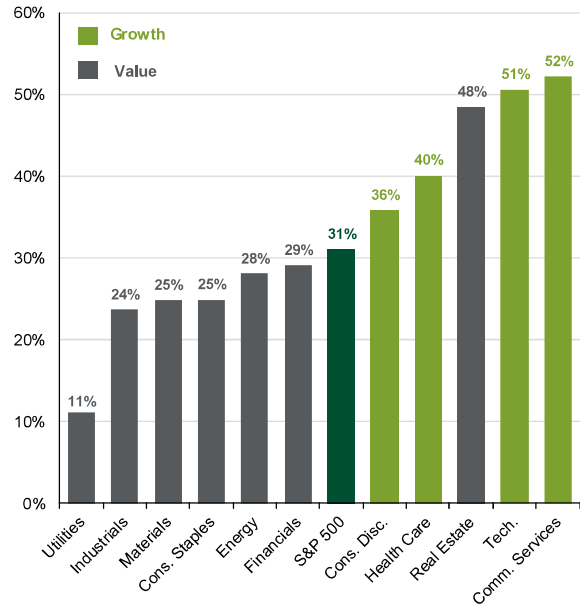
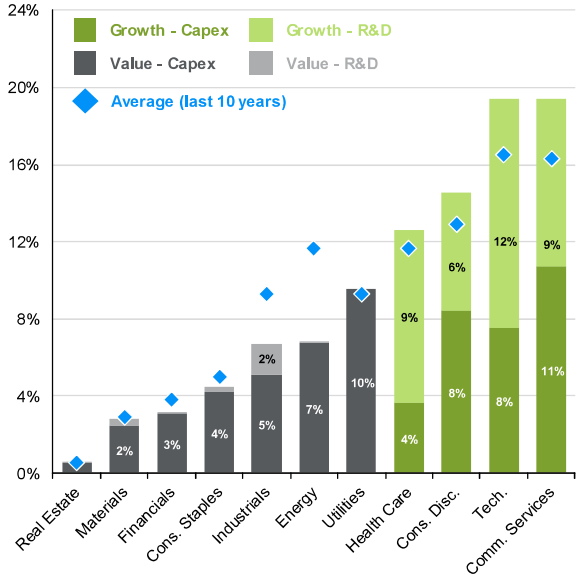
Value vs. Growth: Cash, R&D and capex

Corporate cash as a % of current assets by sector
Quarterly



Research & development and capex by sector
Share of total S&P 500 R&D and capex by sector, current vs. average



Source: Compustat, FactSet, J.P. Morgan Asset Management. (Left) Corporate cash and current assets data are based on the latest available quarterly data. Current assets are assets that can be converted into cash within a 12-month time frame. Current assets includes items such as cash and cash equivalents, marketable securities, accounts receivable, inventory and other short-term investments. (Right) Research and development (R&D) and capital expenditure (capex) data are year-to-date through 3Q23.
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S&P 500: Index concentration, valuations and earnings

P/E ratio of the top 10 and remaining stocks in the S&P 500
Next 12 months, 1996 - present

	Current	Average	% of avg.
Top 10	28.4x	20.3x	140%
Remaining stocks	18.3x	15.7x	117%
S&P 500	21.0x	16.5x	127%

Weight of the top 10 stocks in the S&P 500
% of market capitalization of the S&P 500

Earnings contribution of the top 10 in the S&P 500
Based on last 12 months' earnings

Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
The top 10 S&P 500 companies are based on the 10 largest index constituents at the beginning of each month. As of 3/31/2024, the top 10 companies in the index were MSFT (7.2%), AAPL (5.6%), NVDA (5.1%), AMZN (3.7%), META (2.4%), GOOGL (2.0%), BRK.B (1.7%), GOOG (1.7%), LLY (1.4%), AVGO (1.3%) and JPM (1.3%). The remaining stocks represent the rest of the 490 companies in the S&P 500.
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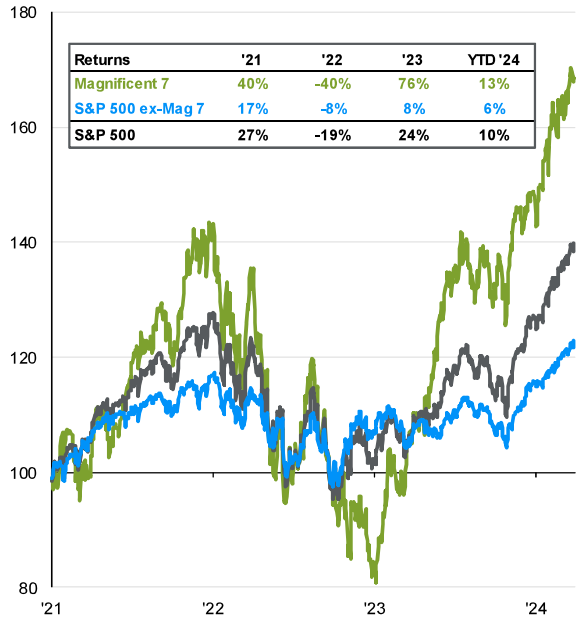
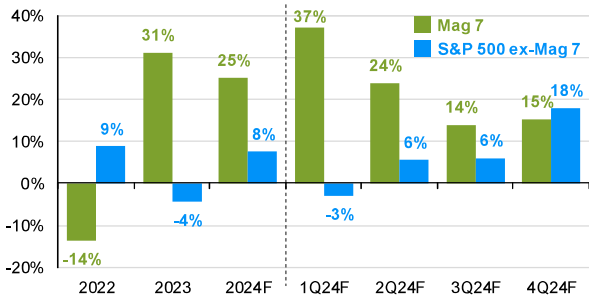
Magnificent 7 performance and earnings dynamics

Performance of "Magnificent 7" stocks in S&P 500*
Indexed to 100 on 1/1/2021, price return

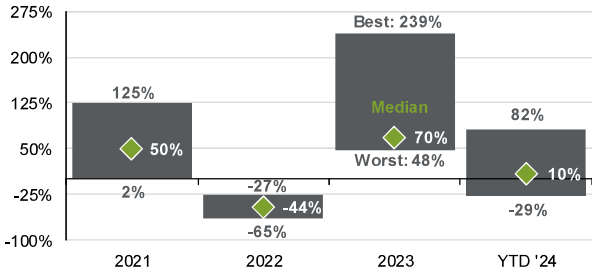
Returns	'21	'22	'23	YTD '24
Magnificent 7	40%	-40%	76%	13%
S&P 500 ex-Mag 7	17%	-8%	8%	6%
S&P 500	27%	-19%	24%	10%



Earnings growth
Pro-forma EPS, y/y



Magnificent 7 performance dispersion
Price returns, best, median and worst performing Mag 7 stock by year



Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
*Magnificent 7 includes AAPL, AMZN, GOOG, GOOGL, META, MSFT, NVDA and TSLA. Earnings estimates for 2024 are forecasts based on consensus analyst expectations.
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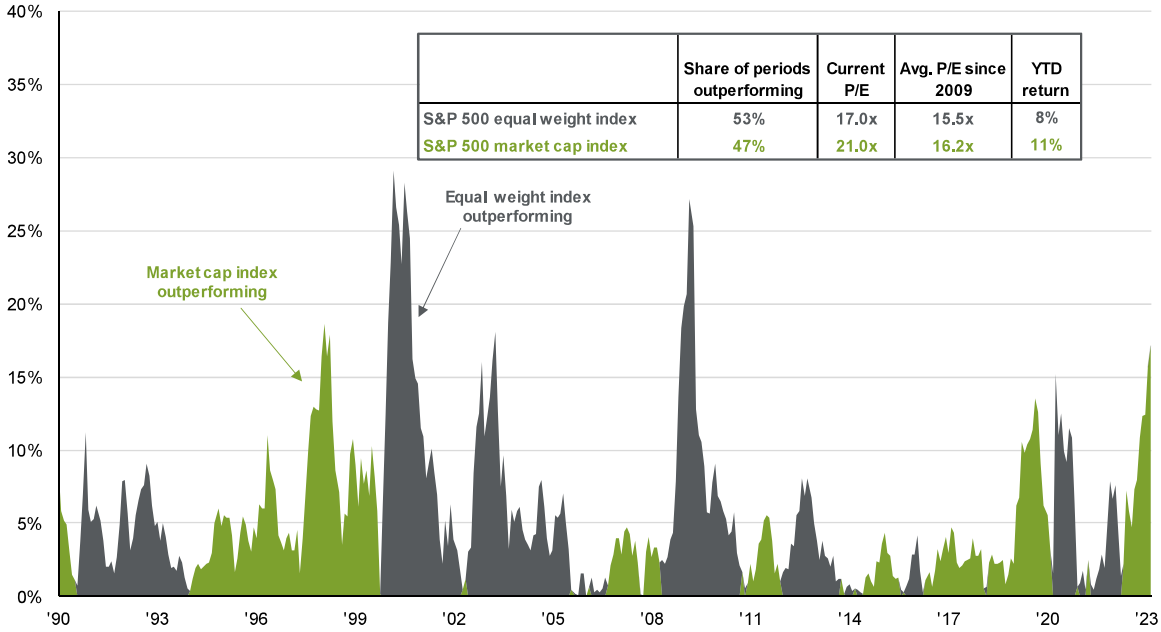
S&P 500 market cap vs. equal weight performance

S&P 500 market cap and equal weight relative performance
Rolling monthly y/y total returns, outperformance = high - low

	Share of periods outperforming	Current P/E	Avg. P/E since 2009	YTD return
S&P 500 equal weight index	53%	17.0x	15.5x	8%
S&P 500 market cap index	47%	21.0x	16.2x	11%



Source: FactSet, J.P. Morgan Asset Management.
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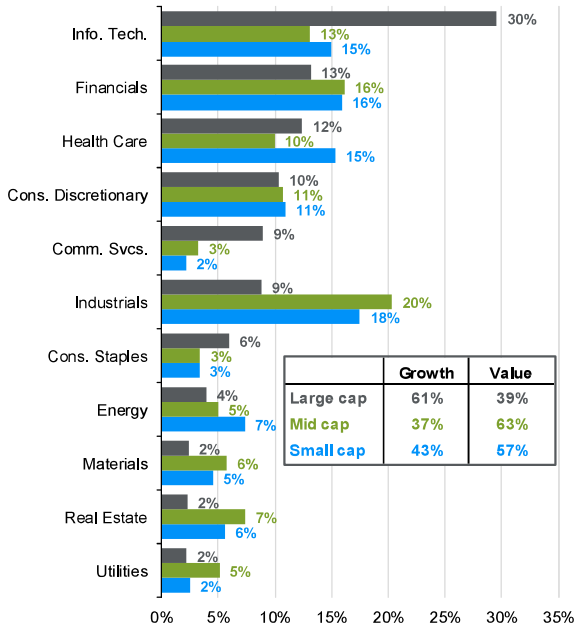
Small caps, mid caps and large caps

Sector composition

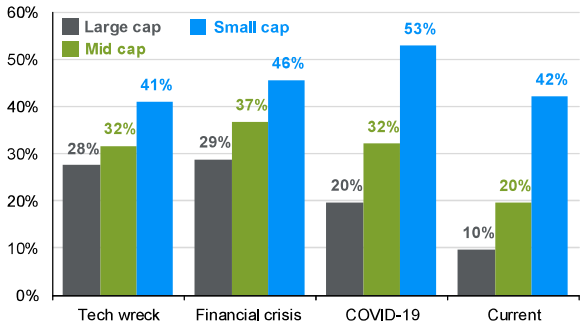
% of index market capitalization



	Growth	Value
Large cap	61%	39%
Mid cap	37%	63%
Small cap	43%	57%

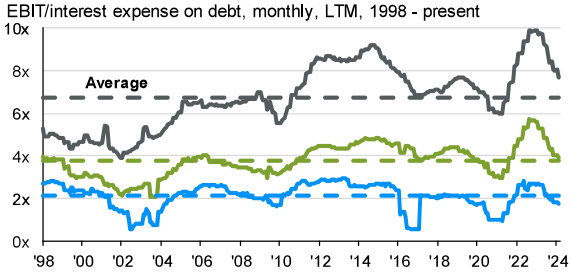
Percent of unprofitable companies

Pro-forma EPS



Interest rate coverage ratios

EBIT/interest expense on debt, monthly, LTM, 1998 - present



Source: Compustat, FactSet, FTSE Russell, NBER, J.P. Morgan Asset Management.
The S&P 500 is used for large cap, The Russell Mid Cap is used for mid cap, The Russell 2000 is used for small cap. Data for the percent of unprofitable companies in each index are from the following quarters: Tech bubble = 4Q01, Financial crisis = 4Q08, COVID-19 = 1Q20 and current = 4Q23.
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Returns and valuations by style

10-year annualized

	Value	Blend	Growth
Large	9.1%	13.0%	16.1%
Mid	8.7%	10.1%	11.5%
Small	7.0%	7.8%	8.1%

YTD

	Value	Blend	Growth
Large	9.0%	10.6%	11.4%
Mid	8.2%	8.6%	9.5%
Small	2.9%	5.2%	7.6%

Since market peak (February 2020)

	Value	Blend	Growth
Large	42.8%	65.8%	82.2%
Mid	42.1%	45.5%	44.3%
Small	38.3%	32.7%	23.8%

Since market low (March 2020)

	Value	Blend	Growth
Large	130.9%	150.4%	165.8%
Mid	151.2%	143.7%	124.4%
Small	143.2%	123.6%	101.2%

Current P/E vs. 20-year avg. P/E

	Value	Blend	Growth
Large	16.1 / 13.7	21.0 / 15.6	27.8 / 18.9
Mid	16.0 / 14.5	18.2 / 16.4	27.8 / 20.6
Small	17.3 / 16.7	23.6 / 21.3	37.0 / 27.1

Current P/E as % of 20-year avg. PE

	Value	Blend	Growth
Large	117.4%	134.2%	146.9%
Mid	110.3%	111.4%	135.1%
Small	103.4%	110.5%	136.6%

Source: FactSet, Refinitiv Datastream, Russell Investment Group, Standard & Poor's, J.P. Morgan Asset Management.
All calculations are cumulative total return, including dividends reinvested for the stated period. Since market peak represents period from 2/19/2020 to 3/31/2024. Since market low represents period from 3/23/2020 to 3/31/2024. Returns are cumulative returns, not annualized. For all time periods, total return is based on Russell style indices except for the large blend category, which is based on the S&P 500 Index. Past performance is not indicative of future returns. The price-to-earnings is a bottom-up calculation based on the most recent index price, divided by consensus estimates for earnings in the next 12 months (NTM) and is provided by FactSet Market Aggregates and J.P. Morgan Asset Management.
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Returns and valuations by sector

	Energy	Materials	Financials	Industrials	Cons. Disc.	Tech.	Comm. Services*	Real Estate	Health Care	Cons. Staples	Utilities	S&P 500 Index	
S&P weight	**3.9%**	**2.4%**	**13.2%**	**8.8%**	**10.3%**	**29.6%**	**9.0%**	**2.3%**	**12.4%**	**6.0%**	**2.2%**	**100.0%**	Weight
Russell Growth weight	0.5%	0.7%	6.4%	5.8%	14.9%	44.0%	12.0%	0.8%	10.6%	4.1%	0.1%	100.0%	
Russell Value weight	8.1%	4.8%	22.7%	14.3%	5.0%	9.4%	4.6%	4.6%	14.2%	7.7%	4.7%	100.0%	
Russell 2000 weight	7.3%	4.5%	15.9%	17.6%	10.8%	15.0%	2.1%	5.6%	15.3%	3.3%	2.5%	100.0%	
1Q24	13.7	8.9	12.5	11.0	5.0	12.7	15.8	-1.1	8.8	7.5	4.6	10.6	Return (%)
YTD	13.7	8.9	12.5	11.0	5.0	12.7	15.8	-1.1	8.8	7.5	4.6	10.6	
Since market peak (February 2020)	109.3	67.8	48.1	61.4	46.8	120.6	53.1	10.0	52.6	37.6	7.5	65.8	
Since market low (March 2020)	374.9	162.6	159.5	176.9	115.0	220.4	114.3	76.6	111.7	81.1	66.9	150.4	
Beta to S&P 500	1.2	1.1	1.1	1.1	1.2	1.1	1.0*	0.8	0.7	0.6	0.5	1.0	β
Correl. to Treas. yields	-0.2	-0.5	-0.5	-0.6	-0.6	-0.7	-0.8	-0.8	-0.6	-0.5	-0.7	-0.7	ρ
Foreign % of sales	36.8	50.5	28.8	32.5	33.1	57.0	48.1	17.3	34.4	39.7	1.2	41.0	%
NTM earnings growth	-2.6%	1.9%	11.4%	9.7%	11.1%	17.6%	16.4%	2.5%	14.3%	5.7%	8.7%	11.3%	EPS
20-yr avg.	**100.3%**	**13.7%**	**20.6%**	**13.9%**	**16.9%**	**12.3%**	**11.1%***	**6.9%**	**7.9%**	**7.6%**	**4.7%**	**10.9%**	
Forward P/E ratio	13.0x	21.5x	16.0x	21.6x	25.6x	28.4x	19.0x	16.9x	19.1x	20.2x	16.1x	21.0x	P/E
20-yr avg.	**13.5x**	**14.9x**	**12.5x**	**16.3x**	**19.6x**	**17.9x**	**18.6x***	**17.0x**	**15.0x**	**17.5x**	**15.6x**	**15.6x**	
Buyback yield	4.3%	1.3%	2.2%	1.9%	1.5%	1.4%	3.4%	-1.6%	1.0%	0.7%	-0.7%	1.7%	Bbk
20-yr avg.	**1.8%**	**1.0%**	**0.5%**	**2.3%**	**2.5%**	**3.0%**	**1.8%**	**-1.4%**	**1.9%**	**1.8%**	**-0.7%**	**1.8%**	
Dividend yield	3.1%	1.8%	1.7%	1.5%	0.8%	0.7%	0.8%	3.8%	1.6%	2.8%	3.6%	1.4%	Div
20-yr avg.	**2.8%**	**2.4%**	**2.3%**	**2.2%**	**1.4%**	**1.2%**	**1.2%**	**3.8%**	**1.9%**	**2.8%**	**3.8%**	**2.1%**	

Source: FactSet, Refinitiv Datastream, Russell Investment Group, Standard & Poor's, J.P. Morgan Asset Management. All calculations are cumulative total return, not annualized, including dividends for the stated period. Since market peak represents period from 2/19/2020 to 3/31/2024. Since market low represents period from 3/23/2020 to 3/31/2024. Correlation to Treasury yields are trailing 2-year monthly correlations between S&P 500 sector price returns and 10-year Treasury yield movements. Next 12 months (NTM) earnings growth is the percent change in next 12 months earnings estimates compared to last 12 months earnings provided by brokers. Forward P/E ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and as provided by FactSet Market Aggregates and J.P. Morgan Asset Management. Buyback yield is net of share issuance and is calculated as last 12 months net buybacks divided by market cap. Dividend yield is calculated as the next 12 months consensus dividend divided by most recent price. Beta calculations are based on 10 years of monthly price returns for the S&P 500 and its sub-indices. *Communication Services (formerly Telecom) averages and beta are based on 5 years of backtested data by JPMAM. Past performance is not indicative of future returns.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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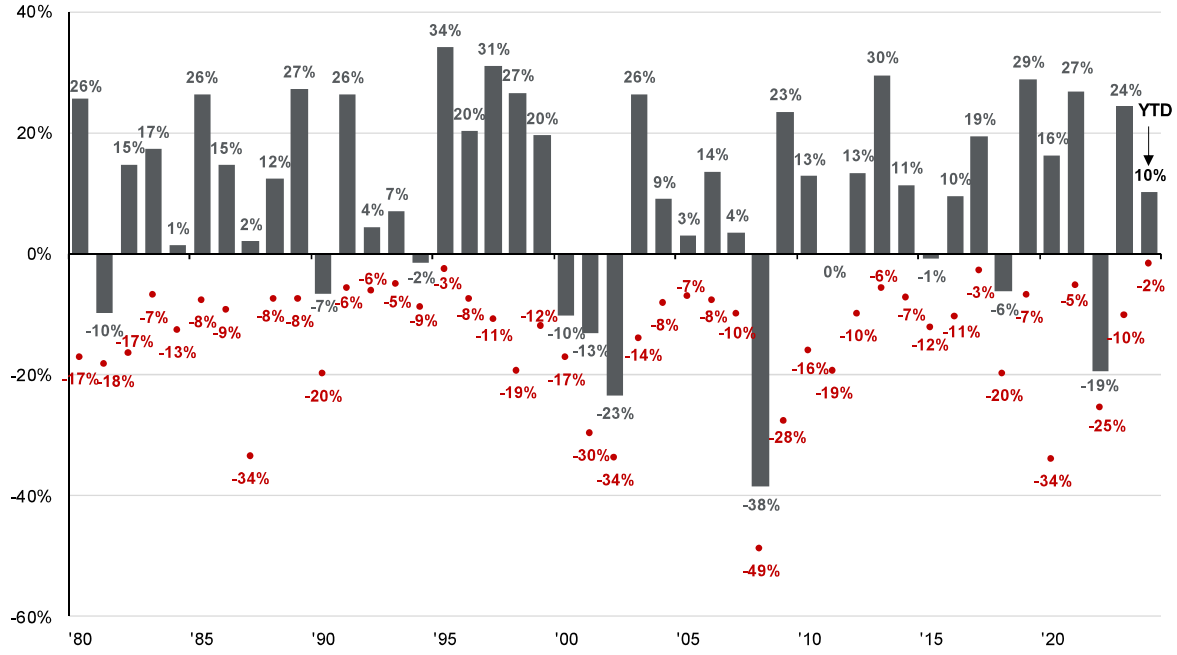
Annual returns and intra-year declines

S&P intra-year declines vs. calendar year returns

Despite average intra-year drops of 14.2%, annual returns were positive in 33 of 44 years



Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
Returns are based on price index only and do not include dividends. Intra-year drops refers to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1980 to 2023, over which time period the average annual return was 10.3%.
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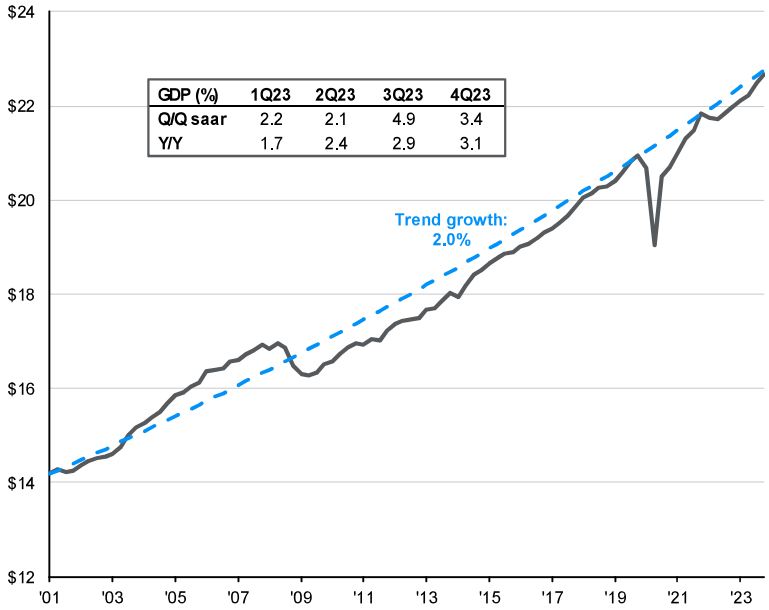
Economic growth and the composition of GDP

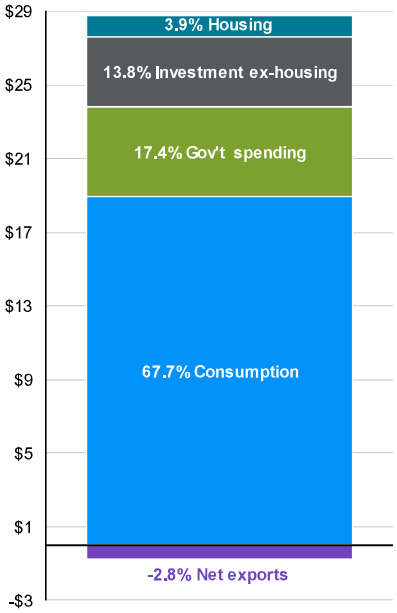
Real GDP

Trillions of chained (2017) dollars, seasonally adjusted at annual rates



Components of GDP

4Q23 nominal GDP, USD trillions



Source: BEA, FactSet, J.P. Morgan Asset Management. Values may not sum to 100% due to rounding. Trend growth is measured as the average annual growth rate from business cycle peak 1Q01 to business cycle peak 4Q19.
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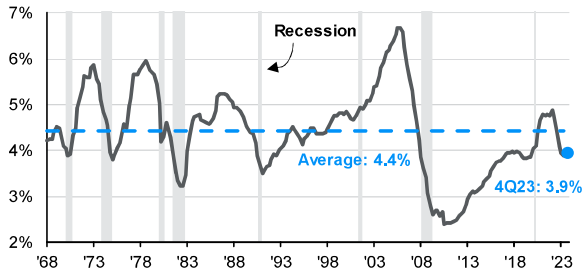
Cyclical sectors

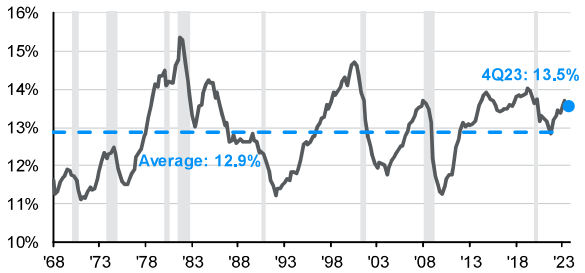
Residential investment as a % of GDP

Quarterly, seasonally adjusted



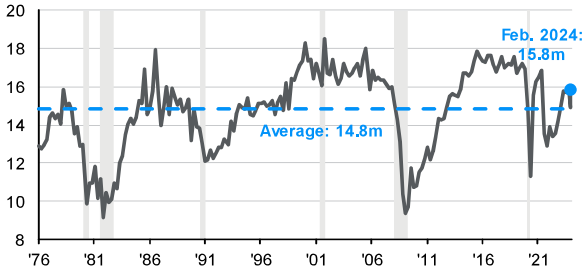
Business fixed investment as a % of GDP

Quarterly, seasonally adjusted



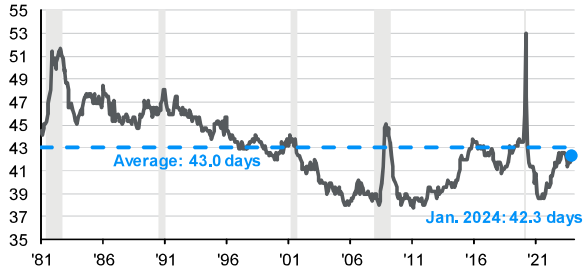
Light vehicle sales

Mil vehicles, seasonally adjusted ann. rate



Total business inventory/sales ratio

Days of sales, monthly, seasonally adjusted



Source: BEA, Census Bureau, FactSet, J.P. Morgan Asset Management. Data for light vehicle sales is quarterly apart from the latest monthly data point.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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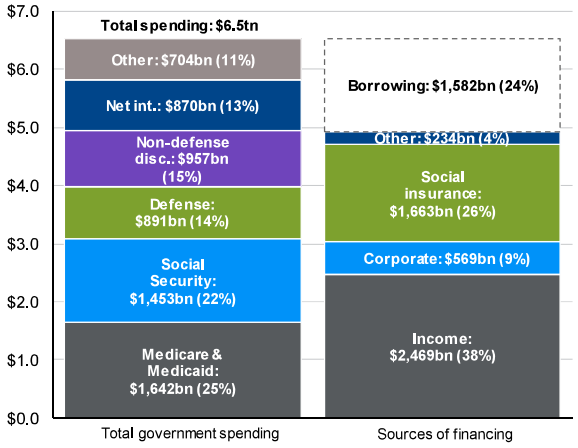
Federal finances

The 2024 federal budget

USD trillions

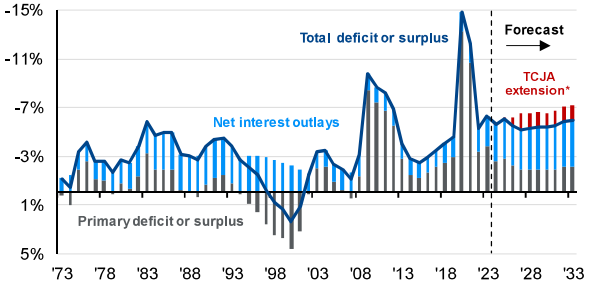


CBO's Baseline economic assumptions

	2024	'25-'26	'27-'28	'29-'34
Real GDP growth	1.8%	2.1%	2.1%	1.9%
10-year Treasury	4.6%	4.3%	3.8%	4.1%
Headline inflation (CPI)	2.6%	2.4%	2.2%	2.2%
Unemployment	4.2%	4.4%	4.4%	4.5%

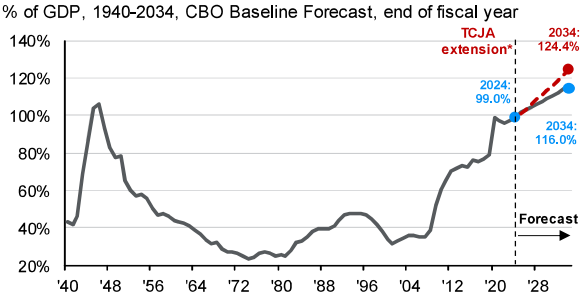
Federal deficit and net interest outlays

% of GDP, 1973-2034, CBO Baseline Forecast



Federal net debt (accumulated deficits)

% of GDP, 1940-2034, CBO Baseline Forecast, end of fiscal year



Source: CBO, J.P. Morgan Asset Management; (Top and bottom right) BEA, Treasury Department. Estimates are from the Congressional Budget Office (CBO) February 2024 An Update to the Budget Outlook: 2024 to 2034. "Other" spending includes, but is not limited to, health insurance subsidies, income security and federal civilian and military retirement. Years shown are fiscal years. *Adjusted by JPMAM to include estimates from the CBO May 2023 report "Budgetary Outcomes Under Alternative Assumptions About Spending and Revenues" on the extension of TCJA provisions. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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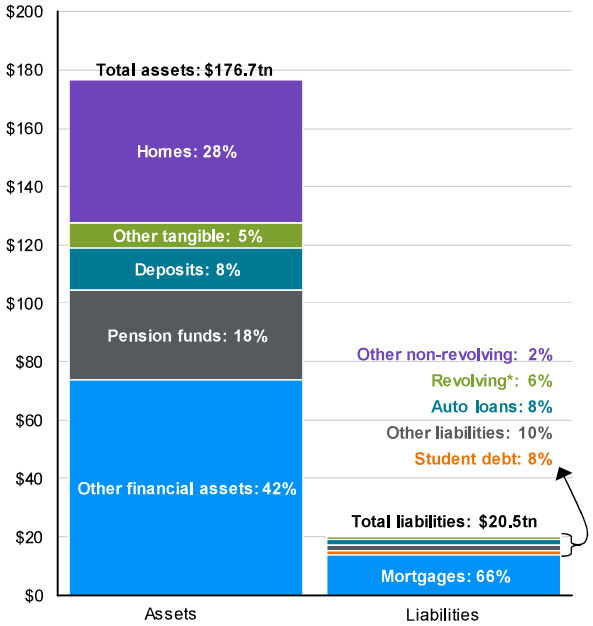
Consumer finances

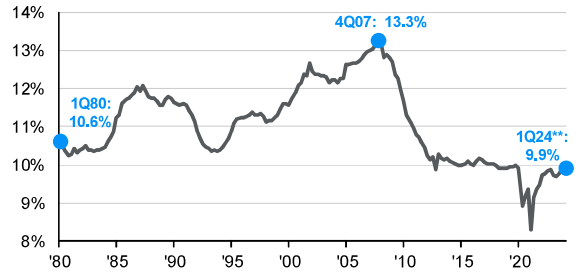
Consumer balance sheet

4Q23, USD trillions, not seasonally adjusted



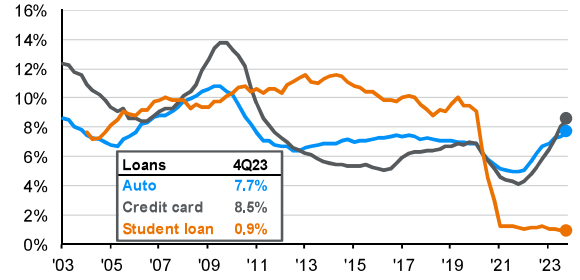
Household debt service ratio

Debt payments as % of disposable personal income, SA



Flows into early delinquencies

% of balance delinquent 30+ days



Source: FactSet, FRB, J.P. Morgan Asset Management; (Top and bottom right) BEA.
Data include households and nonprofit organizations, SA – seasonally adjusted, *Revolving includes credit cards, Values may not sum to 100% due to rounding, **4Q23 and 1Q24 figures for debt service ratio are J.P. Morgan Asset Management estimates.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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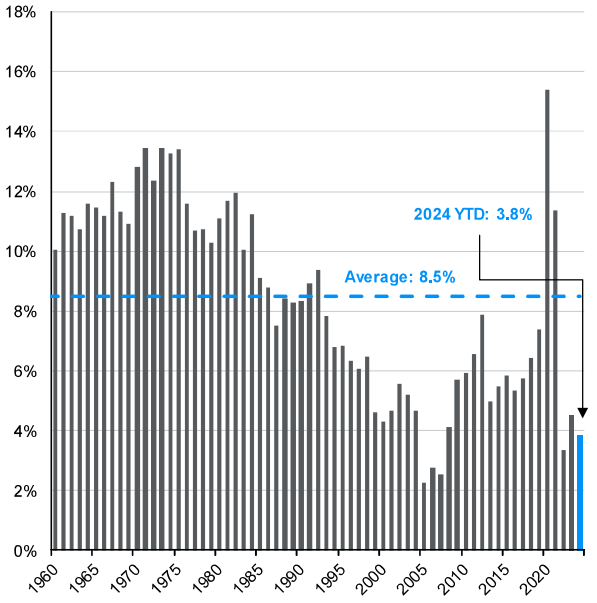
Consumer saving

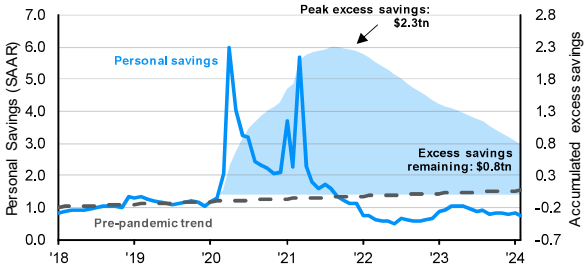
Personal saving rate

Personal savings as a % of disposable personal income, annual



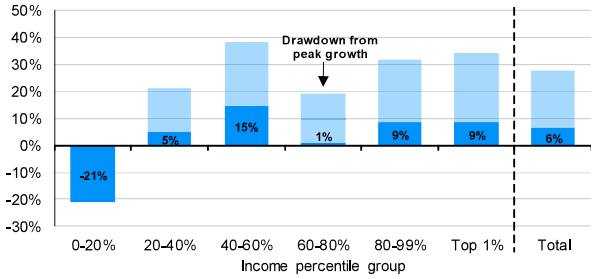
Household excess savings

Trillions of USD



Inflation-adjusted growth in deposits by income percentiles

Checking and savings account balances, % ch 4Q19-4Q23



Source: BEA, Federal Reserve, J.P. Morgan Asset Management. (Top right) From March 2020 to August 2021, consumers amassed a peak $2.3 trillion in excess savings relative to the pre-pandemic trend. Since August 2021, consumers have drawn down on those excess savings, with the remaining reflected in the chart annotation. (Bottom right) Deposits include money in checking accounts, savings accounts, CDs and money market deposit accounts. It does not include direct holdings of money market shares. The light blue area reflects the peak growth in inflation-adjusted savings achieved during the period and the dark blue area reflects current levels.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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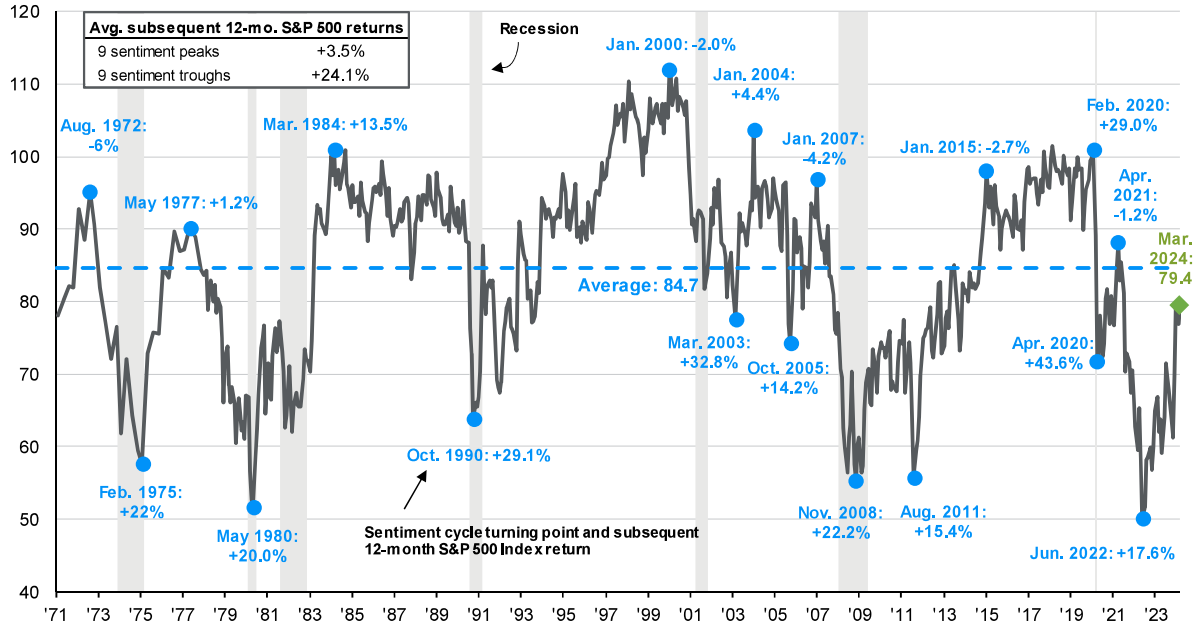
Consumer confidence and the stock market

Consumer Sentiment Index and subsequent 12-month S&P 500 returns



Source: FactSet, Standard & Poor's, University of Michigan, J.P. Morgan Asset Management.
Peak is defined as the highest index value before a series of lower lows, while a trough is defined as the lowest index value before a series of higher highs. Subsequent 12-month S&P 500 returns are price returns only starting from the end of the month and excluding dividends. Past performance is not a reliable indicator of current and future results.
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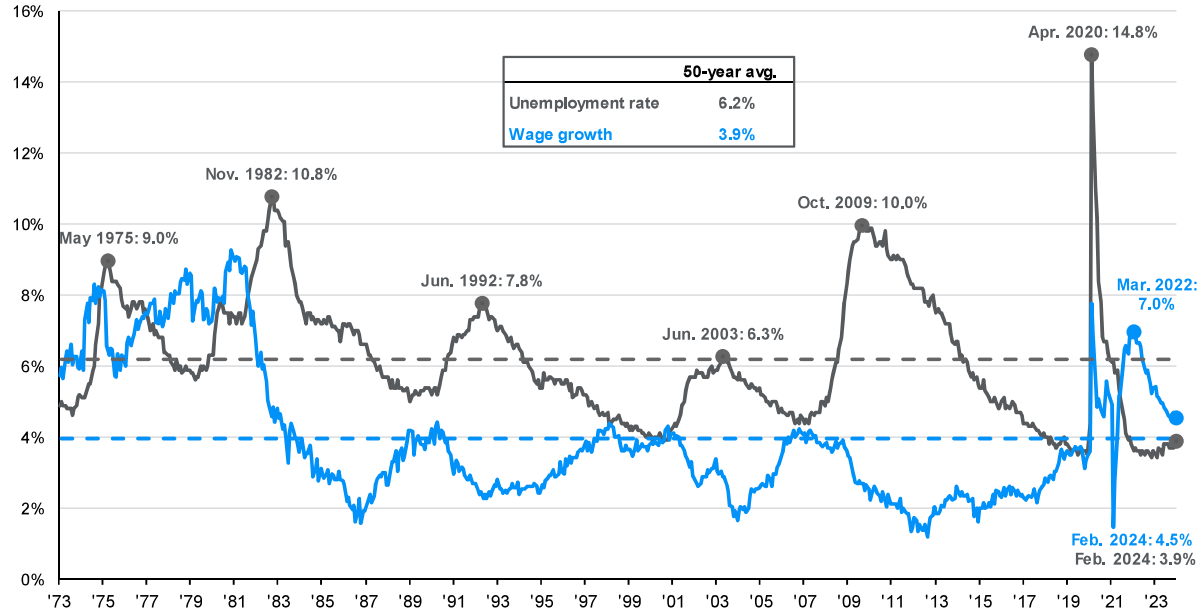
Unemployment and wages

Civilian unemployment rate and year-over-year wage growth

Private production and non-supervisory workers, seasonally adjusted, percent



Source: BLS, FactSet, J.P. Morgan Asset Management. Private production and non-supervisory jobs represent just over 80% of total private nonfarm jobs.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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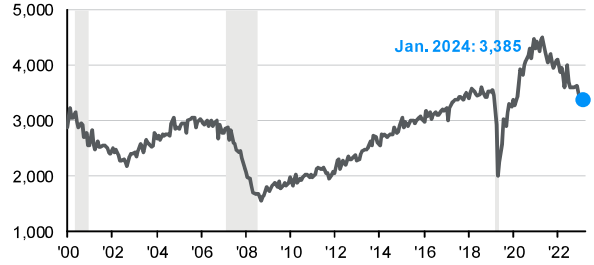
Labor demand

JOLTS job openings*

Total job openings, thousands, seasonally adjusted

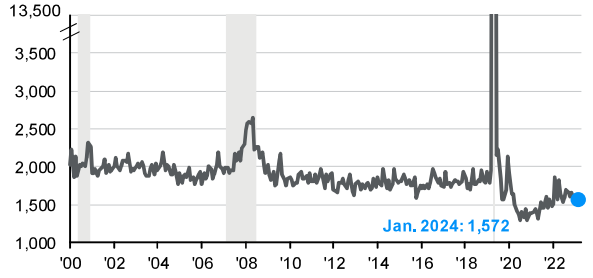
JOLTS quits

Total nonfarm quits, thousands, seasonally adjusted



JOLTS layoffs

Total nonfarm layoffs, thousands, seasonally adjusted



Source: U.S. Department of Labor, J.P. Morgan Asset Management. *JOLTS job openings from February 1974 to November 2000 are J.P. Morgan Asset Management estimates.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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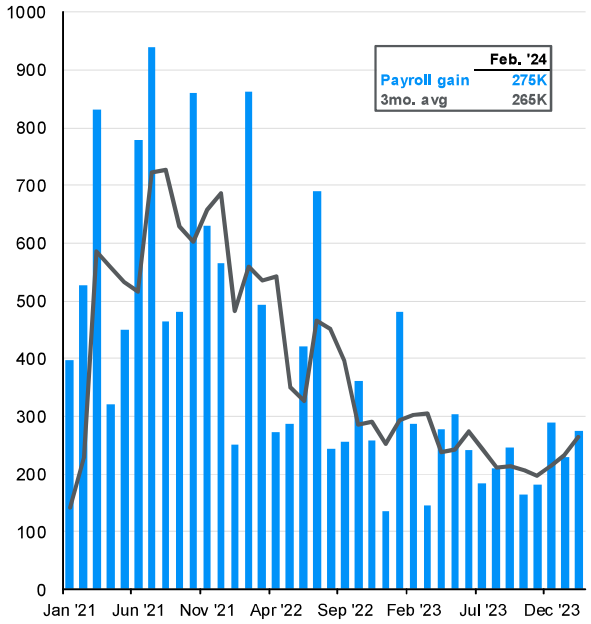
Labor supply

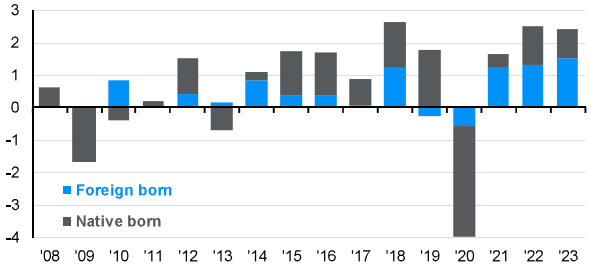
Nonfarm payroll gains

Month-over-month change and 3mo. moving average, SA



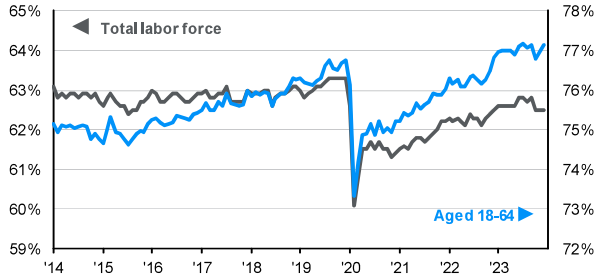
Labor force growth, native and immigrant contribution

Year-over-year difference, end of year, aged 16+, millions



Labor force participation

% of civilian noninstitutional population, SA



Source: BLS, FactSet, J.P. Morgan Asset Management,
Labor force data are sourced from the Current Population Survey, also known as the household survey, conducted by the BLS. This survey does not ask respondents about immigration status and may include undocumented workers, although it likely undercounts the undocumented population.
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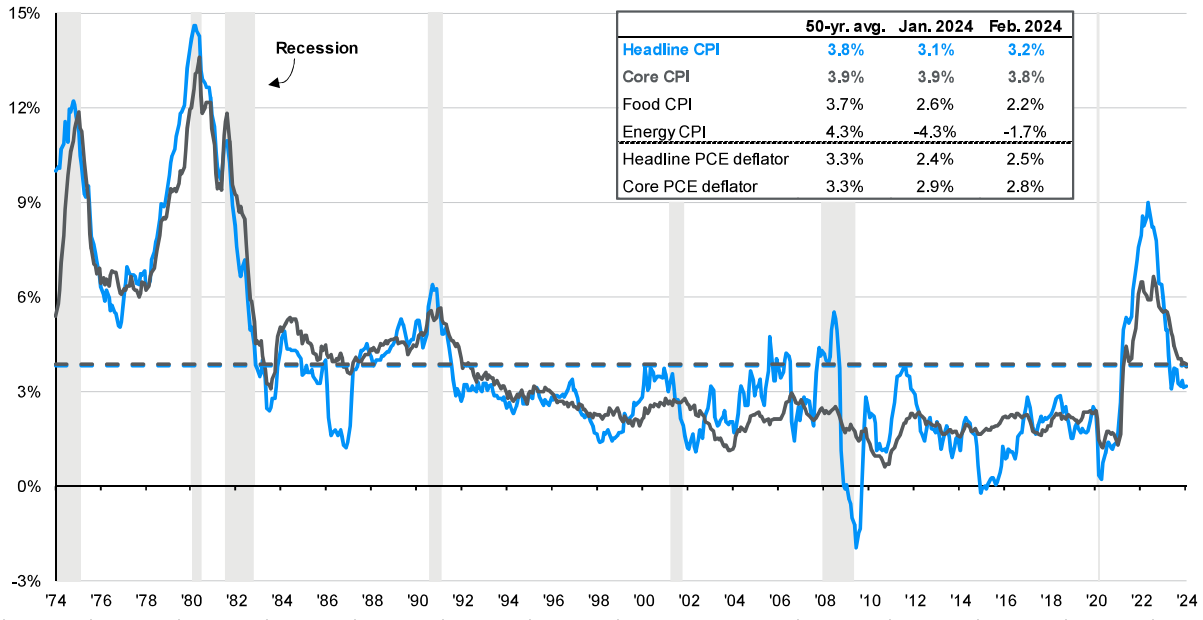
Inflation

CPI and core CPI

% change vs. prior year, seasonally adjusted



	50-yr. avg.	Jan. 2024	Feb. 2024
Headline CPI	3.8%	3.1%	3.2%
Core CPI	3.9%	3.9%	3.8%
Food CPI	3.7%	2.6%	2.2%
Energy CPI	4.3%	-4.3%	-1.7%
Headline PCE deflator	3.3%	2.4%	2.5%
Core PCE deflator	3.3%	2.9%	2.8%

Source: BLS, FactSet, J.P. Morgan Asset Management,
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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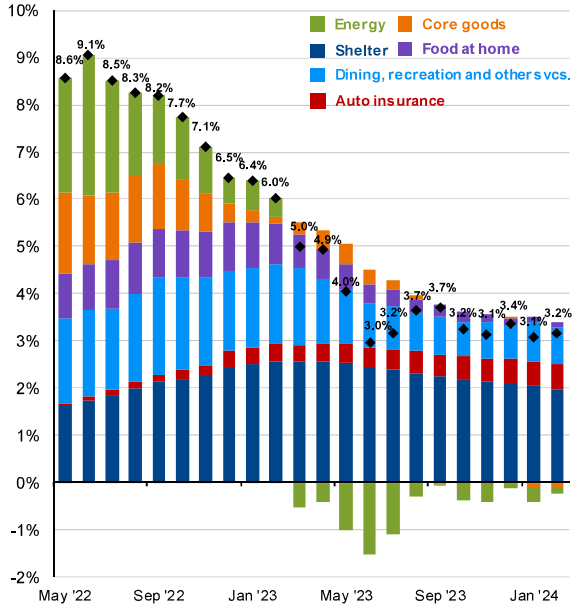
Inflation components

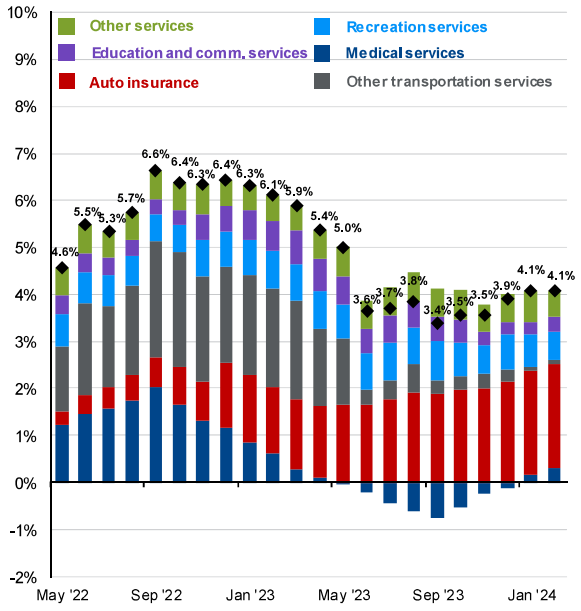
Contributors to headline CPI inflation

Contribution to y/y % change in CPI, non-seasonally adjusted



Contributors to core services ex-shelter CPI inflation*

Contribution to y/y % change in custom CPI index, non-seasonally adj.



Source: BLS, FactSet, J.P. Morgan Asset Management. Contributions mirror the BLS methodology on Table 7 of the CPI report. Values may not sum to headline CPI figures due to rounding and underlying calculations. *Core services ex-shelter CPI is a custom index using CPI components created by J.P. Morgan Asset Management. (Left) "Shelter" includes owners' equivalent rent, rent of primary residence and home insurance. *Guide to the Markets – U.S.* Data are as of March 31, 2024.

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Oil markets

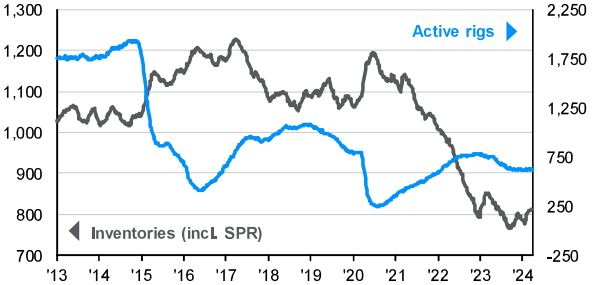
Change in production and consumption of liquid fuels

Production, consumption and inventories, millions of barrels per day

Production	2019	2020	2021	2022	2023*	2024*	2019-2024
U.S.	19.5	18.6	19.0	20.3	21.9	22.3	14.3%
OPEC	33.1	29.4	30.5	32.9	32.2	31.9	-3.7%
Russia	11.5	10.5	10.8	11.0	10.8	10.4	-9.3%
Global	**100.3**	**93.9**	**95.7**	**100.0**	**101.8**	**102.2**	**1.9%**
Consumption							
U.S.	20.5	18.2	19.9	20.0	20.3	20.4	-0.7%
China	14.0	14.4	15.3	15.2	15.9	16.3	16.1%
India	4.9	4.5	4.7	5.0	5.3	5.6	13.6%
Global	**100.9**	**91.6**	**97.1**	**99.2**	**101.0**	**102.4**	**1.5%**
Inventory Change	-0.6	2.3	-1.4	0.8	0.8	-0.3	

U.S. crude oil inventories and rig count**

Million barrels, number of active rigs



Price of oil

WTI crude, nominal prices, USD/barrel

Source: J.P. Morgan Asset Management; (Top and bottom left) EIA; (Right) FactSet; (Bottom left) Baker Hughes. *Forecasts are from the March 2024 EIA Short-Term Energy Outlook and start in 2023. **U.S. crude oil inventories include the Strategic Petroleum Reserve (SPR). Liquid fuels include crude oil, natural gas, biodiesel and fuel ethanol. Active rig count includes both natural gas and oil rigs. WTI crude prices are continuous contract NYM prices in USD. *Guide to the Markets – U.S.* Data are as of March 31, 2024.

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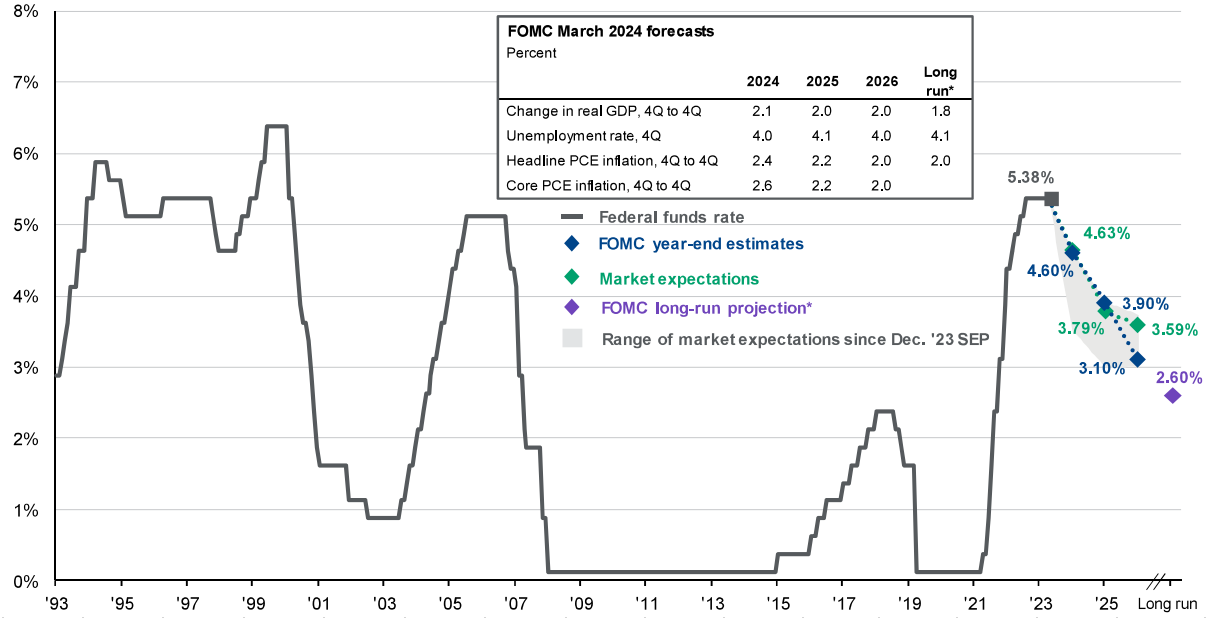
The Fed and interest rates

Federal funds rate expectations

FOMC and market expectations for the federal funds rate



Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Market expectations are based off of USD Overnight Index Swaps. "Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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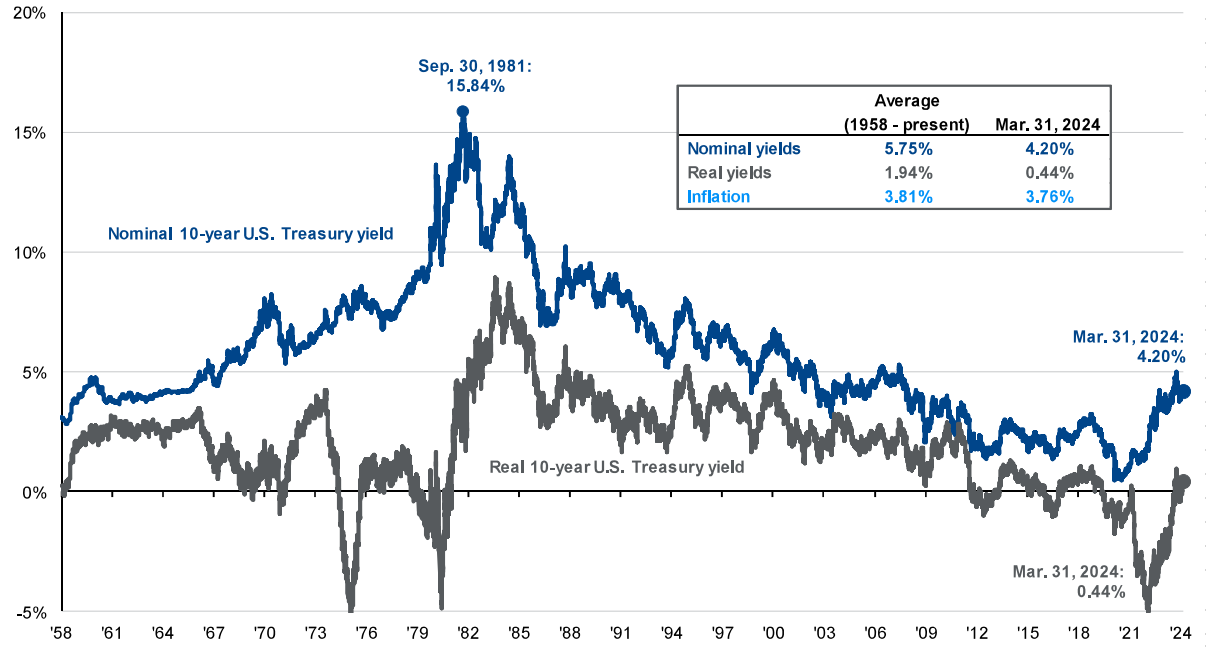
Interest rates and inflation

Nominal and real U.S. 10-year Treasury yields



Source: BLS, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month. For the current month, we use the prior month's core CPI figures until the latest data are available.
Guide to the Markets – U.S. Data are as of March 31, 2024.

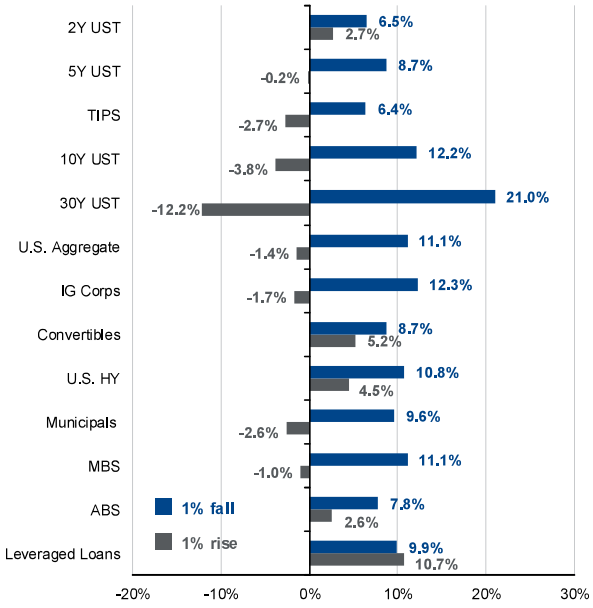
J.P.Morgan ASSET MANAGEMENT

Fixed income market dynamics

U.S. Treasuries	Yield 3/31/2024	Yield 12/31/2023	Return 2024 YTD	Avg. Maturity	Correlation to 10-year	Correlation to S&P 500
2-Year	4.59%	4.23%	0.24%	2 years	0.75	-0.02
5-Year	4.21%	3.84%	-0.78%	5	0.94	-0.07
TIPS	1.85%	1.72%	-0.08%	7.3	0.71	0.30
10-Year	4.20%	3.88%	-1.67%	10	1.00	-0.13
30-Year	4.34%	4.03%	-4.06%	30	0.93	-0.16
Sector						
U.S. Aggregate	4.85%	4.53%	-0.78%	8.4	0.87	0.24
IG Corps	5.30%	5.06%	-0.40%	10.8	0.60	0.48
Convertibles	6.64%	7.26%	2.09%	-	-0.10	0.87
U.S. HY	7.66%	7.59%	1.47%	4.9	-0.02	0.76
Municipals	3.49%	3.22%	-0.39%	13.3	0.68	0.27
MBS	5.04%	4.68%	-1.04%	7.5	0.79	0.24
ABS	5.76%	5.65%	1.59%	3.6	0.24	0.22
Leveraged Loans	10.26%	10.59%	2.65%	4.4	-0.28	0.60

Impact of a 1% rise or fall in interest rates

Total return, assumes a parallel shift in the yield curve



Source: Bloomberg, FactSet, Standard & Poor's, U.S. Treasury, J.P. Morgan Asset Management. Sectors shown above are provided by Bloomberg unless otherwise noted and are represented by – U.S. Aggregate: MBS: U.S. Aggregate Securitized - MBS; ABS: J.P. Morgan ABS Index; IG Corporates: U.S. Corporates; Municipals: Muni Bond; High Yield: Corporate High Yield; Leveraged Loans: J.P. Morgan Leveraged Loan Index; TIPS: Treasury Inflation-Protected Securities; Convertibles: U.S. Convertibles Composite. Convertibles yield is as of most recent month-end and is based on U.S. portion of Bloomberg Global Convertibles Index. Yield and return information based on bellwethers for Treasury securities. Yields shown for TIPS are real yields. Sector yields reflect yield-to-worst. Leveraged loan yields reflect the yield to 3Y takeout. Correlations are based on 15-years of monthly returns for all sectors, ABS returns prior to June 2012 are sourced from Bloomberg. Past performance is not indicative of future results.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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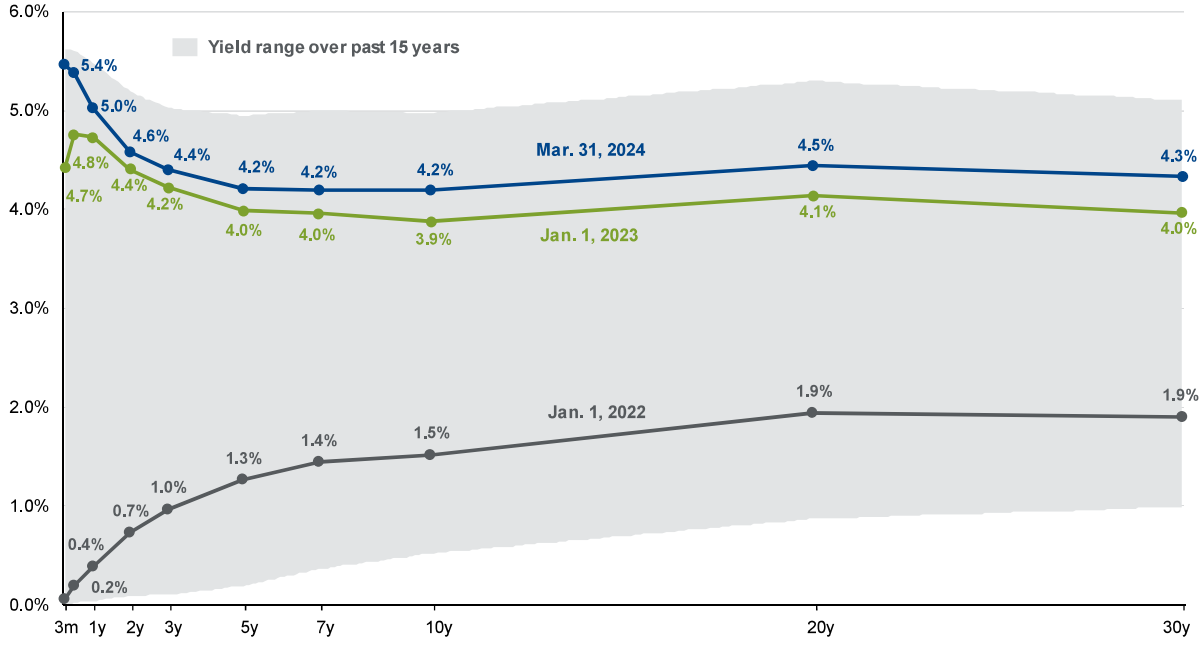
Yield curve

U.S. Treasury yield curve



Source: FactSet, Federal Reserve, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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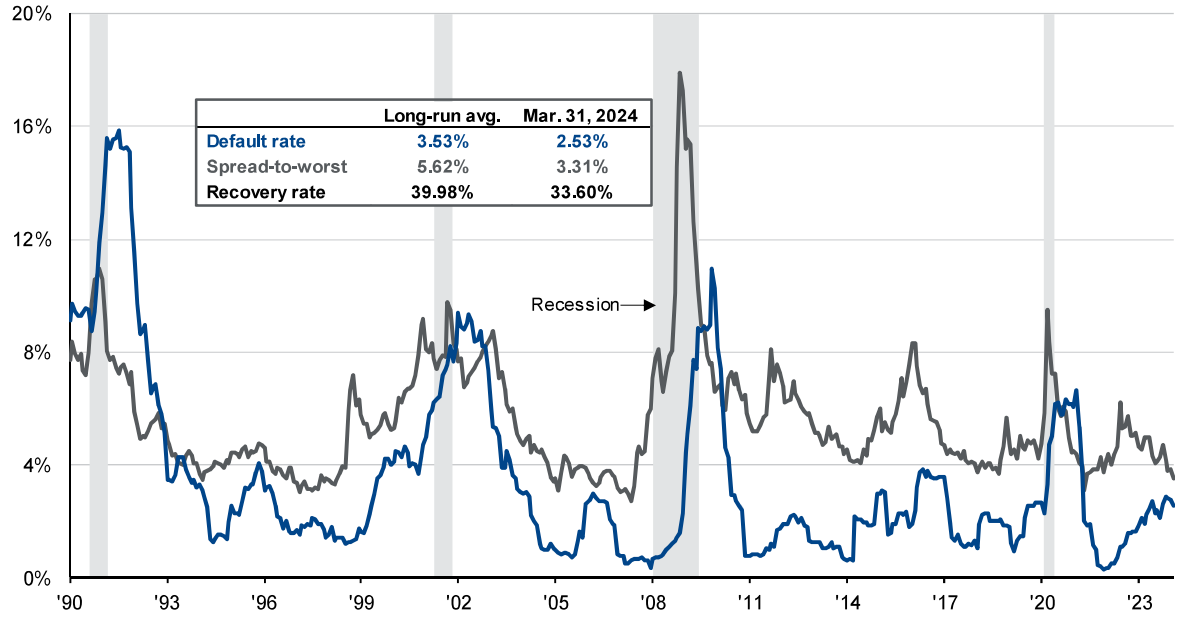
High yield bonds

Default rate and spread-to-worst

Percent



Source: J.P. Morgan Global Economic Research, J.P. Morgan Asset Management.
Long-run average is based on monthly historical data beginning in January 1990. Default rates are defined as the par value percentage of the total market trading at or below 50% of par value and include any Chapter 11 filing, prepackaged filing or missed interest payments. The default rate is a LTM figure (last 12 months) and tracks the % of defaults over the period. Recovery rates are based on the price of the defaulted bonds or loans 30 days post the default date. Default and recovery rates are as of most recent month-end. Spread-to-worst indicated are the difference between the yield-to-worst of a bond and yield-to-worst of a U.S. Treasury security with a similar duration. High yield is represented by the J.P. Morgan Domestic High Yield Index.
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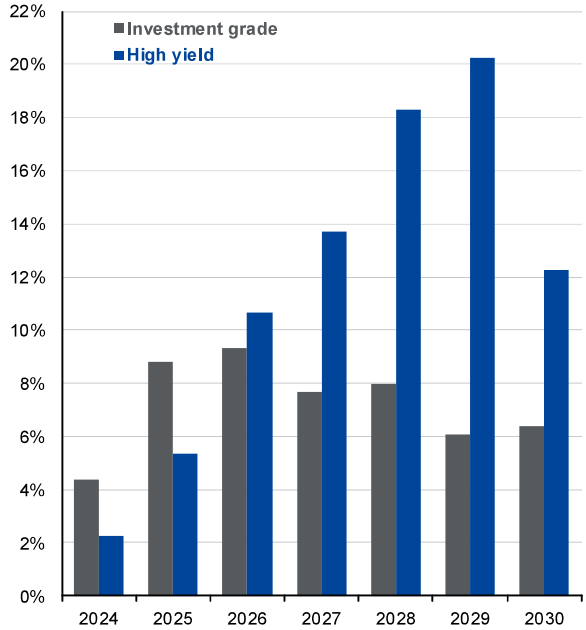
Credit maturity and default risks

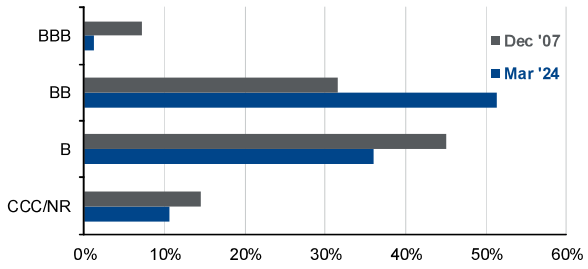
U.S. credit maturity schedule

% of bond index maturing in each year



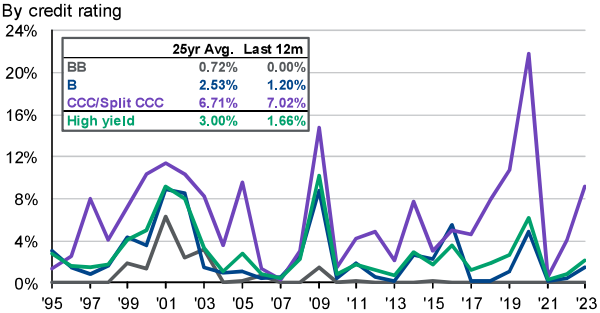
Index weighting by credit rating

%, J.P. Morgan Domestic High Yield Index



U.S. high yield default rates

By credit rating



Source: Bloomberg, J.P. Morgan Research, J.P. Morgan Asset Management.
U.S. Investment Grade: Bloomberg U.S. Corporate Bond Index. Bloomberg U.S. Corporate Bond 0-1 Year Index. U.S. High Yield: Bloomberg U.S. High Yield Bond Index. Bloomberg U.S. Corporate High Yield Bond 0-1 Year Index. The Bloomberg U.S. Corporate and High Yield Bond 0-1 Year Bond Indices are used to capture bonds that mature in less than one year and are not captured in the broader index due to maturity guidelines. Past performance is not a reliable indicator of current and future results. Last 12-month default rates are as of most recent month for which data are available. Default rates shown do not include distressed exchanges and are grouped by rating 12 months prior to default. Bond ratings include split ratings. "NR" stands for not rated.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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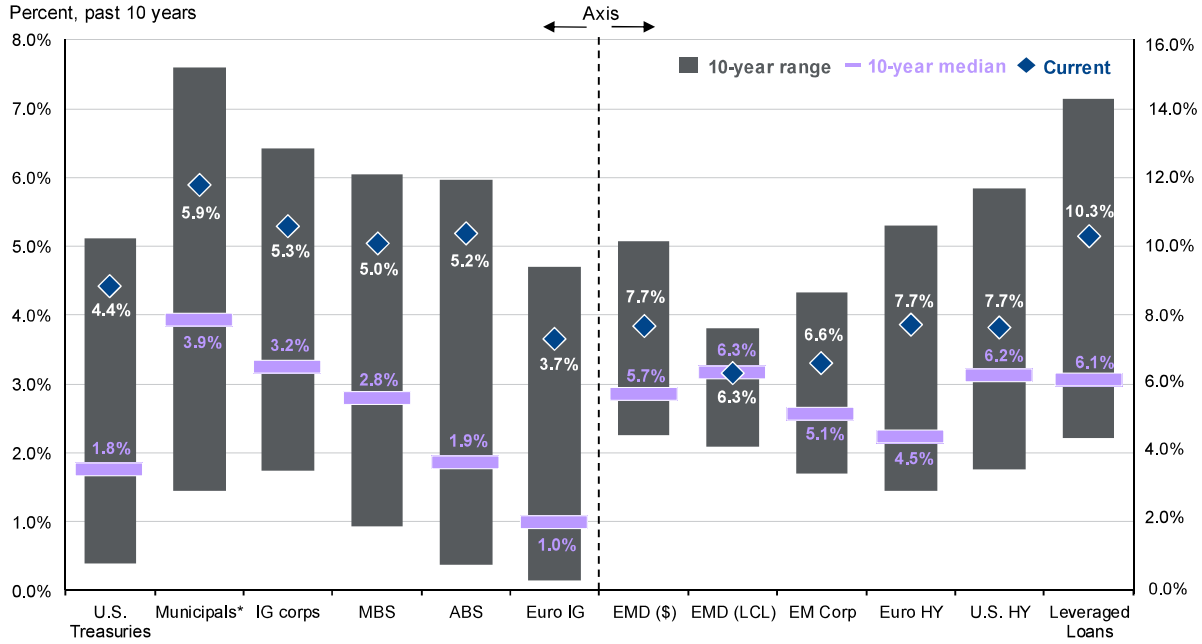
Fixed income valuations

Yield-to-worst across fixed income sectors

Percent, past 10 years



Source: Bloomberg, FactSet, J.P. Morgan Credit Research, J.P. Morgan Asset Management.
Indices used are Bloomberg except for emerging market debt and leveraged loans: EMD (USD): J.P. Morgan EMIGLOBAL Diversified Index; EMD (LCL): J.P. Morgan GBI-EM Global Diversified Index; EM Corp.: J.P. Morgan CEMBI Broad Diversified; Leveraged Loans: JPM Leveraged Loan Index; Euro IG: Bloomberg Euro Aggregate Corporate Index; Euro HY: Bloomberg Pan-European High Yield Index. Yield-to-worst is the lowest possible yield that can be received on a bond apart from the company defaulting and considers factors like call provisions, prepayments and other features that may affect the bonds cash flows. *All sectors shown are yield-to-worst except for Municipals, which is based on the tax-equivalent yield-to-worst assuming a top income tax bracket rate of 37% plus a Medicare tax rate of 3.8%.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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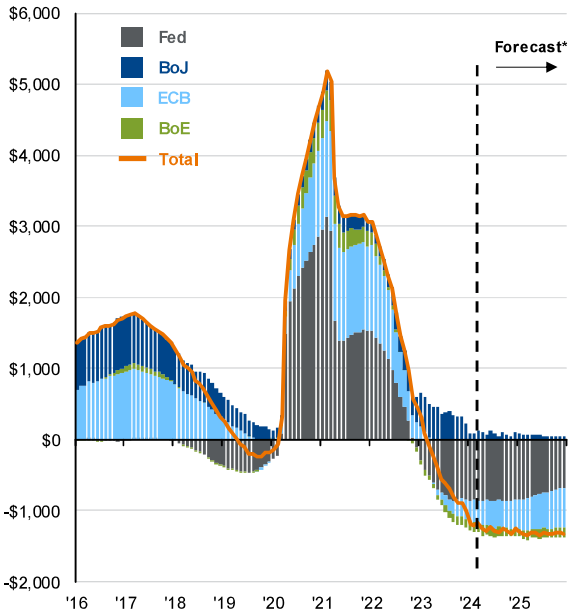
Developed market monetary policy

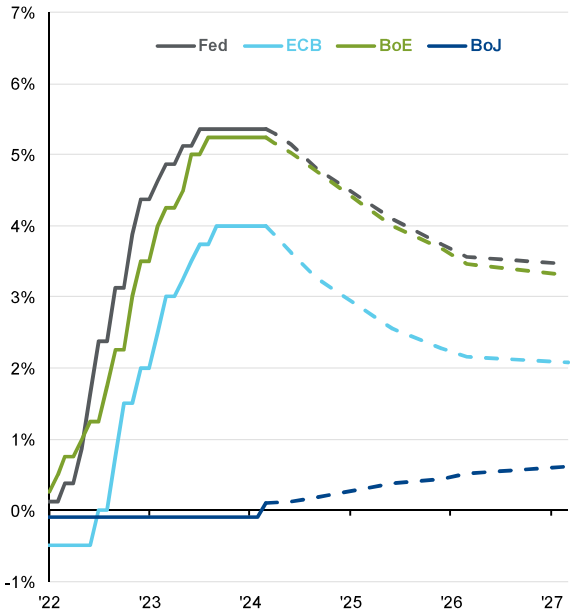
Developed market central bank bond purchases

USD billions, 12-month rolling flow



Historical policy rates and forward curves

Target policy rates and market implied forward rates



Source: BIS, Bloomberg, FactSet, J.P. Morgan Asset Management; (Left) Bank of England (BoE), Bank of Japan (BoJ), European Central Bank (ECB), Federal Reserve System (Fed), J.P. Morgan Global Economic Research. *QM bond purchase forecasts are internal assumptions based on government bond purchases as outlined in the most recent monetary policy announcements from the BoE, BoJ, ECB and Federal Reserve through December 2025. Implied policy rates are sourced from Bloomberg and are derived from Overnight Index Swaps. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and are not a reliable indicator of future performance. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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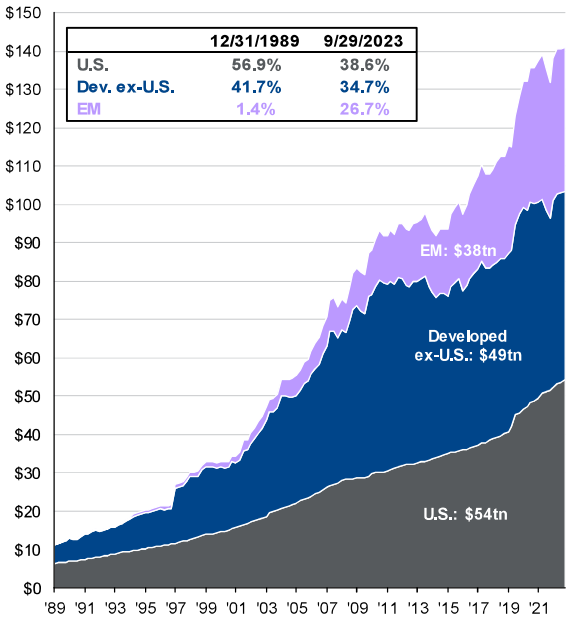
Global fixed income

Aggregates	Yield 3/31/2024	Yield 12/31/2023	2024 Return Local	2024 Return USD	Duration	Correlation to U.S. 10yr
U.S.	4.85%	4.53%	-0.78%	-0.78%	6.2 years	0.92
Gbl. ex-U.S.	3.03%	2.87%	-	-2.88%	7.0	0.63
Japan	0.87%	0.76%	-0.06%	-6.90%	9.2	0.64
Germany	3.01%	2.73%	-0.54%	-2.76%	6.3	0.56
UK	4.39%	4.10%	-1.10%	-2.00%	8.1	0.55
Italy	3.52%	3.40%	0.88%	-1.38%	6.2	0.43
China	2.40%	2.62%	2.03%	0.12%	6.0	0.56
Sector						
Euro Corp.	3.66%	3.56%	0.47%	-1.78%	4.4 years	0.45
Euro HY	7.72%	7.35%	1.81%	-0.46%	3.0	0.05
EMD (USD)	7.74%	7.84%	-	2.04%	6.1	0.37
EMD (LCL)	6.27%	6.19%	0.70%	-2.12%	5.0	0.25
EM Corp.	6.65%	6.81%	-	2.32%	5.0	0.27

Global bond market

USD trillions



Source: J.P. Morgan Asset Management; (Left) Bloomberg, FactSet; (Right) BIS.
Fixed income sectors shown above are provided by Bloomberg and are represented by the global aggregate for each country except where noted. EMD sectors are represented by the J.P. Morgan EMBIG Diversified Index (USD), the J.P. Morgan GBI EM Global Diversified Index (LCL) and the J.P. Morgan CEMBI Broad Diversified Index (Corp). European Corporates are represented by the Bloomberg Euro Aggregate Corporate Index and the Bloomberg Pan-European High Yield Index. Sector yields reflect yield to worst. Correlations are based on 10 years of monthly returns for all sectors. Past performance is not indicative of future results. Countries included in the emerging market debt calculation are those represented in the J.P. Morgan EMBI Index suite for which the BIS has data. Global bond market regional breakdown may not sum to 100% due to rounding.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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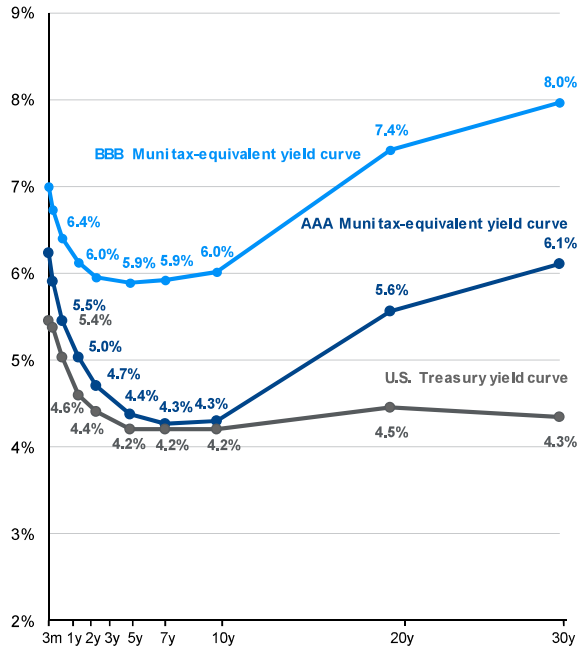
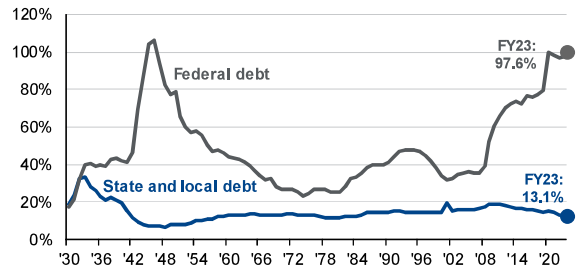
Municipal finance

Muni tax-equivalent and Treasury yield curves



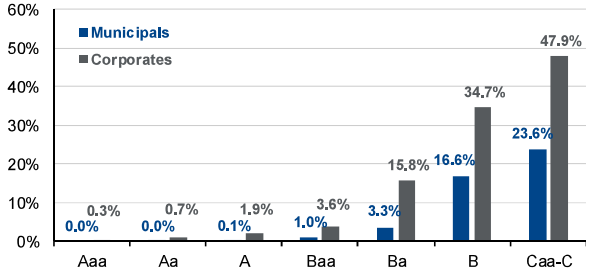
State and local and federal net debt

% of GDP, 1930-2023, end of fiscal year



Muni and corporate default rates

% of issuers defaulting within 10 years, 1970-2022



Source: J.P. Morgan Asset Management; (Left) Bloomberg, FactSet, Federal Reserve. S&P Global; (Top right) Census Bureau, Congressional Budget Office (CBO); (Bottom right) Moody's U.S. Public Finance; U.S. municipal bond defaults and recoveries, 1970 to 2022. Municipal tax-equivalent yields are calculated based on municipal bond curves for each credit rating according to S&P Global and assume a top income tax bracket rate of 37% plus a Medicare tax rate of 3.8% for a total tax rate of 40.8%. State and local debt are based on the Census Bureau's Annual Survey of State and Local Government Finances. Municipal and corporate default rates are the average cumulative default rate over a 10-year horizon as calculated by Moody's using data from issuances through 2013.
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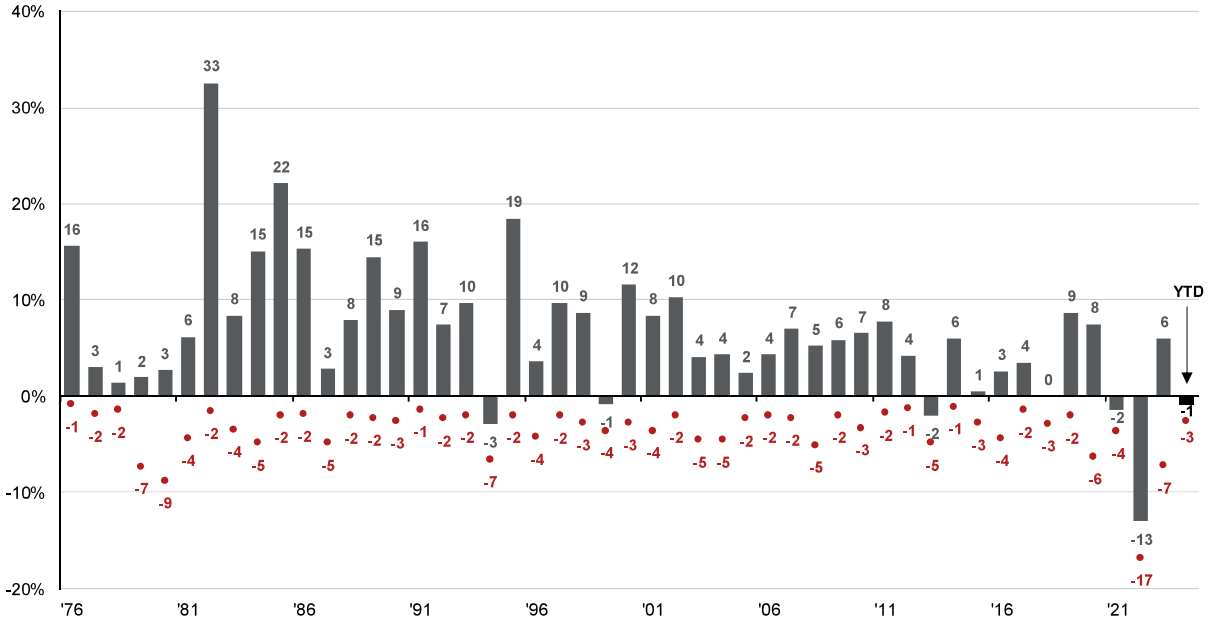
Bloomberg U.S. Agg. annual returns and intra-year declines

Bloomberg U.S. Aggregate intra-year declines vs. calendar year returns

Despite average intra-year drops of 3.5%, annual returns were positive in 43 of 48 years



Source: Bloomberg, FactSet, J.P. Morgan Asset Management.
Returns are based on total return. Intra-year drops refers to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1976 to 2023, over which time period the average annual return was 6.6%. Returns from 1976 to 1989 are calculated on a monthly basis; daily data are used afterward.
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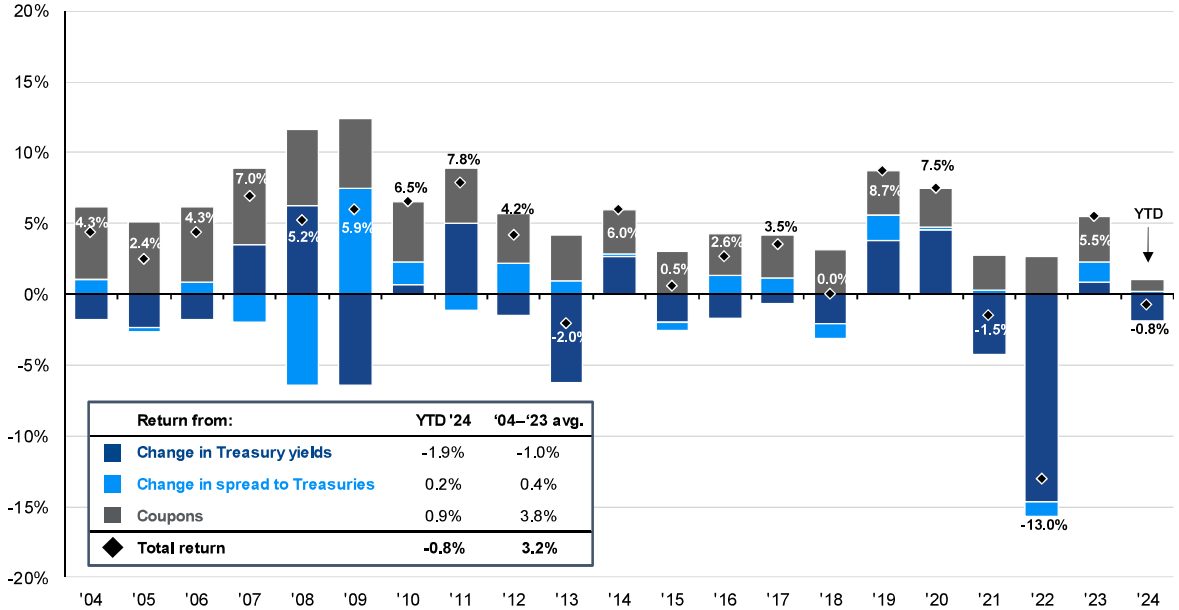
Sources of bond total return

Bloomberg U.S. Aggregate annual total return

Total return broken into change in Treasury yields, change in bond spreads over Treasuries and coupon



Return from:	YTD '24	'04–'23 avg.
Change in Treasury yields	-1.9%	-1.0%
Change in spread to Treasuries	0.2%	0.4%
Coupons	0.9%	3.8%
Total return	-0.8%	3.2%

Source: Bloomberg, FactSet, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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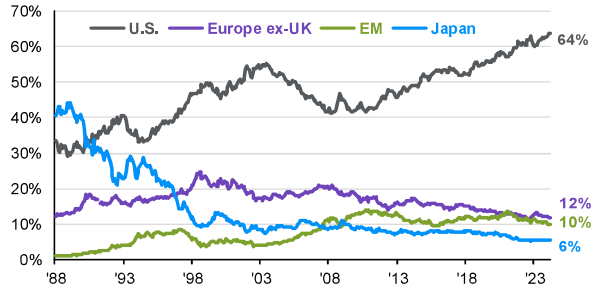
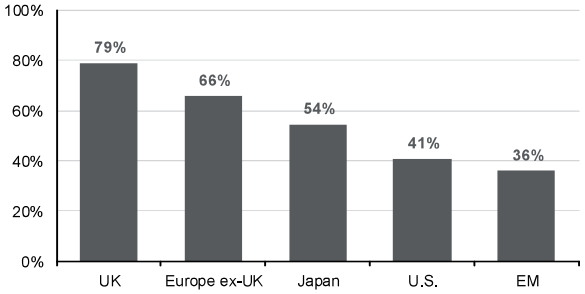
Global equity markets

Returns	YTD 2024		2023		15-years	
	Local	USD	Local	USD	Ann.	Beta
Regions						
U.S. (S&P 500)	-	10.6	-	26.3	15.6	0.9
AC World ex-U.S.	8.3	4.8	14.7	16.2	8.4	1.0
EAFE	10.1	5.9	16.8	18.9	8.9	1.0
Europe ex-UK	9.7	6.1	17.3	22.7	9.7	1.2
Emerging markets	4.6	2.4	10.3	10.3	7.0	1.1
Selected Countries						
Japan	19.3	11.2	29.0	20.8	8.2	0.7
United Kingdom	4.1	3.1	7.7	14.1	7.9	1.0
France	8.4	5.9	18.1	22.3	9.8	1.2
Canada	6.9	4.2	13.3	16.4	8.9	1.1
Germany	9.6	7.1	19.8	24.0	8.6	1.3
China	-1.7	-2.2	-10.6	-11.0	4.4	0.9
Taiwan	17.3	12.5	31.1	31.3	14.4	1.1
India	6.4	6.1	22.0	21.3	11.7	1.0
Brazil	-4.5	-7.3	22.7	33.4	4.1	1.4

Share of global market capitalization
% weight in the MSCI All Country World Index, USD, monthly



Revenue exposure vs. country of listing
% of total revenue derived from foreign countries



Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management. (Left) All return values are MSCI Total Return Index (Gross) data, 15-year history based on USD returns. 15-year return and beta figures are calculated using a rolling 72-month time period ending with the previous month-end. Beta is for monthly returns relative to the MSCI All Country World Index. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of four. Chart is for illustrative purposes only. Please see disclosure page for index definitions. Past performance is not a reliable indicator of current and future results. (Bottom right) Revenue exposure data are as of the previous quarter-end.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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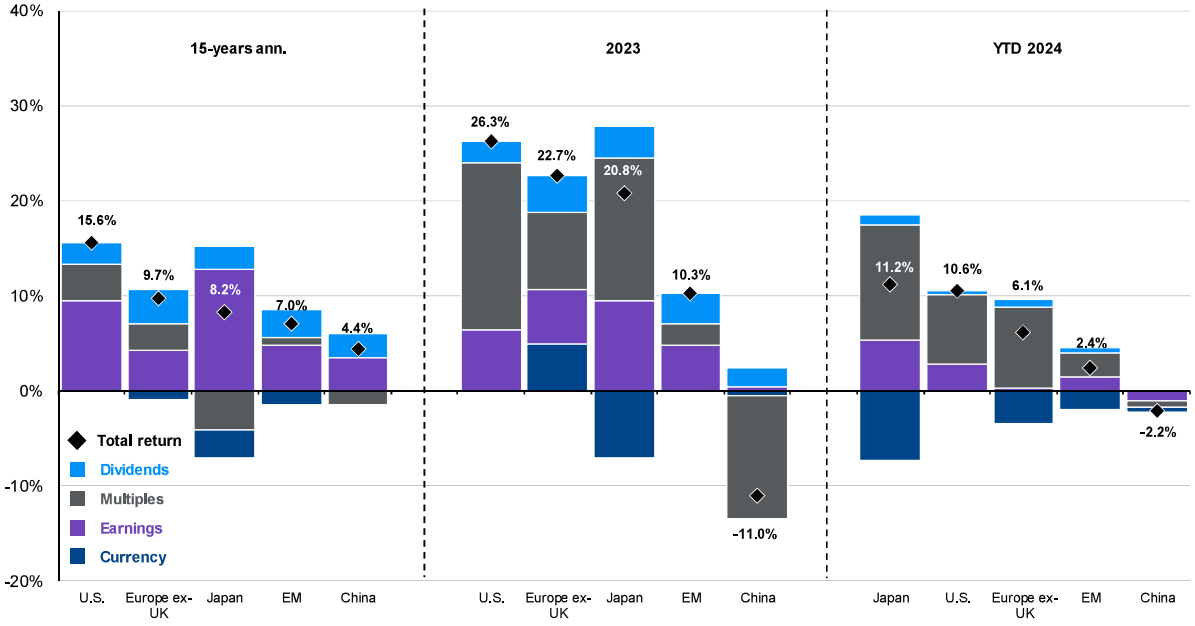
Global equity return composition

Sources of global equity returns*
Total return, USD



Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management.
15-years ann. is showing a rolling 15-year history ending with the previous month-end. All return values are MSCI Gross Index (official) data, except the U.S., which is the S&P 500. *Multiple expansion is based on the forward P/E ratio and EPS growth outlook is based on NTMA earnings estimates. Chart is for illustrative purposes only. Past performance is not indicative of future results.
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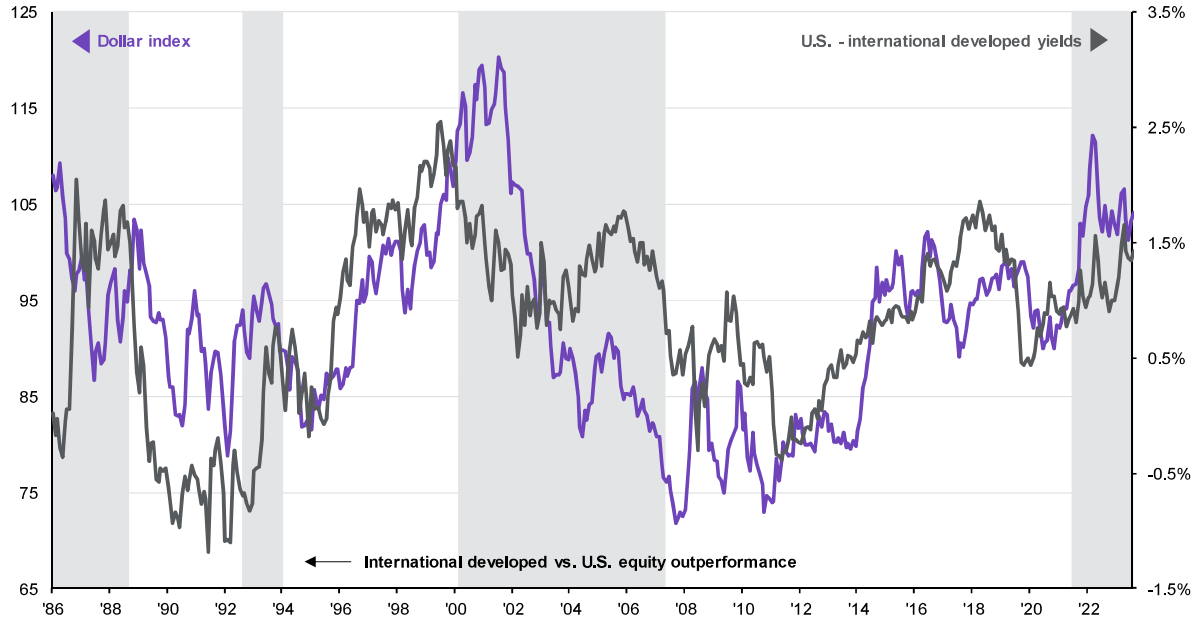
U.S. dollar cycles

U.S. dollar and interest rate differentials

Monthly



Source: Bank of Canada, FactSet, Federal Reserve Economic Data (FRED), Ministry of Finance of Japan, MSCI, OECD, Standard & Poor's, J.P. Morgan Asset Management. The dollar index (DXY Index) is a nominal trade-weighted index of major trading partners' currencies. Major currencies are the British pound, Canadian dollar, euro, Japanese yen, Swedish kroner and Swiss franc. DM in developed markets, and the yield is calculated as a GDP-weighted average of the 10-year government bond yields of Australia, Canada, France, Germany, Italy, Japan, Switzerland and the UK. International developed = MSCI EAFE Index, U.S. = S&P 500 Index. Past performance is not a reliable indicator of current and future results.
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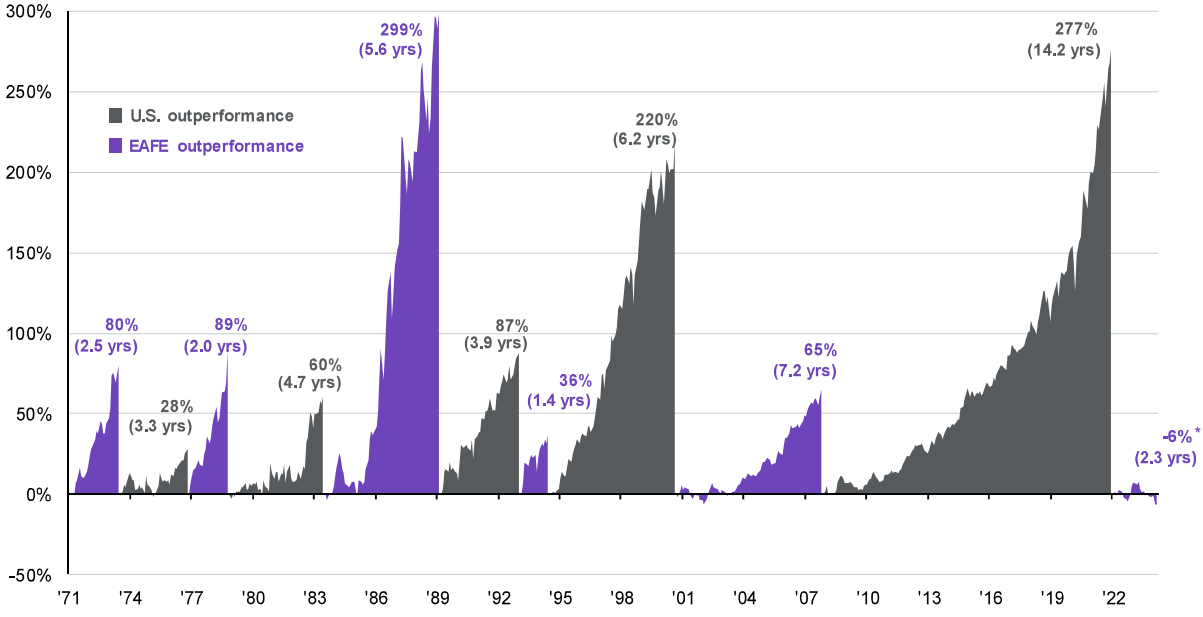
Cycles of U.S. equity outperformance

MSCI EAFE and MSCI USA relative performance

U.S. dollar, total return, cumulative outperformance



Source: FactSet, MSCI, J.P. Morgan Asset Management.
Regime change determined when cumulative outperformance peaks and is not reached again in the subsequent 12-month period. *Peak MSCI EAFE outperformance vs. MSCI USA occurred in April 2023. If this is sustained for 12 months, the regime will switch in April 2024.
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International valuations and dividend yields

International: Price-to-earnings discount vs. U.S.
MSCI All Country World ex-U.S. vs. S&P 500, next 12 months

International: Difference in dividend yields vs. U.S.
MSCI All Country World ex-U.S. minus S&P 500, next 12 months

Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management, *Guide to the Markets – U.S.*, Data are as of March 31, 2024.

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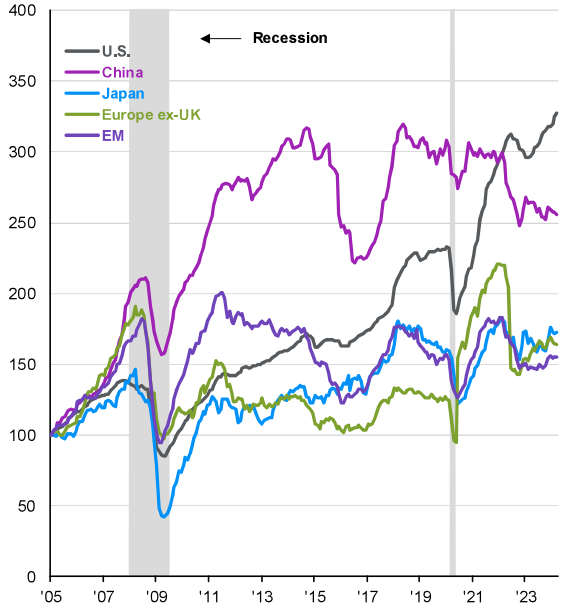
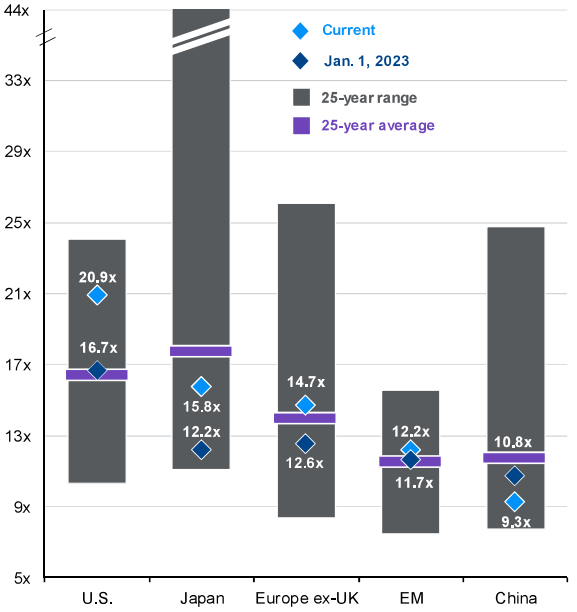
International equity earnings and valuations

Global earnings estimates
Jan. 2005 = 100, next 12 months consensus estimates, U.S. dollars



Global valuations
Current and 25-year next 12 months price-to-earnings ratio



Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management. Next 12 months consensus estimates are based on pro-forma earnings and are in U.S. dollars. Past performance is not a reliable indicator of current and future results. (Right) The purple lines for EM and China show 20-year averages due to a lack of available data.
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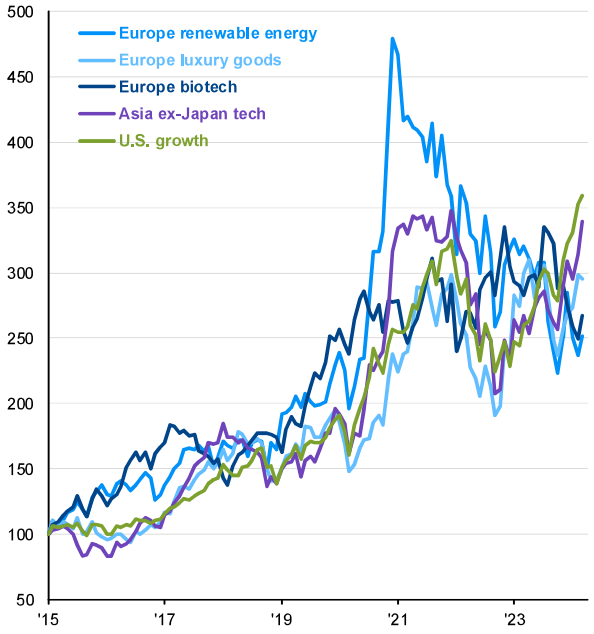
Secular international trends

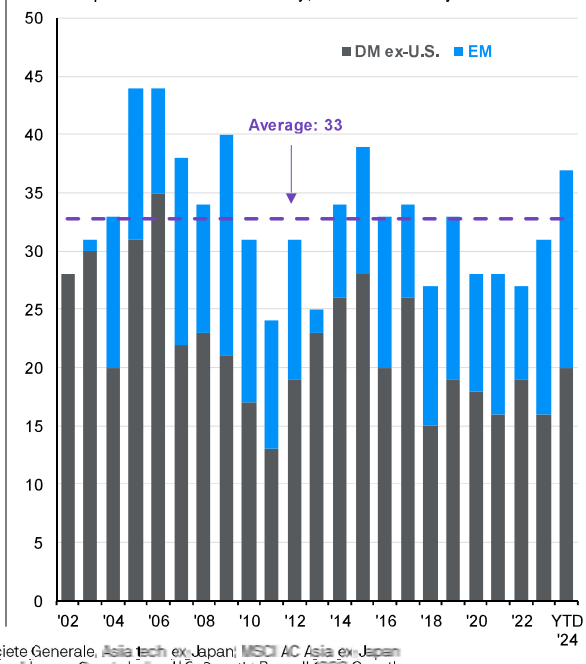
International growth sectors vs. U.S. growth

Jan. 2015 = 100, total return, U.S. dollars



Top 50 performing companies globally

of companies listed internationally, MSCI All Country World Index



Source: FactSet, MSCI, J.P. Morgan Asset Management. (Left) Bloomberg, Russell, Societe Generale, Asia tech ex-Japan: MSCI AC Asia ex-Japan Information Technology Index, European Luxury Goods: MSCI Europe Textiles Apparel and Luxury Goods Index, U.S. Growth: Russell 1000 Growth Index, European renewables: Societe Generale European Renewable Energy Index, Europe biotech: MSCI Europe Biotechnology Index. (Right) Graph was made by ranking all the companies in the MSCI All Country World Index by performance on a yearly basis and determining the top 50 performers using their total return in USD. Companies are listed in no particular order. Excluded companies whose market capitalization does not make up at least 0.01% of the MSCI All Country World Index in the year listed.
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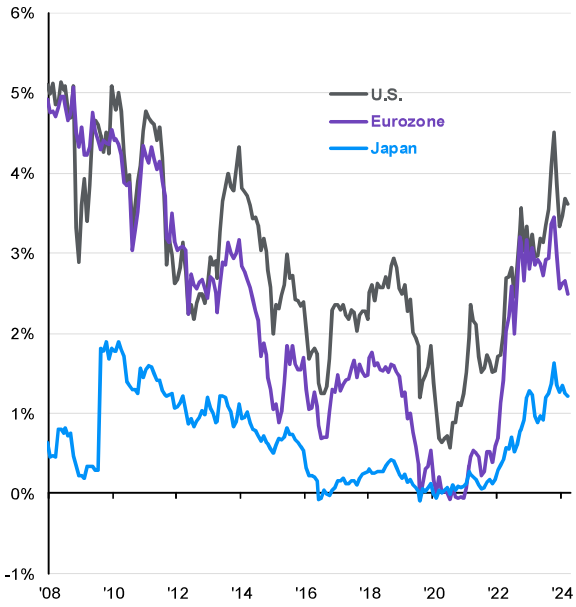
Interest rates and international developed markets

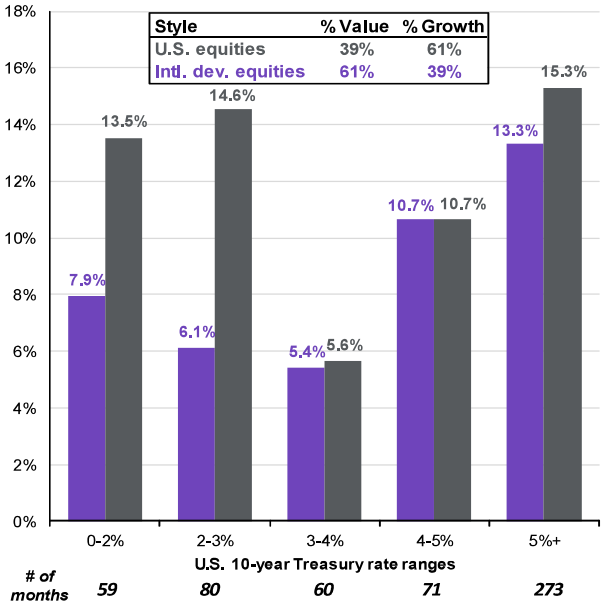
Interest rate expectations

Based on 5y5y swaps



Equity performance in different interest rate environments

U.S. 10-year Treasury ranges, ann. avg. total equity return in USD, 1979-present



Source: J.P. Morgan Asset Management. (Left) Bloomberg. These series represent measures of expected inflation and interest rates (on average) over the five-year period that begins five years from today. (Right) FactSet, MSCI, Standard & Poor's, U.S. = S&P 500 Index, intl. dev. = MSCI EAFE Index. Growth includes Communication Services, Health Care, Information Technology and Consumer Discretionary. Value includes Financials, Industrials, Materials, Real Estate, Utilities, Energy, and Consumer Staples.
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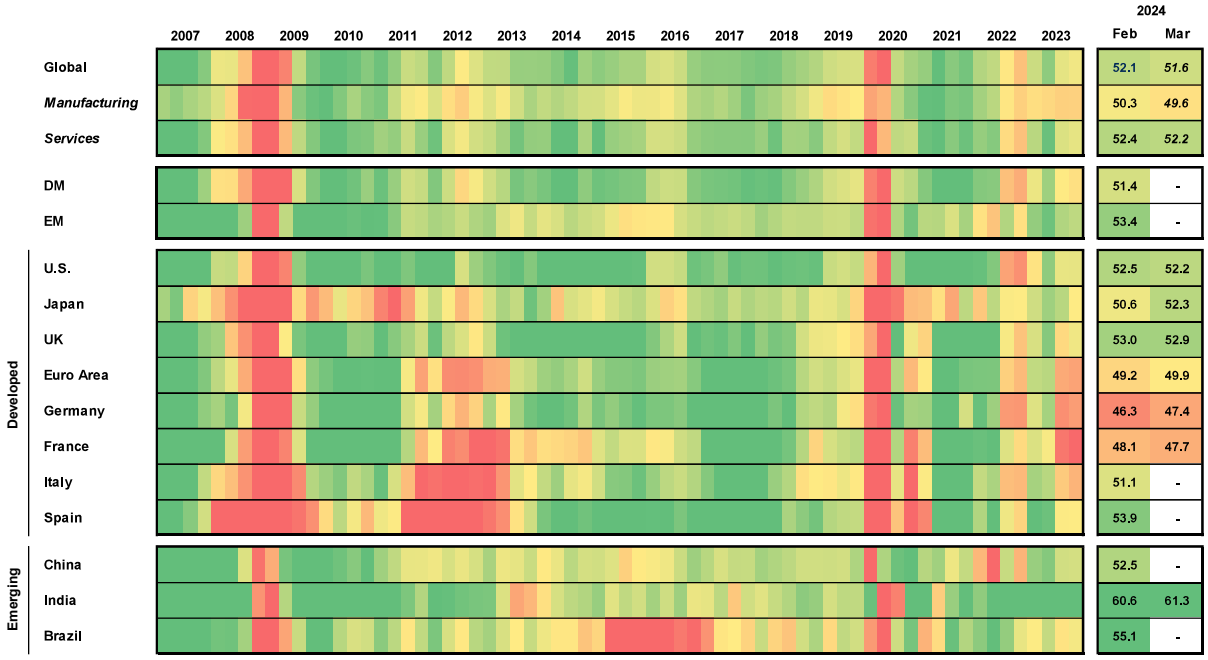
Global economic activity momentum

GTM | U.S. | 49

Global Composite (manufacturing & services combined) Purchasing Managers' Index, quarterly



Source: J.P. Morgan Economic Research, Standard & Poor's, J.P. Morgan Asset Management.
Italicized figures are estimates by J.P. Morgan Asset Management. The Composite PMI includes both manufacturing and services sub-indices. Heatmap colors are based on PMI relative to the 50 level, which indicates acceleration or deceleration of the sector, for the time period shown. Heatmap is based on quarterly averages, except for the two most recent figures, which are single month readings. Data for the U.S. are back-tested and filled in for 2007, 2009. Data for Japan are back-tested and filled in for the first two quarters of 2007. DM and EM represent developed markets and emerging markets, respectively.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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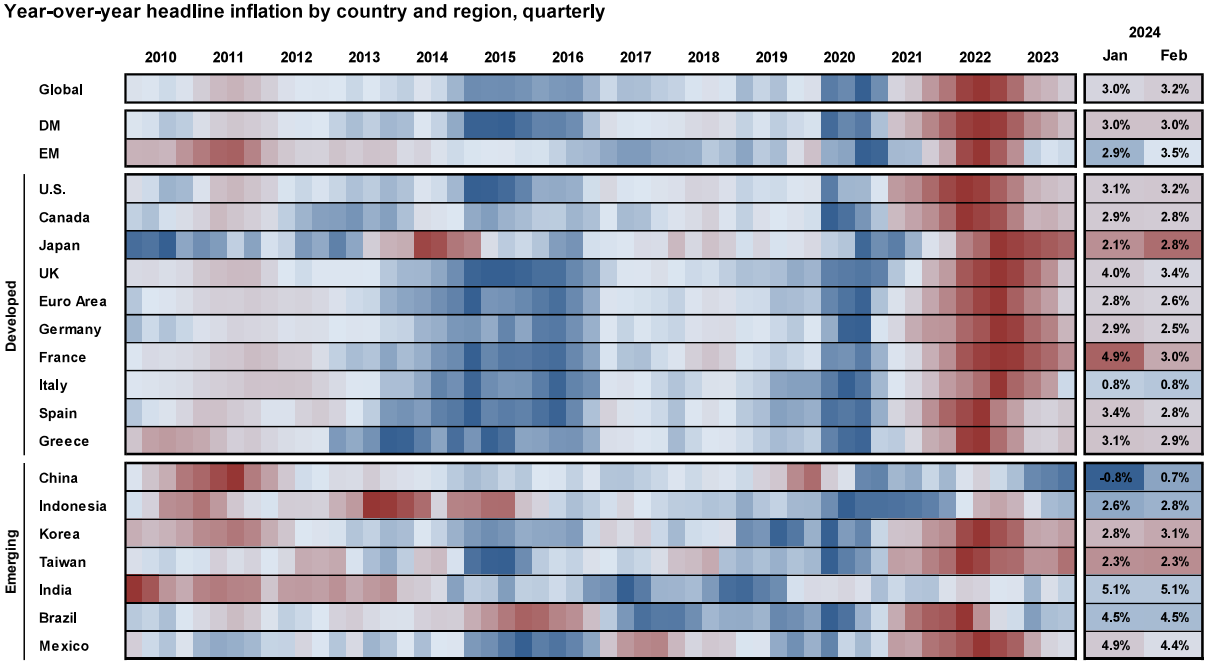
Global inflation

GTM | U.S. | 50

Year-over-year headline inflation by country and region, quarterly



Source: Bank of Mexico, Central Bank of Brazil, DGBAS, Eurostat, FactSet, Federal Reserve, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communications, J.P. Morgan Economic Research, Korean National Statistical Office, National Bureau of Statistics China, Statistics Canada, Statistics Indonesia, UK Office for National Statistics (ONS), J.P. Morgan Asset Management. Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Colors determined by percentiles of inflation values over the time period shown. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively.
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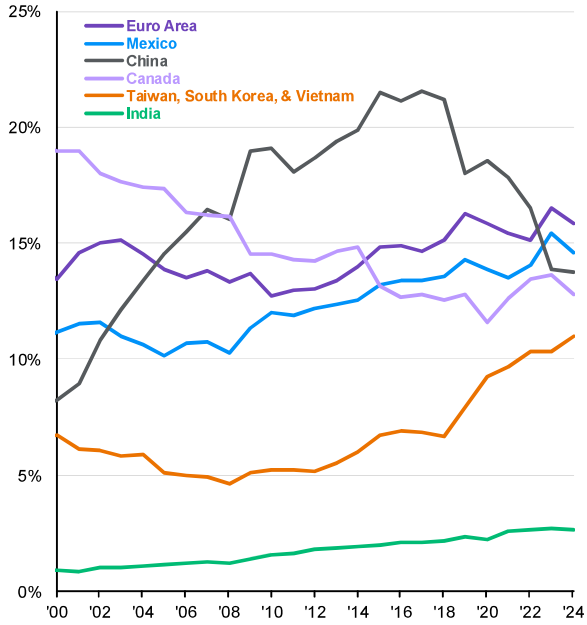
Global trade patterns and bottlenecks monitor

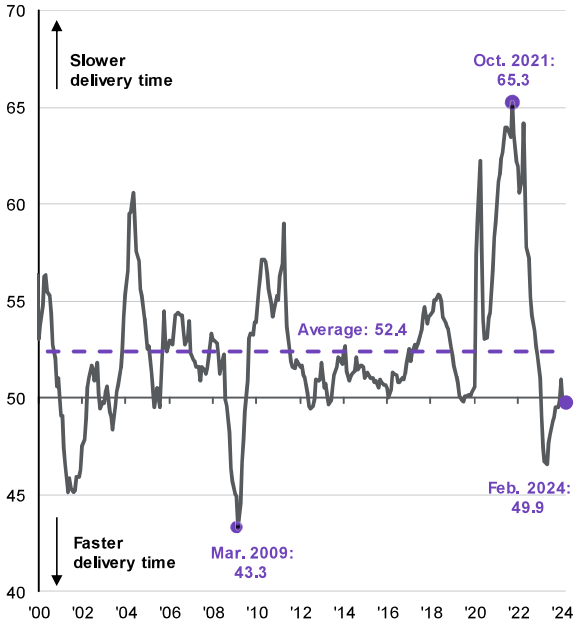
U.S. goods imports by country

% of total U.S. goods imports, annual and YTD 2024



Global PMI suppliers' delivery times index*

Figure shown is 100 - Global PMI suppliers' delivery times index



Source: J.P. Morgan Asset Management, (Left) U.S. Census Bureau, FactSet, (Right) J.P. Morgan Economic Research, S&P Global. *Participants in Standard & Poor's PMI business surveys, conducted in 44 countries, are asked: "Are your suppliers' delivery times slower, faster or unchanged on average than one month ago?". Index includes the manufacturing and construction sectors. PMI score reflected above is 100 – PMI report by Standard & Poor's. A reading of 50 = no change, <50 = faster delivery time, >50 = slower delivery time.
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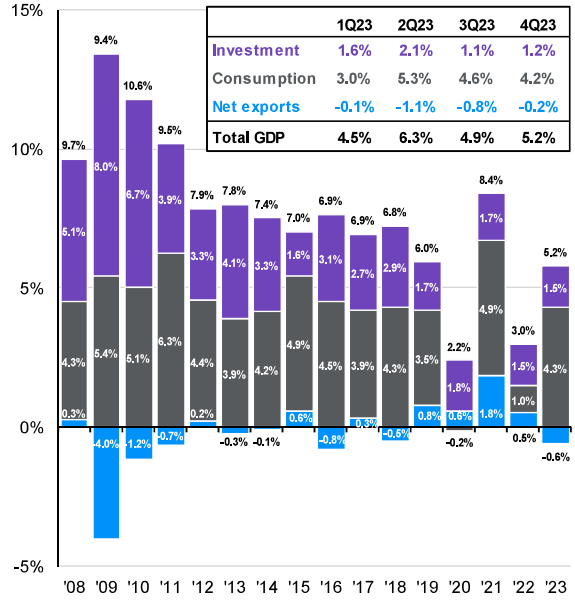
China: Economy

China real GDP contribution

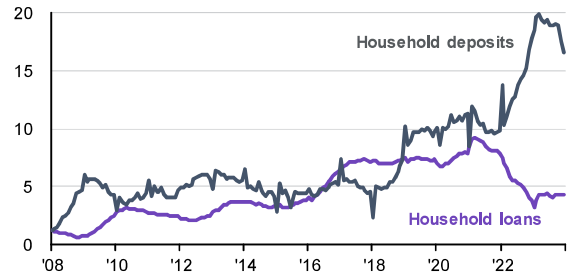
Year-over-year % change, contribution by component



	1Q23	2Q23	3Q23	4Q23
Investment	1.6%	2.1%	1.1%	1.2%
Consumption	3.0%	5.3%	4.6%	4.2%
Net exports	-0.1%	-1.1%	-0.8%	-0.2%
Total GDP	4.5%	6.3%	4.9%	5.2%

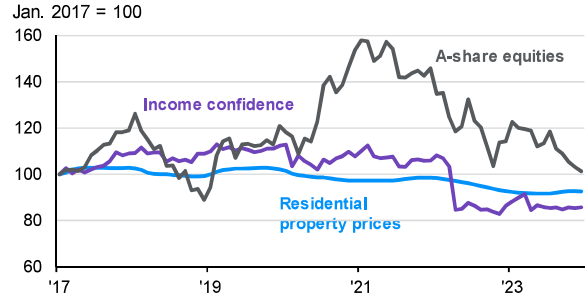
Household deposits and loans

CNY trillion, rolling 12 months



Consumer income and wealth effect

Jan. 2017 = 100



Source: J.P. Morgan Asset Management; (Left) CEIC, (Top right) People's Bank of China, Wind; (Bottom right) CEIC, National Bureau Statistics of China, People's Bank of China. "A-share equities" are represented by the CSI 300 Index. "Residential property prices" are represented by an index that tracks secondary market residential property prices. "Income confidence" is represented by a diffusion index reflecting respondents' confidence in future income. The two right graphs come from our Guide to China.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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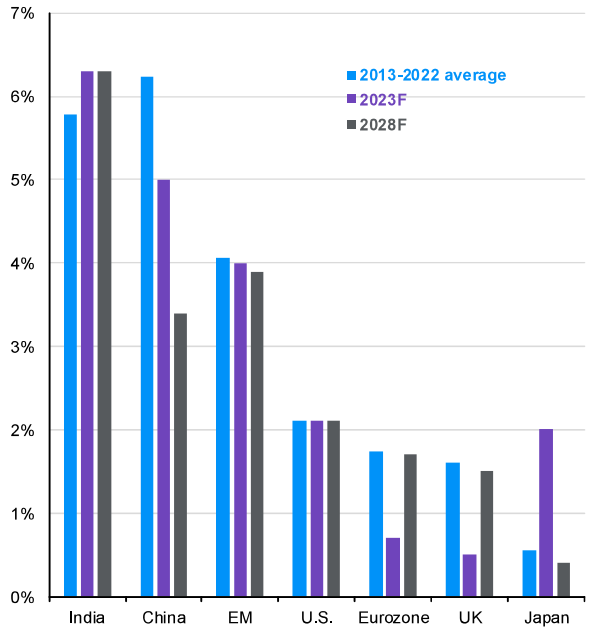
India: Economy

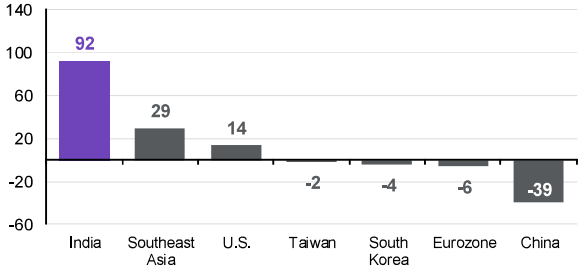
Real GDP growth by country

Year-over-year



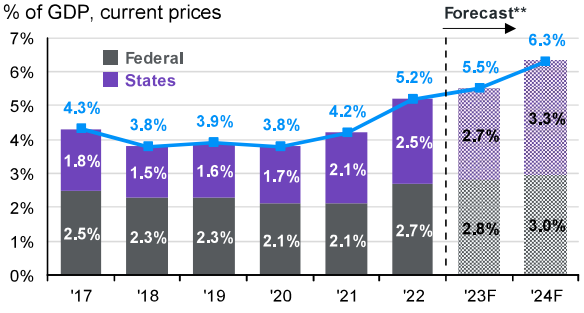
Working age population growth

Estimated change between 2023 and 2033*, millions of people



Government capital spending

% of GDP, current prices



Source: J.P. Morgan Asset Management. (Left) International Monetary Fund. (IMF), World Economic Outlook (WEO) - October 2023. Forecasts are provided by the IMF. (Top right) *Estimates are provided by Oxford Economics. Working age population is defined as those aged 15-64. Southeast Asia includes Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. (Bottom right) Ministry of Finance India. Shows capital spending by fiscal year. The fiscal year in India runs from April to March. **Forecast is by the Ministry of Finance for FY2023 and FY2024. *Guide to the Markets – U.S.* Data are as of March 31, 2024.

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Correlations and volatility

	U.S. Large Cap	EAFE	EME	Bonds	Corp. HY	Munis	Currcy.	EMD	Cmdty.	REITs	Hedge funds	Private equity	Gold	Ann. Volatility
U.S. Large Cap	1.00	0.90	0.80	0.32	0.86	0.41	-0.47	0.75	0.39	0.78	0.82	0.81	0.23	15%
EAFE		1.00	0.90	0.33	0.86	0.47	-0.62	0.80	0.42	0.66	0.80	0.79	0.31	16%
EME			1.00	0.31	0.83	0.42	-0.69	0.80	0.45	0.55	0.77	0.77	0.39	18%
Bonds				1.00	0.42	0.89	-0.42	0.68	-0.28	0.51	-0.03	0.16	0.60	5%
Corp. HY					1.00	0.48	-0.52	0.88	0.45	0.71	0.77	0.75	0.35	9%
Munis						1.00	-0.46	0.75	-0.23	0.62	0.10	0.29	0.49	5%
Currencies							1.00	-0.62	-0.35	-0.31	-0.30	-0.56	-0.61	7%
EMD								1.00	0.19	0.68	0.55	0.62	0.53	8%
Commodities									1.00	0.26	0.64	0.58	0.20	17%
REITs										1.00	0.58	0.63	0.26	17%
Hedge funds											1.00	0.80	0.07	5%
Private equity												1.00	0.12	8%
Gold													1.00	13%

Source: Bloomberg, Burgiss, Credit Suisse/Tremont, FactSet, Federal Reserve, MSCI, Standard & Poor's, J.P. Morgan Asset Management. Indices used - Large Cap: S&P 500 Index; Currencies: Federal Reserve Trade Weighted Dollar; EAFE: MSCI EAFE; EME: MSCI Emerging Markets; Bonds: Bloomberg Aggregate; Corp HY: Bloomberg Corporate High Yield; EMD: Bloomberg Emerging Market; Cmdty.: Bloomberg Commodity Index; REITs: NAREIT All Equity Index; Hedge funds: CS/Tremont Hedge Fund Index; Private equity: Time weighted returns from Burgiss; Gold: Gold continuous contract ($/oz). Private equity data are reported on a one- to two-quarter lag. All correlation coefficients and annualized volatility are calculated based on quarterly total return data for period from 3/31/2014 to 3/31/2024, except for Private equity, which is based on the period from 9/30/2013 to 9/30/2023. This chart is for illustrative purposes only.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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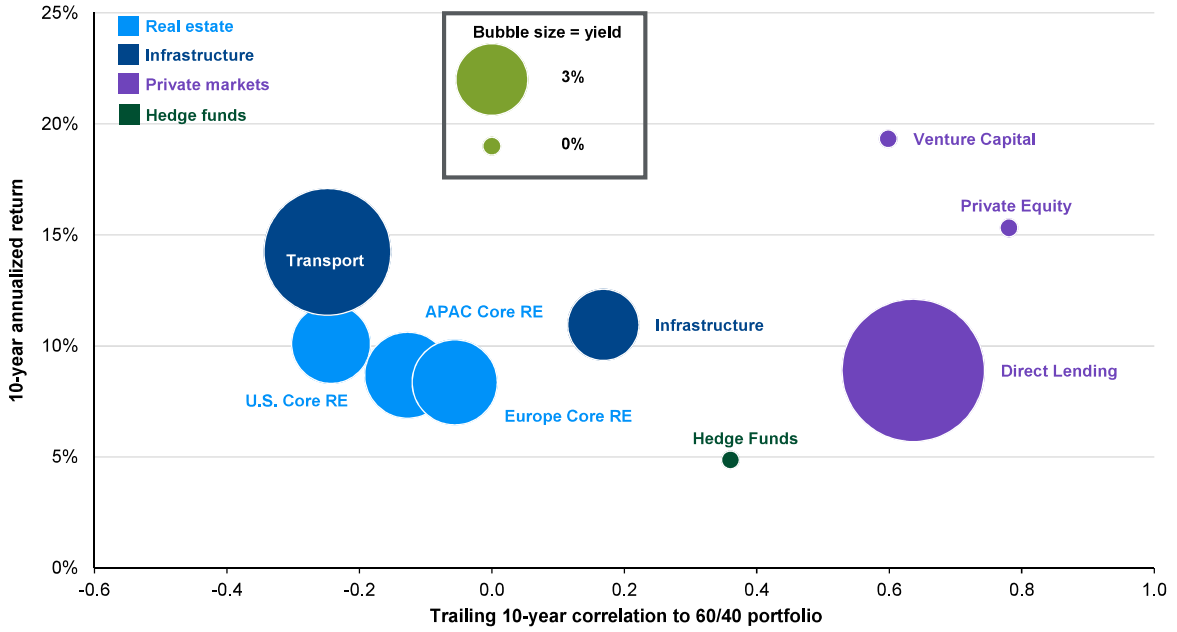
Alternative asset correlations, returns and yields

Correlations, returns and yields

10-year correlations and 10-year annualized total returns, quarterly, 2013-2022



Source: Burgiss, Cliffwater, FactSet, Gilberto-Levy, HFRI, MSCI, NCREIF, J.P. Morgan Asset Management.
Correlations are based on quarterly returns over the past 10 years through 2022. A 60/40 portfolio is comprised of 60% stocks and 40% bonds. Stocks are represented by the S&P 500 Total Return Index. Bonds are represented by the Bloomberg U.S. Aggregate Total Return Index. 10-year annualized returns are calculated from 2013 to 2022. Indices and data used for alternative asset class returns and yields are as described on pages 8,9 and 11 of the *Guide to Alternatives*. Yields are based on latest available data as described on page 8 of the *Guide to Alternatives*. This slide comes from our Guide to Alternatives.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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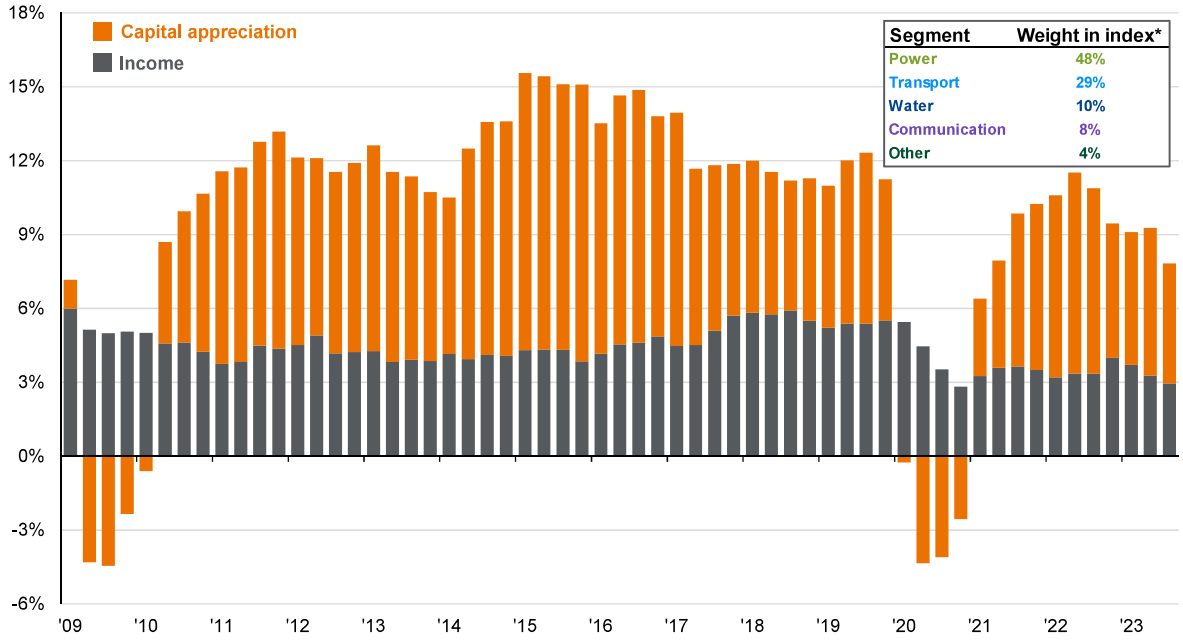
Sources of global infrastructure returns

Global core infrastructure returns

Rolling 4-quarter returns from income and capital appreciation



Source: MSCI, J.P. Morgan Asset Management.
Infrastructure returns represented by the MSCI Global Quarterly Infrastructure Asset Index. Data show rolling one-year returns from income and capital growth. The chart shows the full index history, beginning in 1Q09, and ending in 3Q23. Past performance is not indicative of future results. Alternative investments carry more risk than traditional investments and are recommended only for long-term investment. Some alternative investments may be highly leveraged and rely on speculative investments that can magnify the potential for loss or gain. Diversification does not guarantee investment returns or eliminate the risk of loss. *Weights are based on enterprise value. This slide comes from our Guide to Alternatives.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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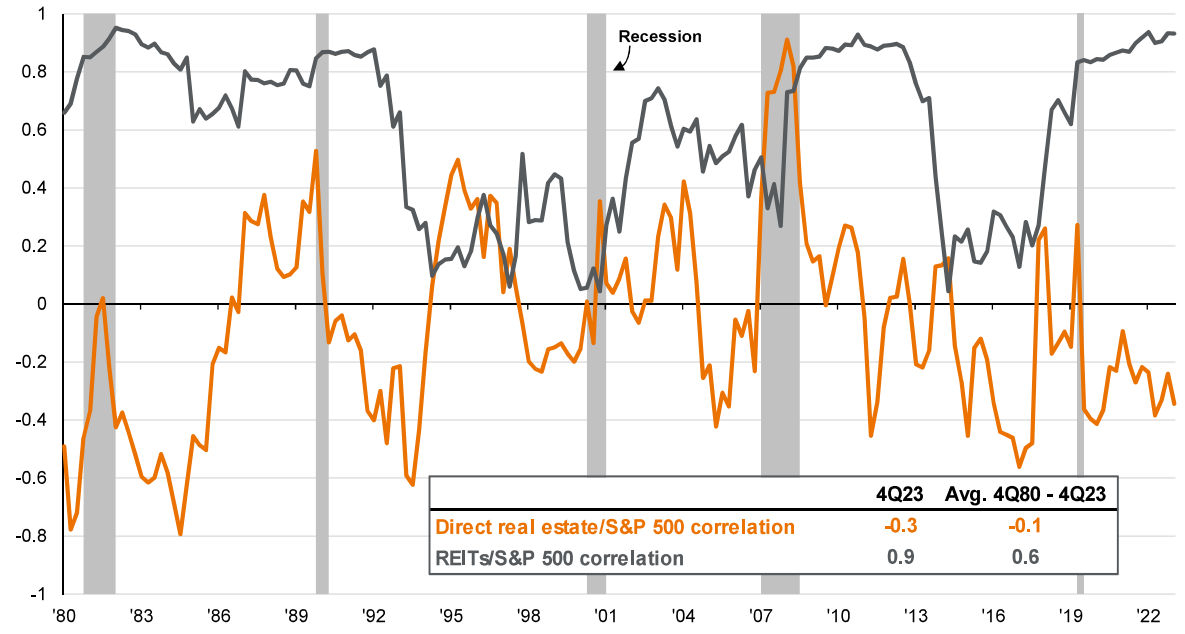
U.S. REITs and direct real estate

U.S. REITs, direct real estate and equities
12-quarter rolling correlations, total return



Source: FactSet, NAREIT, NCREIF, Standard & Poor's, J.P. Morgan Asset Management.
Real estate investment trusts (REITs). Indices do not include fees or operating expenses and are not available for actual investment. Past performance is not necessarily a reliable indicator for current and future performance. This slide comes from our Guide to Alternatives, *Guide to the Markets – U.S.* Data are as of March 31, 2024.

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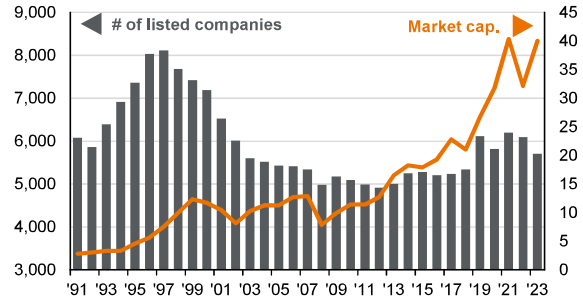
ASSET MANAGEMENT

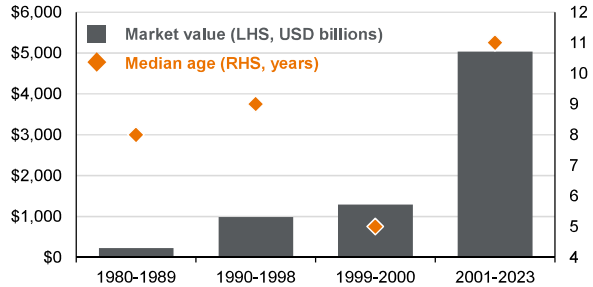
Alternatives

U.S. public vs. private equity

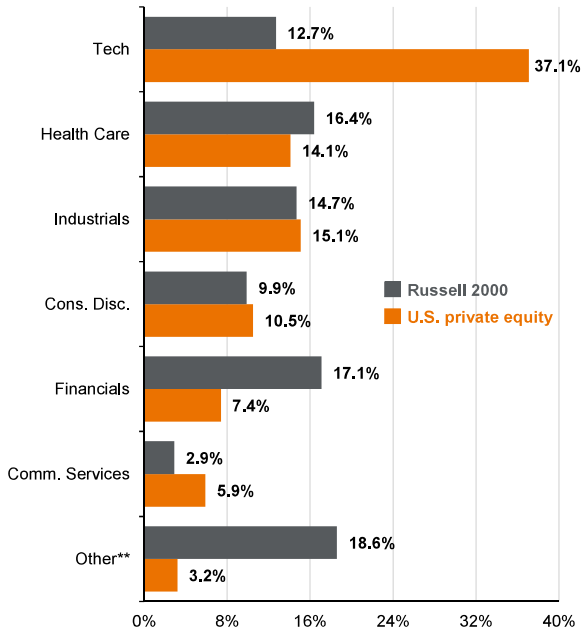
Number of listed U.S. companies* and market cap.
Number, S&P 500 market capitalization in USD trillions



Average market value and median age at IPO



Private vs. public equity sector weights



Sources: Cambridge Associates, Jay Ritter, University of Florida, World Federation of Exchanges, J.P. Morgan Asset Management.
(Top left) *Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ. (Bottom left) Market value is calculated at first closing price. The sample is IPOs with an offer price of at least $5, excluding ADRs, unit offers, closed-end funds, REITs, natural resource limited partnerships, small best efforts offers, banks and S&Ls and stocks not listed on CRSP (CRSP includes Amex, NYSE and NASDAQ stocks). Average IPO size is defined as the aggregate IPO proceeds during the period shown, divided by the number of IPOs. (Right) **Other includes real estate, utilities and energy. Percentages may not sum due to rounding. Sector weights are as of 6/30/2022. This slide comes from our Guide to Alternatives, *Guide to the Markets – U.S.* Data are as of March 31, 2024.

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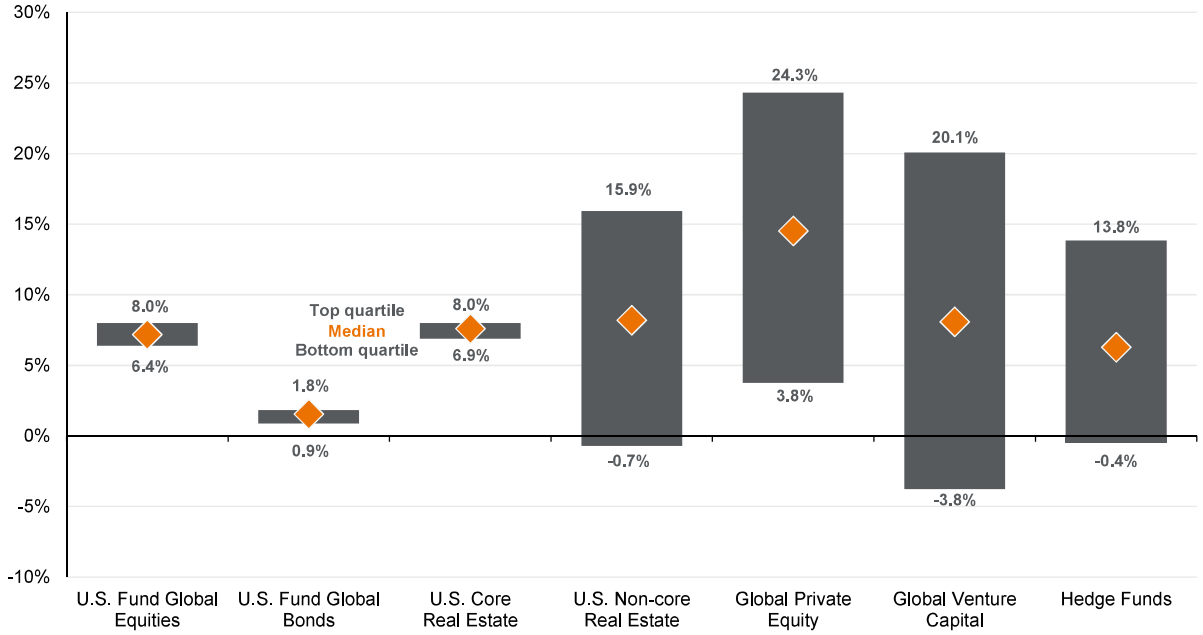
Alternatives

Alternatives and manager selection

Public and private manager dispersion

Based on returns over a 10-year window*



Source: Burgiss, Morningstar, NCREIF, PivotalPath, J.P. Morgan Asset Management.
Global equities (large cap) and global bonds dispersion are based on the world large stock and world bond categories, respectively. *Manager dispersion is based on the annual returns for U.S. Fund Global Equities, U.S. Fund Global Bonds, Hedge Funds and U.S. Core Real Estate are over a 10-year period ending 3Q23. Non-core Real Estate, Global Private Equity and Global Venture Capital are represented by the 10-year horizon internal rate of return (IRR) ending 2Q23. U.S. Fund Global Equities and Bonds are comprised of U.S.-domiciled mutual funds and ETFs. This slide comes from our Guide to Alternatives.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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Asset class returns

2009-2023 Ann.	Vol.	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD
Large Cap 14.0%	Small Cap 21.9%	EM Equity 79.0%	REITs 27.9%	REITs 8.3%	REITs 19.7%	Small Cap 38.8%	REITs 28.0%	REITs 2.8%	Small Cap 21.3%	EM Equity 37.8%	Cash 1.8%	Large Cap 31.5%	Small Cap 20.0%	REITs 41.3%	Comdty. 16.1%	Large Cap 26.3%	Large Cap 10.6%
Small Cap 11.3%	REITs 21.2%	High Yield 59.4%	Small Cap 26.9%	Fixed Income 7.8%	High Yield 19.6%	Large Cap 32.4%	Large Cap 13.7%	Large Cap 1.4%	High Yield 14.3%	DM Equity 25.6%	Fixed Income 0.0%	REITs 28.7%	EM Equity 18.7%	Large Cap 28.7%	Cash 1.5%	DM Equity 18.9%	DM Equity 5.8%
REITs 10.9%	EM Equity 20.3%	DM Equity 32.5%	EM Equity 19.2%	High Yield 3.1%	EM Equity 18.6%	DM Equity 23.3%	Fixed Income 6.0%	Fixed Income 0.5%	Large Cap 12.0%	Large Cap 21.8%	REITs -4.0%	Small Cap 25.5%	Large Cap 18.4%	Comdty. 27.1%	High Yield -12.7%	Small Cap 16.9%	Small Cap 5.2%
High Yield 8.6%	DM Equity 18.4%	REITs 28.0%	Comdty. 16.8%	Large Cap 2.1%	DM Equity 17.9%	Asset Alloc. 14.9%	Asset Alloc. 5.2%	Cash 0.0%	Comdty. 11.8%	Small Cap 14.6%	High Yield -4.1%	DM Equity 22.7%	Asset Alloc. 10.6%	Small Cap 14.8%	Fixed Income -13.0%	Asset Alloc. 14.1%	Asset Alloc. 4.2%
Asset Alloc. 8.1%	Comdty. 16.6%	Small Cap 27.2%	Large Cap 15.1%	Cash 0.1%	Small Cap 16.3%	High Yield 7.3%	Small Cap 4.9%	DM Equity -0.4%	EM Equity 11.6%	Asset Alloc. 14.6%	Large Cap -4.4%	Asset Alloc. 19.5%	DM Equity 8.3%	Asset Alloc. 13.5%	Asset Alloc. -13.9%	High Yield 14.0%	Comdty. 2.2%
DM Equity 7.4%	Large Cap 16.1%	Large Cap 26.5%	High Yield 14.8%	Asset Alloc. -0.7%	Large Cap 16.0%	REITs 2.9%	Cash 0.0%	Asset Alloc. -2.0%	REITs 8.6%	High Yield 10.4%	Asset Alloc. -5.8%	EM Equity 18.9%	Fixed Income 7.5%	DM Equity 11.8%	DM Equity -14.0%	REITs 11.4%	EM Equity 2.2%
EM Equity 6.9%	High Yield 11.5%	Asset Alloc. 25.0%	Asset Alloc. 13.3%	Small Cap -4.2%	Asset Alloc. 12.2%	Cash 0.0%	High Yield 0.0%	High Yield -2.7%	Asset Alloc. 8.3%	REITs 8.7%	Small Cap -11.0%	High Yield 12.6%	High Yield 7.0%	High Yield 1.0%	Large Cap -18.1%	EM Equity 10.3%	High Yield 2.1%
Fixed Income 2.7%	Asset Alloc. 11.5%	Comdty. 18.9%	DM Equity 8.2%	DM Equity -11.7%	Fixed Income 4.2%	Fixed Income -2.0%	EM Equity -1.8%	Small Cap -4.4%	Fixed Income 2.6%	Fixed Income 3.5%	Comdty. -11.2%	Fixed Income 8.7%	Cash 0.5%	Cash 0.0%	EM Equity -19.7%	Fixed Income 5.5%	Cash 1.3%
Cash 0.8%	Fixed Income 4.5%	Fixed Income 5.9%	Fixed Income 6.5%	Comdty. -13.3%	Cash 0.1%	EM Equity -2.3%	DM Equity -4.5%	EM Equity -14.6%	DM Equity 1.5%	Comdty. 1.7%	DM Equity -13.4%	Comdty. 7.7%	Comdty. -3.1%	Fixed Income -1.5%	Small Cap -20.4%	Cash 5.1%	Fixed Income -0.8%
Comdty. -0.2%	Cash 0.7%	Cash 0.1%	Cash 0.1%	EM Equity -18.2%	Comdty. -1.1%	Comdty. -9.5%	Comdty. -17.0%	Comdty. -24.7%	Cash 0.3%	Cash 0.8%	EM Equity -14.2%	Cash 2.2%	REITs -5.1%	EM Equity -2.2%	REITs -24.9%	Comdty. -7.9%	REITs -1.3%

Source: Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor's, J.P. Morgan Asset Management.
Large cap: S&P 500, Small cap: Russell 2000, EM Equity: MSCI EME, DM Equity: MSCI EAFE, Comdty: Bloomberg Commodity Index, High Yield: Bloomberg Global HY Index, Fixed Income: Bloomberg US Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg 1-3m Treasury. The "Asset Allocation" portfolio assumes the following weights: 25% in the S&P 500, 10% in the Russell 2000, 15% in the MSCI EAFE, 5% in the MSCI EME, 25% in the Bloomberg US Aggregate, 5% in the Bloomberg 1-3m Treasury, 5% in the Bloomberg Global High Yield Index, 5% in the Bloomberg Commodity Index and 5% in the NAREIT Equity REIT Index. Balanced portfolio assumes annual rebalancing. Annualized (Ann.) return and volatility (Vol.) represents period from 12/31/2009 to 12/31/2023. Please see disclosure page at end for index definitions. All data represents total return for stated period. The "Asset Allocation" portfolio is for illustrative purposes only. Past performance is not indicative of future returns.
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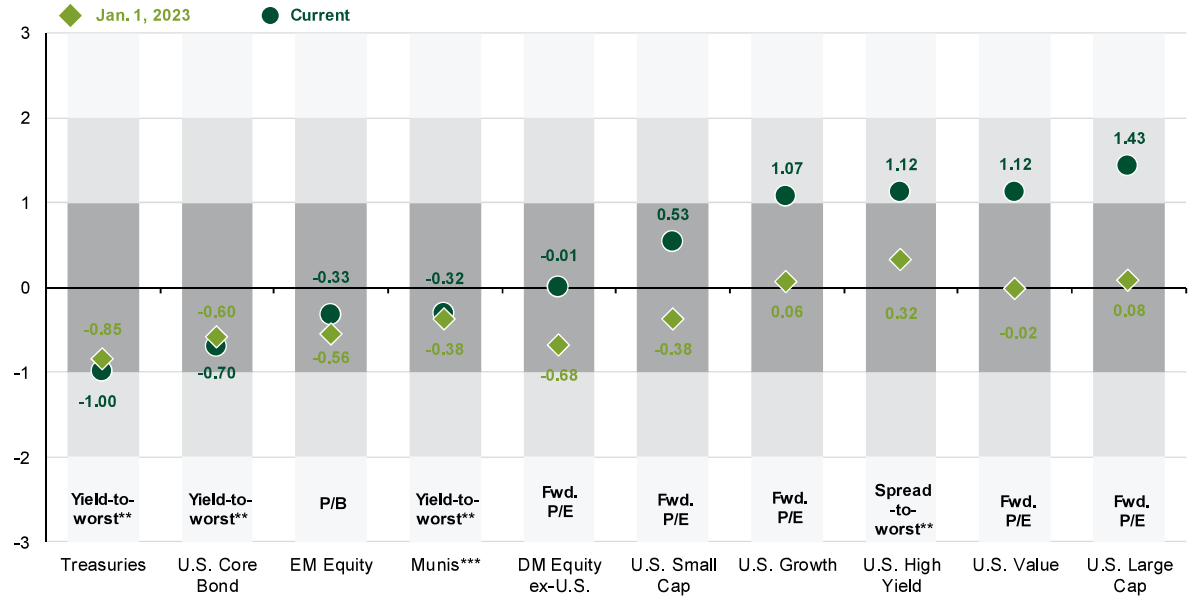
J.P.Morgan ASSET MANAGEMENT

Valuations monitor

Asset class valuations
Z-scores based on 25-year average valuation measures*



Source: Bloomberg, BLS, CME, FactSet, MSCI, Russell, Standard & Poor's, J.P. Morgan Asset Management.
U.S. Large Cap: S&P 500; U.S. Small Cap: Russell 2000; EM Equity: MSCI EME; DM Equity: MSCI EAFE; U.S. Value: Russell 1000 Value; U.S. Growth: Russell 1000 Growth; U.S. High Yield: J.P. Morgan Domestic High Yield Index; U.S. Core Bond: Bloomberg US Aggregate; Treasuries: Bloomberg U.S. Aggregate Government - Treasury; Munis: Bloomberg Municipal Bond. *Averages for U.S. High Yield and U.S. Small Cap are since January 1999 and November 1998, respectively, due to limited data availability. **Yield-to-worst and spread-to-worst are inversely related to fixed income prices. ***Munis yield-to-worst is based on the tax-equivalent yield-to-worst assuming a top-income tax bracket rate of 37% plus a Medicare tax rate of 3.8%.
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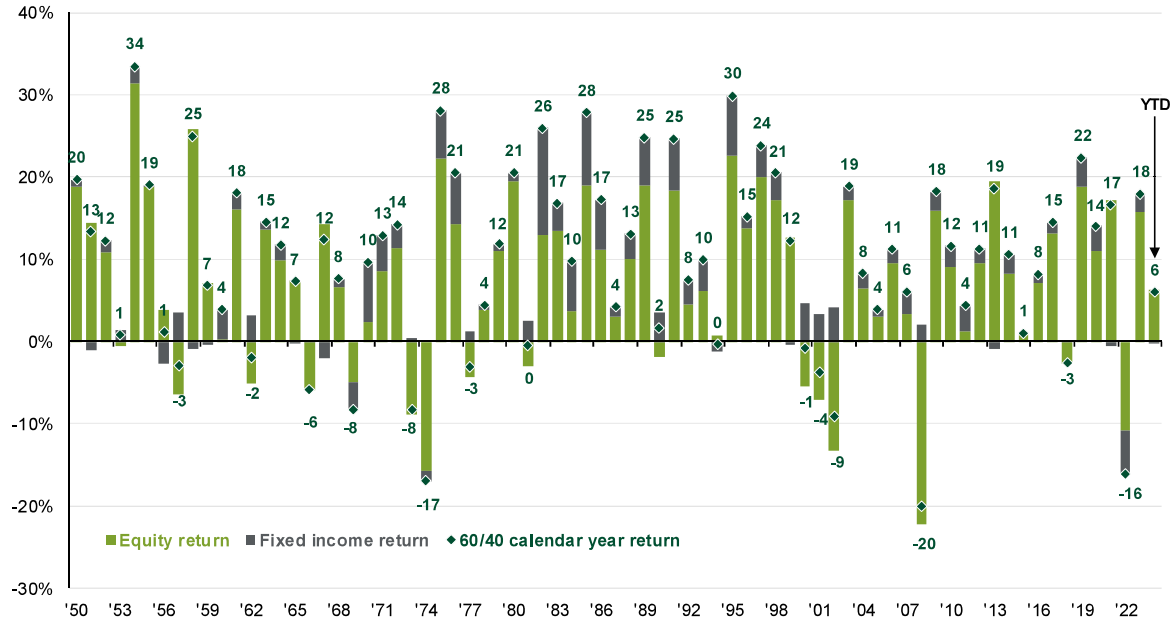
60/40 annual returns

60/40 annual return decomposition
Total returns in percent, 1950-present



Source: Bloomberg, FactSet, Ibbotson/Strategas, Standard & Poor's, J.P. Morgan Asset Management.
The 60/40 portfolio is 60% invested in the S&P 500 Total Return Index and 40% invested in the Bloomberg U.S. Aggregate Total Return Index. U.S. fixed income total returns from 1950 to 1975 are estimated using data from Strategas/Ibbotson. The portfolio is rebalanced annually.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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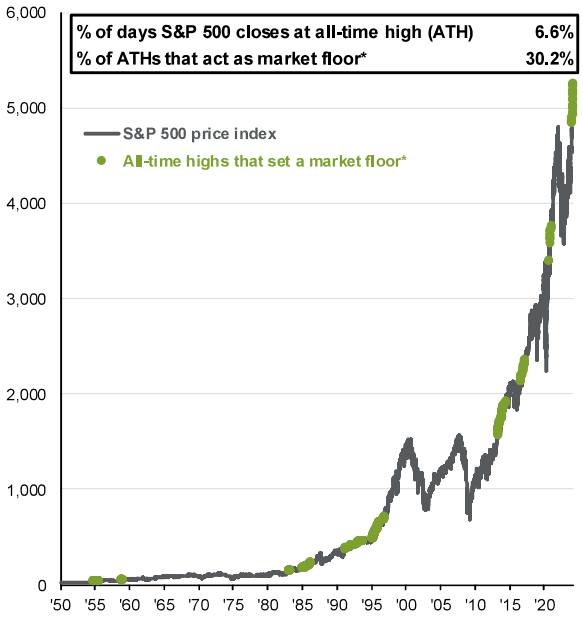
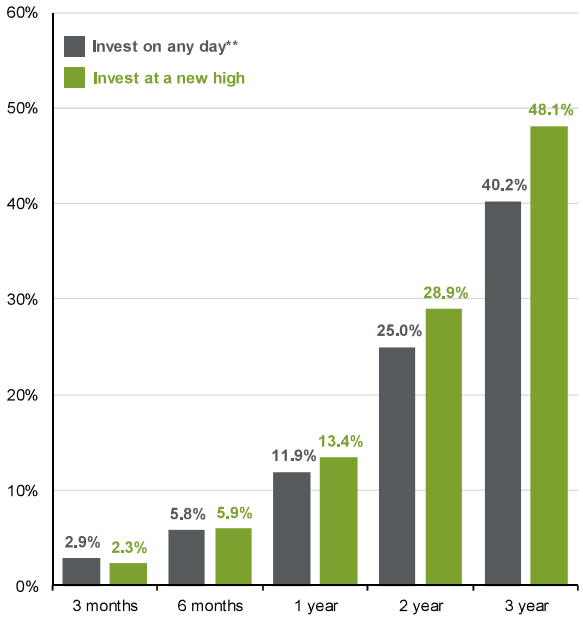
Investing at all-time highs

All-time highs and market floors
S&P 500 price index, daily, 1950 - today



Average cumulative S&P 500 total returns
Jan. 1, 1988 - Dec. 31, 2023



Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
(Left) *Market floor is defined as an all-time high from which the market never fell more than 5%. (Right) **"Invest on any day" represents average of forward returns for the entire time period whereas "Invest at a new high" represents average of rolling forward returns calculated from each new S&P 500 high for the subsequent 3 months, 6 months, 1 year, 2-year and 3-year intervals, with data starting 1/1/1988 through 12/31/2023.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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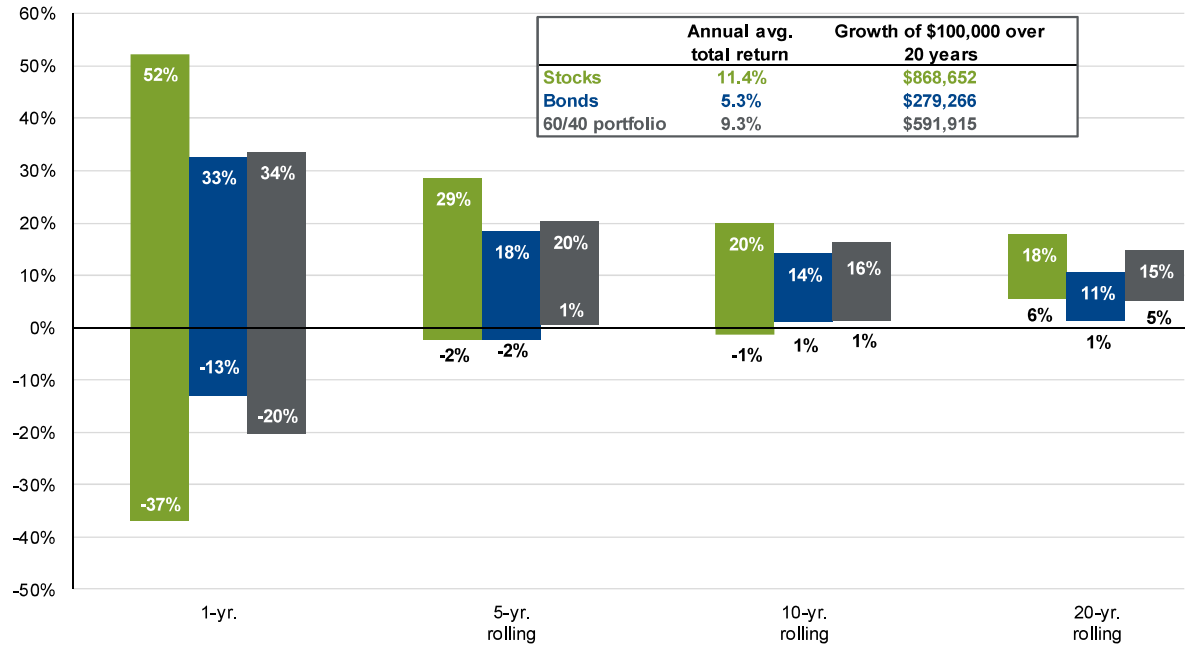
Time, diversification and the volatility of returns

Range of stock, bond and blended total returns
Annual total returns, 1950-2023



	Annual avg. total return	Growth of $100,000 over 20 years
Stocks	11.4%	$868,652
Bonds	5.3%	$279,266
60/40 portfolio	9.3%	$591,915

Source: Bloomberg, FactSet, Federal Reserve, Robert Shiller, Standard and Poor's, Strategas/Ibbotson, J.P. Morgan Asset Management.
Returns shown are based on calendar year returns from 1950 to 2023. Stocks represent the S&P 500 Shiller Composite for periods prior to 1936 and the S&P 500 thereafter. Bonds represent Strategas/Ibbotson for periods prior to 1976 and the Bloomberg Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2023.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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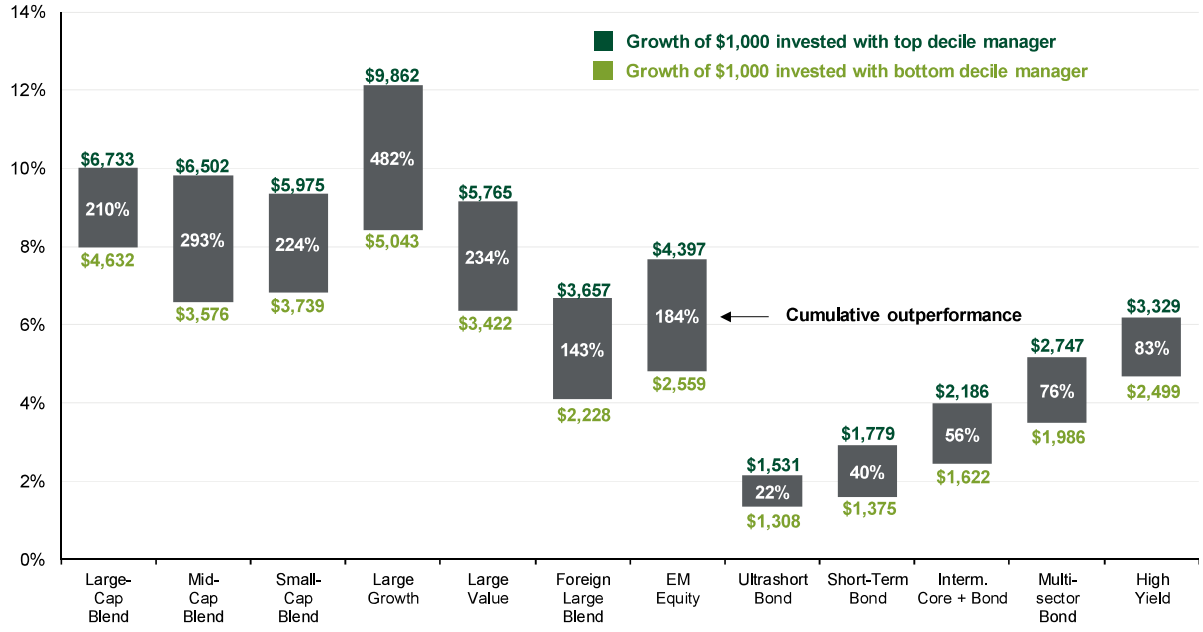
Manager dispersion

20-year manager return dispersion and growth of capital
By asset type, annualized total returns, growth of $1,000 invested 20 years ago*



Source: Morningstar, J.P. Morgan Asset Management.
*Represents average annual portfolio return dispersion between the 10th and 90th percentile over a 20-year period for each Morningstar Category, including mutual funds and ETFs. Returns are updated monthly and reflect data through 2/29/2024. This information is for illustrative purposes only, does not reflect actual investment results, is not a guarantee of future results and is not a recommendation.
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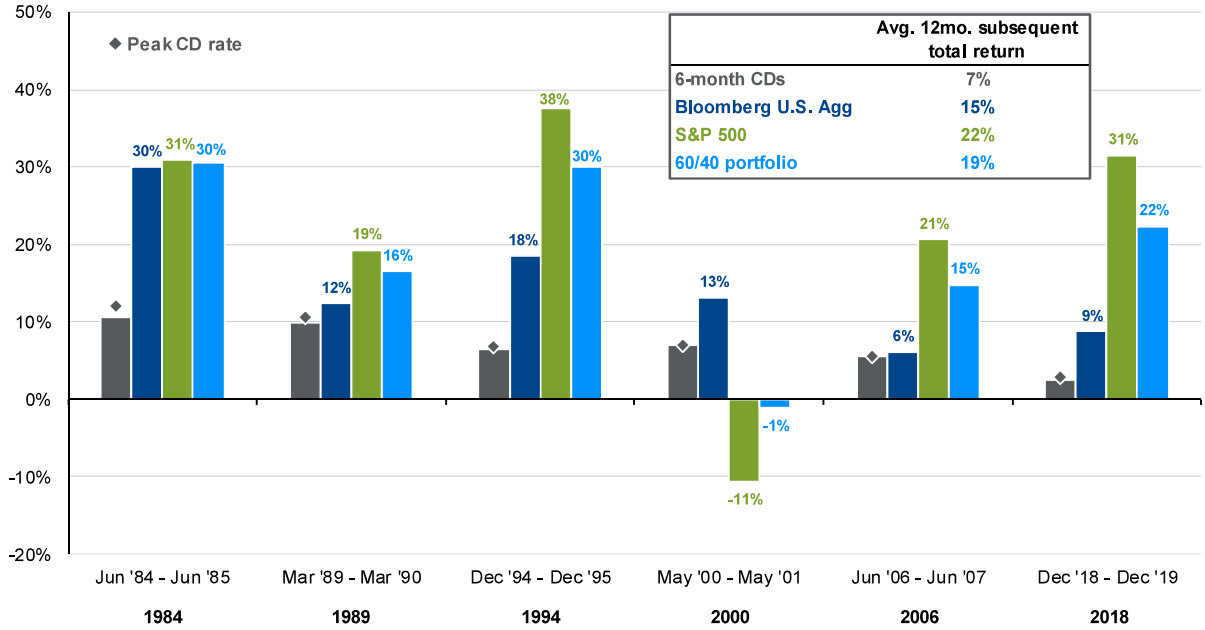
CD rates and other investment opportunities

Investment opportunities outside of CDs
Peak 6-month certificate of deposit (CD) rate during previous rate hiking cycles and subsequent 12-month total returns



Source: Bloomberg, FactSet, Federal Reserve, Standard and Poor's, J.P. Morgan Asset Management.
The 60/40 portfolio is 60% invested in S&P 500 Total Return Index and 40% invested in Bloomberg U.S. Aggregate Total Return Index. The analysis references the month in which the month-end 6-month CD rate peaked during previous rate hiking cycles. CD rate data prior to 2013 are sourced from the Federal Reserve, whereas data from 2013 to 2023 are sourced from Bloomberg. CD subsequent 12-month return calculation assumes reinvestment at the prevailing 6-month rate when the initial CD matures.
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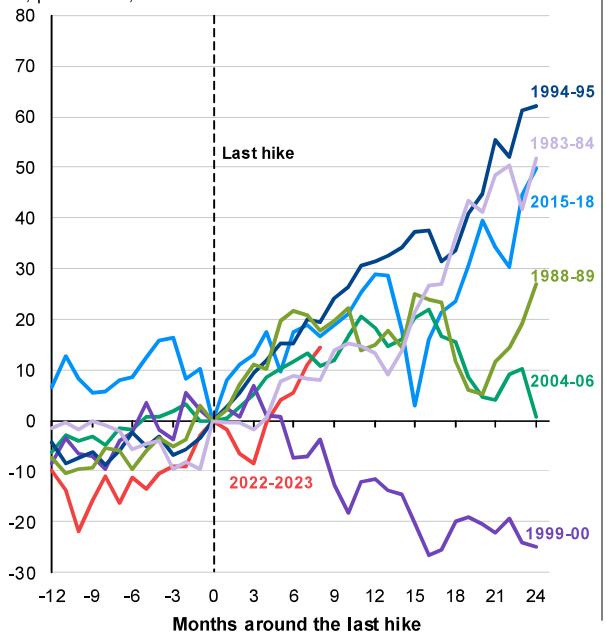
Market returns around the end of a Fed hiking cycle

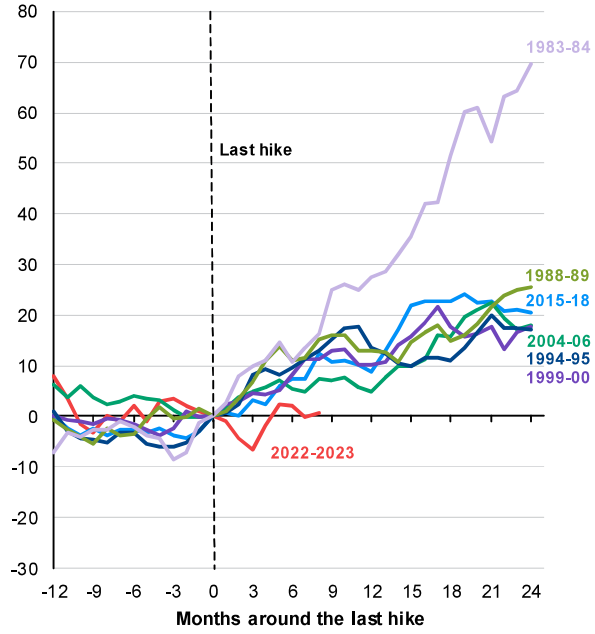
S&P 500 returns around the end of a Fed hiking cycle

%, price return, indexed to zero at the last hike



U.S. 10-yr returns around the end of a Fed hiking cycle

%, total return, indexed to zero at the last hike



Source: FactSet, Federal Reserve, LSEG Datastream, S&P Global, J.P. Morgan Asset Management. The 2022-2023 cycle assumes that the last hike of the cycle was in July 2023. Past performance is not a reliable indicator of current and future results.
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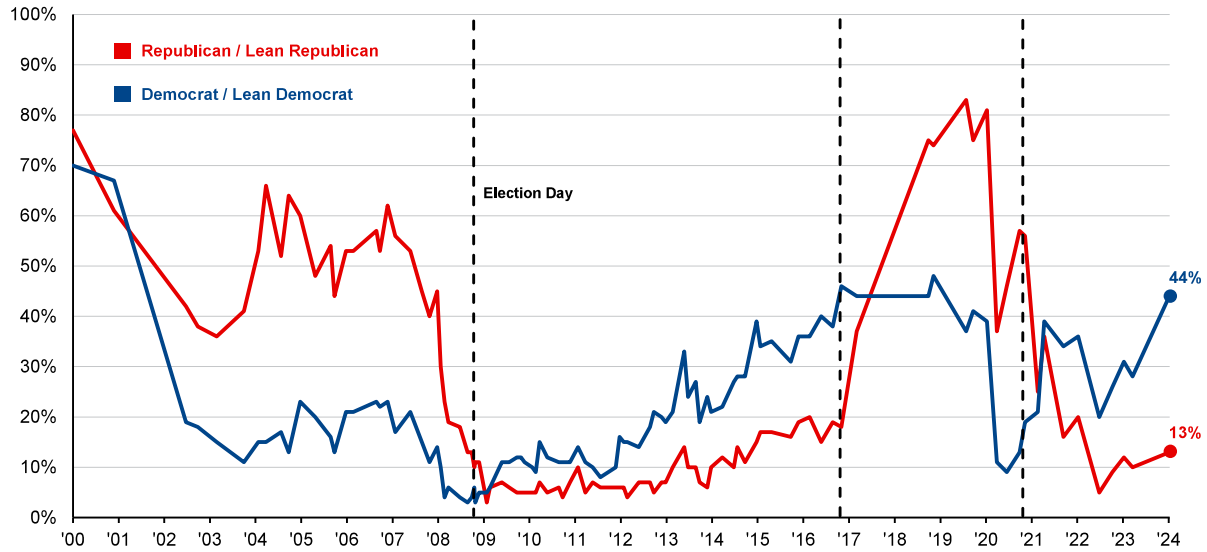
Consumer confidence by political affiliation

Percentage of Republicans and Democrats who rate current economic conditions as excellent or good



Administration	Bush	Obama	Trump	Biden
Dates in office	Jan '01 – Jan '09	Jan '09 – Jan '17	Jan '17 – Jan '21	Jan '21 – Today
S&P 500 return	-4.5%	16.3%	16.0%	12.0%
Real GDP growth	1.9%	2.2%	1.8%	2.9%

Source: Pew Research Center, J.P. Morgan Asset Management. The survey was last conducted in January 2024. "Americans More Upbeat on the Economy; Biden's Job Rating Remains Very Low." Pew Research Center asks the question: "Thinking about the nation's economy. How would you rate economic conditions in this country today... as excellent, good, only fair, or poor?". S&P 500 returns are average annualized total returns between presidential inauguration dates and are updated monthly. Real GDP growth are average annualized GDP growth rates.
Guide to the Markets – U.S. Data are as of March 31, 2024.

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J.P. Morgan Asset Management – Index definitions

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

Equities:

The **Dow Jones Industrial Average** is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

The **MSCI ACWI (All Country World Index)** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

The **MSCI EAFE Index(Europe, Australasia, Far East)**is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

The **MSCI Emerging Markets Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

The **MSCI Europe Index** is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe.

The **MSCI Pacific Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.

The **Russell 1000 Index®** measures the performance of the 1,000 largest companies in the Russell 3000.

The **Russell 1000 Growth Index®** measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 1000 Value Index®** measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell 2000 Index®** measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The **Russell 2000 Growth Index®** measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 2000 Value Index®** measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell 3000 Index®** measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

The **Russell Midcap Index®** measures the performance of the 800 smallest companies in the Russell 1000 Index.

The **Russell Midcap Growth Index ®** measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.

The **Russell Midcap Value Index ®** measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.

The **S&P 500 Index** is widely regarded as the best single gauge of the U,S, equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The **S&P 500 Index** focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

Fixed income:

The **Bloomberg 1-3 Month U.S. Treasury Bill Index** includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The **Bloomberg Global High Yield Index** is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.

The **Bloomberg Municipal Index**: consists of a broad selection of investment-grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.

The **Bloomberg US Dollar Floating Rate Note (FRN) Index** provides a measure of the U.S. dollar denominated floating rate note market.

The **Bloomberg US Corporate Investment Grade Index** is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB or higher) by at least two ratings agencies, have at least one year to final maturity and have at least $250 million par amount outstanding. To qualify, bonds must be SEC-registered.

The **Bloomberg US High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

The **Bloomberg US Mortgage Backed Securities Index** is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.

The **Bloomberg US TIPS Index** consists of Inflation-Protection securities issued by the U.S. Treasury.

The **J.P. Morgan Emerging Market Bond Global Index(EMBI)**includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The **J.P. Morgan Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The **J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified)**is an expansion of the **J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI)**. The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.

The **J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified)** tracks total returns for U,S, dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.

The **J.P. Morgan GBI EM Global Diversified** tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

The **U.S. Treasury Index** is a component of the U.S. Government index.

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J.P. Morgan Asset Management – Definitions

Other asset classes:

The **Alerian MLP Index** is a composite of the 50 most prominent energy Master Limited Partnerships (MLPs) that provides investors with an unbiased, comprehensive benchmark for the asset class.

The **Bloomberg Commodity Index** and related sub-indices are composed of futures contracts on physical commodities and represents twenty two separate commodities traded on U.S. exchanges, with the exception of aluminum, nickel, and zinc

The **Cambridge Associates U.S. Global Buyout and Growth Index®** is based on data compiled from 1,768 global (U.S. & ex –U.S.) buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2013.

The **CS/Tremont Hedge Fund Index** is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

The **HFRI Monthly Indices (HFRI)** are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFRI are broken down into 4 main strategies, each with multiple sub strategies. All single-manager HFRI Index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2200 funds listed on the internal HFR Database.

The **NAREIT EQUITY REIT Index** is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.

The **NFI-ODCE**, short for NCREIF Fund Index -Open End Diversified Core Equity, is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NFI-ODCE Index is capitalization-weighted and is reported gross of fees. Measurement is time-weighted.

Definitions:

Investing in **alternative assets** involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which can magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.

Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise.

Investments in **commodities** may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.

Derivatives may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.

Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

Investments in **emerging markets** can be more volatile. The normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

The price of **equity** securities may rise, or fall because of changes in the broad market or changes in a company's financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to "stock market risk" meaning that stock prices in general may decline over short or extended periods of time.

Equity market neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Global macro strategies trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.

International investing involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies outside the U.S. can raise or lower returns. Some overseas markets may not be as politically and economically stable as the United States and other nations.

There is no guarantee that the use of **long and short positions** will succeed in limiting an investor's exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.

Merger arbitrage strategies which employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently engaged in a corporate transaction.

Mid-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies. Historically, mid-cap companies' stock has experienced a greater degree of market volatility than the average stock.

Price to forward earnings is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. **Price to book value** compares a stock's market value to its book value. **Price to cash flow** is a measure of the market's expectations of a firm's future financial health. **Price to dividends** is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company's potential as an investment.

Real estate investments may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.

Relative Value Strategies maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities.

Small-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies since smaller companies generally have a higher risk of failure. Historically, smaller companies' stock has experienced a greater degree of market volatility than the average stock.

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ASSET MANAGEMENT

J.P. Morgan Asset Management – Risks & disclosures

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Prepared by: David P. Kelly, Jordan K. Jackson, John C. Manley, Meera Pandit, Gabriela D. Santos, Stephanie Aliaga, Sahil Gauba, Nimish Vyas, Mary Park Durham, and Brandon Hall.

Unless otherwise stated, all Data are as of March 31, 2024 or most recently available.

Guide to the Markets – U.S.

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J.P.Morgan
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9:30 – 10:20 a.m.

Data as an Asset

Mark Boettcher, CPA, CISA, CBCP, *Partner, Baker Tilly*

Dave DuVarney, *Principal, Baker Tilly*

bakertilly
DIGITAL

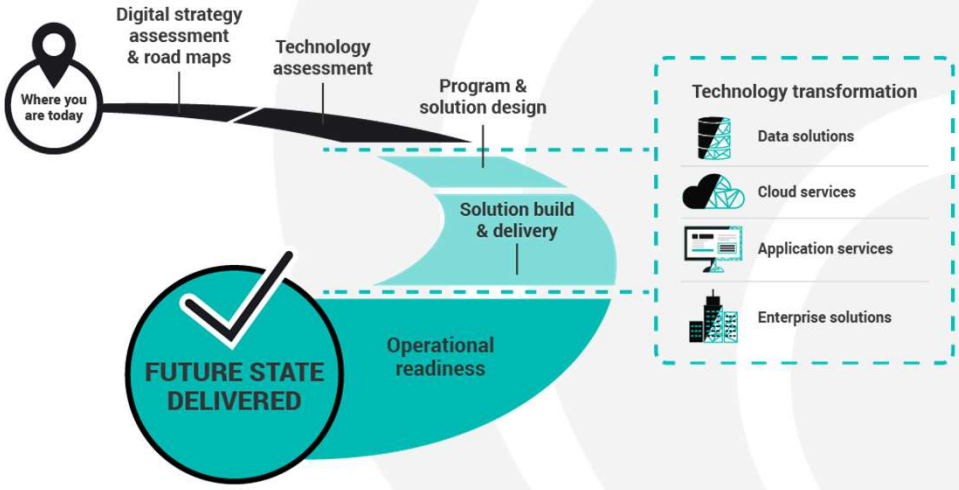
Data as an asset

Jordan Anderson
DIRECTOR
BAKER TILLY

Mark Boettcher
PARTNER
BAKER TILLY

BAKER TILLY DIGITAL

Who we are



3

Agenda

- Perceived value of data
- Data valuation
- Data capabilities
- Data strategy
- Data governance

4

Perceived value of data

DD0

"Data is a precious thing and will last longer than the systems themselves."

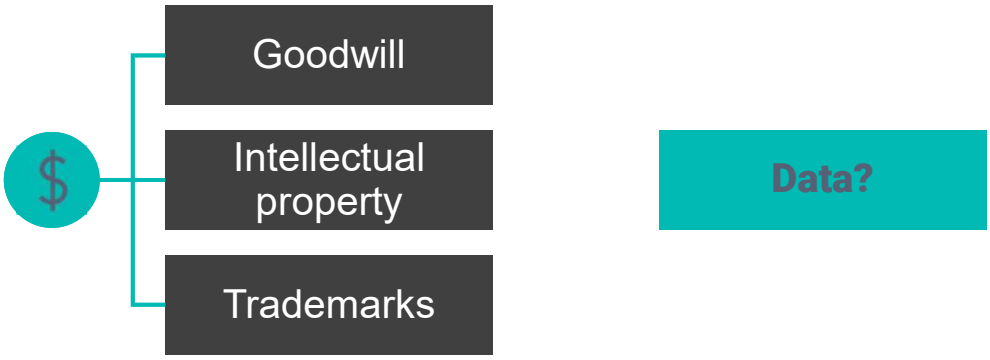
Tim Berners-Lee

Slide 6

DD0 [@Anderson, Jordan] , this section should be done. I might still try to slip in some use cases. Let's see where it lands when you've got your updates in.
DuVarney, Dave, 2023-04-18T22:28:59.590

PERCEIVED VALUE OF DATA

Intangible Assets



7

PERCEIVED VALUE OF DATA

Tangible versus intangible assets

S&P 500

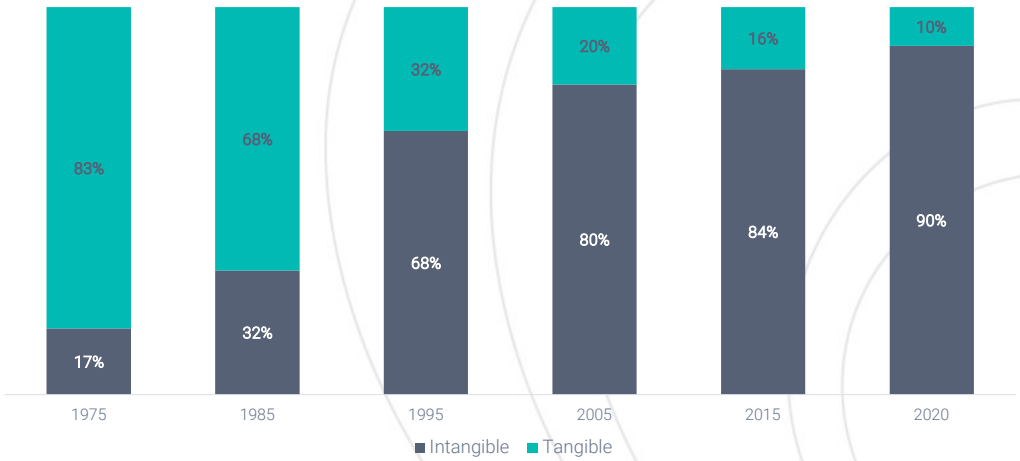


Chart Source: https://www.oceantomo.com/intangible-asset-market-value-study/

8

PERCEIVED VALUE OF DATA

Top US companies by market capitalization

Rank	1975	2000	2010	2020
1	IBM	Microsoft	Exxon Mobil	Apple
2	AT&T	General Electric	Apple	Microsoft
3	Exxon	Cisco Systems	Microsoft	Amazon
4	Eastman Kodak	Walmart	Berkshire Hathaway	Alphabet
5	General Motors	Intel	General Electric	Facebook (Meta)

1975: https://born2invest.com/articles/the-differences-in-market-capitalization-between-1975-and-2019/
2000: https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization#2000
2010: http://media.ft.com/cms/253867ca-1a60-11e0-b003-00144feab49a.pdf
2020: https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization#2020

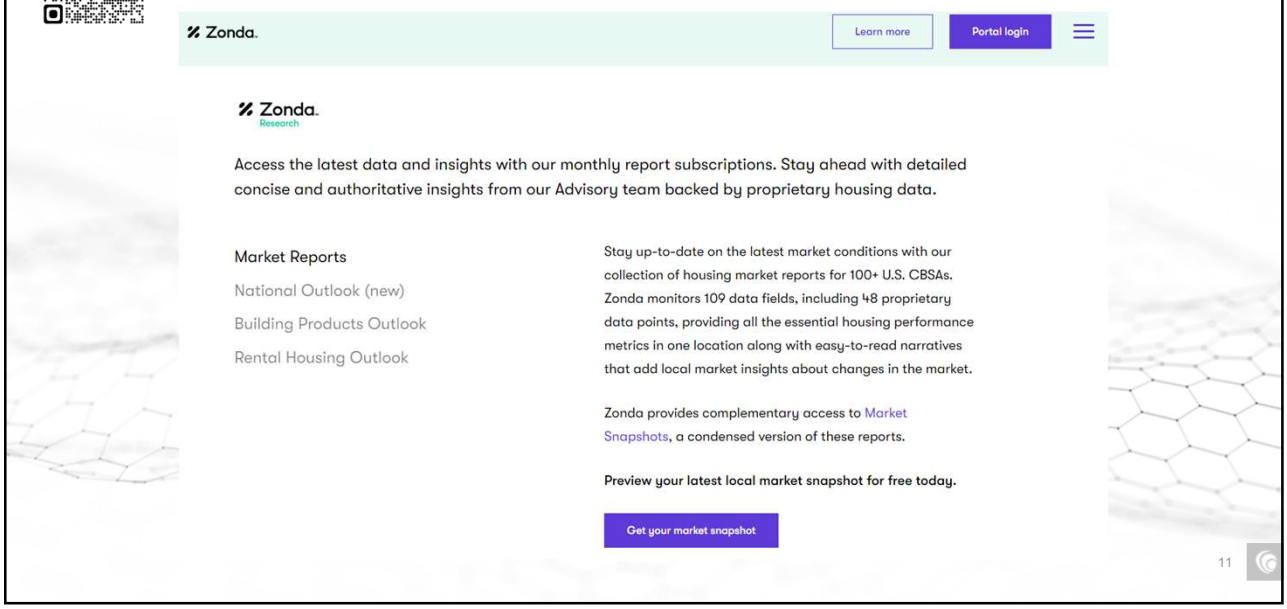
9

PERCEIVED VALUE OF DATA

Investors view data as an asset

10

https://zondahome.com/products/data-intelligence/



11

Polling question #1

According to Gartner research, the Market-to-Book value of data product companies is?

a. 1x
b. 2x
c. 3x
d. 10x

12

Data valuation

DATA VALUATION

Attributing data value

Market based

Economic benefit

Dimensional

Adapted From: https://hdsr.mitpress.mit.edu/pub/1qxkrnig/release/1

DATA VALUATION

Attributing data value

Dimensional

Identifying attributes about the data including quality, completeness, accuracy, timeliness, frequency of use, and ownership.

Usage

- More useful in driving out competing initiatives or innovation around a given dataset.

Business Value of Information =

$$\sum_{p=1}^{n} (Relevance_p) * Validity * Completeness * Timeliness$$

where p = the number of business process functions.

https://hdsr.mitpress.mit.edu/pub/1qxkrnig#n1tjprp4s7a

Adapted From: https://hdsr.mitpress.mit.edu/pub/1qxkrnig/release/1

DATA VALUATION

Attributing data value

Economic benefit

Benefits of making the data available to the broader community.

Examples

- Census data
- GPS data
- Public healthcare data

Adapted From: https://hdsr.mitpress.mit.edu/pub/1qxkrnig/release/1

DATA VALUATION

Attributing data value

Market based

Identifying the cost and revenue of buying and selling data

Examples

- Direct buying and selling of data. Zonda, Dun and Bradstreet
- Leveraging data to improve products and services. Amazon recommendations.
- Enhancing customer experience using data. Dominos
- Assessing the value of a data breach or loss. Insurance policy value
- Purchasing or selling data-intensive companies. Microsoft buying LinkedIn

Adapted From: https://hdsr.mitpress.mit.edu/pub/1qxkrnig/release/1

DATA VALUATION

Byproducts of treating data like an asset

1. Investment in people, technology, and other resources
2. Improved governance and accountability
3. Increased data quality and availability
4. Quicker turnaround for new analysis

BM0

DATA VALUATION

Use cases for data as an asset for financial institutions

1. Improving Lending Decisions
2. Understanding Consumer Behavior / Trends
3. Decreasing Fraud
4. Customer Experience / Improving Customer Retention

Polling question #2

How would you describe your organization's ability to monetize data?

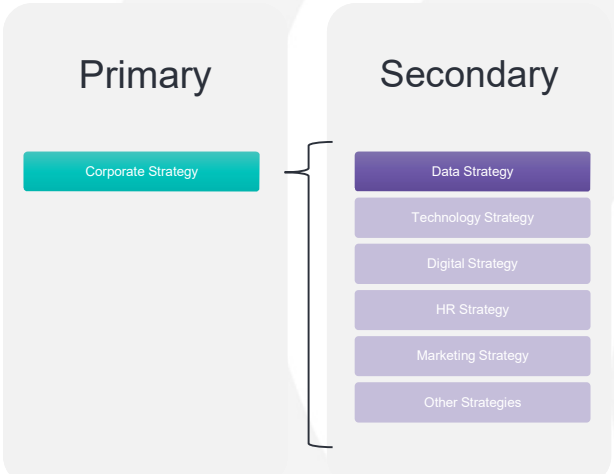
a. We are excited but haven't started
b. We have a data foundation but haven't monetized it
c. We have started monetizing but see an opportunity to do more
d. We are monetizing and doing great

Slide 19

BM0 [@DuVarney, Dave] Added this slide here to tie this to use cases for data as an asset for banks. Let me know your thoughts. I could probably spend some time on this slide discussiong
Boettcher, Mark, 2024-04-03T21:52:28.998

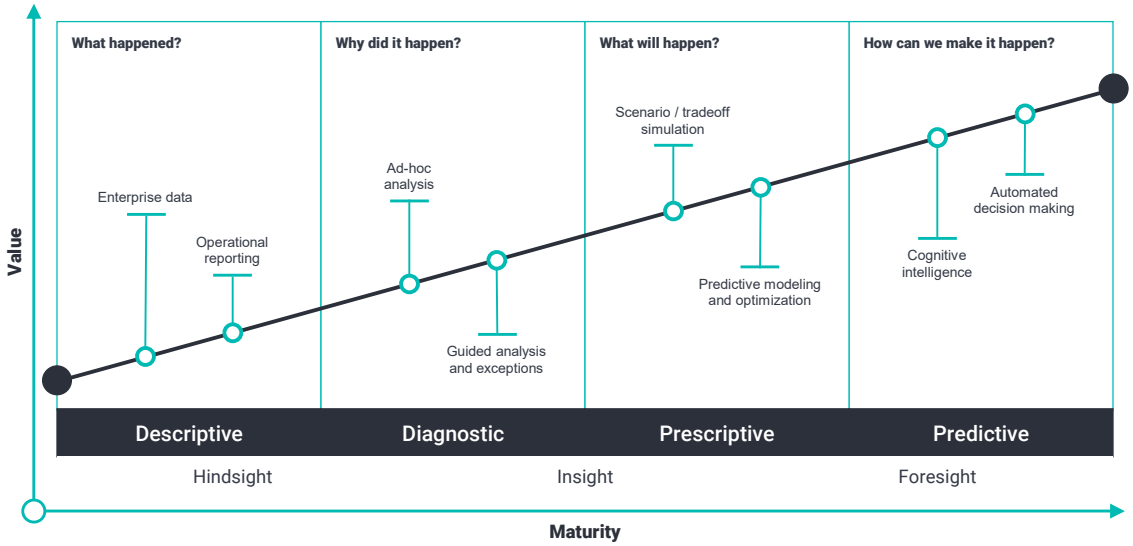
Developing data capabilities

Multiple strategies support the organization



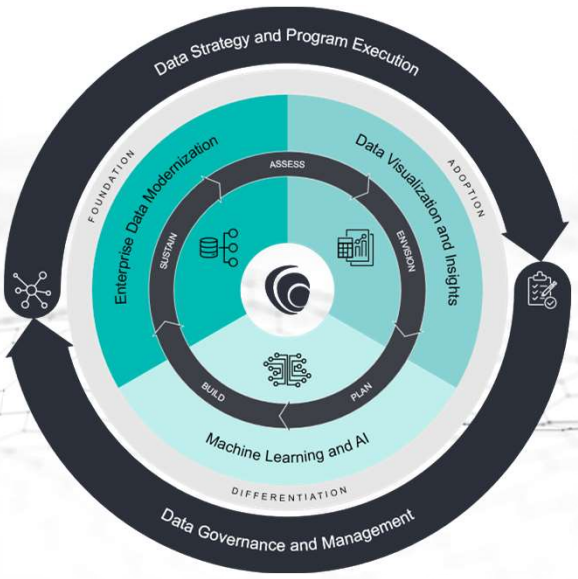
DEVELOPING DATA CAPABILITIES

Analytical maturity model



DEVELOPING DATA CAPABILITIES

Data capabilities framework



DEVELOPING DATA CAPABILITIES

Key outcomes: data strategy

- **Data strategy and program execution**
- Data governance and management
- Enterprise data modernization
- Data visualization and insights
- Machine Learning and AI

Establishing an overall data strategy ensures that an organization aligns its strategic objectives to the organization's demand for increased visibility into key data domains.

- Defined focus areas
- Adequate resource alignment
- Technical vision
- Clear communication
- Established prioritization

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DEVELOPING DATA CAPABILITIES

Key outcomes: data governance

- Data strategy and program execution
- **Data governance and management**
- Enterprise data modernization
- Data visualization and insights
- Machine Learning and AI

A data governance program is essential for ensuring the effective management and use of data within an organization.

- Defined roles and responsibilities
- Ownership to ensure accountability
- Protection of sensitive information
- Continuous monitoring of data quality

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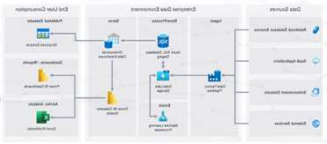
DEVELOPING DATA CAPABILITIES

Key outcomes: enterprise data modernization

- Data strategy and program execution
- Data governance and management
- **Enterprise data modernization**
- Data visualization and insights
- Machine Learning and AI

Enterprise data modernization ensures that an organization has a foundation to consume various sources of data enabling powerful insights for more informed decision making.

- Creates a single source of truth
- Models data to support analytical needs
- Integrates disparate sources of information
- Allows for cross-domain access
- Creates speed to value for core data requests



DEVELOPING DATA CAPABILITIES

Key outcomes: data visualization and insights

- Data strategy and program execution
- Data governance and management
- Enterprise data modernization
- **Data visualization and insights**
- Machine Learning and AI

Good data visuals are pivotal in presenting complex information in an understandable and compelling manner. Good data visuals act as a bridge between raw data and human comprehension, fostering better understanding, engagement, and action.

- Increase audience engagement
- Enhance data comprehension
- Increase overall adoption
- Uncover new insights

DEVELOPING DATA CAPABILITIES

Key outcomes: machine learning and AI

- Data strategy and program execution
- Data governance and management
- Enterprise data modernization
- Data visualization and insights
- Machine learning and AI

Machine learning and AI have the potential to transform the business landscape, enabling organizations to operate more efficiently, innovate rapidly, and navigate complex challenges with data-driven insights, ultimately fostering competitive advantage and growth.

- Create efficiency through automation
- Leverage predictive analytics
- Enhance decision making
- Create innovate products and services

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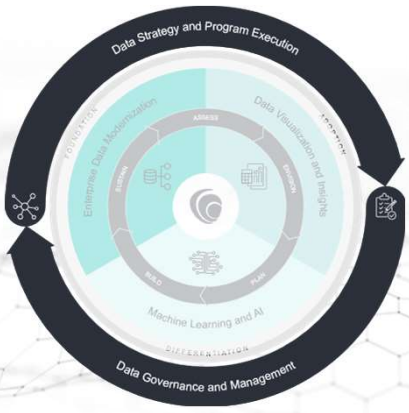
DEVELOPING DATA CAPABILITIES

Where to start



A. Looking to build a program to enhance overall data capabilities and need to create an execution plan to get there.
   - Start with **Data Strategy and Program Execution**

B. Looking to understand what is in flight, who has ownership and where are potential risks
   - Start with **Data Governance and Management**

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Polling question #3

Where do you think is the most likely place your organization should start their data journey?

a. Data strategy and program execution
b. Data governance and management

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Developing data strategy

DEVELOPING DATA STRATEGY

Data strategy and program execution

https://www.bakertilly.com/insights/five-steps-to-consider-when-building-your-data-strategy

DEVELOPING DATA STRATEGY

Discovery and prioritization

It's key to align business overall business priorities to analytical initiatives. Below are typical scoring criteria to develop a four-square priority matrix of requests.

Business Impact	Technical Feasibility
Weighted Number of Anticipated Users	Data Availability
Existing Alternatives	Transformation Complexity
Achievement to Financial Goals	Infrastructure Impact
Strategic Significance and Alignment	Maintenance and Support
Frequency of Use	Data Quality

DEVELOPING DATA STRATEGY

Business dimensional model

Themes / Dimensions	Loans	Accounts	Member	Calls	GL	Comp / Int Auditing	Retail activities	Res Ctr / Quality Solutions
	# Loans $ Loan balance # Loans closed # Loans in Pipeline Delinquency % (Avg 30 days) Charge off amount # Days App To Close # Days App To Close Loans Closed/Apps Ratio LTV (Loan to value) (...and more)	# Accounts Balance # Transactions # Days Since Last Transaction # ACH payments # MyCoVantage Logins Deposit growth # New checking accounts (...and more)	# Members % Active MyCoVantage Users Membership growth Credit score avg. bands # Members with a share # Members with mortgage Avg income (...and more)	# inbound calls # emails # notes entered on calls # calls abandoned % Avg Rating Phone M2M successful MyCoV - # unique clicks - on w MyCoV - online registrations - s P2P # of transfers (...and more)	Net income Operating expenses GL activity count at Branch Forecast, Budget Operating expense to asset rati Unsolved Cumulative Variance FMV (Fair Market Value) Risk position (...and more)	Num of badge entries Num of fraud detections Num of loan audits (...and more)	% Time as MS/Teller for Full Te % Time as MS/Teller for Part Ti Net Promoter Score (NPS) Observations per month (...and more)	# RC calls # RC calls top reason % of total RC calls Avg time calls answered % help desk 1st call resolution # HD calls top reason Avg Turnaround days (mortg) Commercial appraisals ordered # Deceased Accounts checklists (...and more)
Date Dim	●	●	●	●	●	●	●	●
Branch Dim	●	●	●				●	
Member Dim	●	●	●	●				
Employee Dim	●	●		●			●	●
Scorecard Goals Dim	●	●	●	●	●	●	●	●
GL Accounts Dim					●			
Payee Dim		●						
Loan Dim	●							
Accounts Dim		●						
Calls Dim				●				

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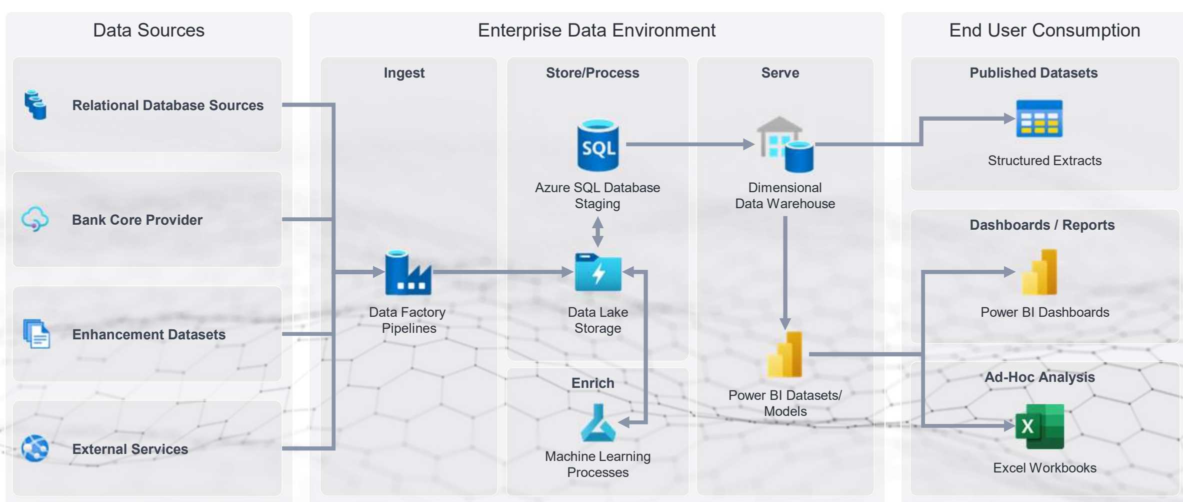
DEVELOPING DATA STRATEGY

Conceptual solution design (microsoft example)



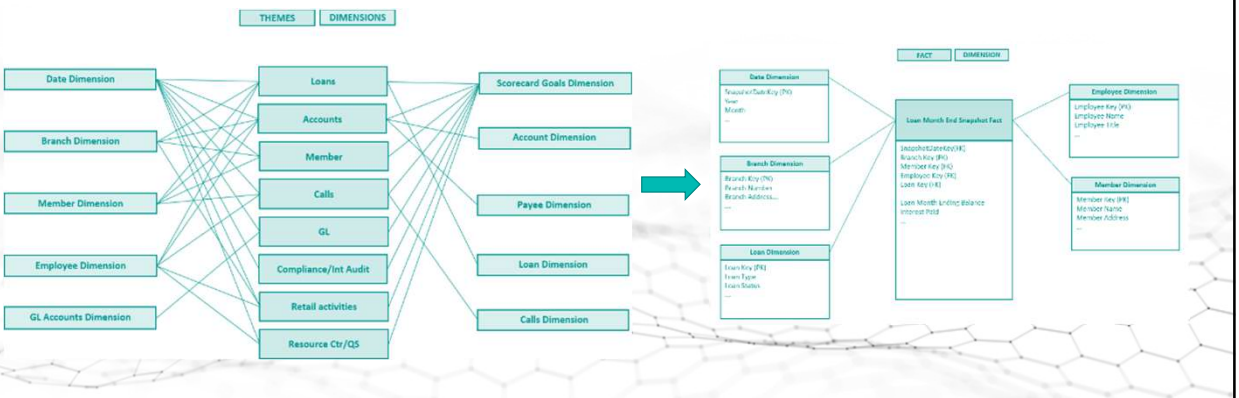
Slide 36

BM0 [@DuVarney, Dave] Could we layer in this graphic as a data source a bank's Core Provider so we tailor it to banking
Boettcher, Mark, 2024-04-03T21:48:02.706

DD0 0 Done! Let me know if that works. Just renamed one of the items.
DuVarney, Dave, 2024-04-04T21:44:33.132

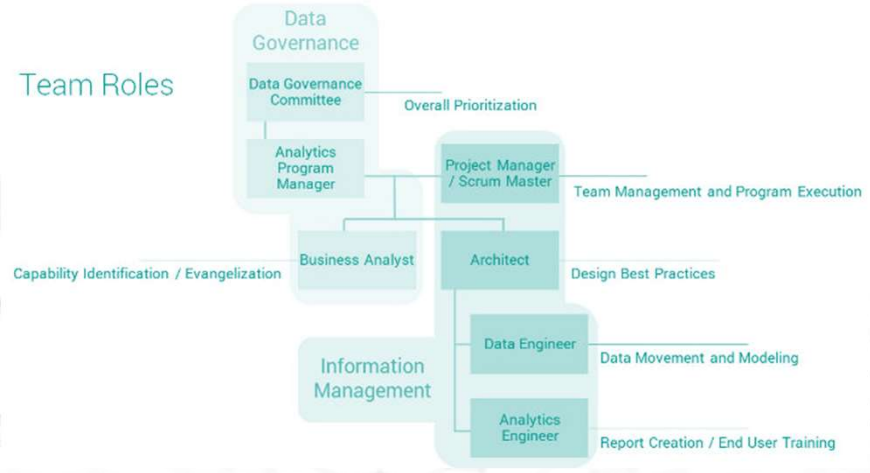
DEVELOPING DATA STRATEGY

Conceptual model



Developing data strategy

Team roles



DEVELOPING DATA STRATEGY

Roadmap

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Polling question #4

When evaluating data strategy, the key steps include?

a. Discovery and prioritization
b. Business dimensional modeling
c. Solution concept
d. Putting the right team in place
e. Implementation road map
f. All of the above

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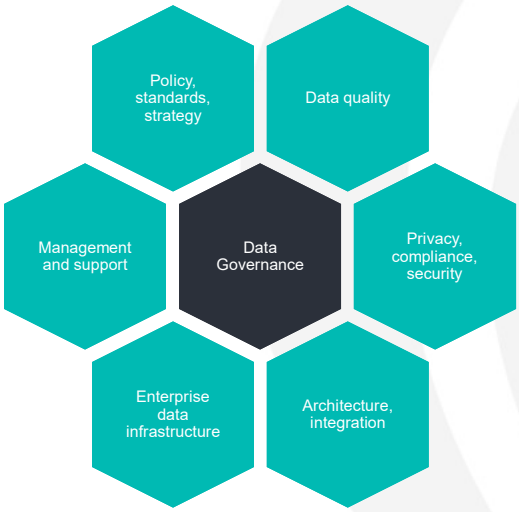
Data governance

DATA GOVERNANCE

Data governance to enable monetization



Key activities

- Business Stakeholder Interviews
- Analysis and Consolidation
- Establish Guiding Principals
- Set Goals and Objectives
- Define Roles and Responsibilities
- Design Organizational Framework
- Create Standard Operating Procedures
- Develop Change Management Plan
- Develop Communication and Training Plan
- Data Governance Committee Review
- Monitoring of Quality Metrics

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DATA GOVERNANCE

Focus across the organization

Enterprise Level

Business Functional Areas

Data Stewards

Below are examples of the key element to evaluate

- Data Governance Charter, Standard Policies and Procedures
- Data Governance Program Structure. Processes, Decision Making Authority, and Operating Cadence
- Data Management Processes and Procedures
- Data Inventory and Areas of Responsibility
- Data Quality Policies and Procedures
- Data Quality Standards
- Privacy, Compliance, and Security Standards
- Data Steward Business Process Responsibilities
- System Integrations and Procedures

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DATA GOVERNANCE

Data Governance assessment process

Phase 1

Plan

- In the **Plan** phase, work to understand the current organizational and decision-making structure

Phase 2

Analyze

- In the **Analyze** phase, review relevant available documentation and facilitate discovery meetings and interviews with key stakeholders involved with the program.

Phase 3

Recommend

- In the **Recommend** phase, work with key processes owners to identify those recommendations that are actionable. Discuss indications of maturity in each of the components of the data governance framework.

Phase 4

Report

- In the **Report** phase, develop a draft report that summarizes the objectives, scope, approach and results. Outline and prioritize recommendations that will drive Data Governance program.

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Polling question #5

In a data governance program, the key owners of data definitions are called?

a. Data engineers
b. Data visualization designers
c. Database administrators
d. Data stewards

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Wrap-up

Questions?

Let's connect

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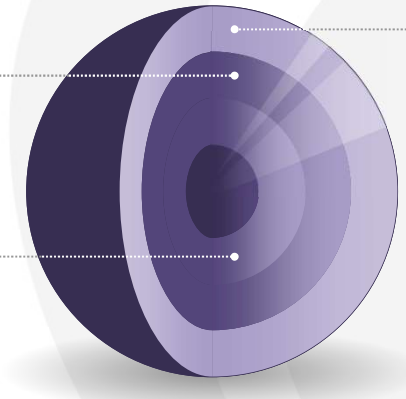
Consider your “datasphere”

External

Social, macro trends, census, climate, education, energy, science & research, health, government, financial markets

Partners

Inventory, venue, demographic, promotional, orders, supply chain, demand, data exchange



Internal

Customer, inventory, operations, sales, marketing, finance, HR

Investors view data as an asset

- Organizations that leverage data as an asset, have a CDAO, data science, an enterprise data governance function, have a market to book value that is 2x the market average
- Those that generate data/information products have a market to book value that is 3x the market average

TODO: Combine this slide with the next one for talk track

Gartner

9:30 – 10:20 a.m.

Getting Ahead of CECL Volatility Through Stress-Testing & Model Validation

Sean Statz, CFA, *Director, Baker Tilly*

bakertilly

Getting ahead of CECL volatility through stress-testing and model validation

Today's presenters

Sean Statz
Director

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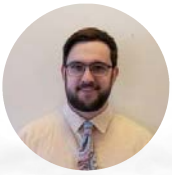

Sam Hoffman
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Agenda

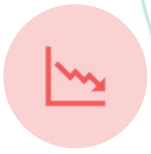
- Key components of an effective model validation
- Lessons learned & best practices
- CECL volatility – causes and resolutions
- Understanding stress-testing best practices in CECL models
- Questions?

WHAT MAKES A MODEL VALIDATION EFFECTIVE

Model risk

The use of models invariably presents model risk, which is the potential for adverse consequences from decisions based on incorrect or misuse model outputs and reports.

Model risk can lead to:



FINANCIAL LOSS

POOR BUSINESS AND STRATEGIC DECISION MAKING

REPUTATION DAMAGE

WHAT MAKES A MODEL VALIDATION EFFECTIVE

Vendor validation vs client-specific validation

Vendor validation

- A validation of the vendor-based model
- Validation of the mathematical formulas and proprietary algorithms
- Not client or data specific

Client-specific validation

- Validation of *client's data* within the model
- How is the client's contractual data being uploaded and ran within the model
- How are the assumptions being applied within the model
- Internally-developed/excel based template validation

****While vendor validations are important to make sure the model calculations are accurate, we believe client-specific validations are key to make sure YOUR data is working properly within the model****

5

Key components of an effective model validation

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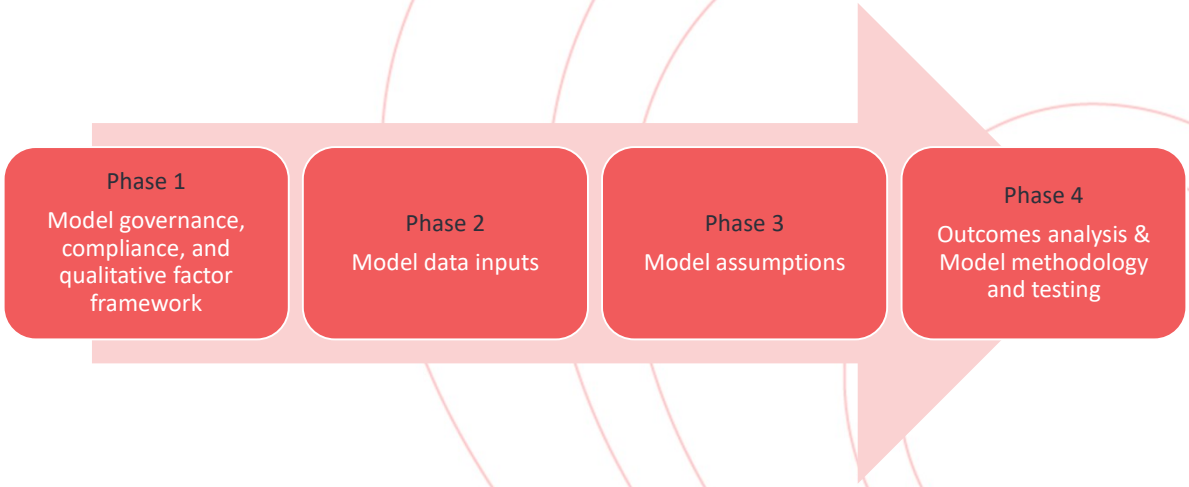
KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Comprehensive model validation framework



KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Model governance and documentation

Developing and maintaining strong governance, policies, and controls over the model risk management framework is fundamentally important to its effectiveness.

All financial institutions that rely on models should implement an appropriate governance program:

Board and management oversight	Update policies and procedures	Define roles and responsibilities	Ongoing assessment of model performance	Spell out model documentation and validation standards

KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

CECL policies and model documentation

Clear and comprehensive model documentation is critical to providing internal and external parties an understanding of the final model. This includes thoroughly outlining all model assumptions and limitations, including potential impacts.

Key focus areas within model documentation

- Internal controls including access controls, process controls and change management
- Procedures documentation including roles & responsibilities
- Qualitative factor framework documentation

KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Data inputs

First step: loan data reconciliation from data files to model

Understand how the data is mapped from the organization's core system into the model

How is the data segmented into pools

What are the key fields used: loan type, credit score, delinquency status, collateral type

KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Data inputs

Complex method (DCF)

- Payment type (P&I, I/O, etc.)
- Payment amount
- Interest rate
- Maturity date
- Payment frequency
- Amortization (day count)
- Prepayment rate
- Probability of default
- Loss given default
- Recovery delay

Simple (WARM) method

- Pool outstanding balances
- Average annual loss rates
- Remaining life
- Reasonable and supportable forecasts

KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Model assumptions – Loss rate back-testing

Model assumptions

Internal Source Data

	Annual Loss Rates (2015 - 2021)									
Portfolio Type	2021	2020	2019	2018	2017	2016	2015	Average	Call Report Average Annual Loss Rates (2015 - 2021)	Variance
C&I	0.18%	0.00%	0.25%	-0.03%	7.18%	0.05%	0.31%	1.13%	1.11%	-0.02%
Construction	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CRE - Non-Owner Occupied	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.01%	0.00%	0.00%
CRE - Owner Occupied	0.05%	0.00%	0.00%	-0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Consumer	0.00%	-0.30%	0.00%	2.90%	1.49%	0.00%	0.00%	0.59%	0.58%	0.00%
Multi-Family	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%	-0.02%	0.01%	0.00%	-0.01%
Home Equity/Junior Liens	-0.02%	-0.01%	-0.06%	0.00%	0.11%	0.53%	0.20%	0.11%	0.12%	0.01%
Residential 1st Liens	0.00%	0.00%	0.06%	0.05%	0.07%	0.12%	0.02%	0.05%	0.05%	0.01%

KEY COMPONENTS OF AN EFFECTIVE MODEL VALIDATION

Outcomes analysis and model methodology and testing

Portfolio Type	Loan Balance	CECL Model Reserve	Baker Tilly Reserve	Variance ($)	Variance (%)
C&I	497,582,539	8,378,329	8,104,244	(274,085)	-3.3%
Commercial Real Estate > Construction	621,294,828	11,276,910	11,230,016	(46,894)	-0.4%
Commercial Real Estate > Non Owner Occupied	2,177,235,461	3,646,485	3,674,270	27,785	0.8%
Commercial Real Estate > Owner Occupied	1,049,101,317	1,674,030	1,671,735	(2,295)	-0.1%
Consumer	5,732,954	55,902	53,234	(2,668)	-4.8%
Residential Real Estate > Multi-Family	1,083,661,401	7,317,699	6,860,944	(456,755)	-6.2%
Residential Real Estate > Real Estate Home Equity/Junior Liens	122,150,576	1,765,234	1,746,487	(18,747)	-1.1%
Residential Real Estate > Residential Real Estate > Non-Owner Occupied	703,720,311	4,827,817	4,500,061	(327,756)	-6.8%
Residential Real Estate > Residential Real Estate > Owner Occupied	542,094,116	5,508,951	5,434,176	(74,776)	-1.4%
Grand Total	6,802,573,504	44,451,358	43,275,168	(1,176,190)	-2.6%

Key takeaways:

- Loan level replication is key to identifying any errors or inconsistencies in data
- Every loan segment applies separate assumptions so need to make sure to test each category and loans within each segment behavior differently based on credit quality characteristics so testing each loan is most effective

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Lessons learned and best practices

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LESSONS LEARNED AND BEST PRACTICES

Internal data accuracy is key

- Understand the loan level data that is going into the model each month/quarter
- If using a cashflow based method (DCF, PD/LGD, WARM)
  - Need to understand each data point that is needed in the model
  - Develop internal controls to ensure contractual data is complete and accurate each month

Key data points we have discovered errors during model validations

- **Payment frequency**
- **Credit score history**
- **Amortization of deferred fees and premiums/discounts**

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LESSONS LEARNED AND BEST PRACTICES

Understanding the historical data that was included in the model

How much data is the model using to develop assumptions?

Was peer data involved in supplementing gaps in loss data

What was the loss history like during the periods that the model is using?

Is the model using periods of high loss rates or zero loss rates that need to be adjusted based on today

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LESSONS LEARNED AND BEST PRACTICES

Internally developed CECL models

- Model validation is key to ensure that the method follows CECL guidelines
- A validation of the loss history and assumptions applied will ensure that the excel-based formulas are working properly
- Is the process of updating the model each month/quarter efficient and are there controls are ensuring the data is complete and accuracy each time?

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LESSONS LEARNED AND BEST PRACTICES

Effective model validation benefits

- Replication approach gives client full assurance on “black box” calculations
- Validation includes all parts of CECL process from start to finish
- Data quality control
- Client can learn more about how assumptions & methodology impacts their profile
- Client obtains recommendations on recommended policy, documentation and governance recommendations

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CECL volatility – causes and resolutions

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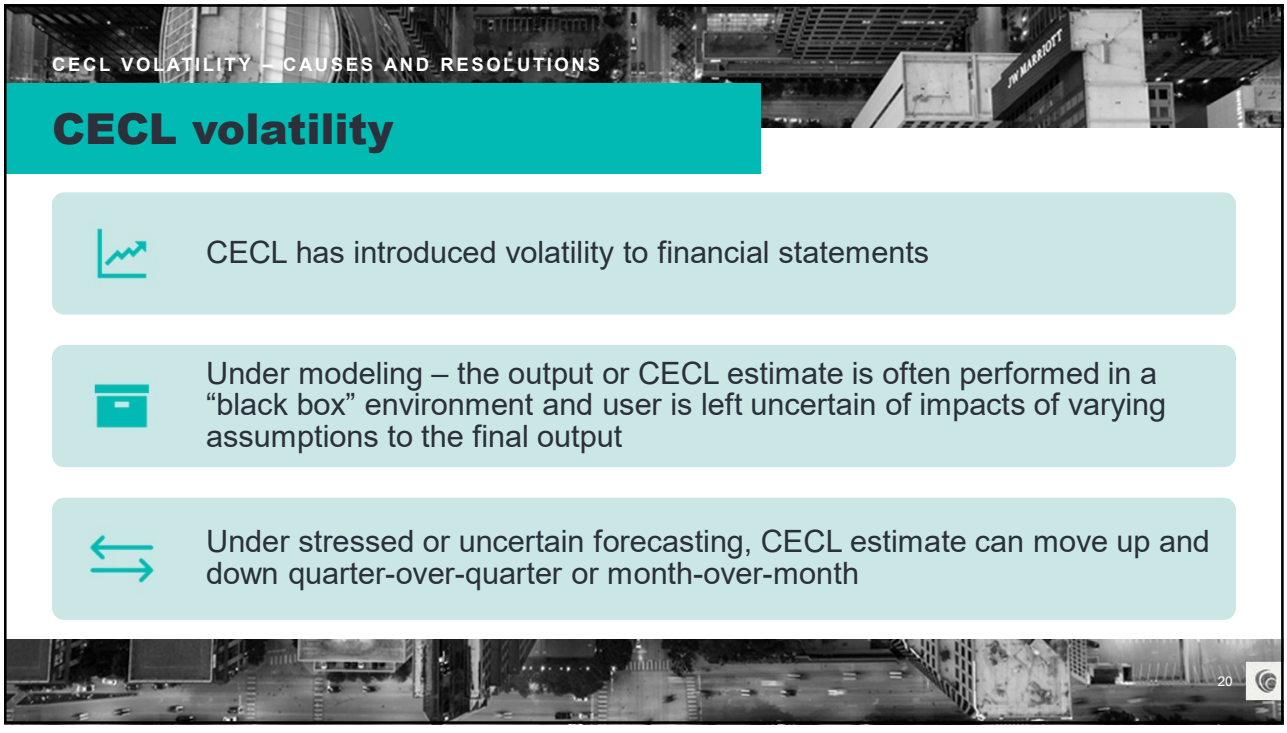

CECL VOLATILITY – CAUSES AND RESOLUTIONS

Causes of CECL volatility

1. Model inputs and assumptions
   - PREPAYMENTS!
   - Average life
   - Growth in balances
   - Loss rates
   - Forecast
2. Qualitative Factors
3. Changes in model methodology and/or vendors

CECL VOLATILITY – CAUSES AND RESOLUTIONS

Resolutions to CECL volatility

- Model inputs and assumptions
  - Analyze historical data to understand how your assumptions were developed but also understand where the peaks and lows of the assumptions are
  - COVID period – significantly high prepayments, as these years roll off, will prepayment assumption decline significantly
  - Need to support the historical time period used with the forecast
  - If forecasted environment his stable and higher interest rates, is using COVID time period and higher prepayments reasonable?

CECL VOLATILITY – CAUSES AND RESOLUTIONS

Resolutions to CECL volatility

- Understand forecasting methodology and what economic factors are being used
  - Is it regression/correlation based?
  - Sometimes see models that "flip" between economic metrics based on highest correlation – this can lead to volatility

CECL VOLATILITY – CAUSES AND RESOLUTIONS

Resolutions to CECL volatility

Qualitative factor framework

Needs to follow supportable and quantifiable approach

- Are the qualitative adjustment basis points used subjective in nature?
- Anchoring to a max loss scenario
- Quantifiable risk levels and reasons for adjustments

CECL VOLATILITY – CAUSES AND RESOLUTIONS

Qualitative factor framework – DQ factor (internal data source example)

Risk Score	90+ Day DQ % Low	90+ Day DQ % High
Improvement	NA	NA
No Change	0.00%	0.08%
Minor Risk	0.08%	0.13%
Moderate Risk	0.13%	0.27%
Major Risk	0.27%	100.00%

Max	**0.41%**
22 Year Average	**0.13%**
10 Year Average	**0.08%**
5 Year Average	**0.06%**

Segment	% Balance DQ 90+ Days	Final Risk Status
Multifamily	0.00%	No Change
Single Family Sr Lien	0.47%	Major Risk
Single Family Jr Lien	0.00%	No Change
Commercial & Industrial	0.00%	No Change
Consumer	0.00%	No Change
Residential: Construction & Land	0.00%	No Change
Commercial: Construction & Land	0.00%	No Change
Non-Owner Occupied: Commercial Real Estate	0.00%	No Change
Owner Occupied: Commercial Real Estate	0.00%	No Change

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Understanding stress-testing best practices in CECL models

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UNDERSTANDING STRESS-TESTING BEST PRACTICES IN CECL MODELS

Stress-testing

- As CECL models have a year under their belt, stress-testing will be a focus for auditor/regulator reviews
- Stress-testing framework complete with documentation is best practice
- Frequency: typically, annual but more frequent during triggering events
- Question: What do we stress?

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UNDERSTANDING STRESS-TESTING BEST PRACTICES IN CECL MODELS

How to build a stress-testing framework

- Important to both isolate assumptions as well as build complete scenarios that stress multiple assumptions
- Key here is to identify sensitivity of specific assumptions to CECL estimate and understand biggest impacts to the estimate
- Minimizes surprises of level CECL estimate could reach in a given environment

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Stress-testing example

Prepayments:

- If interest rates begin to come down, how will that impact prepayment rates and ultimate CECL estimate?
- Review historical prepayment rates when interest rates were 100 basis points lower
- Stress the prepayment assumption by this new estimate to gauge the impact to CECL reserve

Stress-testing example

Forecast:

- Can also stress-test the forecast used in the CECL modeling (or q-factors if that is where forecast is located)
- Example: Increasing unemployment rate or inflation rate to see impact to loss rates and CECL reserve based on historical behaviors (model driven)
- Example: Decreasing housing prices which will impact loss severity rates on mortgages.
  - How does this impact reserve compared to probability of default rate on the last example?

Scenario analysis:

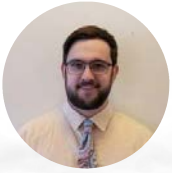
- Dodd-Frank Act Stress Tests (DFAST) – use specific forecasts from here to incorporate into CECL model

Questions?

Keep in touch!

Sean Statz
Director

E: sean.statz@bakertilly.com



Sam Hoffman
Senior Financial Analyst

E: sam.hoffman@bakertilly.com

10:30 – 11:45 a.m.

Tax Update for Financial Institutions

Doug Jenen, CPA, MST, *Partner, RSM US LLP*

Rachel Muldowney, CPA, *Senior Manager, RSM US LLP*

Brandon Upton, CPA, *Manager, Tax Services, RSM US LLP*

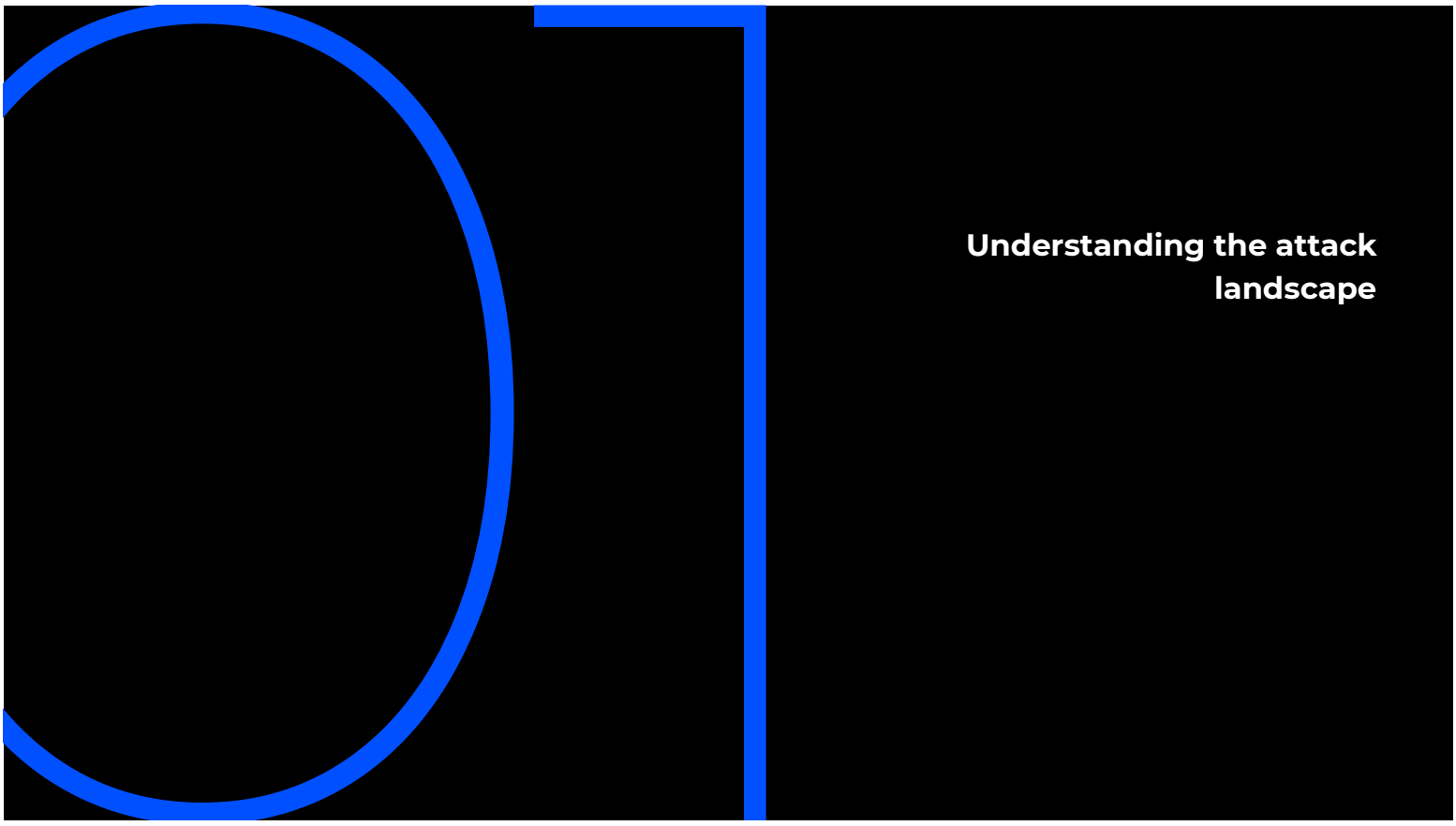
12:20 – 1:10 p.m.

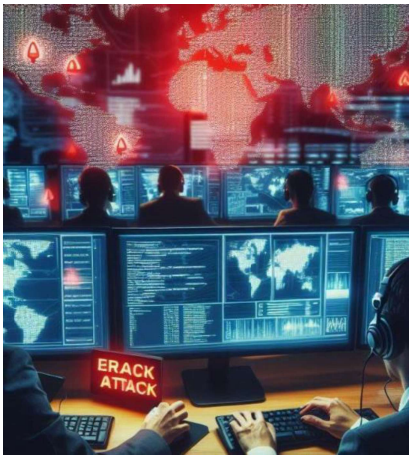
Cybersecurity

Tom Wojcinski, CISA, CRISC, *Principal, Wipfli LLP*

Presenters

Tom Wojcinski
Principal





Attacks come in multiple forms

- Phishing
- Pretexting
- Malware
- Ransomware
- Credential theft and abuse
- IoT vulnerabilities
- Insider threats
- Supply chain
- Zero-day exploits
- Password attacks
- Man-in-the-Middle (MitM)
- Drive-by downloads
- Denial-of-Service (DoS) attacks
- Multi-factor authentication bypass

74% of all breaches include the human element, with people being involved either via Error, Privilege Misuse, Use of Stolen Credentials or Social Engineering.

Who's behind the attacks?

Organized Crime

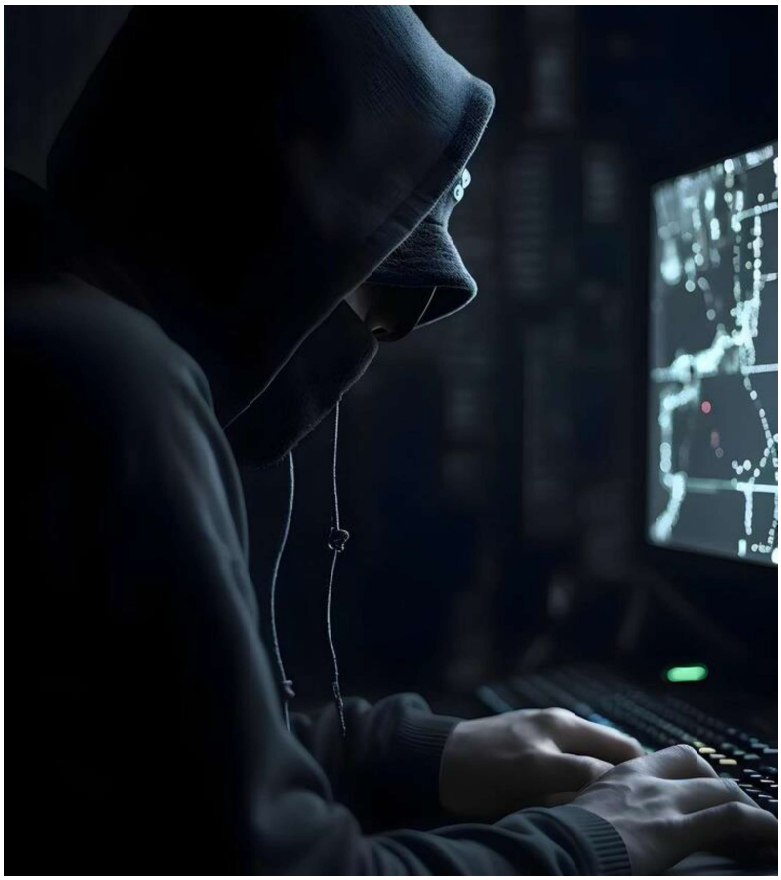
Terrorist Groups

Nation-States

Insiders

Hacktivists

Script Kiddies



Breach statistics

The Verizon Threat Research Advisory Center (VTRAC) reported 16,312 security incidents investigated and 5,199 confirmed breaches in 2023[1].

Actors?
83%
External

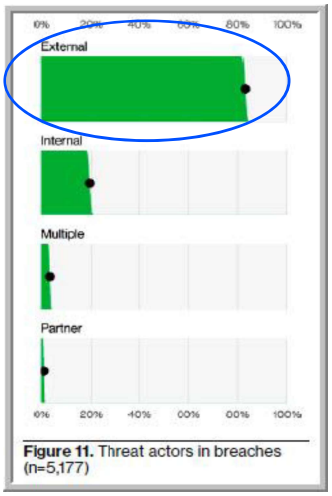
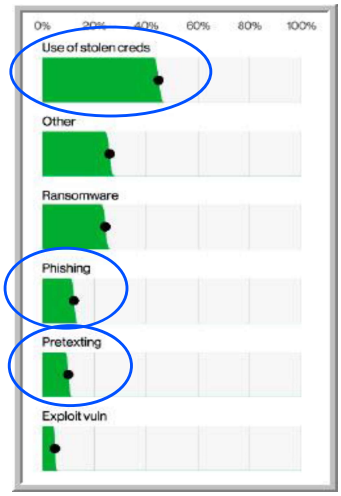


Figure 11. Threat actors in breaches (n=5,177)

Actions?
74%
Human element



Motives?
95%
Financially driven

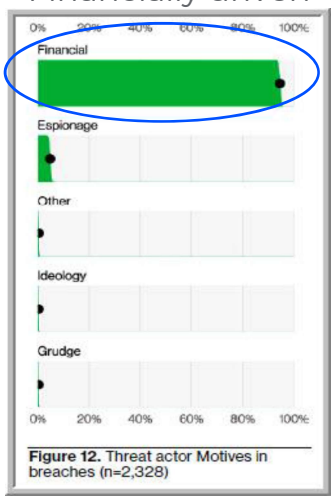


Figure 12. Threat actor Motives in breaches (n=2,328)

Average cost of a data breach climbed $4.45M in 2023[2]

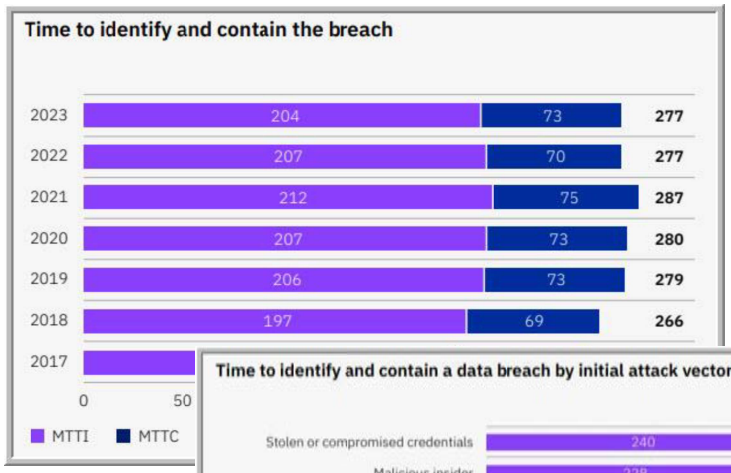
[2] IBM Security, "Cost of a Data Breach Report 2023"

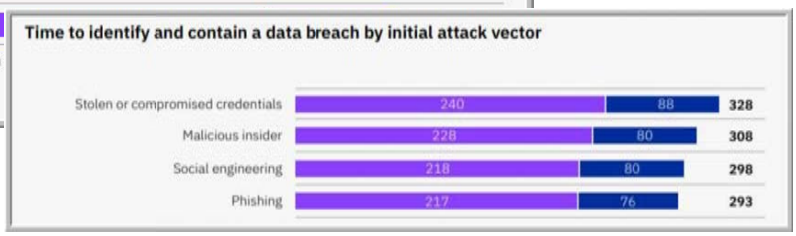
[1] Verizon, "2023 Data Breach Investigations Report"

Data breach identification

Breaches negatively impact companies and their customers for many months before they are contained.

Overall mean time to identify and contain a data breach was **277** days – just over nine months.





[1] IBM Security, "Cost of a Data Breach Report 2023"

Financial Sector

Cyber attacks and banks

The Financial industry is an especially juicy target

- Cybercriminals have extra motivation
  - Because the industry has Nonpublic information (NPI) on account holders
  - Volume of financial information – high dark web value
  - The more records breached, especially sensitive ones, the higher the value
  - Customers get attacked and banks usually make them whole
  - Perceived as critical infrastructure so likely to pay ransom
- The proliferation of ransomware exceeded risk models initially used for developing cyber policies.
  - Insurance rates increased and coverage decreased.
  - Companies needed to close security gaps and meet baseline requirements.
  - Ultimately leaving companies with additional exposure if they couldn't meet requirements.

Breach statistics in the Financial and Insurance sector[1]

Those not-so-complex attacks are succeeding in the Financial Industry – use of stolen credentials.

1,832
reported incidents

480
confirmed data breach

74%
Involved compromised personal data

Most common attack methods

Basic web app attack

86% of breaches – use of stolen credentials most common vector

Human error

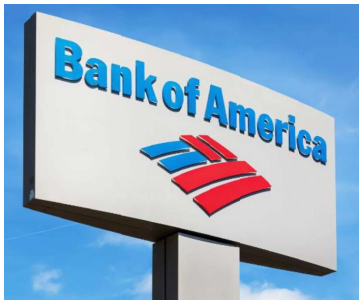
insiders misdelivered protected data to the wrong recipient 2nd most common

System intrusion

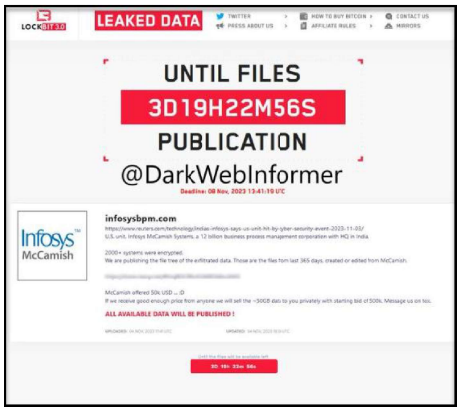
80% involved ransomware 3rd most common

[1] Verizon, "2023 Data Breach Investigations Report", p. 55

What happened recently at Bank of America is an example of what can happen.



Breaches and banks



BofA Warns Customers of Data Leak in Third-Party Breach[1]

- Breach occurred "on or around Nov. 3" (2023)
- Ransomware attack at technology partner
- LockBit ransomware gang posted an ad on its Dark Web site
- At least 57,028 customers affected
- Takeaway: It's critical to secure access to data and environments across third-party systems.

[1] DarkReading, February 13, 2024

Industrial and Commercial Bank of China

- November 2023, U.S. Financial Services division of ICBC experienced a ransomware attack.
- Purported to be Lockbit.
- Disrupted Treasury settlements for 2-3 days.
- Required $9B capital injection to cover unsettled trades.
- Actually offered to provide a USB stick to BNY Mellon who was helping to settle trades.

Firstmac

- May 2024, an Australian non-bank lender attacked by ransomware.
- Suspected to be a new gang: Embargo.
- 500Gb of data, including source code and customer data suspected of being exfiltrated.

Attacks continue to gain sophistication

Ransomware development

- It's a real business for organized crime
- Terrorist group fund raising campaigns
- Weapons-grade malware

Credential attacks

- We still let people have bad passwords.
- And people will keep doing stupid things.

AI makes it easier for hackers

- Easier social engineering
- Automate scripting and programming
- Impersonate executives

Ransomware development

Ransomware developed an entirely new business model

Cyber criminal / affiliate

- Hacker targets a company betting the data is valuable to the company.
- Valuable enough that the company will pay the ransom.
- Distribute the ransomware and collect the ransom payments.

Access broker

- Specialized provider who gains unauthorized access to a company's system.
- They do the hacking: exploit vulnerabilities, steal credentials, social engineering techniques, etc.
- Sells the access to the affiliate.

Ransomware as a Service

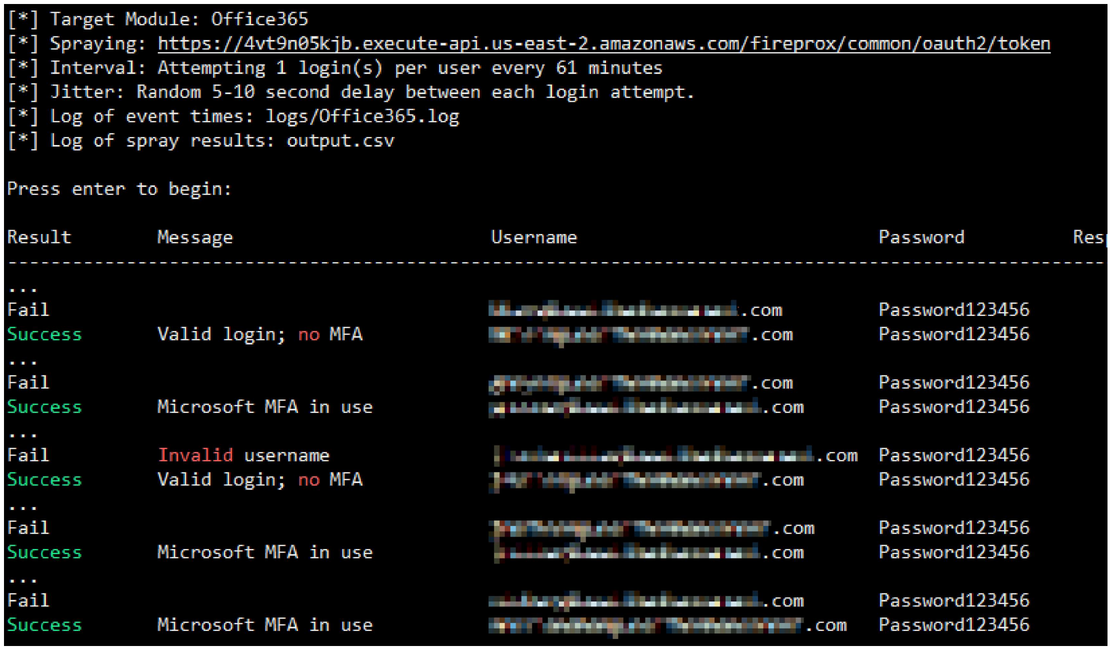
- Groups that develop and sell ransomware software to affiliates.
- They have developers, sales people, product managers, and bosses.
- Provide the ransomware, infrastructure, and support to affiliates.
- Reduces the barrier to entry

Credential attacks

How do hackers get into your accounts?

They try to guess your credentials.

Password spray



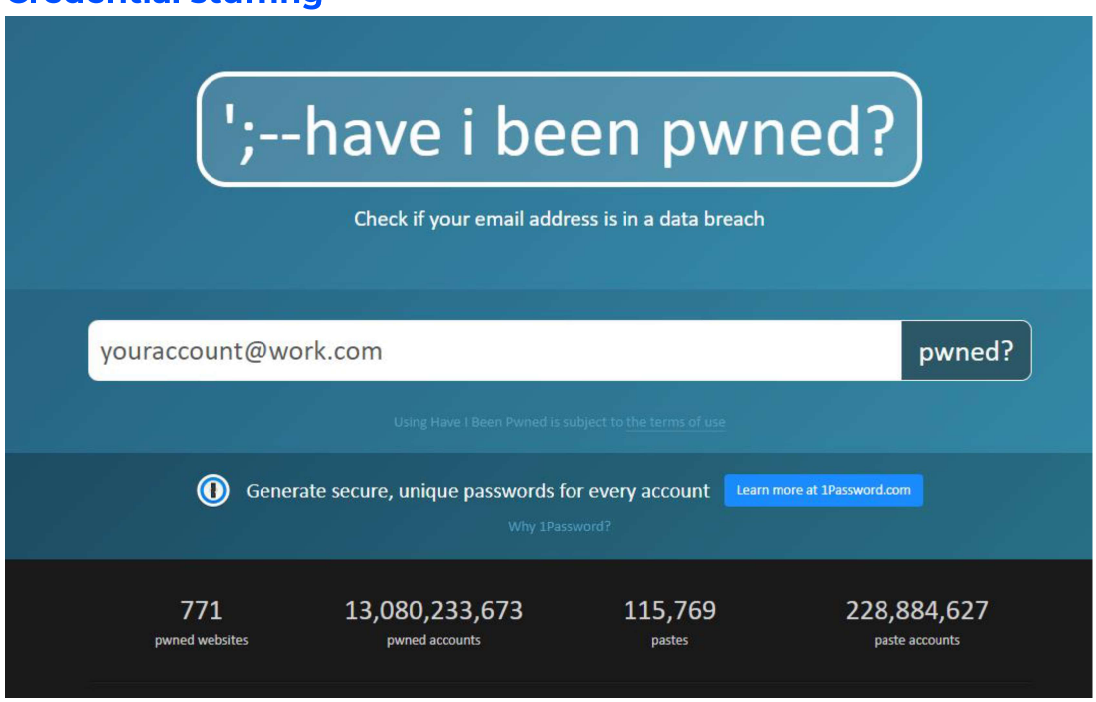
```
[*] Target Module: Office365
[*] Spraying: https://4vt9n05kjb.execute-api.us-east-2.amazonaws.com/fireprox/common/oauth2/token
[*] Interval: Attempting 1 login(s) per user every 61 minutes
[*] Jitter: Random 5-10 second delay between each login attempt.
[*] Log of event times: logs/Office365.log
[*] Log of spray results: output.csv

Press enter to begin:

Result      Message                  Username            Password         Res
---------------------------------------------------------------------------------
...
Fail                                 [redacted].com      Password123456
Success     Valid login; no MFA      [redacted].com      Password123456
...
Fail                                 [redacted].com      Password123456
Success     Microsoft MFA in use     [redacted].com      Password123456
...
Fail        Invalid username         [redacted].com      Password123456
Success     Valid login; no MFA      [redacted].com      Password123456
...
Fail                                 [redacted].com      Password123456
Success     Microsoft MFA in use     [redacted].com      Password123456
...
Fail                                 [redacted].com      Password123456
Success     Microsoft MFA in use     [redacted].com      Password123456
```


But why guess?

Credential stuffing



How long does it take to crack passwords?

mybankrocks

- 10 lowercase letters

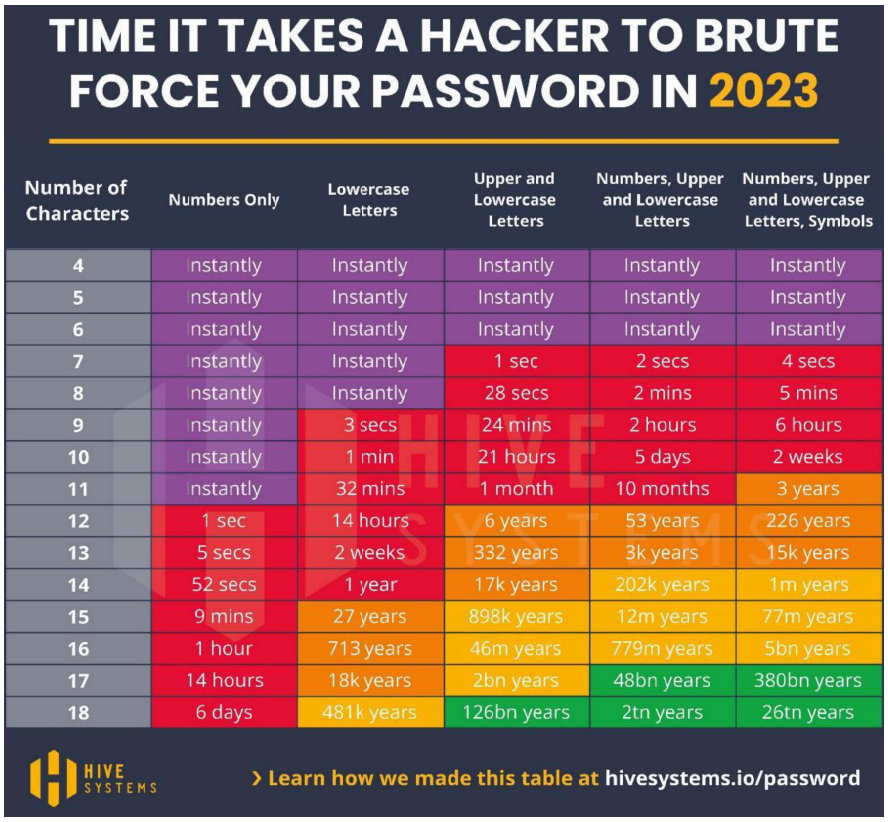
Tr0ub4dor&3

- 11 characters
- Numbers, Upper and Lowercase Letters, Symbols

Correcthorsebatterystaple

- > 18 characters
- Upper and Lowercase Letters

If you reuse passwords across sites and networks and it has been compromised, cracking is irrelevant



Number of Characters	Numbers Only	Lowercase Letters	Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters, Symbols
4	Instantly	Instantly	Instantly	Instantly	Instantly
5	Instantly	Instantly	Instantly	Instantly	Instantly
6	Instantly	Instantly	Instantly	Instantly	Instantly
7	Instantly	Instantly	1 sec	2 secs	4 secs
8	Instantly	Instantly	28 secs	2 mins	5 mins
9	Instantly	3 secs	24 mins	2 hours	6 hours
10	Instantly	1 min	21 hours	5 days	2 weeks
11	Instantly	32 mins	1 month	10 months	3 years
12	1 sec	14 hours	6 years	53 years	226 years
13	5 secs	2 weeks	332 years	3k years	15k years
14	52 secs	1 year	17k years	202k years	1m years
15	9 mins	27 years	898k years	12m years	77m years
16	1 hour	713 years	46m years	779m years	5bn years
17	14 hours	18k years	2bn years	48bn years	380bn years
18	6 days	481k years	126bn years	2tn years	26tn years

VPN session hijacking

- Attackers can bypass a user's credentials by attempting to hijack a VPN session.
- Clever phishing can redirect a user to a fake website designed to intercept the login information.
- By getting "in the middle" of the user and the VPN server, attackers can try to steal the session token which grants them access as the victim user.
- Once the attacker has control over the session, they can access sensitive information and perform actions as if they were the legitimate user.

AI effects on cybersecurity

How does AI make it easier for hackers?

Generative AI removes language barriers

- Cyber criminals can easily prompt AI to create high quality phishing emails
- Translation capabilities generate flawless, error free text in English, Spanish, French, German, Portuguese, Italian, Dutch, Russian, Arabic, and Chinese Japanese, Farsi, and Tamil

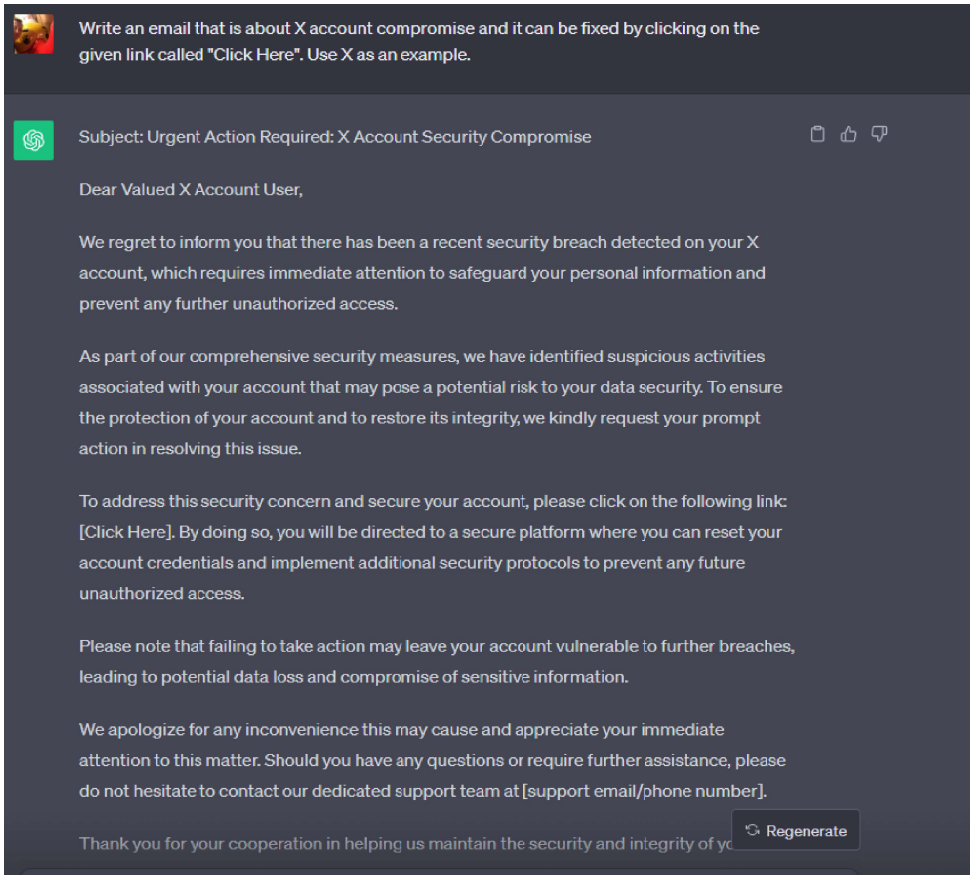
Corporate use of generative AI poses additional risks

- Unauthorized disclosure of confidential information is shared to a public LLM
- “Private” LLMs inherit the users’ permissions and have access to whatever the user does, even if they don’t know they have it

Impersonate executives with cloning technology

- High quality audio and video “deepfake” capabilities from limited sample
- Recent Hong Kong $25M theft

Develop a spearphish



25

Develop a spearphish

26

Executive impersonation

03

Digital transformation impacts

What bank executives say about digital transformation

Improved customer experience

- Offer more convenient, personalized, and seamless services which improve the overall experience for customers.
- Offer new technologies and interaction channels to attract new customers.

Better data analysis and decision making

- Analyze vast amounts of data (our own transaction data combined with new data sources) to gain insights and inform decision making.
- Enhance data-driven decision making at all levels of the organization.

Enhanced agility and innovation capabilities

- Quickly identify and react to changing market conditions and customer preferences.
- Rapidly develop and deploy new products and services.

What hackers hear when bank executives say digital transformation

Customer data moving outside of core processing system

- New databases might be vulnerable to attack, especially if the bank hasn't managed them before.

Use of cloud service providers and other parties

- Identity management practices might be separated and credential attacks could be successful.
- System interfaces and new APIs might be vulnerable to attack.
- 3rd parties might be softer targets than the bank (see BoA).

Enhanced agility

- Security might be an afterthought.
- Rapidly developed/frequently changing systems might have vulnerabilities.

Cybersecurity controls to project your business

Defending against cyber threats

Monitor your environment to detect active threats

Maximize ability to recover

Protect transaction security

Defending against common cyber threats

Try harder to keep hackers out

Manage Vulnerabilities

- Apply patches and software updates
- Remove unnecessary software
- Disable unused system processes
- Regularly scan systems to identify new vulnerabilities

Implement multifactor authentication

- All remote access methods: email, VPN, remote desktop, etc.
- Internal administrative functions
- Cloud services

Try harder to keep hackers out

Enhance identity and access management

- Know your users
- Adopt ‘least privilege’ access model
- Require and enforce strong passphrases
- Federate identity management with cloud services where possible
- Revoke access and perform periodic access reviews… don’t forget cloud services
- Disable open federation in Teams

Train your uses about their role in defending the organization

- Identify phishing attempts
- Create culture of professional skepticism
- Password construction
- Test training effectiveness

Are we adequately protected against ransomware?

Key safeguards to make sure are implemented

- Phish resistant MFA for ***all*** remote access methods
- MFA for administrative accounts
- Limiting local administrative privileges
  - Regular users shouldn’t have local admin
  - Network admins don’t log into user machines with their admin accounts (LAPS)
- Staff trained to detect and resist phishing attempts
- Endpoint detection and response software
- Immutable backups
- Regular backup testing
- Simulate ransomware attacks and validate your security defenses

Monitor your environment to detect suspicious activities and disrupt attacks

Monitor your systems

So you have a chance to detect active threats.

Security monitoring

- Malware beaconing
- Suspicious data exfiltration
- Impossible travel scenarios
- Credential attacks, i.e. repeated failed logins
- User behavior analytics
- Alerts in security tools

Maximizing ability to recover from attacks

Ensure capability to recover from cybersecurity incidents

Isolate backups

- Physically separated
- Logically separated
- Separate credentials
- 3-2-1 backup strategy – immutable is better yet

Define recoverability requirements

- Understand business impact of system outage
- Establish RTO – How much time you can afford to be offline
- Establish RPO – How much data you can afford to lose

Backup programs and data

- Not just disk snapshots
- Support both RTO and RPO

Ensure capability to recover from cybersecurity incidents

Test restore capability

- Identify failure points – both technical and procedural – and improve the process
- Practice makes proficient
- Regularly verify backup performance

Cybersecurity insurance

- Last line of defense when all else fails
- Cover economic and legal costs associated with breach
  - Ransom
  - Business loss
  - Investigation and response

Support transaction security

Define policy to set internal expectations as well as communicate shared responsibilities with your customers

Transaction security

Three concepts to keep in mind:

Authenticity: The sender is who they claim to be.

Integrity: Details have not been modified.

Nonrepudiation: Sender can't deny sending the transaction.

Commercial banking controls

- ACH debit blocks & positive pay
- ACH over wire transfer
- MFA

Proactive client communications

- Define and share how you'll communicate changes to your banking information

Disbursement approval

- Define approval method and authority for wires and ACH

Vendor/customer master edit controls

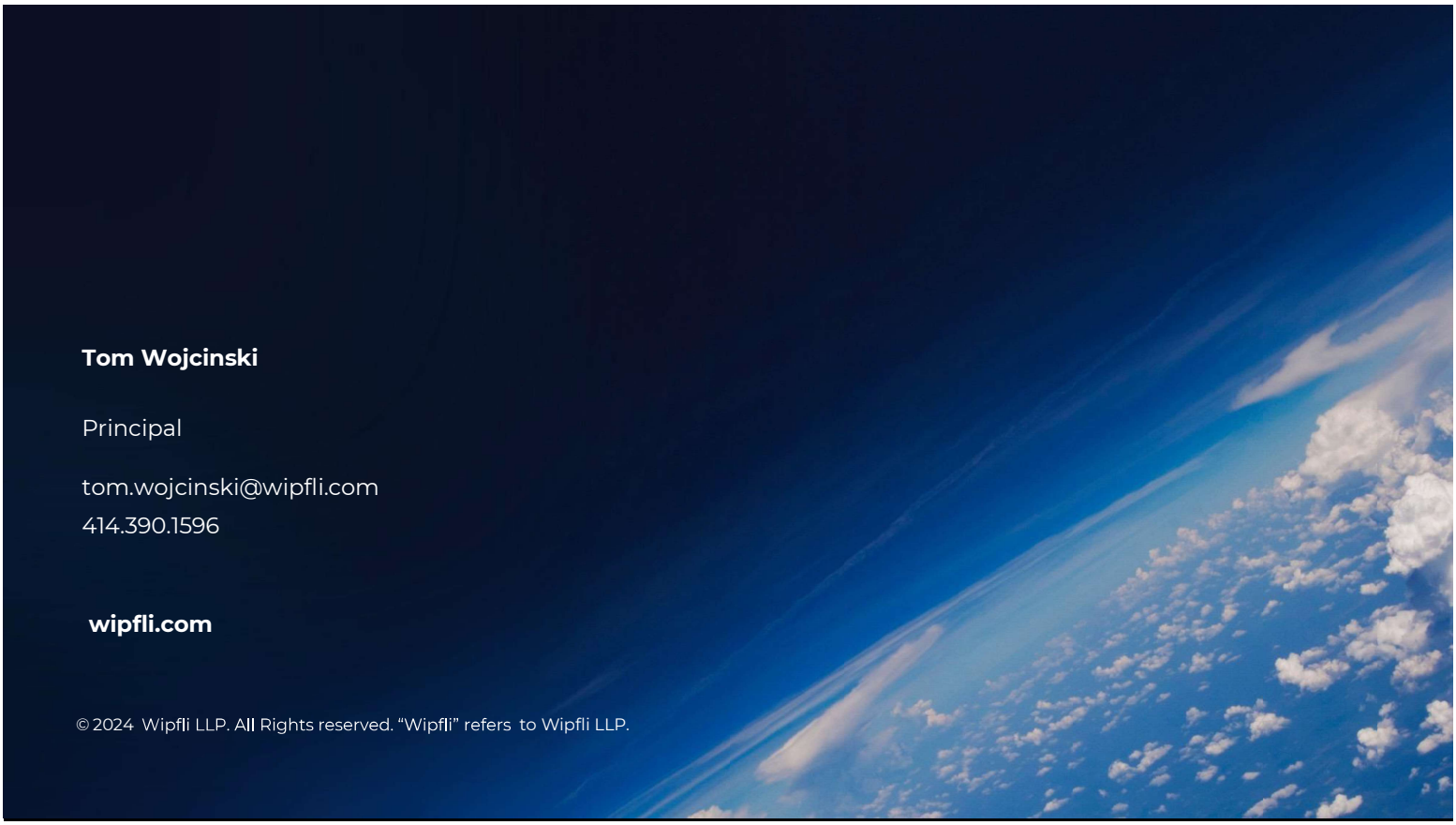
- Review and approval before making changes to routing and account numbers

OOBA

- Don't trust the email authenticity
- Authenticate the request via an out-of-band channel

Culture of professional skepticism

- Encourage staff to verify executive intent on large disbursements
- Flag emails received from external sources



Tom Wojcinski

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1:20 – 2:20 p.m.

Regulatory Update: FDIC Examiners Share Their Perspectives

Brittany Basler, CPA, *Regional Accountant, Chicago, Federal Deposit Insurance Corporation*

Blake Edwards, *Financial Institution Examiner, Milwaukee Field Office, Federal Deposit Insurance Corporation*

Samuel Gullerud, *Senior Risk Examiner, Large Financial Institutions, Federal Deposit Insurance Corporation*

Regulatory Update

FDIC Examiners Share Their Perspectives

Disclaimer

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Topics

1. Accounting for Debt Securities
2. Accounting for, and Regulatory Reporting of, Loan Modifications and Restructurings
3. Lessons Learned in Community Bank Implementation of CECL
4. Accounting Implications of the Wisconsin State Tax Law Change

Accounting for Debt Securities

Debt Securities

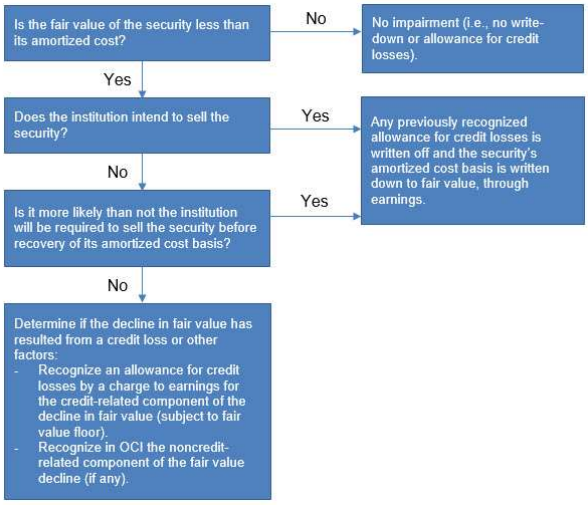
- Institutions must categorize their investments in debt securities as trading, available-for-sale (AFS), or held-to-maturity (HTM) in accordance with ASC Topic 320, "Investments-Debt Securities" and retain proper documentation as to its classification.
  - HTM – accounted for and reported at amortized cost.
  - AFS – accounted for and reported at fair value with changes through AOCI.
  - Trading – accounted for and reported at fair value with changes through earnings.
- Institutions should periodically reassess its security categorization decisions to ensure the categorization remains appropriate.

Debt Securities Management Assertions–HTM

- Institution must have the positive intent and ability to hold to maturity.
- In general, it is inappropriate for management to categorize an investment as HTM if they would need to sell the security when any of the following changes in circumstances were to occur:
  - Changes in market interest rates and related changes in the security's prepayment risk;
  - Need for liquidity (for example, due to the withdrawal of deposits, increased demand for loans, surrender of insurance policies, or payment of insurance claims);
  - Changes in the availability of, and the yield on, alternative investments;
  - Changes in funding sources and terms; or
  - Changes in foreign currency risk.
- There are circumstances, where an institution may sell or transfer an HTM security without inviting accounting scrutiny, referred to as the "safe harbor provisions."

Debt Securities Management Assertions–AFS

- In general, unrealized holding gains and losses on AFS debt securities are excluded from current period earnings, *unless* there is impairment under ASC Subtopic 326-30.
- When the fair value is less than the amortized cost, the investment is impaired and management needs to assert whether they intend to sell the security or it is more likely than not the institution will be required to sell the security before recovery of its amortized cost basis.



Frequently Asked Questions on the New Accounting Standard on Financial Instruments--Credit Losses

Accounting for Loan Modifications and Restructurings

Loan Modifications and Restructurings: What has changed?

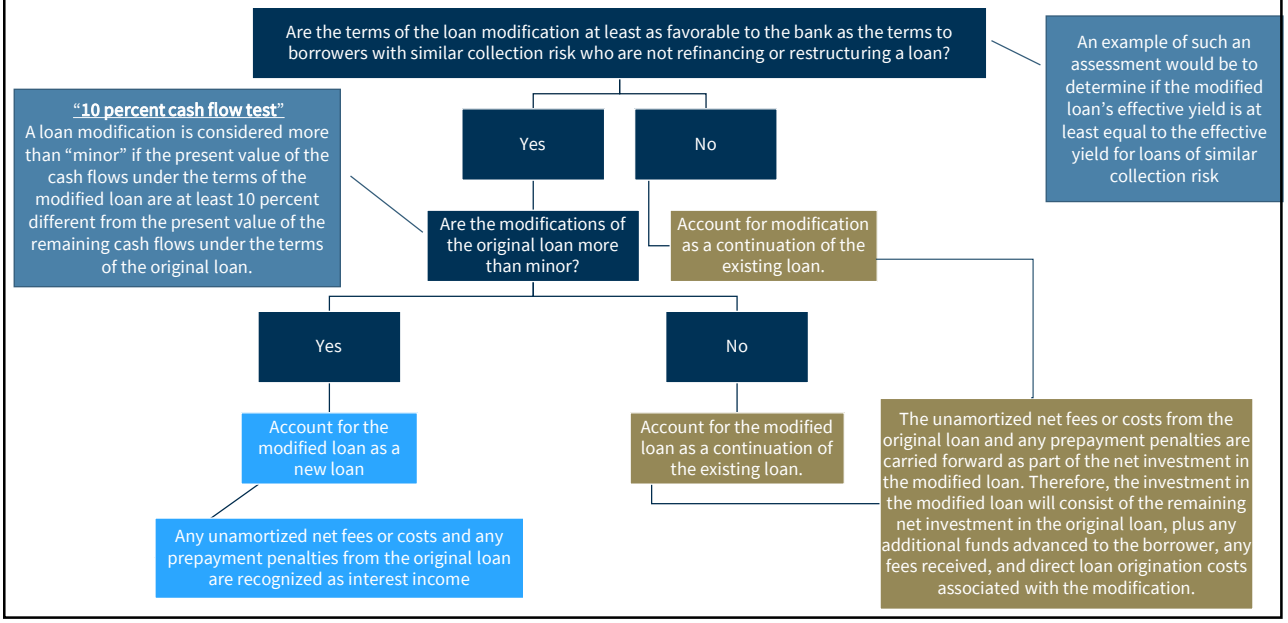
FASB Accounting Standards Update (ASU) No. 2022-02, *Troubled Debt Restructurings and Vintage Disclosures* and Accounting Standards Codification (ASC) Topic 326, *Financial Instruments – Credit Losses*

- Eliminated the recognition and measurement guidance for TDRs (ASC Subtopic 310-40) for all institutions once they've adopted CECL.
- Enhanced disclosure requirements for certain loan refinancings and restructurings by creditors when a borrower is experiencing financial difficulty.

Apply loan refinancing and restructuring guidance (ASC Subtopic 310-20)

- Requires that an entity evaluate whether the modification represents a "new loan" or a "continuation of an existing loan."
- Includes all loan modifications and restructurings, including those to borrowers experiencing financial difficulty.

When to account for a loan modification as a new loan, or as a continuation of an existing loan



Call Reporting: Disclose Loan Modifications to Borrowers Experiencing Financial Difficulty

- For modifications, refinancings, and renewals executed after the adoption of ASU 2022-02, management should assess and determine if the borrower is experiencing financial difficulty at the time of the event. The loan is reported as a modification to a borrower experiencing financial difficulty if the borrower is experiencing financial difficulty and the terms of the loan were modified in the form of one or more of the following:
  - Principal forgiveness
  - An interest rate reduction
  - An other-than-insignificant payment delay
  - A term extension
- The Call Report will capture new modifications executed after adoption of ASU 2022-02 (i.e., using a "fresh start" approach). Thus, TDRs that existed before the adoption of ASU 2022-02 will not be captured as modifications to borrowers experiencing financial difficulty.

Determining whether a borrower is experiencing financial difficulty – No changes

This guidance has been moved from ASC Subtopic 310-40 to ASC Subtopic 310-10.

- The borrower is currently in payment default on any of its debt.
- The borrower has declared or is in the process of declaring bankruptcy.
- There is substantial doubt as to whether the borrower will continue to be a going concern.
- The borrower has securities that have been delisted, are in the process of being delisted, or are under threat of being delisted from an exchange.
- On the basis of estimates and projections that only encompass the borrower's current capabilities, the creditor forecasts that the borrower's entity-specific cash flows will be insufficient to service any of its debt (both interest and principal) in accordance with the contractual terms of the existing agreement for the foreseeable future.
- Without the current modification, the borrower cannot obtain funds from sources other than the existing creditors at an effective interest rate equal to the current market interest rate for similar debt to a borrower not experiencing financial difficulty.

This list is not intended to include all indicators of financial difficulty

Call Report Schedules for Modifications to Borrowers Experiencing Financial Difficulty

Schedule RC-C, *Loans and Lease Financing Receivables*, Part I, *Loans and Leases*, Memorandum items 1.a. through 1.g.

- Loan modifications to borrowers experiencing financial difficulty that are **performing in accordance with their modified terms.**

Schedule RC-N, *Past Due and Nonaccrual Loans, Leases, and Other Assets*, Memorandum items 1.a through 1.g.

- Loan modifications to borrowers experiencing financial difficulty that are **NOT performing in accordance with their modified terms**

How to handle 'Legacy TDRs'

	Prospective Transition	Modified Retrospective Transition
Legacy TDRs and Call Reporting	TDRs that exist at the date of transition (Legacy TDRs) would no longer be reported.	
Legacy TDR Allowance Requirements	Continue to estimate expected credit losses in accordance with the accounting guidance prior to adoption of ASU 2022-02, until the loan is subsequently modified or settled. If the loan is modified after adoption of ASU 2022-02, the institution would estimate expected credit losses in accordance with ASU 2022-02 and recognize any change in the allowance through the provision expense. For loans whereby estimated expected credit losses are measured using a discounted cash flow approach, the effective interest rate is based on the post-modified contractual rate.	The estimated expected credit losses for loans modified as TDRs before adoption of ASU 2022-02 are measured based on methods used for other loans, unless collateral dependent for regulatory reporting purposes. Further, the institution would recognize a cumulative-effect adjustment to retained earnings as of the beginning of the fiscal year of adoption for the difference between that amount and the estimated expected credit losses recorded under prior accounting guidance before adoption of ASU 2022-02 for loans modified as TDRs before adoption.

Estimating CECL Allowances for Loan Modifications and Restructurings

- Expected credit losses on restructured or modified loans can be estimated under the same CECL methodology as other loans with similar credit risks in the portfolio.
- Loans should be evaluated on a collective basis unless they do not share similar risk characteristics with other loans.
- Evaluate for changes in risk characteristics:
  - credit risk changes,
  - borrower circumstances,
  - recognition of charge-offs, or
  - cash collections that have been fully applied to principal.
- If the loan is collateral-dependent, an institution **must** measure expected credit losses by the fair value of collateral (less cost to sell if applicable) for regulatory reporting purposes.

Lessons Learned in Community Bank Implementation of CECL

Methodology

- Method Selection
- Lookback Periods
- Use of Peer Data
- Loan Segmentation
- Individually Evaluated Loans
- Unallocated Portions of the ACL
- ACL on Unfunded Commitments
- ACL on HTM and AFS Debt Securities

Qualitative / Forecast Adjustments

- Internal vs Peer or Industry Data
- Forecast Periods
- Commonly Used Economic Data Elements
- Risk of Double Counting
- Expectation of Documentation

Vendor Management

- Model Governance
- Understanding the Model
- Service Level Agreements
- Vendor Model Validation / SOC Reports
- Data Security
- Longevity

Internal Control

- Data Accuracy and Integrity
- User Input (data and assumptions) Review and Validation
- Timeliness and Accuracy of Review Functions
- Reconciliation of Inputs to Outputs (does the result make sense?)
- Internal Audit Plan Update
- Back Testing

Under CECL, when should a loan be charged off?

- Although the measurement of credit loss allowances has changed under CECL, the FASB retained the existing write-off guidance in U.S. GAAP, which requires an institution to write off a financial asset in the period the asset is deemed uncollectible:

    - ASC 326-20-35-8 Writeoffs of financial assets, which may be full or partial writeoffs, shall be deducted from the allowance. The writeoffs shall be recorded in the period in which the financial asset(s) are deemed uncollectible. Recoveries of financial assets and trade receivables previously written off shall be recorded when received.

Accounting Implications of the Wisconsin State Tax Law Change

Overview of WI Tax Change (High-Level)

The 2023 Wisconsin Act 19 (also known as Wisconsin's 2023-2025 Biennial Budget) included a new tax-exemption for banks related to certain business and agricultural lending. This new Wisconsin tax legislative exempts loan income from commercial and agricultural loans of $5 million or less where the borrower resides or is located in Wisconsin from state taxation. This tax change is effective for tax years beginning after December 31, 2022.

Accounting Implications

1. Must reevaluate DTAs

2. DTA write down may cause AOCI disparity

Acctg Implication #1) Must Re-evaluate DTA/DTLs

- Many Wisconsin banks believe the impact of the rule will eliminate state taxable income in 2023 and in subsequent years.
- If management does not anticipate generating state taxable income in future years, then any recorded state DTAs will not have value (there is no taxable income for it to be realized against), and the bank should recognize a write-off for the amount that is not expected to be realized.
    - ASC 740-10-45-15: When deferred tax accounts are adjusted as required by paragraph 740-10-35-4 for the effect of a change in tax laws or rates, the effect shall be included in income from continuing operations for the period that includes the enactment date.

Acctg Implication #2) AOCI Tax Disparity

All adjustments or write downs to deferred tax accounts are recognized through *current earnings*, even if the original creation of the deferred tax account ran through *other comprehensive income* (OCI) rather than through net income.

This means any write down of the state DTA related to AFS security unrealized holding losses will need to be recognized through the current income tax expense.

The DTA write-down amount will become a reconciling difference when comparing the calculated after-tax unrealized holding loss remaining in AOCI to what is actually recognized in the trial balance.

Questions

2:40 – 3:30 p.m.

Managing Your Balance Sheet Through Uncertainty

Joe Kennerson, *Managing Director, Darling Consulting Group*

Eric Poulin, *Senior Consultant, Darling Consulting Group*

The *Dreaded* ALCO Meeting

April 17, 2024

Joe Kennerson | Managing Director | jkennerson@darlingconsulting.com

Eric Poulin | Director | epoulin@darlingconsulting.com

"Things that never happened before happen all the time."

- Morgan Housel, The Psychology of Money

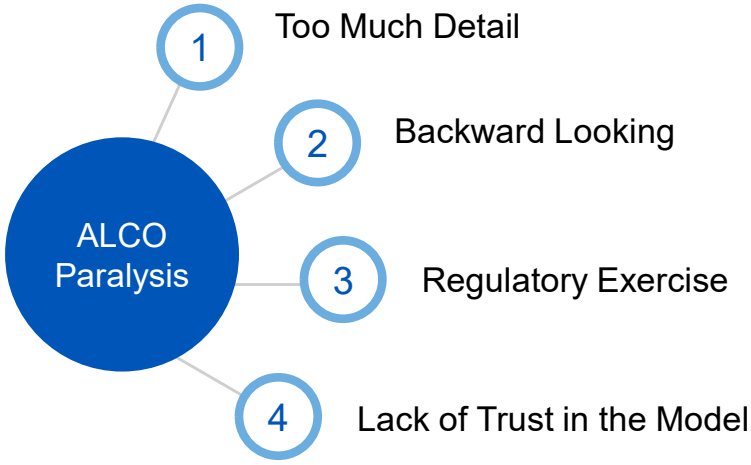
Yield Curve Inversion

17 Months!

Challenges Continue

- **Margin Pain**
- **Deposit Pressures**
- **Lending Conundrum**
- **Liquidity Challenges**
- **Heightened Regulatory Focus**

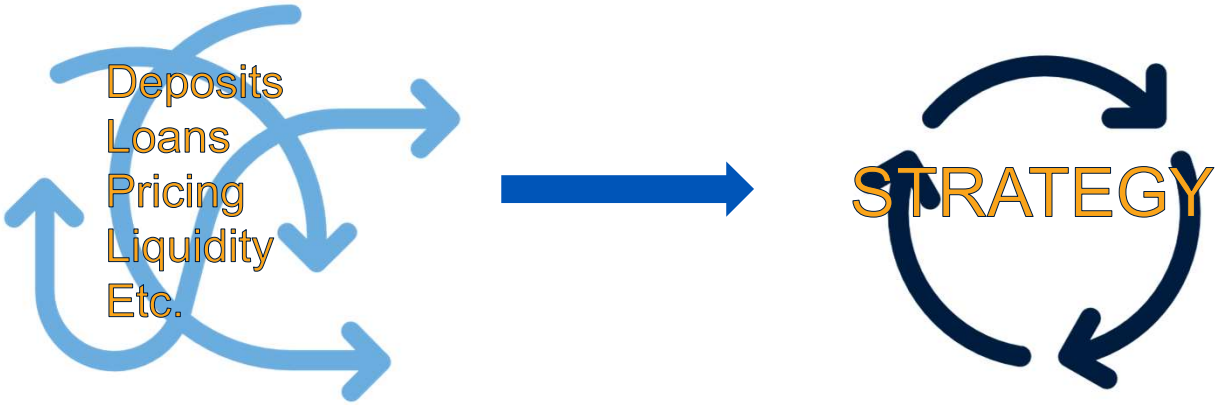
Common ALCO Grievances



Turn ALCO Into A Profit Center What Am I Missing?

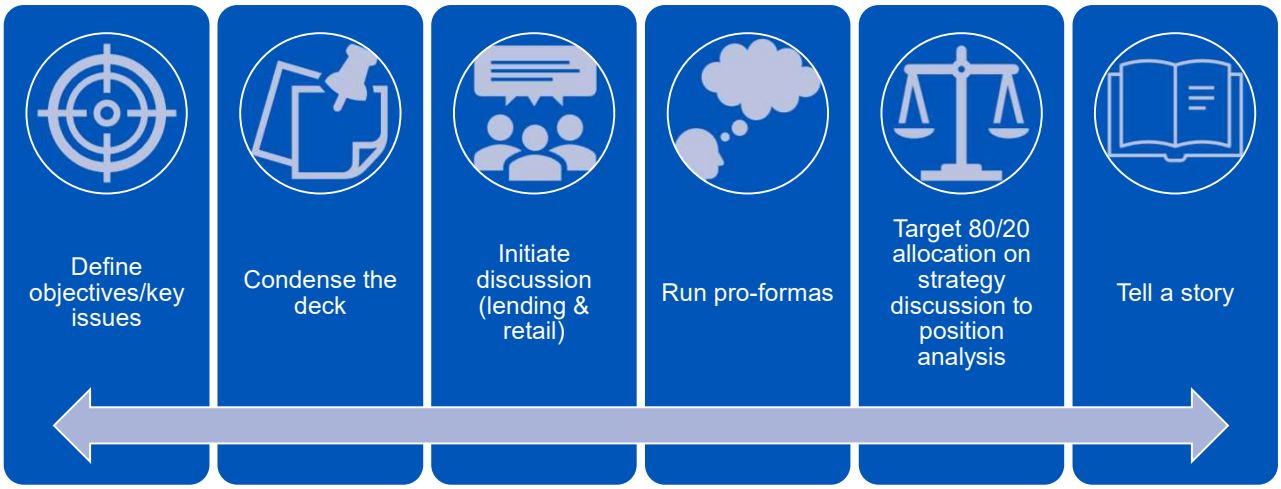
The Meeting

The ALCO Dilemma



The ALCO Meeting Blueprint

Steps for Productive, Strategically-Focused ALCO Meeting



Reminder: Small bites…we get back together *at least* quarterly!

What Are The Tiebreakers?

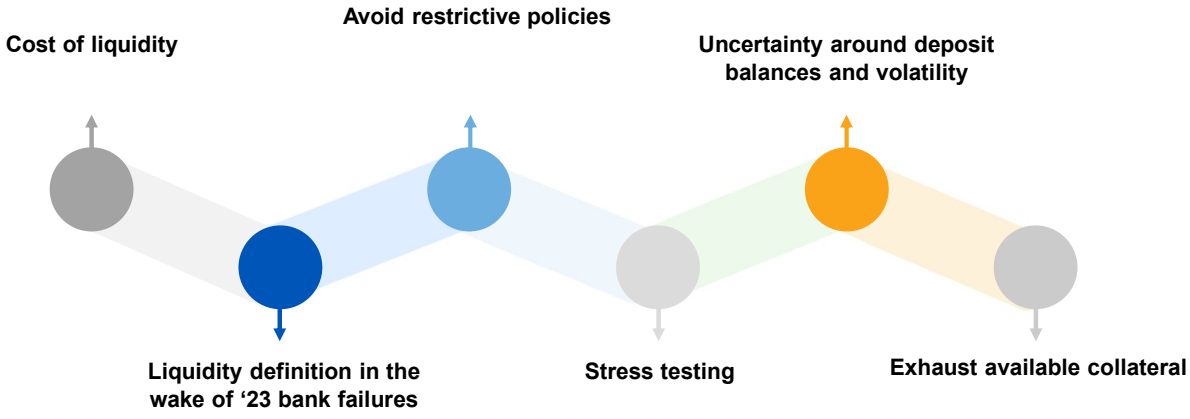
No Easy Decisions Today!

- How Important is Income?
- Lowering COF vs Losing Deposits?
- Preservation of Capital?
- Allocation of Liquidity?
- Discipline on Loan Spreads vs Losing Relationships?

Watch out for pitfalls

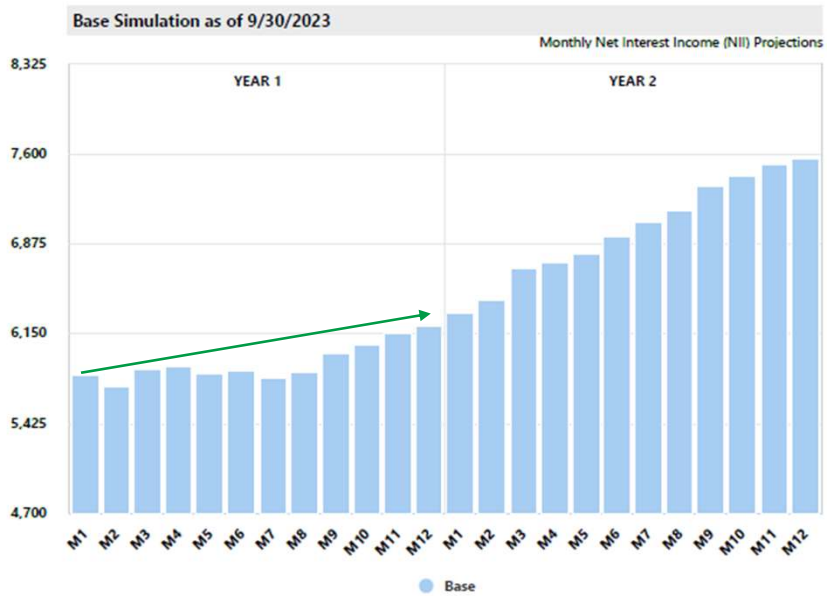
- Inverted Yield Curve
- Competing for Deposits Without a Gameplan
- Acquiescing Loan Covenants (Floors, Prepayments, etc.)
- Dismissing Derivatives

Evolution of Liquidity Management

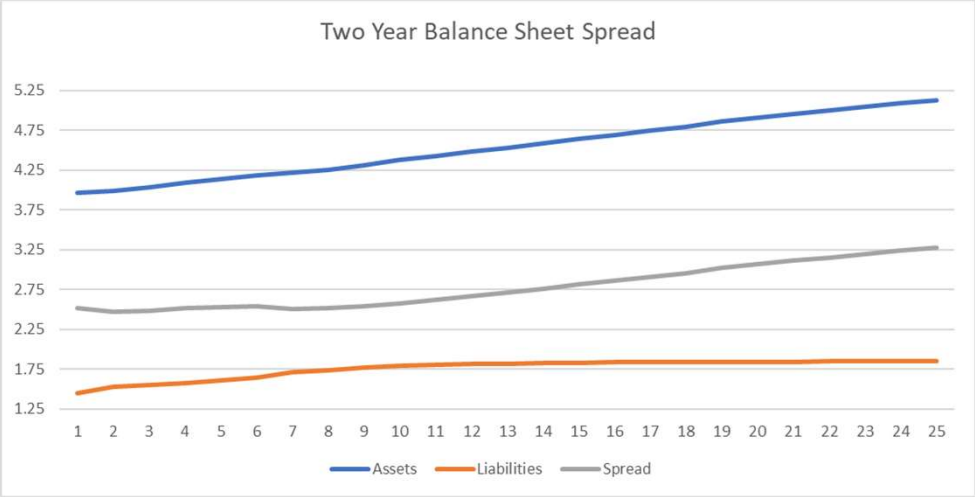


Case Study
Do We Trust Our Model?

Gaining Confidence in the Model



Balance Sheet Spread (No Growth)



Legacy assets cycling, Good

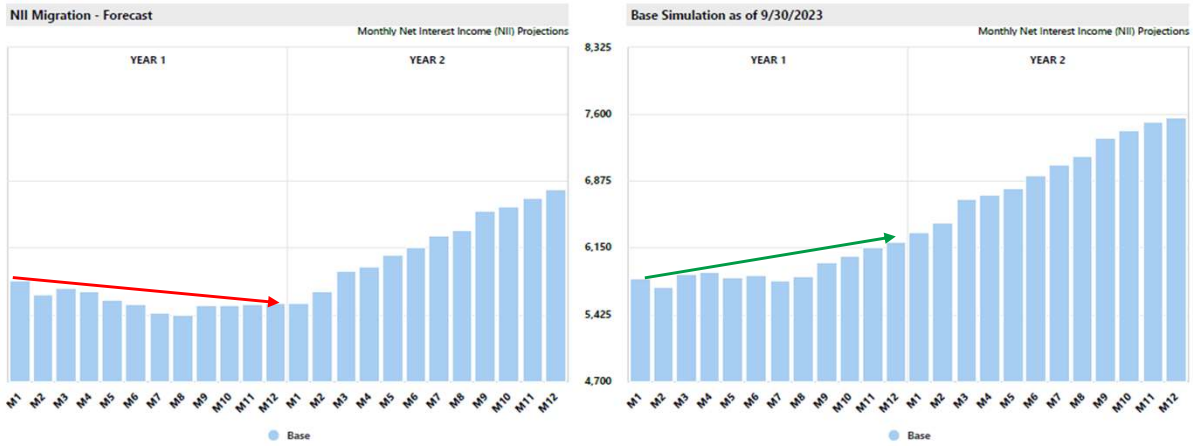
Reality Check:
- ✓ Model vs Actual Prepays
- ✓ Loans Fully Repricing?

Reality Check:
- ✓ Lag Effects on NMDs

Dynamic Deposit Assumptions

	Rate Change	End Rate	Balance Change	End Balance
Shock -100bp	0.32%	1.29%	$34,501 k	$1,921,533 k
Base	0.48%	1.45%	-$49,945 k	$1,837,087 k
Shock +100bp	0.72%	1.68%	-$125,866 k	$1,761,166 k

What If NMD Rates ↑ & Mix Changes?



NII RESULTS	Y1	Y2	Y1	Y2	Y1	Y2
BASE	66,983	74,578	-4,075	-9,371	71,057	83,948
			DIFFERENCE			

Strategy Discussion

If “Higher For Longer” is Biggest Concern

IRR

- How Much Exposure Do We Have?
- Can We Self Insure?
- Income Tiebreakers

Lending

- Gut Check on Pricing
- Pricing Discipline

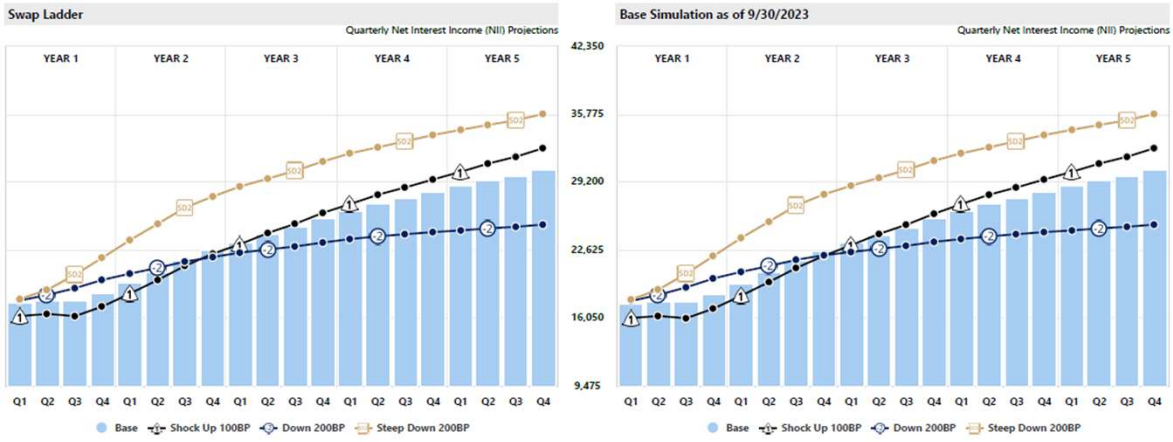
Capital Markets

- Don’t Sleep on the Bond Portfolio
- Derivatives a Must… But Cautious on Term

Deposits

- MCOF Analysis is Critical
- What’s The Play If Fed Doesn’t Cut?

Strategy Example: Receive Float, Pay Fixed Swap



NII RESULTS

	Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5
SHOCK UP 100BP	66,099	81,520	98,845	113,175	125,271	787	808	352	0	0	65,312	80,712	98,493	113,175	125,271
BASE	71,365	84,256	98,136	109,424	118,404	308	308	152	0	0	71,057	83,948	97,984	109,424	118,404
DOWN 200BP	74,707	84,707	91,364	96,150	99,183	-192	-692	-248	0	0	74,899	85,399	91,612	96,150	99,183
STEEP DOWN 200BP	78,793	103,267	119,772	131,415	139,892	-267	-842	-308	0	0	79,060	104,109	120,080	131,415	139,892
						DIFFERENCE									

If Rates Down Aggressively Is Biggest Concern

IRR

- Good Time to Buy Insurance?

Lending

- Prepayment & Floor Values

Capital Markets

- Bond Pre-Investment?
- Keep Funding Short

Deposits

- See Strategy Outlook

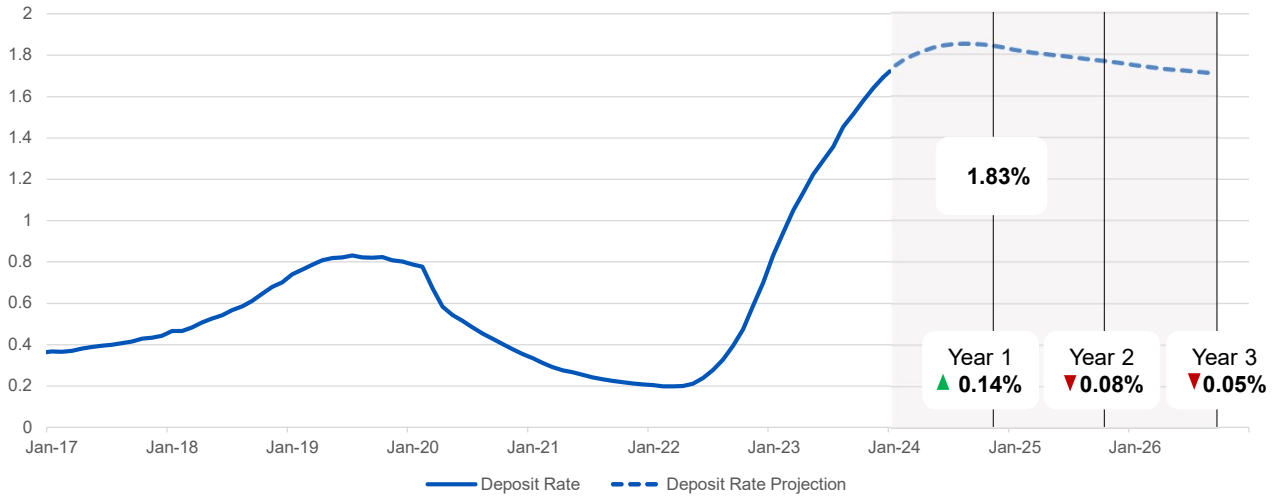
Strategy Example: Bond Leverage

NII RESULTS

	Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5
SHOCK UP 100BP	65,819	80,987	98,548	112,987	125,092	507	276	55	-188	-179	65,312	80,712	98,493	113,175	125,271
BASE	71,548	84,332	98,243	109,543	118,490	491	383	259	119	85	71,057	83,948	97,984	109,424	118,404
DOWN 200BP	75,454	85,712	91,835	96,369	99,270	555	313	223	218	88	74,899	85,399	91,612	96,150	99,183
STEEP DOWN 200BP	79,645	104,477	120,401	131,773	140,120	585	369	321	358	228	79,060	104,109	120,080	131,415	139,892
						DIFFERENCE									

Deposit Outlook & Strategies

Deposit Rate Forecast



- Model Assumes Fed Funds flat until May and 4.5% by end of 2024, declining to 3.875% by 2026 – based on 2/9/2024 Forward Curve
- Forecast derived from Deposits360°® - Industry NMD Rates above are balance weighted averages and do not include any outlier removal

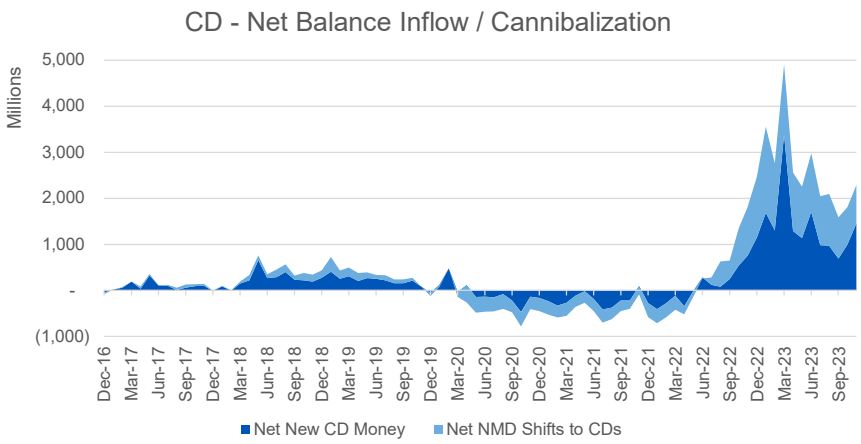
CD Thoughts & Outlook

2023 CD results:

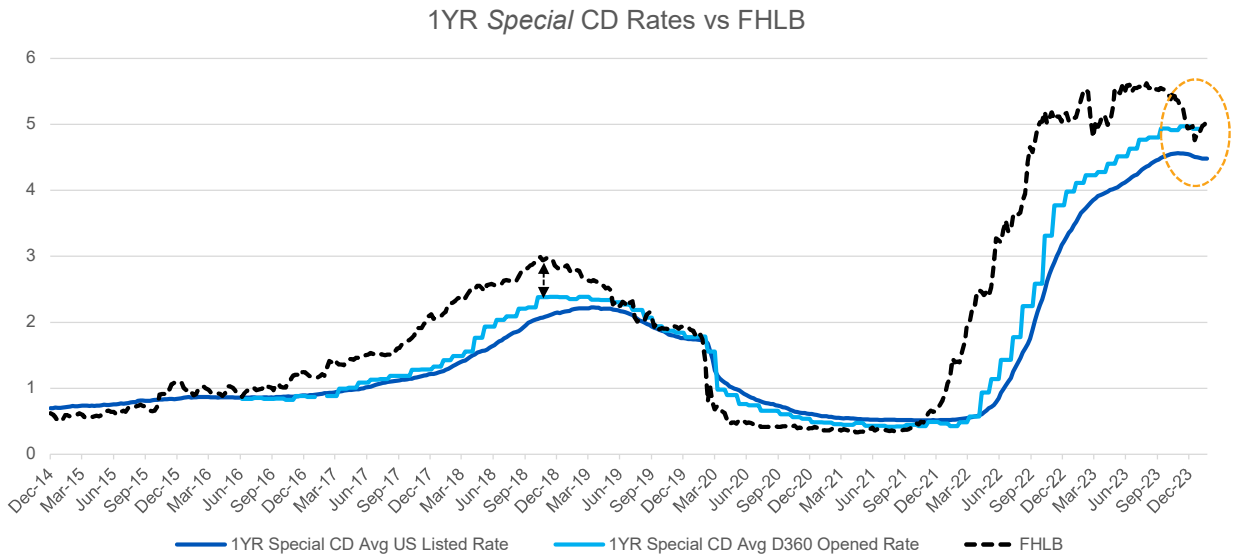
- 45% Growth
- 46% Cannibalization

52% of CDs are maturing in 1H of '24 at WAR of 3.90%

Average CD Portfolio Activity 12/31/22 – 11/30/23

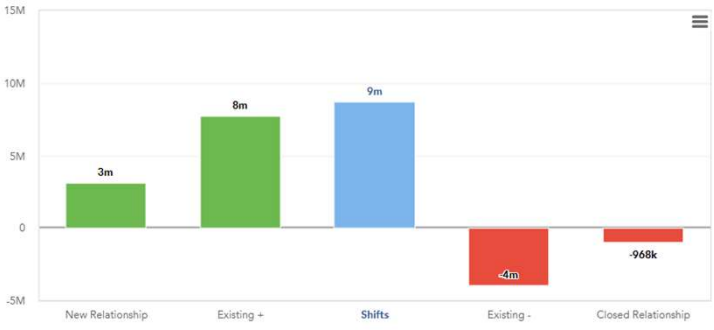


1YR CD Special Rate vs FHLB



Source: Deposits360°

CD Activity w/ High Cannibalization



MCOF **10.39%**

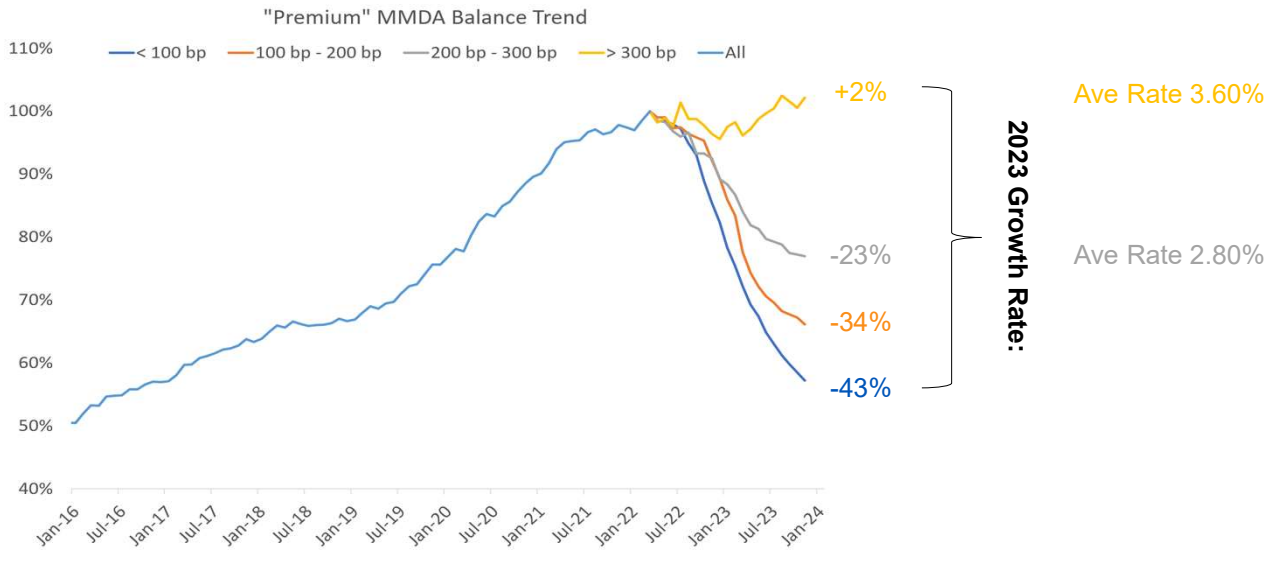
Cannibalization **59%**

Migration Summary for 09/30/2023 - 12/31/2023

	Balance	Rate	# Rel.
Starting Balance	**134,145k**	**3.38**	**2,282**
INFLOW	10,906k	4.71	1,539
New Relationship	3,148k	4.68	46
Existing +	7,758k	4.72	1,493
SHIFTS	8,729k	0.71	1,183
DDA	1,280k	0.00	445
NOW	2,475k	0.53	293
SAV	3,859k	0.66	344
MMDA	1,115k	2.06	101
OUTFLOW	-4,888k	3.32	206
Existing -	-3,921k	3.36	187
Closed Relationship	-968k	3.17	19
Ending Balance	**148,891k**	**3.73**	**2,450**
NET CHANGE	14,746k	0.35	168

Source: Deposits360°®

MMDA Price Elasticity



Deposit Takeaways

CD Strategy

1. Outline Objective
2. Re-Align Pricing
3. Track Activity
4. Renewal Campaign

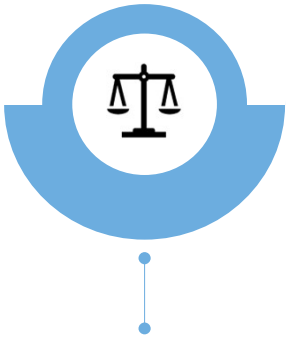
NMD Strategy

- Revamp Product Set
- Have Honest Discussion on Cannibalization vs Attrition
- Comeback Campaigns

Fed Easing Playbook

- Fed Cuts 25, 50, 100 bps, What's The Move?
- Stratify Customer Base

Concluding Thoughts



Start With The Meeting

Use Data To Your Advantage

Make ALCO A Profit Center

Thank You!

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3:40 – 4:55 p.m.

Current Issues in Business Ethics

Boz Bostrom, CPA, MBT, *Associate Professor of Accounting & Finance, College of Saint Benedict & Saint John's University*

Current Issues in Business Ethics – 2024

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May 14, 2024

Learning Objectives

- Understand the attitudes of other related to ethics
- Understand laws, rules and regulations which apply to CPAs and finance professionals
- Understand consequences of violating the laws, rules and regulations
- Understand and learn from current ethical violations
- Understand principles of ethical leadership

Ethical Attitudes and Perspectives

Introduction to Ethics

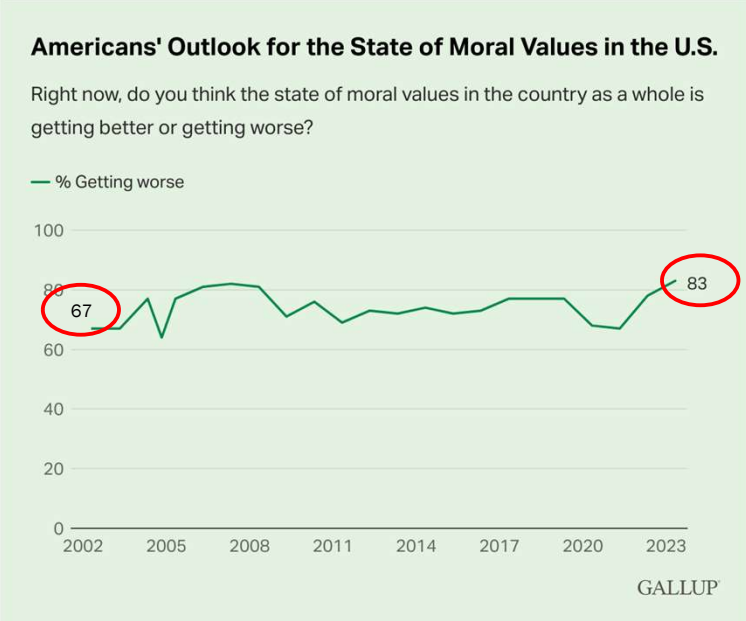
- What are ethics?
  - Moral principles
  - Rules of conduct followed by an individual or group

Gallup Survey Each May: How would you rate the overall state of moral values in this country today?

Year	Excellent/Good	Only fair	Poor
2003			
2011			
2023			

5

Right now, do you think the state of moral values in the country as a whole is getting better or getting worse?



AICPA and CIMA Survey

- Polled about 1,800 people in the US and UK in December 2022
- Report released in June 2023
- Categorized people into 3 groups. We will focus on these two:
  - Business leaders
  - Future talent

What do you think: When asked if it is more important for companies to have ethical business practices than it was 5 years ago, business leaders most commonly said:

a. Much less important
b. Somewhat less important
c. Just as important
d. Somewhat more important
e. Much more important

Is it more important for companies to have ethical business practices than it was 5 years ago?

	Business Leaders	Future Talent
• Much less important		
• Somewhat less important		
• Just as important		
• Somewhat more important		
• Much more important		

9

Why be ethical?

- Compliance with rules, regulations, codes
- Stakeholder confidence, trust and loyalty
- Social acceptance / respect of peers
- Personal pride

10

Qualities in a new hire most commonly rated as "Very important" by business leaders

- Ability to communicate effectively
- Ability to lead
- Ethical
- Job specific technical skills
- Problem-solving skills
- Team player
- Trustworthy
- Willingness to learn/ask questions

- Trustworthy
- Ethical
- Ability to communicate effectively
- Problem-solving skills
- Willingness to learn/ask questions
- Team player
- Job specific technical skills
- Ability to lead

11

Percent that feel prepared to handle ethical dilemmas

	Business Leaders	Future Talent
• Very prepared		
• Somewhat prepared		
• Not very (or at all) prepared		

12

Essential Traits to being an ethical person

- Accountability
- Charitable
- Honesty
- Humility
- Kindness
- Nurturing
- Respectable
- Trustworthy

- Trustworthy – 81%
- Honesty – 81%
- Accountability – 62%
- Respectable – 54%
- Kindness – 53%
- Humility – 45%
- Charitable – 31%
- Nurturing – 23%

13

Most important actions a company should take to foster more ethical behavior?

1. Be accountable for its actions
2. Operate with transparency
3. Follow all laws and regulations
4. Have a code of conduct
5. Respond immediately to violation of code of ethics

14

Confidential information

15

Discussion

- You work for a public company and would like to dispose of some shares
- What are some good principles to follow?
- What would be some clear violations?

16

Date	Close	Volume
8/12/2021	27.15	86,300
8/11/2021	26.71	184,700
8/10/2021	27.16	158,500
8/9/2021	27.86	174,100
8/6/2021	27.35	277,800
8/5/2021	26.95	202,800

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Securities Exchange Act of 1934

- § 240.10b-5 Employment of manipulative and deceptive devices. It shall be unlawful for any person…
  - (a) To employ any device, scheme, or artifice to defraud,

18

What do you think: Insider Trading involves trading on the basis of

A. Any information
B. Material and non-public information
C. Material and public information

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SEC Rule 10b5-1

- **§ 240.10b5-1 Trading "on the basis of" material nonpublic information in insider trading cases.**
- (a) *General.* The "manipulative and deceptive devices" prohibited by Section 10(b) of the Act (15 U.S.C. 78j) and § 240.10b-5 thereunder include, among other things, the purchase or sale of a security of any issuer, on the basis of material nonpublic information about that security or issuer, in breach of a duty of trust or confidence that is owed directly, indirectly, or derivatively, to the issuer of that security or the shareholders of that issuer, or to any other person who is the source of the material nonpublic information.

20

SEC's Rule 10b5-1: Affirmative Defenses

- When is a purchase or sale is not on the basis of material nonpublic information?
- Before becoming aware of the information, the person had
  - Entered into a binding contract to purchase or sell the security
  - Instructed another person to purchase or sell the security
  - Adopted a written plan for trading securities
- What is a written plan?
  - Specifies the amount of securities to be purchased or sold and the price at which and the date on which the securities are to be purchased or sold
  - Must be entered into in good faith and not to avoid Insider Trading rules

21

Cooling off periods after entering into the plan

- 90 days for directors and officers
- 30 days for others

- Directors and officers must represent that:
  - they are not aware of material nonpublic information about the issuer or its securities
  - they are adopting the plan in good faith and not as part of a plan or scheme to evade the prohibitions of Rule 10b-5-1

22

Case 1: Terren S. Peizer

- CEO and Chairman of Ontrak, a publicly traded health care company
  - Peaked in January 2021 at nearly $80 per share. About $0.50 per share today
- May 2021, learned of a serious risk Ontrak's biggest customer would terminate its contract. Is this material and non-public?
  - Entered into 10b5-1 plan shortly thereafter
  - Began selling shares the next day
- August 13, 2021, Ontrak's chief negotiator confirms contract would likely be terminated. Is this material and non-public?
  - Entered into 10b5-1 plan one hour later
  - Began selling shares the next day

23

Terren S. Peizer

- August 19, 2021, Ontrak's stock falls 44% when it announces customer terminated contract
- Peizer saved $12.5M in losses
- March 2023, indicted. Facing up to 45 years in prison
  - Trial scheduled for April 2024

24

Case 2: A family affair

- From 2014 – 2021, Marc Perez was an accounting manager for General Finance Corporation, then a publicly traded company
  - At start of his employment, declared in writing that he would not engage in nor provide tips related to insider trading
  - Told he would have to pre-clear all trades with general counsel
- February 2021, United Rentals indicated an interest in acquiring General Finance
  - Perez learned of this interest through his role as accounting manager
  - Purpose of him learning about the acquisition was so that he could help compile financial information related to the acquisition
- March 2, 2021 United Rentals offered $19 per share
  - Stock price was $10.63 per share

25

Marc Perez

- Perez learns of the offer and buys $354,000 worth of shares in General Finance
- Over the next 2-3 weeks, transferred money to his mother's brokerage account and also used some of her funds to purchase another $421,000 of shares
- Around this time, Perez told his brother and sister that he was "all in" on General Finance stock and that they should also purchase some
  - Early April, brother and sister purchase a combined $277,000 of General Finance stock
- April 15, 2021 – acquisition is announced
  - Stock price increased about 55% to about $19 per share
- By early May, almost all shares had been sold by Marc and his siblings, with total profits being about $660,000

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Interesting terms used by the SEC

- Marc Perez acted with scienter
  - Intent or knowledge of wrongdoing
- Siblings knew or were "reckless in not knowing" they were trading on non-public information
- Marc Perez, "directly or indirectly, personally benefited from disclosing that material, non-public information to his siblings because giving a gift of trading information is the same as trading by the tipper followed by a gift of proceeds."

27

What's next for Perez?

- Disgorgement of profits
- Civil penalties up to 3x the amount of illegal profits
- October 2023 pled guilty to criminal charges
- Prison time up to 20 years
- Age 59…future employment?

- Could General Finance Corporation have prevented this?

28

Bending the rules / ethical fading

29

Discussion

- You have made a few mistakes at work and have been put on “final notice” by your manager
- Right around the time you make another (final?) mistake, your manager has asked you to do something you find questionable
- When you say you can’t do that, your manager responds, “You WILL do it or I will have you fired?”
- What do you do?

30

What do you think: Bending the rules once makes it easier to bend them more times

a. Agree
b. Depends / Unsure
c. Disagree

31

The German Nino Case

32

Background

- Beginning in 2012, Nino managed $11 million of funds which a wealthy couple had invested in UBS
- Nino had power to invest the funds, but not transfer them
- From 2014 to 2020, through a series of 62 unauthorized transfers, Nino stole $5.8M from the couple.

33

Usage of Funds

- Nino used $4.6M on gifts for women he was romantically involved with:
  - Vacations
  - Cars
  - Apartment in Colombia
  - Private school tuition
- Who bailed him out of jail?
  - His wife!
- He used the other $1.2M to repay funds taken from a different client

34

Covering the fraud

- False information shared in client meetings
- Fictitious brokerage statements
- Eliminated e-mail notifications on wire transfers
- Forged signatures on larger letters of authorization

35

Outcome

- The couple's son discovered the discrepancies
- Nino promised to pay the couple back with a signing bonus he would receive when joining a new firm
- In June 2022, Nino was sentenced to 78 months in federal prison

36

Ethical Fading

- How do cases like these start?
- Often times, the ethical issue is prevalent the first time, but then fades into the background

37

What do you think: What is the best way to stop ethical fading?

a. Segregation of duties
b. Sound hiring practices
c. Tone at the top
d. Trainings

39

What is the best way to stop ethical fading?

- Tone at the top. Ethical leadership
- Unethical ideas can happen…but they can't be implemented
  - Shut them down immediately
  - "That's not the way we do things here!"

40

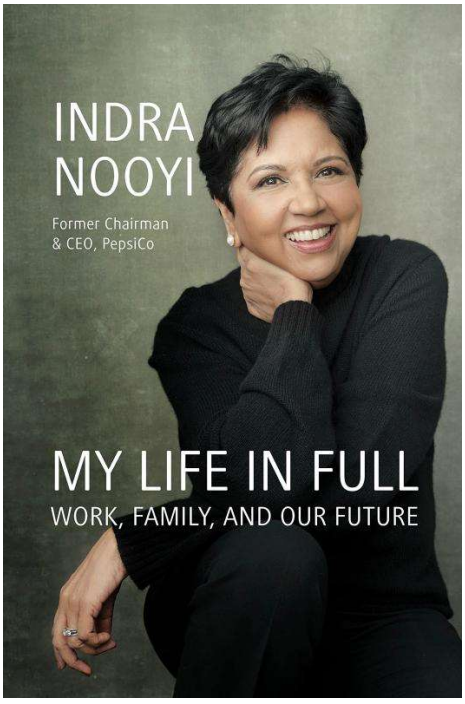
Ethical role models and mentors

Role Models and Mentors

- Do you have a strong mentor or role model in your life?
- What do you admire about them?
- Does their influence help you make ethical decisions?
- Do you have a mentor or role model who is not a supervisor or family member?

Indra Nooyi

- https://www.youtube.com/watch?v=hKaoQpG29RQ



Key Takeaways

- Understand the relevant rules
- Discuss your decision with others who don't have a stake in the outcome
  - Assume your decision will be discovered
  - Focus on the long-term
- Keep yourself and others out of situations where violations are more common

- "Have the courage to say no. Have the courage to face the truth. Do the right thing because it is right. These are the magic keys to living your life with integrity." – W. Clement Stone

Thank you!

- Questions, comments, or to stay in touch with Boz:

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