Morgan Stanley

City of Stamford, Connecticut
Board of Finance Budget Presentation Meeting
Wednesday, April 12th, 2023

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Agenda: OPEB and CERF Pension Discussion

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Asset Allocation Advice from Strategic Thinkers

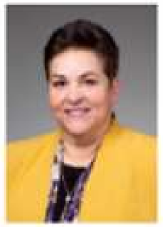
Michael Wilson
Chair of the GIC
Morgan Stanley Chief Investment Officer
Chief U.S. Equity Strategist
Morgan Stanley & Co.

Andrew Sheets
Chief Cross-Asset Strategist
Morgan Stanley & Co.

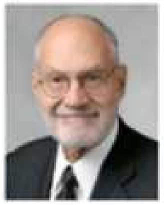
Rui de Figueiredo
Co-Head of Solutions &
Multi-Asset Group
Morgan Stanley Investment Management

Vishwanath Tirupattur
Head of U.S. Fixed Income Research
Morgan Stanley & Co.

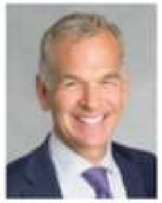
Lisa Shalett
Chief Investment Officer
Head of the Global Investment Office
Morgan Stanley Wealth Management



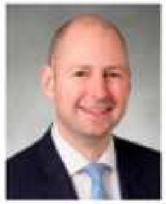
Martin Leibowitz
Senior Advisor
Morgan Stanley & Co.



Andrew Slimmon
Head of Applied Equity Advisors
Morgan Stanley Investment
Management



Matthew Hornbach
Global Head of Macro Strategy
Morgan Stanley & Co.



Annual Update of GIC Capital Market Assumptions (March 2023)

Executive Summary:

Every year between December and March, the Global Investment Committee convenes to update our strategic, or seven-year, and secular, or 20-year, capital market return assumptions. That process involves marking every asset class to current market conditions while weighing valuations against our historical frameworks. We strive to balance a consistent process with dynamic enhancements. These efforts seek to incorporate structural policy changes, such as those from the Federal Reserve and the federal government and those related to global trade and geopolitics. Exhibit 1 summarizes this year's major asset class updates.

2022 featured one of the worst dual bear markets for stocks and bonds in more than 50 years, as the Fed implemented an aggressive tightening campaign to fight decades-high inflation (see Exhibit 2). The impact from such a pronounced policy pivot is apt to be lagged, especially in the wake of events such as COVID-related shutdowns and subsequent historic stimulus. As such, this year's capital market assumptions update accounts for imminent economic slowing and profitability headwinds given the reality of mean reversion over the seven-year horizon. Additionally, rates have been materially reset, with genuine implications for long-run valuations, as the 40-year bull market in US interest rates has ended. While 2022's bear market repricing presents some opportunity for improved forward returns, these end-of-cycle factors are strong near-term offsets.

Essentially, we see the bear market, especially for US stocks, continuing for much of the next 12 to 18 months—a projection that is highly contingent on the timing of a soft landing or potential recession. As we go to press, recession risks are materially increasing given the emergence of a liquidity crisis among some US regional banks, adding to near term uncertainty. While we do not see systemic risks at this time, the impact to the banking system and consumer confidence will likely produce material knock-on effects, intensifying accelerating economic slowing.

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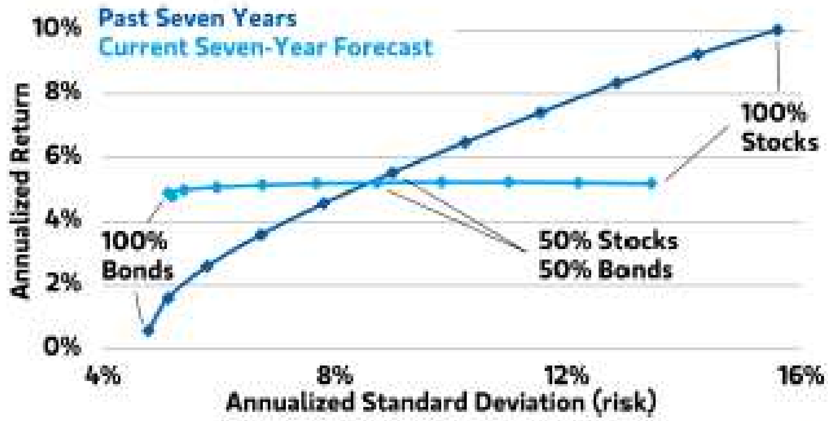
Annual Update of GIC Capital Market Assumptions (March 2023)

Exhibit 1: Return Estimates for Equities and Fixed Income

	2023		2022	
	Annualized Return	Annualized Volatility	Annualized Return	Annualized Volatility
Global Equities	5.2	13.4	5.2	13.1
US Equities	4.4	14.9	4.1	14.1
International Equities	5.2	15.4	5.6	14.7
Emerging & Frontier Mkt. Equities	7.8	19.3	8.3	17.5
Ultrashort Fixed Income	3.7	0.8	1.6	0.7
US Taxable Fixed Income	4.8	5.2	2.0	4.9
High Yield Fixed Income	7.1	8.3	3.6	7.5
Real Assets	5.5	12.3	4.6	10.3
Absolute Return Assets	6.0	5.1	3.5	4.7
Equity Hedge Assets	6.6	9.0	5.2	6.8
Equity Return Assets	6.3	8.8	4.8	8.3

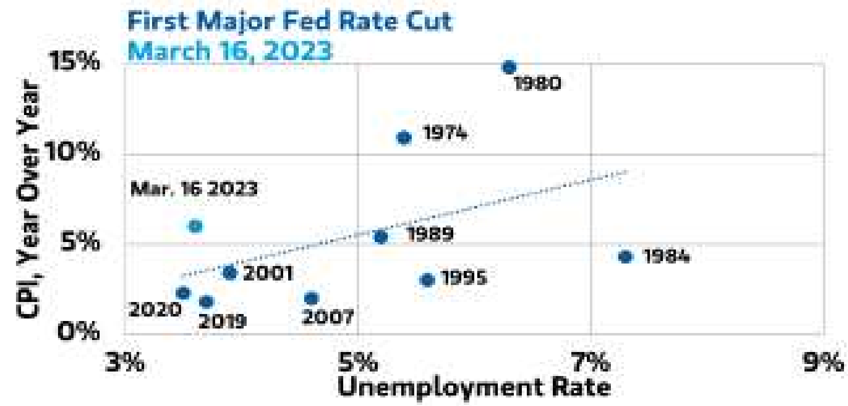
Note: Ultrashort fixed income is represented by 90-day T-bills; US taxable fixed income by the Bloomberg US Aggregate Index; and high yield fixed income by the Bloomberg Global High Yield Corporate Index.
Source: Bloomberg, FactSet, Moody's, Haver Analytics, Morgan Stanley & Co. Research, Morgan Stanley Wealth Management GIC as of Feb. 28, 2023

Exhibit 13: Next-Seven-Year Outlook Is Flatter as Fixed Income Return Expectations Improve Significantly Relative to Equities



Note: Stocks are represented by the MSCI All Country World Index and bonds by the Bloomberg US Aggregate Index.
Source: FactSet, Morgan Stanley Wealth Management GIC as of Feb. 28, 2023

Exhibit 9: CPI Growth and Unemployment Rate Upon First Major Fed Rate Cut



Source: Bloomberg, Morgan Stanley Wealth Management GIC as of Feb. 28, 2023

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Annual Update of GIC Capital Market Assumptions (March 2023)

Exhibit 24: Strategic and Secular Return and Volatility Estimates

	STRATEGIC (SEVEN-YEAR) ESTIMATES FOR 2023		SECULAR (20-YEAR) ESTIMATES FOR 2023	
	Annualized Return	Annualized Volatility	Annualized Return	Annualized Volatility
ULTRASHORT FIXED INCOME	3.7	0.8	3.1	0.8
EQUITIES	5.2	13.4	8.0	13.4
US Equities	4.4	14.9	8.3	14.9
US Large-Cap Growth	4.2	16.1	8.2	16.1
US Large-Cap Value	5.5	14.4	8.3	14.4
US Mid-Cap Growth	3.9	17.8	8.4	17.8
US Mid-Cap Value	5.7	15.6	8.7	15.6
US Small-Cap Growth	4.6	21.8	7.1	21.8
US Small-Cap Value	7.5	19.1	8.5	19.1
International Equities	5.2	15.4	7.2	15.4
European Equities	4.9	15.7	7.1	15.7
Japan Equities	4.8	20.2	6.9	20.2
Asia Pacific ex Japan Equities	7.0	19.8	7.2	19.8
Emerging & Frontier Market Equities	7.8	19.3	8.4	19.3
FIXED INCOME & PREFERREDS	4.8	5.2	3.8	5.2
Short-Term Fixed Income	4.8	2.2	3.5	2.2
US Taxable Fixed Income	4.8	5.2	3.8	5.2
International Fixed Income	2.9	5.1	3.6	5.1
Inflation-Linked Securities	3.7	9.7	4.6	9.7
High Yield Fixed Income	7.1	8.3	5.4	8.3
Emerging Market Fixed Income	7.8	9.2	6.7	9.2
ALTERNATIVES	6.5	8.0	6.2	8.0
Real Assets	5.5	12.3	6.1	12.3
Real Estate/REITS	4.0	16.0	6.4	16.0
Commodities	5.0	15.3	4.3	15.3
Energy Infrastructure/MLPs	7.5	17.6	7.5	17.6
Absolute Return Assets	6.0	5.1	5.2	5.1
Equity Hedge Assets	6.6	9.0	6.0	9.0
Equity Return Assets	6.3	8.8	7.2	8.8
Private Investments	6.5	15.5	10.1	15.5
Private Real Estate	5.0	16.7	7.4	16.7
Private Equity	8.1	16.2	12.9	16.2
Private Credit	9.3	10.4	8.8	10.4

An Industry Leader in Manager Analysis

~70
ANALYSTS DEDICATED TO MANAGER ANALYSIS

$1.77 Trillion+
INVESTMENT ADVISORY ASSETS UNDER MANAGEMENT [1]

#1
MANAGED ACCOUNT PROGRAM BY ASSETS [1]

4,000+
STRATEGIES MONITORED / YEAR

440+
NEW PRODUCTS LAUNCHED LAST 12 MTHS

~400
INVESTMENT MANAGER RELATIONSHIPS

820+
SEPARATELY MANAGED ACCOUNTS

1,650+
MUTUAL FUNDS

970+
ETF STRATEGIES

450+
ALTERNATIVE STRATEGIES [2]

All information as of December 2021 unless otherwise noted and subject to change.

1. Source: Morgan Stanley Wealth Management. This category includes separate account consultant programs, mutual fund advisory programs, ETF advisory programs, rep as portfolio manager programs, rep as advisor programs and unified managed account programs. Separate account consultant programs are programs in which asset managers manage investors' assets in discretionary separate accounts. Mutual fund advisory programs and ETF advisory programs are discretionary and nondiscretionary programs designed to systematically allocate investors' assets across a wide range of mutual funds or ETFs. Rep as portfolio manager programs are discretionary programs in which advice is an essential element; planning is undertaken or advice is treated as a separate service from brokerage. Rep as advisor programs are nondiscretionary programs where the advisor has not been given discretion by the client and must obtain approval each time a change is made to the account or its investments. Unified managed accounts are vehicle-neutral platforms that simplify the delivery of multiple investment vehicles, such as separate accounts, mutual funds, exchange-traded funds and individual securities through their integration within a single environment. Rankings are subject to change.
2. Includes Private Equity.

Identifying High-Quality Managers for Your Portfolio

RIGOROUS MANAGER ANALYSIS[1]

20,000+ Products

~2,450+ Products
Meets our qualitative and quantitative standards

~450 Products
Higher level of conviction

~30-60 Products
Factors in potential short-term performance, drawing from both the Focus and Approved Lists

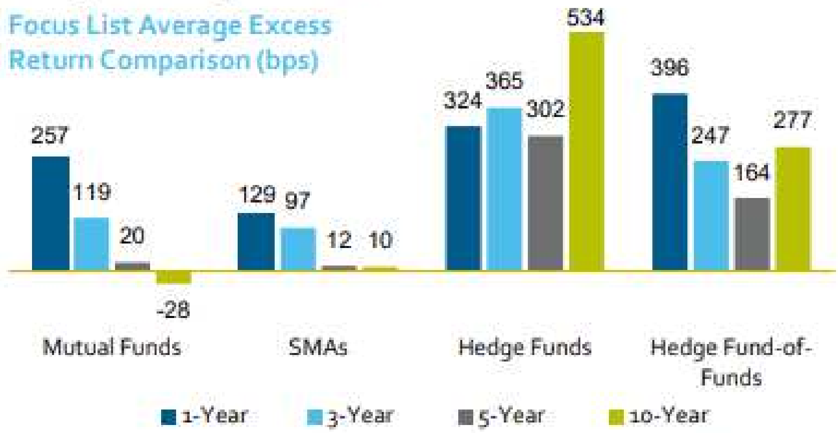
PROPRIETARY SCORING TOOLS

- Adverse Active Alpha℠ 2.0 seeks to identify managers that can potentially enhance your portfolio's risk-reward profile
- The Value Score seeks to rank managers by their prospective value above current expense ratios
- The Risk Score seeks to evaluate active managers' effectiveness in managing risk, in terms of both total and excess returns
- The Tax Score seeks to assess investment strategies' quality and tax efficiency

SUCCESSFUL TRACK RECORD[2,3]

GIMA's high conviction strategies have outperformed their respective benchmarks. We see this across the broad array of strategies in our high-conviction lists.

Focus List Average Excess Return Comparison (bps)



1. Source: Morgan Stanley Wealth Management Global Investment Manager Analysis. All information as of December 2020 and subject to change. A majority of investments reviewed and selected by GIMA pay or cause to be paid an ongoing fee to Morgan Stanley Wealth Management in connection with Morgan Stanley Wealth Management clients that purchase such investments. The functions of manager analysis and review are available only through advisory accounts.
2. The Focus List only includes a limited number of alternative investment products. Excess return represents the total return of the portfolio relative to its benchmark for each trailing return period. A portfolio with a positive excess return has outperformed its benchmark for the stated time period. This statistic is obtained by subtracting the benchmark return from the portfolio's return. The list performance represents an equal weighted average of all the portfolio excess returns.
3. Source: GIMA Alternative Investments Team. Performance as of December 2020 (preliminary). Performance is representative of the current coverage menu as of December 2020, and relative to each product's GIMA analyst designated benchmark (where possible). Performance is unaudited and data is subject to change. Had the results reflected Morgan Stanley Wealth Management brokerage commissions or advisory fees, the performance would have been lower.

Past performance is no guarantee of future results. Estimates of future performance are based on assumptions that may not be realized. This material is not a solicitation of any offer to buy or sell any security or other financial instrument or to participate in any trading strategy. Please refer to important information, disclosures and qualifications at the end of this material.

GIMA Utilizes A Five-Step Due Diligence Process

1 QUANTITATIVE ANALYSIS

- Historical performance metrics
- Statistical measures
- Peer group comparisons

2 QUALITATIVE ANALYSIS

- Multiple points of contact with managers
- Review of manager documentation
- Manager capabilities and experience
- Impact reporting, where applicable

3 BUSINESS & OPERATIONAL REVIEW

- Business risk
- Infrastructure
- Compliance and controls
- Business continuity
- Quality of third party providers for Alternatives
- Documented polices around ESG and Diversity and Inclusion

4 COMPREHENSIVE GOVERNANCE & OVERSIGHT OF RECOMMENDATIONS

- GIMA reviews each proposed investment vehicle
- Formal governance process for all strategies made available on the platform
- Defined process for status changes, including manager upgrades and downgrades
- High bar for the Investing with Impact Platform

5 ONGOING INVESTMENT & OPERATION MONITORING

- Analysts monitor the entire product coverage universe of traditional and alternative investment strategies

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Wealth Management Perspectives

Weekly One Pager

As of March 31, 2023

WEEKLY HIGHLIGHTS

- The S&P 500 increased by 3.50% this week, up to 4,109. The S&P 500 put/call ratio indicated that there were more calls this past week than there have been in at least a month, with the 1.22 S&P 500 put/call ratio last Wednesday the lowest since early February.
- The two-year yield and 10-year yield both increased for the first time in four weeks, up to 4.03% and 3.48%, respectively. The 2s/10s curve decreased to -55.85 after steepening for the prior three weeks. However, the 3-month/10-year curve continued declining and hit a new all-time low of -133.03 on Thursday.
- The MNI Chicago PMI data increased m/m and came in above consensus expectations, up to 43.8. Regional manufacturing data was contradictory, with the Richmond Fed Manufacturing Index increasing m/m and the Dallas Fed Manufacturing Activity Index decreasing m/m. We have continued to see an exceptionally tight labor market, although initial jobless claims did rise slightly more than expected last week.

Equity Global	3/31/2023	1-Wk %	1-Mo. %	YTD %	1-Year %	3-Year %[1]
S&P 500	4,109	3.50	3.67	7.48	-7.75	18.58
DJ Industrial Average	33,274	3.22	2.08	0.93	-1.98	17.31
NASDAQ Composite	12,222	3.38	6.78	17.05	-13.25	17.60
MSCI Europe (Lcl)	1,851	3.61	-0.27	8.24	5.06	15.73
MSCI Japan	1,207	2.47	-0.85	5.99	3.16	17.13
MSCI EM	986	1.47	2.57	3.50	-10.79	8.01
MSCI EAFE	2,084	3.64	2.21	8.23	-1.17	13.50

Market Cap & Style	3/31/2023	1-Wk %	1-Mo. %	YTD %	1-Year %	3-Year %[1]
S&P 500 Large Cap	4,109	3.50	3.67	7.48	-7.75	18.58
S&P 400 Mid Cap	2,512	4.56	-3.21	3.79	-5.17	22.07
S&P 600 Small Cap	1,160	1.77	-6.97	0.59	-10.62	20.86
S&P 500 Growth	2,541	1.47	4.29	8.02	-16.58	16.25
S&P 500 Value	1,480	2.66	-0.08	3.71	-1.57	18.54

Commodities	3/31/2023	1-Wk %	1-Mo. %	YTD %	1-Year %	3-Year %[1]
Gold	1,970	-0.40	7.84	8.02	1.69	24.92
Copper	408.3	-0.46	-0.37	7.14	-14.07	83.24
Oil (WTI)	75.56	9.10	-2.11	-6.08	-11.44	84.65
Natural Gas	2.20	-0.95	-20.09	-50.95	-61.10	33.84
BCOM	105.51	2.41	-0.61	-6.47	-15.19	70.57

Currencies ($ per)	3/31/2023	1-Mo.	1-Year	3-Year
US Dollar Index	102.59	104.87	98.31	99.05
Euro	1.08	1.06	1.11	1.10
Japanese Yen/$	133	136	122	108
British Pound	1.23	1.20	1.31	1.24
Australian Dollar	0.67	0.67	0.75	0.61
Chinese Renminbi/$	6.87	6.94	6.34	7.08
MSCI EM Curr. Index	1,689	1,666	1,744	1,565

Fixed Income	3/31/2023	1-Mo.	1-Year	3-Year
Federal Funds Rate	4.83	4.57	0.33	0.09
3-Mo. Treasuries Yld	4.73	4.81	0.48	0.00
2-Yr Treasuries Yld	4.04	4.82	2.33	0.25
10-Yr Treasuries Yld	3.47	3.92	2.34	0.67
30-Yr Treasuries Yld	3.65	3.92	2.45	1.32
10-Yr AAA Muni Yld	2.72	3.05	2.39	1.62
3m/10y Yld. Spread	-134	-93	183	55
2y/10y Yld. Spread	-57	-90	0	42
US Agg. Spread[2]	147	139	125	272
US HY Spread[2]	472	412	324	902
US Agg. Return (%)[1]	-	2.66%	-5.22%	-2.92%
US HY Return (%)[1]	-	0.42%	-4.15%	5.61%

S&P 500 Sector Total Returns

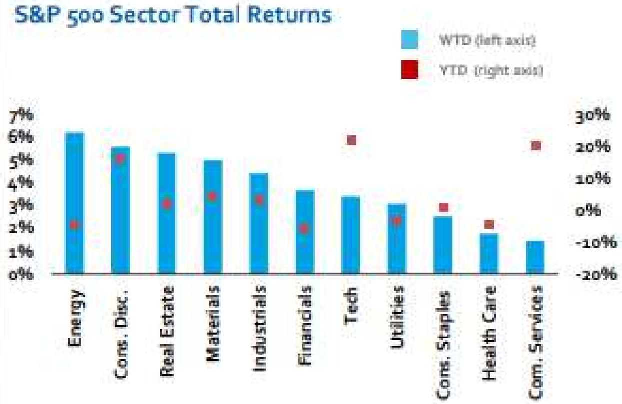


Chart of the Week: Fundamentals for Commercial Real Estate Deteriorate

Source: Bloomberg, FactSet, Morgan Stanley Wealth Management GIC 1) Annualized 3-year % return 2) Option Adjusted Spread (OAS). OAS is a measurement of the spread of a fixed income security rate and the risk-free rate of return, which is adjusted to take into account an embedded option. Equity risk premium is the excess return that an individual stock or the overall stock market provides over a risk-free rate. The risk-free rate represents the interest an investor would expect from an absolutely risk-free investment over a specified period of time. 3) M2 is a measure of the money supply that includes all elements of M1 as well as "near money." M1 includes cash and checking deposits, while near money refers to savings deposits, money market securities, mutual funds and other time deposits. Z-score is a statistical measurement of a score's relationship to the mean in a group of scores. A z-score of 0 means the score is the same as the mean. Earnings revisions breadth is defined as the number of positive analyst revisions minus the number of negative analyst revisions divided by the total number of revisions; Chart of the Week: Bloomberg as of March 29, 2023

Key Points from The GIC Weekly

Discussion Points from The GIC Weekly

US equity markets gained ground in the first quarter with an asymmetric view of interest rate risk, inert earnings estimates and still-ample liquidity. While a soft economic landing is still possible, the odds of that have decreased given recent regional banking turmoil and the implications of tighter lending standards to major sectors of the economy. The stock market's myopic obsession with the level of long-term interest rates as the only determinant of stock prices is concerning. Extreme interest rate volatility typically has casualties, and the next ones could be commercial real estate and private investments. About half of CRE mortgages need to be refinanced in the next two years, and regional banks originate most of the mortgages. Venture capital faces pressure, too, as accelerated cash burn rates collide with higher capital costs and restricted funding access, a development that will also have an economic impact. Private equity has ample dry powder, but markdowns of recent vintage funds are apt to significantly slow fundraising. Watch CRE prices and deal activity to monitor the rate of private market revaluations. Consider rebalancing portfolios with an eye toward markdowns on illiquid investments. Venture capital and commercial real estate are especially vulnerable. New investment funds may be more opportunistic. Private credit/debt is our preferred private investment over the next 12 months.

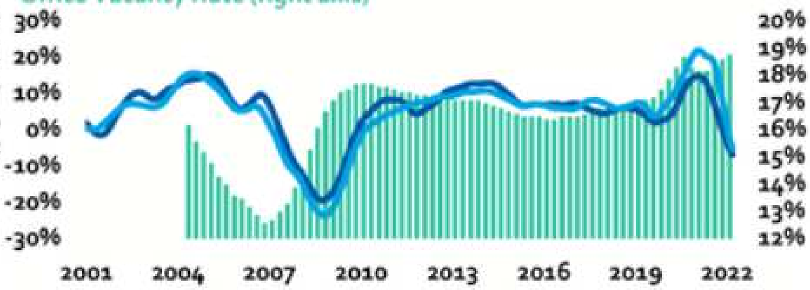
Chart of the Week: Fundamentals for Commercial Real Estate Deteriorate

With property prices posting negative year-over-year comparisons and the office vacancy rate nearing a 20-year high, the commercial real estate market is vulnerable to any adverse developments in interest rates or bank lending. More than half of the nearly $2.9 trillion in CRE mortgages will be up for refinancing in the next 24 months, and regional banks account for 70% to 80% of the loans. Even if current rates stay flat, the new lending rates are likely to be 350 to 450 basis points higher. For building owners themselves, secular headwinds from the embrace of remote/hybrid work options pose additional complications that may accelerate CRE markdown.

All-Property Price, Year Over Year (left axis)

Major Market Non-Major Market

Office Vacancy Rate (right axis)

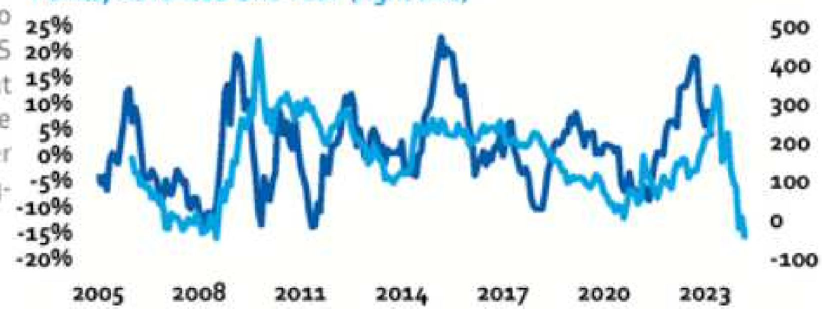


Fixed Income Insight: Real Yield Curve Suggests Headwinds for the Dollar

As with nominal yields, the yield curve for real interest rates has inverted. While nominal curve inversion usually suggests recession risks are rising, inversion of real yield curves is important to currency traders who hedge positions for inflation. The current situation suggests that the US dollar may weaken over the next 12 months (see chart). If history is a guide, such a development would likely put a floor under US inflation. Combined with the battle over the US debt ceiling, the inverted real yield curve could create a backdrop in which overall interest rates must stay higher for longer and certainly higher than what investors in US megacap tech stocks and other long-duration assets are discounting.

US Dollar Index, Year Over Year (left axis)

US Real Yield, 10-Year Minus Three-Month, Basis Points, Advanced One Year (right axis)



Source: Chart of the Week: Bloomberg as of Feb. 28, 2023; Source: Fixed Income Insight: Bloomberg as of March 29, 2023

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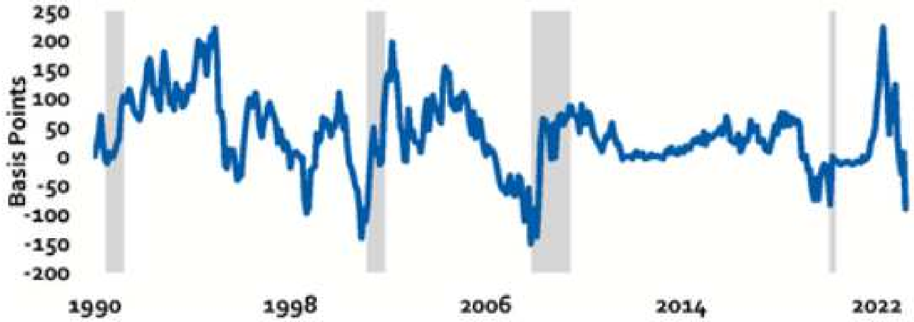
Charts in Focus: Yield Curve

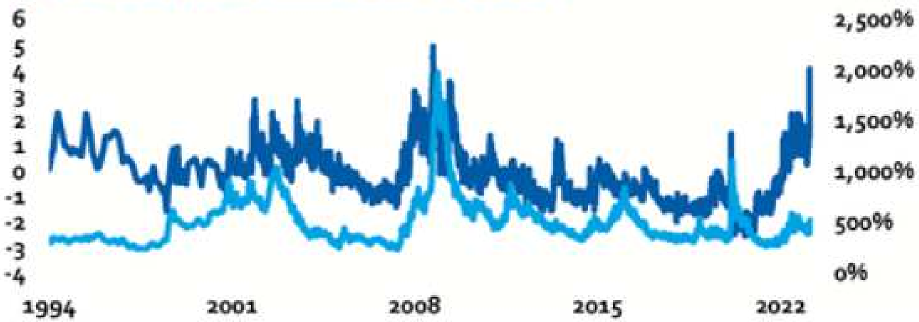
Two-Year Yield is Well Below the Fed Funds Rate
As of March 30, 2023

Fed Funds Rate Minus Two-Year US Treasury Yield
Recession



Bond Volatility Has Been High Compared With Equities
As of March 24, 2023

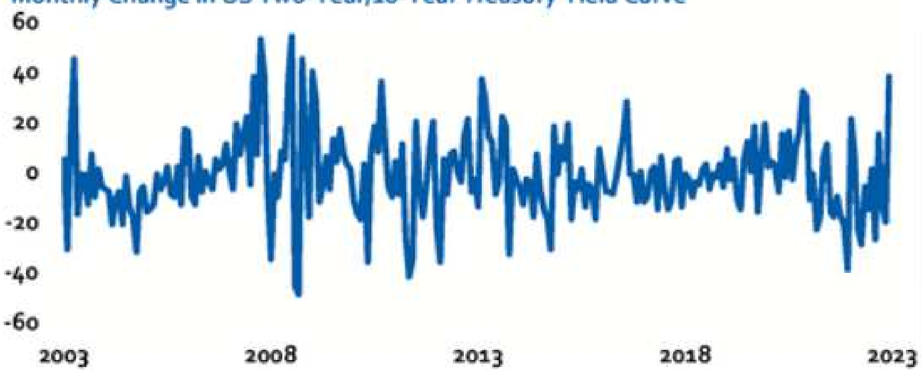
ICE BofA MOVE Index Relative VIX, Z-Score (left axis)
High Yield Option-Adjusted Spread* (right axis)



*Bloomberg US Corporate High Yield Index Average Option-Adjusted Spread

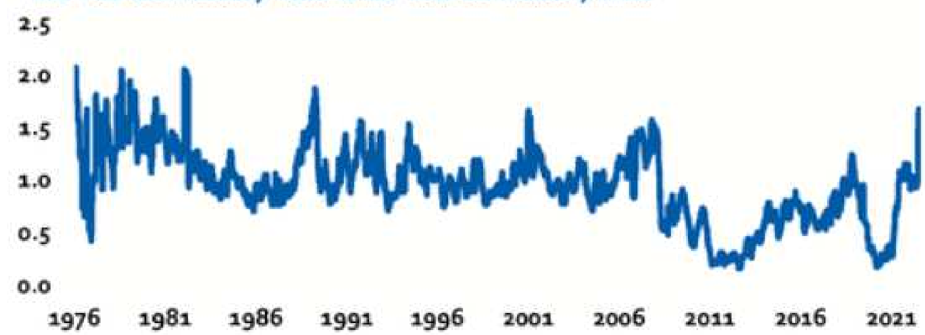
The Two-Year/10-Year Spread Increased Quickly...
As of March 28, 2023

Monthly Change in US Two-Year/10-Year Treasury Yield Curve



... Making it One of the Biggest Moves Since the 1970s
As of March 28, 2023

60-Day Standard Deviation
Two-Year US Treasury Yield vs. 10-Year US Treasury Yield

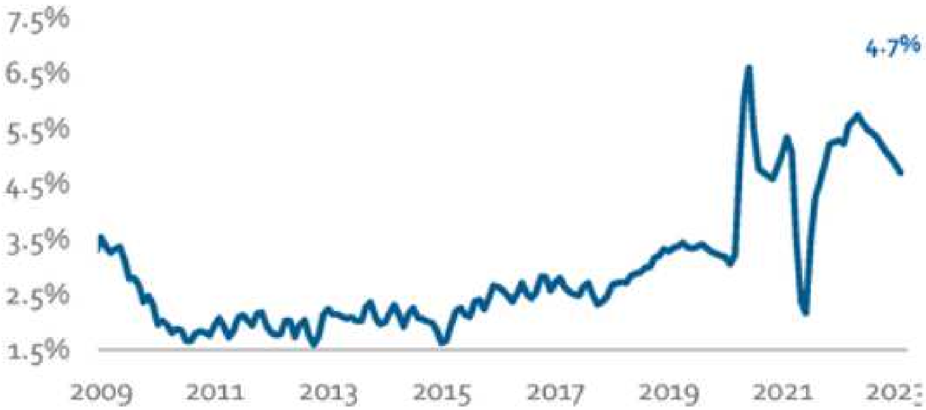


Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management GIC, Bloomberg

Current Indicators: Inflation

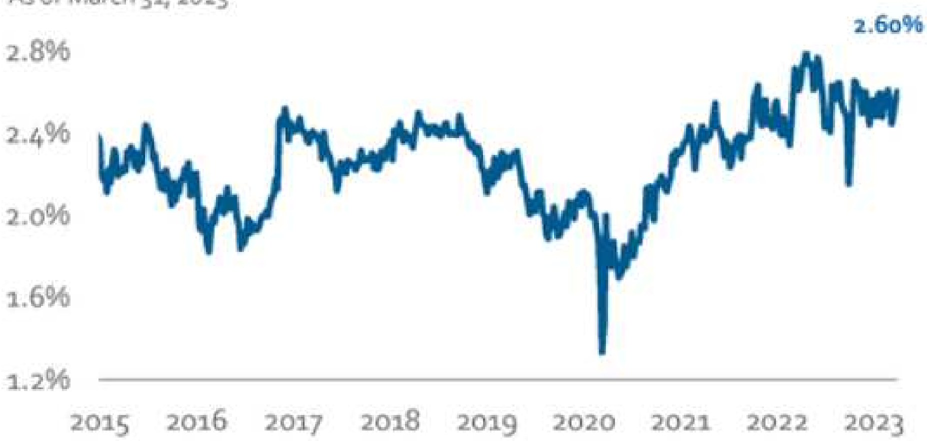
Average Hourly Earnings (Y/Y, 3-month average)

As of February 28, 2023



US Five-Year, Five-Year Inflation Swap Forward Rates

As of March 31, 2023



CPI, Core CPI, Personal Consumption Expenditures (Y/Y)

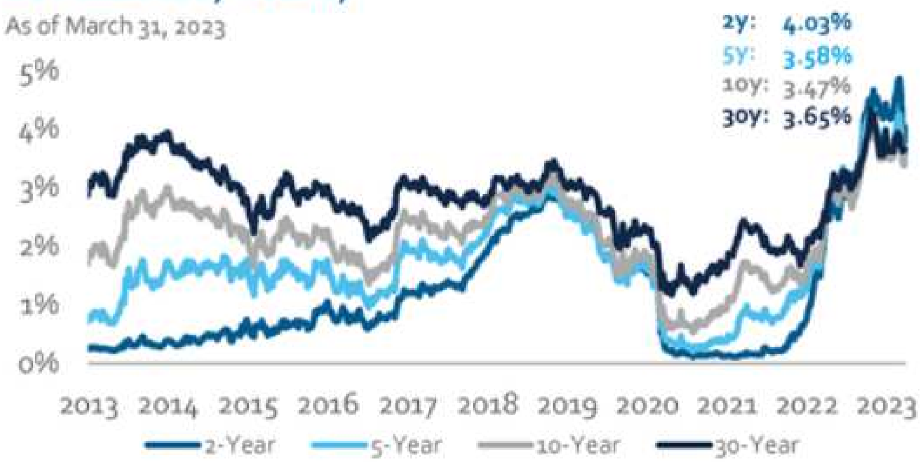
As of February 28, 2023

Source: Bloomberg, Haver Analytics, EvercoreISI Investor Surveys, Commitments of Traders (COT) Report, Morgan Stanley Wealth Management GIC

Current Indicators: Rates

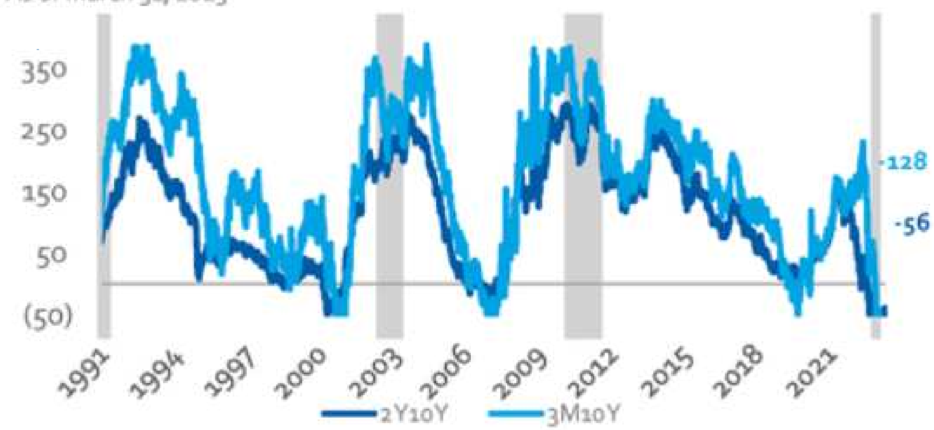
US Treasuries by Maturity

As of March 31, 2023



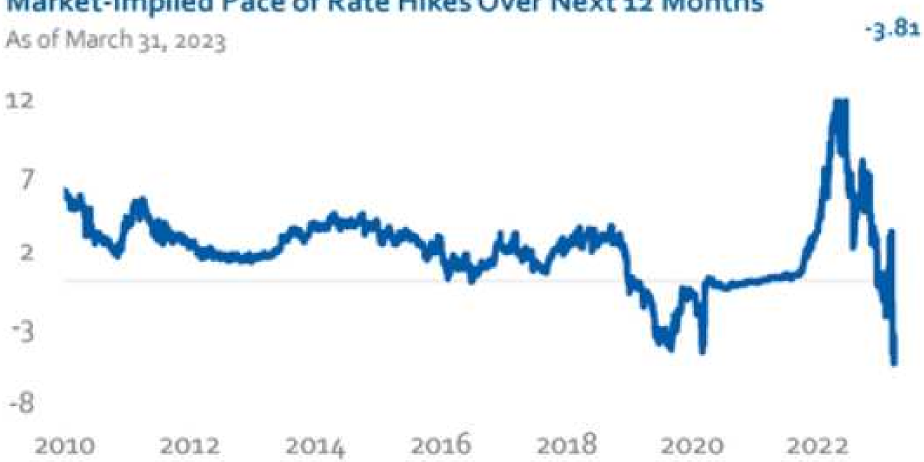
US Treasury Spreads: 3m10y & 2y10y (Bps)

As of March 31, 2023



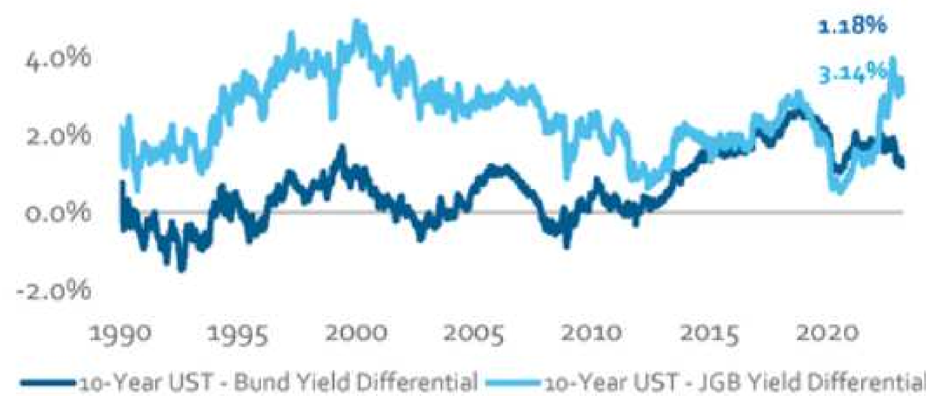
Market-Implied Pace of Rate Hikes Over Next 12 Months

As of March 31, 2023



10-Year Government Bond Yield Differentials

As of March 31, 2023



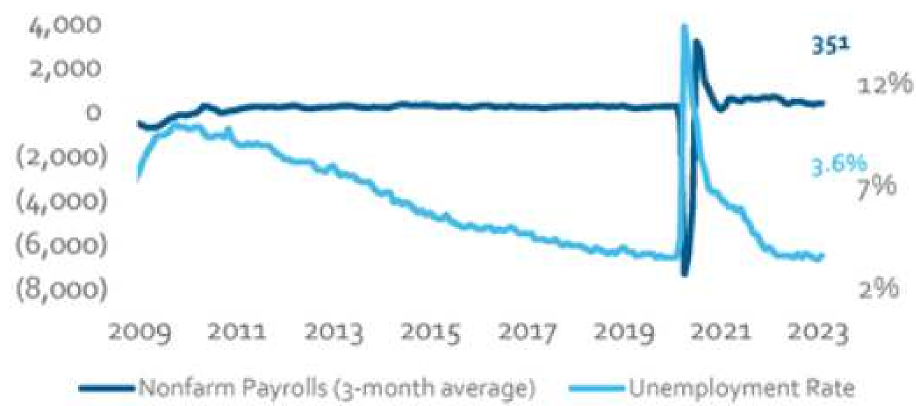
Source: Bloomberg, FactSet, Morgan Stanley Wealth Management GIC

Morgan Stanley

Current Indicators: Growth

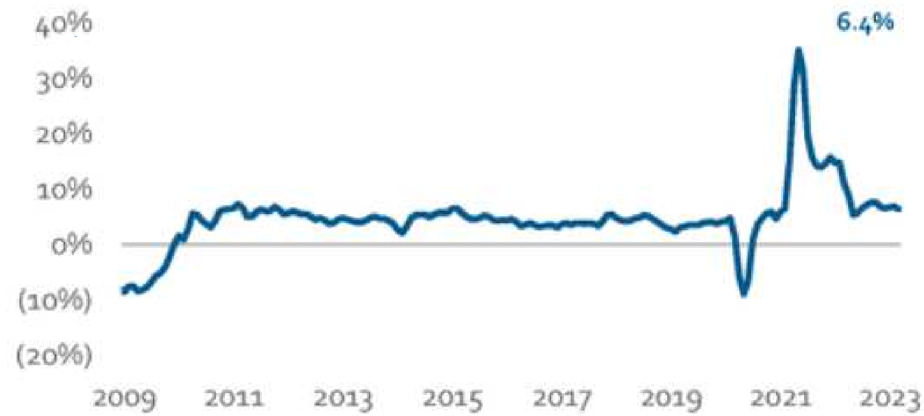
Nonfarm Payrolls & US Unemployment

As of February 28, 2023



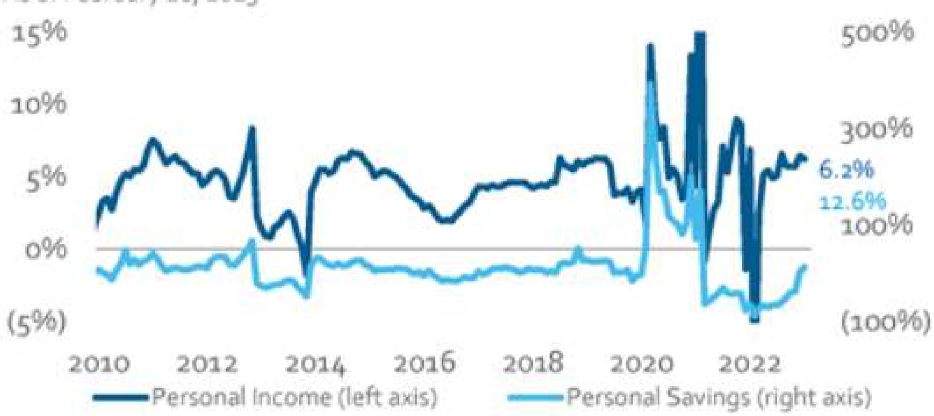
Retail Sales Ex Gas (Y/Y, 3-month average)

As of March 31, 2023



US Personal Savings & Personal Income (Y/Y)

As of February 28, 2023



US Housing (3-month average)

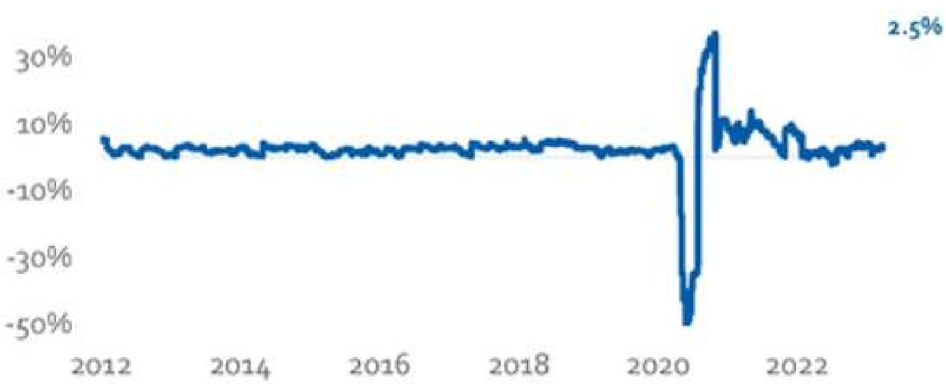
As of February 28, 2023

Source: Bloomberg, Haver Analytics, EvercoreISI Investor Surveys, Commitments of Traders (COT) Report, Morgan Stanley Wealth Management GIC

Current Indicators: Growth

Atlanta Fed GDPNow Forecast

As of March 31, 2023



Global Purchasing Manager Indices

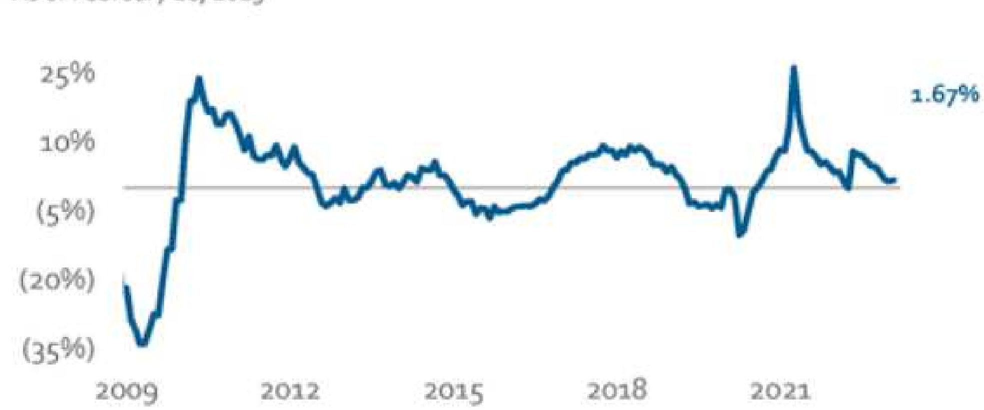
As of March 31, 2023

US Real Imports and Exports (Y/Y, 3M Average)

As of January 31, 2023

US Durable Goods Orders Ex-Transportation (Y/Y)

As of February 28, 2023



Source: Bloomberg, Haver Analytics, EvercoreISI Investor Surveys, Commitments of Traders (COT) Report, Morgan Stanley Wealth Management GIC

Charts in Focus: Residential Housing

Housing Adjacent Industries Have Diverged

As of March 29, 2023

Homeowners Are in a Much Better Position Than During the GFC

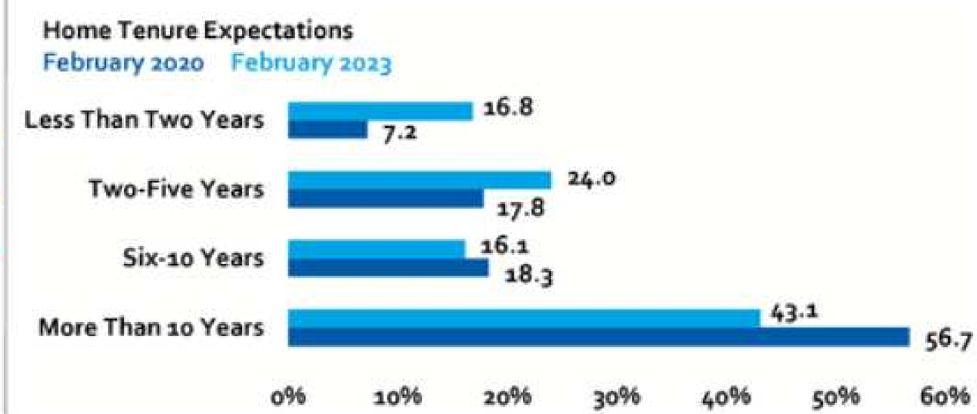
As of December 31, 2022

FICO Scores Have Improved Since the Pre-GFC Housing Bubble

As of December 31, 2022

Homeowners Expected Time in Their Homes Has Decreased

As of February 28, 2023



Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management GIC, Bloomberg, BCA Research

Morgan Stanley

Current Indicators: Equity Valuation

Morgan Stanley & Co. S&P 500 December 2023 Price Target

As of March 31, 2023

EPS Landscape	MS & Co 2024 EPS Est.	Multiple	Price Target	Upside / (Downside)
Bull Case	$251	16.70	4,200	2.2%
Base Case	$241	16.10	3,900	(5.1%)
Bear Case	$230	15.30	3,500	(14.8%)
Current S&P 500 Price			4,109	

Morgan Stanley & Co. and Consensus S&P 500 Earnings Estimates

As of March 31, 2023

S&P 500 Current and Historical Valuation

As of March 31, 2023

	Mar 31, 2023	Tech Bubble	Financial Crisis	20-Year Average	Current Relative to Average
S&P 500 Trailing P/E	19.6	28.9	12.1	18.3	1.07
S&P 500 Forward P/E	18.7	26.6	11.2	15.3	1.22
Technology	26.1	62.3	12.6	25.2	1.04
Consumer Discretionary	24.1	28.5	28.5	20.6	1.17
Communication Services	16.3	28.6	11.4	16.6	0.98
Industrials	19.2	20.1	8.7	17.6	1.09
Real Estate	35.0	-	-	-	-
Financials	13.2	13.9	7.8	14.5	0.91
Consumer Staples	20.5	19.6	11.5	18.0	1.13
Energy	10.2	25.2	11.6	21.4	0.48
Utilities	17.9	14.8	9.8	14.9	1.20
Materials	17.4	19.2	13.9	18.6	0.94
Health Care	17.4	24.5	9.3	18.1	0.96

Source: FactSet, Bloomberg, Morgan Stanley Wealth Management GIC

Frameworks: Active Manager Performance Metrics

Average Percentage of Active Managers Outperforming their Benchmark by Asset Class

As of February 28, 2023

			% Active Managers Outperforming		
Asset Class	Peer Group	Benchmark Index	Last 20 Years	2011-2021	YTD
US Equities	US Large-Cap Growth	Russell 1000 Growth	40	33	45
	US Large-Cap Value	Russell 1000 Value	44	42	65
	US Mid-Cap Growth	Russell Midcap Growth	42	39	37
	US Mid-Cap Value	Russell Midcap Value	40	38	81
	US Small-Cap Growth	Russell 2000 Growth	50	48	34
	US Small-Cap Value	Russell 2000 Value	51	44	81
International Equities	Europe Stock	MSCI Europe	53	54	37
	Japan Stock	MSCI Japan	52	54	42
	Emerging Markets	MSCI Emerging Markets	44	46	48
Fixed Income	US Ultrashort Bond	Bloomberg Barclays Govt./Credit: One-Year Duration	54	56	95
	US Short-Term Bond	Bloomberg Barclays Govt./Credit: One to Five Years	46	49	80
	US Intermediate-Term Bond	Bloomberg Barclays US Aggregate	48	50	41
	US High Yield Bond	ICE BofA US High Yield Master II	36	34	59
	US Bank Loans	S&P/LSTA Leveraged Loan	29	28	11
	US Intermediate-Term Municipal	S&P National AMT-Free Municipal	38	35	47
	World Bond	FTSE World Govt. Bond (USD-Hedged)	56	63	97
Real Estate	Global Real Estate	S&P Global REIT	42	39	5
	US Real Estate	FTSE NAREIT All Equity REITs	42	37	23

Source: Morningstar, FactSet, Morgan Stanley Wealth Management GIC, Trailing 12-Month Average

Fiduciary Schedule for the City of Stamford

Annual reviews and analysis provided to the City of Stamford CERF & OPEB Plans

Fiscal Quarter End	Morgan Stanley Consulting Group Services
Q2 2023 (January)	Investment Policy Statement (IPS) Review
Q3 2023 (April)	Cash Flow Analysis (using actuarial valuation reports)
Q4 2023 (July)	Total Fee Analysis
Q1 2024 (October)	Portfolio Risk and Asset Allocation Study

Morgan Stanley

Cash Flow Analysis City of Stamford CERF

Analysis provided to the City of Stamford CERF and OPEB Plans

City of Stamford CERF Pension
Cash Flow Analysis
April 20th, 2023 CERF meeting

David R. Javaheri, CIMA®, Managing Director, U.S. Government Entity Specialist
Kevin M. Nichols, CAIA®, CIMA®, CPWA®, Senior Investment Management Consultant, Executive Director, U.S. Government Entity Specialist
Joseph J. Matthews, CFA, CFP®, Senior Investment Management Consultant, First Vice President, U.S. Government Entity Specialist

CERF Meeting 4/20/2023	Fiscal Years Ending June 30th									
Cash Flow Report*	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Benefit Payments (Retiree Pension Payroll)	$ (18,934,994)	$ (19,735,000)	$ (20,447,000)	$ (21,067,000)	$ (21,675,000)	$ (22,290,000)	$ (22,837,000)	$ (23,373,000)	$ (23,798,000)	$ (24,216,000)
Employee Contributions	$ 2,018,617	$ 1,986,000	$ 1,987,000	$ 1,984,000	$ 1,969,000	$ 1,955,000	$ 1,948,000	$ 1,933,000	$ 1,911,000	$ 1,892,000
Actuarial Determined Employer Contribution (ADEC)	$ 3,752,628	$ 3,653,000	$ 3,852,000	$ 4,059,000	$ 4,222,000	$ 4,347,000	$ 4,462,000	$ 4,541,000	$ 4,616,000	$ 4,685,000
Estimated City + BOE Contributions	$ 3,752,628	$ 3,653,000	$ 3,852,000	$ 4,059,000	$ 4,222,000	$ 4,347,000	$ 4,462,000	$ 4,541,000	$ 4,616,000	$ 4,685,000
Administrative Expenses	$ (100,035)	$ (103,036)	$ (106,127)	$ (109,311)	$ (112,590)	$ (115,968)	$ (119,447)	$ (123,030)	$ (126,721)	$ (130,523)
Dividend & Interest Earned on Pension Portfolio	$ 6,051,586	$ 6,393,663	$ 6,822,038	$ 7,279,115	$ 7,766,815	$ 8,287,192	$ 8,842,434	$ 9,434,877	$ 10,067,014	$ 10,741,504
Net Cash Flow	**$ (7,112,163)**	**$ (7,702,337)**	**$ (7,785,962)**	**$ (7,744,885)**	**$ (7,717,185)**	**$ (7,700,808)**	**$ (7,584,566)**	**$ (7,464,123)**	**$ (7,203,986)**	**$ (6,897,496)**
Actuarial Accrued Liability	$ 283,524,868	$ 287,633,000	$ 291,542,000	$ 294,816,000	$ 297,541,000	$ 299,768,000	$ 301,459,000	$ 302,591,000	$ 303,190,000	$ 303,242,000
Market Value of Assets	$ 252,969,174	$ 267,268,711	$ 285,175,715	$ 304,282,488	$ 324,669,414	$ 346,422,265	$ 369,632,557	$ 394,397,938	$ 420,822,600	$ 449,017,714
Employee Payroll	$ 41,714,164	$ 42,380,809	$ 43,652,233	$ 44,961,800	$ 46,310,654	$ 47,699,974	$ 49,130,973	$ 50,604,902	$ 52,123,049	$ 53,686,741

Suggested ADEC presented for informational purposes only. Cash Flow determined by the estimated City and Board of Education contributions

ASSUMED RATE OF RETURN	6.70%
ASSUMED CITY CONTRIBUTION RATE (% OF PAYROLL)	8.62%
ASSUMED PORTFOLIO YIELD**	2.39%

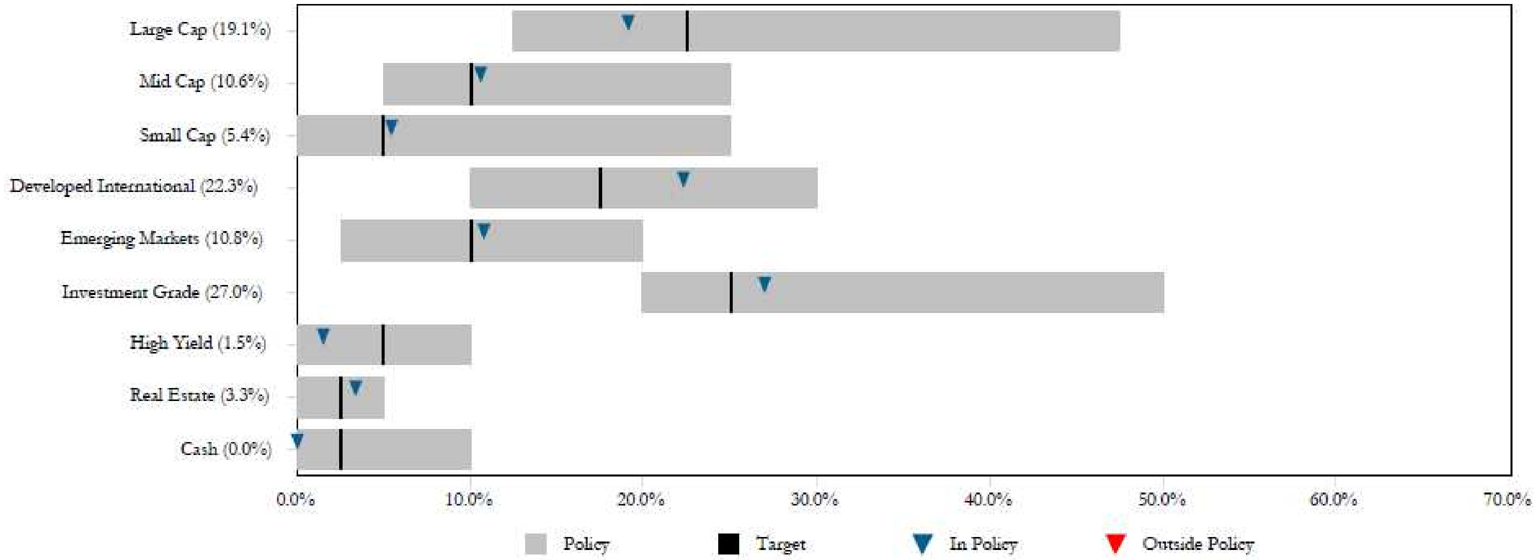
*FY 2022 Numbers are from the City's Annual Financial Statements, actuarial valuation and Morgan Stanley records
**CERF Portfolio Current Yield as of 3.31.22 maintained over analysis

Current Allocation and Ranges for CERF IPS

Investment Policy Statement Review

City of Stamford CERF
Compliance Monitor
As of March 31, 2023

Executive Summary



	Asset Allocation ($)	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)
Total Fund	**267,268,711**	**100.00**	-	-	**100.00**
Large Cap	51,012,005	19.09	12.50	47.50	22.50
Mid Cap	28,249,790	10.57	5.00	25.00	10.00
Small Cap	14,461,475	5.41	0.00	25.00	5.00
Developed International	59,692,766	22.33	10.00	30.00	17.50
Emerging Markets	28,804,938	10.78	2.50	20.00	10.00
Investment Grade	72,155,621	27.00	20.00	50.00	25.00
High Yield	3,995,934	1.50	0.00	10.00	5.00
Real Estate	8,896,182	3.33	0.00	5.00	2.50
Cash	-	0.00	0.00	10.00	2.50

Morgan Stanley

Current Allocation and Ranges for OPEB IPS

Investment Policy Statement Review

City of Stamford OPEB				
Asset Class	Current*	Min	Target	Max
Cash	1.56%	0.00%	0.00%	7.50%
Investment Grade Fixed Income	20.93%	12.50%	20.00%	40.00%
High Yield Fixed Income	0.00%	0.00%	2.50%	10.00%
US Large Cap Equities	24.83%	15.00%	25.00%	55.00%
US Mid Cap Equities	8.51%	5.00%	12.50%	20.00%
US Small Cap Equities	8.35%	0.00%	7.50%	20.00%
Developed International Equities	25.21%	10.00%	20.00%	35.00%
Emerging Market Equities	10.60%	5.00%	12.50%	20.00%
** = as of March 31st, 2023*				

Morgan Stanley

Benchmarks for CERF and OPEB IPS

Investment Policy Statement

City of Stamford CERF & OPEB	
Asset Class	Benchmark
Cash	90 Day T-Bill
Investment Grade Fixed Income	US Barclays Aggregate Bond Index
High Yield Fixed Income	US Barclays Corporate High Yield Index
US Large Cap Equities	S&P 500 Index
US Mid Cap Equities	Russell Mid Cap Index
US Small Cap Equities	Russell 2000 Index
Developed International Equities	MSCI EAFE
Emerging Market Equities	MSCI EM Index
Real Estate	MSCI REIT Index

Morgan Stanley

CERF Historical Funded Ratio

For Fiscal Years ending June 30th

City of Stamford CERF				
Fiscal Years Ending June 30th				
FYE	Assets	Liabilities	Funded Ratio	DWRR
2014	$ 209,313,155	$ 244,509,417.00	85.61%	16.65%
2015	$ 206,622,350	$ 250,062,776.00	82.63%	1.44%
2016	$ 190,594,323	$ 256,606,003.00	74.28%	-4.38%
2017	$ 210,354,348	$ 260,932,076.00	80.62%	14.62%
2018	$ 223,064,471	$ 280,600,216.00	79.50%	9.77%
2019	$ 226,353,660	$ 277,700,136.00	81.51%	4.50%
2020	$ 232,577,627	$ 295,622,794.00	78.67%	6.39%
2021	$ 301,659,968	$ 299,900,000.00	100.59%	32.89%#
2022	$ 252,969,174	$ 283,524,868.00	89.22%	-13.07%
2023*	$ 267,268,711	$ 287,633,000.00	92.92%	7.41%

* = asset value and performance as of March 31st, 2023. Liability estimate taken from actuarial valuation dated July 1, 2022.

= 6th percentile for Public Funds Nationwide

Morgan Stanley

OPEB Historical Funded Ratio

For Fiscal Years ending June 30th

City of Stamford OPEB				
Fiscal Years Ending June 30th				
FYE	Assets	Liabilities	Funded Ratio	DWRR
2017	$ 92,167,012	$ 354,679,524.00	25.99%	13.43%
2018	$ 116,316,787	$ 364,157,076.00	31.94%	8.51%
2019	$ 139,486,805	$ 404,502,040.00	32.79%	4.84%
2020	$ 167,672,853	$ 426,210,000.00	36.92%	6.55%
2021	$ 249,366,919	$ 449,135,000.00	55.70%	31.52%#
2022	$ 234,729,038	$ 316,424,256.00	74.18%	-15.51%
2023*	$ 259,239,205	$ 329,780,000.00	78.61%	7.84%
* = asset value and performance as of March 31st, 2023. Liability estimate taken from actuarial valuation dated July 1, 2022.				
# = 12th percentile for Public Funds Nationwide				

Important Disclosures

Global Investment Manager Analysis (GIMA) defines Adverse Active Alpha (AAA) as follows:

Adverse refers to the demonstrated ability to outperform in a variety of market environments and when conditions were difficult for active manager relative performance. “Difficult” periods were times when active management did not perform well relative to the index, as opposed to down market periods. At various times, active management has experienced difficult relative performance periods in up, down, and flat markets. We developed a set of factors to help discern which periods were more difficult for active managers that we utilize to identify managers that were able to overcome these headwinds and outperformed in the face of adversity.

Active refers to managers with high active share – i.e., managers whose portfolios looked different from the index – and had moderate to low tracking error. In this way, the ranking seeks to find managers that were active, but not taking outsized factor bets, such as large sector or industry bets and that had some degree of style consistency. The combination of high active share and low tracking error is fairly uncommon among active managers, but we believe these traits may point toward managers with strong stock picking skills.

Alpha refers to the demonstrated ability to add value relative to an index and/or peers. Back tests indicate that highly ranked managers as a group outperformed the index and style peer group over subsequent periods and relative to active share alone. By combining the “adverse” component with the “active” component, we believe we increase the odds of finding some of the most proficient stock pickers.

Important Considerations Regarding the Adverse Active Alpha Ranking Process:

Global Investment Manager Analysis, formerly Consulting Group Investment Advisor Research (CG IAR), provides comprehensive manager analysis for Morgan Stanley’s investment advisory platforms on a wide range of investment products, including separately managed accounts, mutual funds and exchange-traded funds in the equity, fixed income and alternative investment categories In our view, the Adverse Active Alpha manager ranking model is an important part of evaluating managers for consideration.

However, we do recognize that AAA cannot, in and of itself, tell us which managers’ strategies to invest in or when to buy or sell the strategies. While highly ranked managers historically performed well as a group in our analysis, past performance is not a guarantee of future results for any manager or strategy. Index returns assume reinvestment of dividends and, unlike fund or strategy returns, do not reflect any fees or expenses. Indices are unmanaged and not available for direct investment.

It is also important to keep in mind that just because a manager has high active share, a portfolio that looks different than the index (benchmark) doesn’t necessarily mean the portfolio had or will have better performance than the index. Being different than the index does not consider factors such as: the timeliness of data provided by the manager, the appropriateness of the benchmark used for comparison to the portfolio, the relevancy of the period(s) being analyzed between the portfolio and the benchmark, knowing the difference between the securities and their concentration in a manager’s portfolio vs. the benchmark and the potential that the data provided by the manager looked significantly different in periods before and after the performance snapshot(s) used for analysis. While the preceding considerations are not part of the AAA ranking model, GIMA’s strives to evaluate other material and forward looking factors as part of the overall manager evaluation process. Factors such as but not limited to manager turnover and changes to investment process can partially or fully negate a positive Adverse Active Alpha ranking. Additionally, highly ranked managers can have differing risk profiles that might not be suitable for all investors. For more information on AAA, please see the Adverse Active Alpha Ranking Model and Selecting Managers with Adverse Active Alpha whitepapers. The whitepaper are available from your Financial Advisor or Private Wealth Advisor.

ADVERSE ACTIVE ALPHA is a registered service mark of Morgan Stanley and/or its affiliates. U.S. Pat. No. 8,756,098 applies to the Adverse Active Alpha system and/or methodology.

Morgan Stanley

Important Disclosures (cont'd)

The Global Investment Manager Analysis (GIMA) Services Only Apply to Certain Investment Advisory Programs

GIMA evaluates certain investment products for the purposes of some – but not all – of Morgan Stanley Smith Barney LLC's investment advisory programs (as escribed in more detail in the applicable Form ADV Disclosure Document for Morgan Stanley Wealth Management). If you do not invest through one of these investment advisory programs, Morgan Stanley Wealth Management is not obligated to provide you notice of any GIMA status changes even though it may give notice to clients in other programs.

Focus List, Approved List and Tactical Opportunities List; Watch Policy

GIMA uses two methods to evaluate investment products in applicable advisory programs: Focus (and investment products meeting this standard are described as being on the Focus List) and Approved (and investment products meeting this standard are described as being on the Approved List). In general, Focus entails a more thorough evaluation of an investment product than Approved. Sometimes an investment product may be evaluated using the Focus List process but then placed on the Approved List instead of the Focus List.

Investment products may move from the Focus List to the Approved List, or vice versa. GIMA may also determine that an investment product no longer meets the criteria under either process and will no longer be recommended in investment advisory programs (in which case the investment product is given a "Not Approved" status).

GIMA has a "Watch" policy and may describe a Focus List or Approved List investment product as being on "Watch" if GIMA identifies specific areas that (a) merit further evaluation by GIMA and (b) may, but are not certain to, result in the investment product becoming "Not Approved." The Watch period depends on the length of time needed for GIMA to conduct its evaluation and for the investment manager or fund to address any concerns. GIMA may, but is not obligated to, note the Watch status in this report with a "W" or "Watch" next to the "Status" on the cover page.

Certain investment products on either the Focus List or Approved List may also be recommended for the Tactical Opportunities List based in part on tactical opportunities existing at a given time. The investment products on the Tactical Opportunities List change over time.

For more information on the Focus List, Approved List, Tactical Opportunities List and Watch processes, please see the applicable Form ADV Disclosure Document for Morgan Stanley Wealth Management. Your Financial Advisor or Private Wealth Advisor can also provide upon request a copy of a publication entitled "Manager Selection Process."

Strategy May Be Available as a Separately Managed Account or Mutual Fund Strategies are sometimes available in Morgan Stanley Wealth Management investment advisory programs both in the form of a separately managed account ("SMA") and a mutual fund. These may have different expenses and investment minimums. Your Financial Advisor or Private Wealth Advisor can provide more information on whether any particular strategy is available in more than one form in a particular investment advisory program.

For mutual funds, the investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Investors should carefully consider the investment objectives and risks as well as charges and expenses of a mutual fund before investing. The prospectus contains this and other important information about the mutual fund. To obtain a prospectus, contact your Financial Advisor or visit the mutual fund company's website. Please read the prospectus carefully before investing.

Morgan Stanley

Asset Class Risk Considerations

For index definitions to the indices referenced in this report please visit the following: http://www.morganstanleyfa.com/public/projectfiles/id.pdf

Equity securities may fluctuate in response to news on companies, industries, market conditions and general economic environment.

Investing in foreign markets entails risks not typically associated with domestic markets, such as currency fluctuations and controls, restrictions on foreign investments, less governmental supervision and regulation, and the potential for political instability. These risks may be magnified in countries with **emerging markets and frontier markets,** since these countries may have relatively unstable governments and less established markets and economies.

Investing in small- to medium-sized companies entails special risks, such as limited product lines, markets and financial resources, and greater volatility than securities of larger, more established companies.

The value of **fixed income securities** will fluctuate and, upon a sale, may be worth more or less than their original cost or maturity value. Bonds are subject to interest rate risk, call risk, reinvestment risk, liquidity risk, and credit risk of the issuer.

High yield bonds (bonds rated below investment grade) may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk, price volatility, and limited liquidity in the secondary market. High yield bonds should comprise only a limited portion of a balanced portfolio.

Interest on **municipal bonds** is generally exempt from federal income tax; however, some bonds may be subject to the alternative minimum tax (AMT). Typically, state tax-exemption applies if securities are issued within one's state of residence and, if applicable, local tax-exemption applies if securities are issued within one's city of residence.

Treasury Inflation Protection Securities' (TIPS) coupon payments and underlying principal are automatically increased to compensate for inflation by tracking the consumer price index (CPI). While the real rate of return is guaranteed, TIPS tend to offer a low return. Because the return of TIPS is linked to inflation, TIPS may significantly underperform versus conventional U.S. Treasuries in times of low inflation.

Ultrashort-term fixed income asset class is comprised of fixed income securities with high quality, very short maturities. They are therefore subject to the risks associated with debt securities such as credit and interest rate risk.

Alternative Investments Risks

Alternative investments, including hedge funds, private equity funds and managed futures, can be highly illiquid, are speculative and not suitable for all investors. Investing in alternative investments is only intended for experienced and sophisticated investors who are willing to bear the high economic risks associated with such an investment. Investors should carefully review and consider potential risks before investing. Certain of these risks may include:

- loss of all or a substantial portion of the investment due to leveraging, short-selling, or other speculative practices;
- lack of liquidity in that there may be no secondary market for the fund and none is expected to develop; volatility of returns;
- restrictions on transferring interests in a fund;
- potential lack of diversification and resulting higher risk due to concentration of trading authority when a single advisor is utilized;
- absence of information regarding valuations and pricing;
- complex tax structures and delays in tax reporting;
- less regulation and higher fees than mutual funds;
- fund of funds often have a higher fee structure than single manager funds as a result of an additional layer of fees; and risks associated with the operations, personnel and processes of the manager.

Asset Class Risk Considerations (cont'd)

Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets.

The **indices** are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment.

The **indices selected by Morgan Stanley Wealth Management** to measure performance are representative of broad asset classes. Morgan Stanley Wealth Management retains the right to change representative indices at any time.

Growth investing does not guarantee a profit or eliminate risk. The stocks of these companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations.

Value investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected.

Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

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