MEKETA

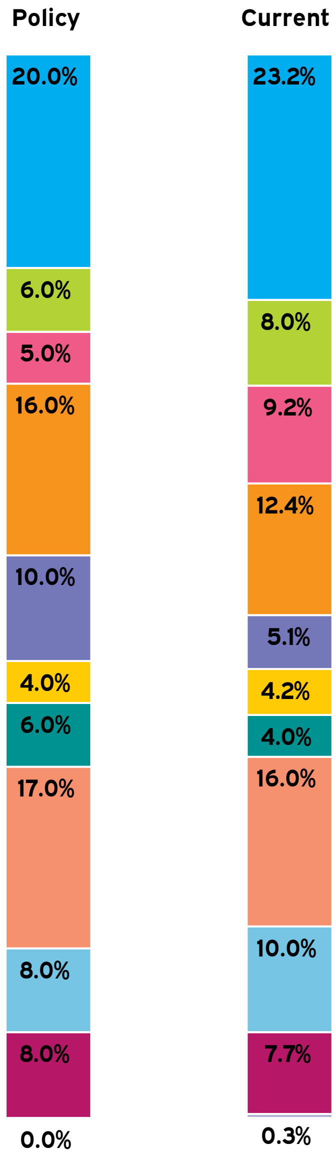
Massachusetts Housing Finance Agency Retirement System

Quarterly Review
December 31, 2023

Fund Evaluation Report

Fourth Quarter 2023
Performance Review

Asset Allocation Compliance | As of December 31, 2023



	Current Balance ($)	Current Allocation (%)	Policy (%)	Difference (%)	Policy Range (%)	Within IPS Range?
US Equity	56,006,714	23	20	3	15 - 25	Yes
Developed Market Equity	19,228,821	8	6	2	2 - 10	Yes
Emerging Market Equity	22,307,442	9	5	4	0 - 15	Yes
Investment Grade Bonds	30,010,939	12	16	-4	11 - 21	Yes
TIPS	12,254,473	5	10	-5	5 - 15	Yes
Emerging Market Bonds	10,137,703	4	4	0	1 - 7	Yes
High Yield Bonds	9,690,725	4	6	-2	3 - 9	Yes
Private Equity	38,573,556	16	17	-1	12 - 22	Yes
Real Estate	24,100,213	10	8	2	5 - 11	Yes
Infrastructure	18,616,024	8	8	0	5 - 12	Yes
Cash	791,998	0	0	0	0 - 5	Yes
Total	**241,718,608**	**100**	**100**	**0**		

Massachusetts Housing Finance Agency Retirement System

Asset Allocation & Performance | As of December 31, 2023

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Retirement System	**241,718,608**	**100.0**	**6.3**	**11.2**	**5.7**	**9.6**	**6.9**	**6.1**	**Jul-01**
60% MSCI ACWI / 40% Barclays Global Aggregate			*9.9*	*15.4*	*1.2*	*7.0*	*5.0*	*5.7*	
InvMetrics Public DB $50mm-$250mm Net (USD) Median			*8.2*	*13.3*	*3.6*	*8.7*	*6.6*	*6.1*	
Total Retirement System Rank			92	80	4	15	34	44	
Domestic Equity Assets	**56,006,714**	**23.2**	**12.0**	**24.3**	**8.4**	**15.1**	**11.4**	**8.2**	**Jul-01**
Russell 3000 Index			*12.1*	*26.0*	*8.5*	*15.2*	*11.5*	*8.4*	
eV US Large Cap Equity Median			*11.4*	*20.1*	*8.8*	*14.0*	*10.5*	*8.3*	
Domestic Equity Assets Rank			39	39	57	37	35	56	
Total International Developed Market Equity	**19,228,821**	**8.0**	**10.5**	**16.6**	**2.6**	**7.8**	**4.5**	**5.9**	**Jul-01**
MSCI EAFE (Net)			*10.4*	*18.2*	*4.0*	*8.2*	*4.3*	*5.3*	
eV EAFE Core Equity Median			*10.2*	*17.1*	*3.0*	*8.1*	*4.6*	*6.1*	
Total International Developed Market Equity Rank			43	56	59	60	56	54	
International Emerging Market Equity Assets	**22,307,442**	**9.2**	**11.3**	**30.3**	**0.4**	**7.8**	**3.3**	**2.3**	**Jul-07**
MSCI Emerging Markets (Net)			*7.9*	*9.8*	*-5.1*	*3.7*	*2.7*	*2.2*	
eV Emg Mkts Equity Median			*7.9*	*12.0*	*-3.3*	*5.1*	*3.3*	*2.7*	
International Emerging Market Equity Assets Rank			10	4	31	23	51	68	
Investment Grade Bond Assets	**30,010,939**	**12.4**	**7.1**	**6.8**	**-2.5**	**2.0**	**2.3**	**3.9**	**Jul-01**
Blmbg. U.S. Aggregate Index			*6.8*	*5.5*	*-3.3*	*1.1*	*1.8*	*3.7*	
eV US Core Fixed Inc Median			*6.8*	*5.9*	*-3.1*	*1.4*	*2.0*	*3.9*	
Investment Grade Bond Assets Rank			23	9	15	9	19	52	
High Yield Bond Assets	**9,690,725**	**4.0**	**7.3**	**12.1**	**1.1**	**5.3**	**4.4**	**5.7**	**Feb-05**
Credit Suisse High Yield Index			*6.8*	*13.6*	*2.3*	*5.2*	*4.4*	*6.1*	
eV US High Yield Fixed Inc Median			*6.5*	*12.2*	*2.1*	*5.1*	*4.3*	*5.8*	
High Yield Bond Assets Rank			12	54	89	36	37	59	

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
TIPS Assets	**12,254,473**	**5.1**	**4.5**	**3.9**	**-1.1**	**3.1**	**2.4**	**3.5**	**Jul-07**
Blmbg. U.S. TIPS			*4.7*	*3.9*	*-1.0*	*3.2*	*2.4*	*3.6*	
eV US TIPS / Inflation Fixed Inc Median			*4.5*	*3.9*	*-1.0*	*3.2*	*2.3*	*3.5*	
TIPS Assets Rank			47	53	63	63	43	40	
Emerging Market Debt Assets	**10,137,703**	**4.2**	**9.7**	**13.3**	**-2.7**	**2.3**	**0.0**	**-1.2**	**Mar-13**
50% JPM EMBI GD / 50% JPM GBI-EM			*8.6*	*11.9*	*-3.3*	*1.4*	*1.7*	*0.9*	
Real Estate Assets	**24,100,213**	**10.0**	**-2.8**	**-9.8**	**5.1**	**4.8**	**7.6**	**5.7**	**Apr-05**
NCREIF ODCE (Net)			*-5.0*	*-12.7*	*4.0*	*3.3*	*6.3*	*5.8*	
Private Equity Assets	**38,573,556**	**16.0**	**0.6**	**3.0**	**18.7**	**19.4**	**14.1**	**8.9**	**Oct-03**
Preqin Private Equity 1Q Lagged			*-0.6*	*6.2*	*16.5*	*15.3*	*14.8*	*13.4*	
Infrastructure Assets	**18,616,024**	**7.7**	**2.7**	**8.4**	**11.2**	**10.2**	**--**	**10.3**	**Oct-18**
CPI +3% (Unadjusted)			*0.4*	*6.4*	*8.8*	*7.2*	*5.9*	*6.9*	
Cash	**791,998**	**0.3**							

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Retirement System	**241,718,608**	**100.0**	**6.3**	**11.2**	**5.7**	**9.6**	**6.9**	**6.1**	**Jul-01**
60% MSCI ACWI / 40% Barclays Global Aggregate			*9.9*	*15.4*	*1.2*	*7.0*	*5.0*	*5.7*	
InvMetrics Public DB $50mm-$250mm Net (USD) Median			*8.2*	*13.3*	*3.6*	*8.7*	*6.6*	*6.1*	
Total Retirement System Rank			92	80	4	15	34	44	
Domestic Equity Assets	**56,006,714**	**23.2**	**12.0**	**24.3**	**8.4**	**15.1**	**11.4**	**8.2**	**Jul-01**
Russell 3000 Index			*12.1*	*26.0*	*8.5*	*15.2*	*11.5*	*8.4*	
eV US Large Cap Equity Median			*11.4*	*20.1*	*8.8*	*14.0*	*10.5*	*8.3*	
Domestic Equity Assets Rank			39	39	57	37	35	56	
SSgA Russell 1000 Value Index-NL	25,492,201	10.5	9.5	11.4	8.8	10.8	8.3	7.5	Jan-05
Russell 1000 Value Index			*9.5*	*11.5*	*8.9*	*10.9*	*8.4*	*7.6*	
eV US Large Cap Value Equity Median			*9.8*	*12.2*	*9.9*	*11.9*	*8.8*	*8.0*	
SSgA Russell 1000 Value Index-NL Rank			58	57	71	71	66	72	
SSgA Russell 1000 Growth-NL	25,584,607	10.6	14.2	42.7	8.8	19.4	14.8	11.8	Jul-07
Russell 1000 Growth Index			*14.2*	*42.7*	*8.9*	*19.5*	*14.9*	*11.9*	
eV US Large Cap Growth Equity Median			*13.7*	*38.0*	*6.1*	*16.4*	*12.8*	*10.6*	
SSgA Russell 1000 Growth-NL Rank			36	29	21	10	7	10	
SSgA Russell 2000 Index-NL	4,929,906	2.0	14.1	17.0	2.3	10.0	7.2	10.3	Aug-10
Russell 2000 Index			*14.0*	*16.9*	*2.2*	*10.0*	*7.2*	*10.3*	
eV US Small Cap Core Equity Median			*12.3*	*17.0*	*6.9*	*11.9*	*8.2*	*11.5*	
SSgA Russell 2000 Index-NL Rank			20	50	86	83	76	75	

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total International Developed Market Equity	**19,228,821**	**8.0**	**10.5**	**16.6**	**2.6**	**7.8**	**4.5**	**5.9**	**Jul-01**
MSCI EAFE (Net)			*10.4*	*18.2*	*4.0*	*8.2*	*4.3*	*5.3*	
eV EAFE Core Equity Median			*10.2*	*17.1*	*3.0*	*8.1*	*4.6*	*6.1*	
Total International Developed Market Equity Rank			43	56	59	60	56	54	
SSgA MSCI EAFE Index-NL	14,779,292	6.1	10.4	18.5	4.3	8.4	4.5	6.2	Aug-10
MSCI EAFE (Net)			*10.4*	*18.2*	*4.0*	*8.2*	*4.3*	*6.0*	
eV EAFE Core Equity Median			*10.2*	*17.1*	*3.0*	*8.1*	*4.6*	*6.7*	
SSgA MSCI EAFE Index-NL Rank			47	31	30	43	54	74	
SSgA MSCI EAFE Small Cap Index-NL	4,449,529	1.8	11.0	13.4	-0.6	6.6	4.8	7.2	Aug-10
MSCI EAFE Small Cap (Net)			*11.1*	*13.2*	*-0.7*	*6.6*	*4.8*	*7.1*	
eV EAFE Small Cap Core Median			*10.7*	*13.8*	*0.6*	*7.0*	*5.3*	*8.0*	
SSgA MSCI EAFE Small Cap Index-NL Rank			40	60	65	61	60	72	
International Emerging Market Equity Assets	**22,307,442**	**9.2**	**11.3**	**30.3**	**0.4**	**7.8**	**3.3**	**2.3**	**Jul-07**
MSCI Emerging Markets (Net)			*7.9*	*9.8*	*-5.1*	*3.7*	*2.7*	*2.2*	
eV Emg Mkts Equity Median			*7.9*	*12.0*	*-3.3*	*5.1*	*3.3*	*2.7*	
International Emerging Market Equity Assets Rank			10	4	31	23	51	68	
GQG Partners Emerging Markets	22,307,442	9.2	11.3	30.3	0.4	--	--	8.7	Apr-19
MSCI Emerging Markets (Net)			*7.9*	*9.8*	*-5.1*	*3.7*	*2.7*	*1.8*	
eV Emg Mkts Equity Median			*7.9*	*12.0*	*-3.3*	*5.1*	*3.3*	*3.2*	
GQG Partners Emerging Markets Rank			10	4	31	--	--	11	

Asset Allocation & Performance | As of December 31, 2023

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Investment Grade Bond Assets	**30,010,939**	**12.4**	**7.1**	**6.8**	**-2.5**	**2.0**	**2.3**	**3.9**	**Jul-01**
Blmbg. U.S. Aggregate Index			*6.8*	*5.5*	*-3.3*	*1.1*	*1.8*	*3.7*	
eV US Core Fixed Inc Median			*6.8*	*5.9*	*-3.1*	*1.4*	*2.0*	*3.9*	
Investment Grade Bond Assets Rank			23	9	15	9	19	52	
Longfellow Investment Grade Bond	30,010,939	12.4	7.1	6.8	-2.5	2.0	--	1.5	Sep-17
Blmbg. U.S. Aggregate Index			*6.8*	*5.5*	*-3.3*	*1.1*	*1.8*	*0.9*	
eV US Core Fixed Inc Median			*6.8*	*5.9*	*-3.1*	*1.4*	*2.0*	*1.1*	
Longfellow Investment Grade Bond Rank			23	9	15	9	--	10	
High Yield Bond Assets	**9,690,725**	**4.0**	**7.3**	**12.1**	**1.1**	**5.3**	**4.4**	**5.7**	**Feb-05**
Credit Suisse High Yield Index			*6.8*	*13.6*	*2.3*	*5.2*	*4.4*	*6.1*	
eV US High Yield Fixed Inc Median			*6.5*	*12.2*	*2.1*	*5.1*	*4.3*	*5.8*	
High Yield Bond Assets Rank			12	54	89	36	37	59	
Lord Abbett High Yield Core	9,690,725	4.0	7.3	12.1	1.1	--	--	3.4	Jul-19
Blmbg. U.S. Corp: High Yield Index			*7.2*	*13.4*	*2.0*	*5.4*	*4.6*	*3.8*	
eV US High Yield Fixed Inc Median			*6.5*	*12.2*	*2.1*	*5.1*	*4.3*	*3.6*	
Lord Abbett High Yield Core Rank			12	54	88	--	--	56	

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
TIPS Assets	**12,254,473**	**5.1**	**4.5**	**3.9**	**-1.1**	**3.1**	**2.4**	**3.5**	**Jul-07**
Blmbg. U.S. TIPS			*4.7*	*3.9*	*-1.0*	*3.2*	*2.4*	*3.6*	
eV US TIPS / Inflation Fixed Inc Median			*4.5*	*3.9*	*-1.0*	*3.2*	*2.3*	*3.5*	
TIPS Assets Rank			47	53	63	63	43	40	
SSgA TIPS-NL	12,254,473	5.1	4.5	3.9	-1.1	3.1	2.3	3.5	Jul-07
Blmbg. U.S. TIPS			*4.7*	*3.9*	*-1.0*	*3.2*	*2.4*	*3.6*	
eV US TIPS / Inflation Fixed Inc Median			*4.5*	*3.9*	*-1.0*	*3.2*	*2.3*	*3.5*	
SSgA TIPS-NL Rank			47	53	64	63	46	42	
Emerging Market Debt Assets	**10,137,703**	**4.2**	**9.7**	**13.3**	**-2.7**	**2.3**	**0.0**	**-1.2**	**Mar-13**
50% JPM EMBI GD / 50% JPM GBI-EM			*8.6*	*11.9*	*-3.3*	*1.4*	*1.7*	*0.9*	
Metlife Emerging Markets Debt	4,263,884	1.8	8.1	12.6	-2.0	2.7	--	2.5	Nov-16
MetLife Custom Benchmark			*7.6*	*10.7*	*-2.4*	*2.2*	*2.5*	*1.9*	
Aberdeen Emerging Markets Bond Fund	5,873,820	2.4	11.0	13.8	-3.1	2.0	--	2.0	Dec-16
JPM EMBI Global Diversified			*9.2*	*11.1*	*-3.6*	*1.7*	*3.2*	*2.1*	
Real Estate Assets	**24,100,213**	**10.0**	**-2.8**	**-9.8**	**5.1**	**4.8**	**7.6**	**5.7**	**Apr-05**
NCREIF ODCE (Net)			*-5.0*	*-12.7*	*4.0*	*3.3*	*6.3*	*5.8*	
Intercontinental U.S. REIF	9,739,863	4.0	-5.8	-16.0	2.7	3.4	--	6.5	Oct-14
NCREIF ODCE (Net)			*-5.0*	*-12.7*	*4.0*	*3.3*	*6.3*	*6.0*	
AEW Core Property Trust	10,505,110	4.3	-1.1	-8.5	6.0	4.7	--	6.5	Oct-14
NCREIF ODCE (Net)			*-5.0*	*-12.7*	*4.0*	*3.3*	*6.3*	*6.0*	
AEW Partners IX, L.P.	3,855,240	1.6	0.6	6.5	--	--	--	-6.3	Apr-21
NCREIF ODCE (Net)			*-5.0*	*-12.7*	*4.0*	*3.3*	*6.3*	*3.7*	

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Private Equity Assets	**38,573,556**	**16.0**	**0.6**	**3.0**	**18.7**	**19.4**	**14.1**	**8.9**	**Oct-03**
Preqin Private Equity 1Q Lagged			*-0.6*	*6.2*	*16.5*	*15.3*	*14.8*	*13.4*	
Ascent Venture Partners - Fund V	649,801	0.3							
Ascent Venture Partners - Fund VI	1,559,539	0.6							
Constitution Capital Partners Ironsides III	5,460,041	2.3							
Constitution Capital Partners Ironsides IV	3,148,166	1.3							
Constitution Capital Partners Ironsides V	2,779,556	1.1							
Constitution Capital Direct IV	1,640,768	0.7							
Constitution Capital Direct V	4,351,269	1.8							
Constitution Capital Co-Investment Fund VI, L.P.	4,319,213	1.8							
Goldman Sachs PEP 2005	103,475	0.0							
HarbourVest Partners VIII	47,342	0.0							
HarbourVest Partners IX	2,848,501	1.2							
HarbourVest X Buyout Fund	5,484,602	2.3							
HarbourVest Partners XI	4,985,858	2.1							
HarbourVest Fund XII	1,195,424	0.5							

	Market Value $	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Infrastructure Assets	**18,616,024**	**7.7**	**2.7**	**8.4**	**11.2**	**10.2**	**--**	**10.3**	**Oct-18**
CPI +3% (Unadjusted)			*0.4*	*6.4*	*8.8*	*7.2*	*5.9*	*6.9*	
IFM Global Infrastructure (U.S.), L.P.[CE]	18,616,024	7.7	2.7	8.4	11.2	10.2	--	10.3	Oct-18
CPI +3% (Unadjusted)			*0.4*	*6.4*	*8.8*	*7.2*	*5.9*	*6.9*	
Cash	**791,998**	**0.3**							
Cash STIF	791,998	0.3							

Calendar Year Performance

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
Total Retirement System	**11.2**	**-8.6**	**16.2**	**14.1**	**17.4**	**-3.2**	**14.3**	**9.6**	**-2.7**	**4.3**
60% MSCI ACWI / 40% Barclays Global Aggregate	*15.4*	*-17.3*	*8.8*	*14.0*	*18.6*	*-6.0*	*17.1*	*5.7*	*-2.5*	*2.8*
Domestic Equity Assets	**24.3**	**-18.2**	**25.2**	**21.5**	**30.8**	**-5.6**	**20.9**	**13.0**	**0.4**	**12.4**
Russell 3000 Index	*26.0*	*-19.2*	*25.7*	*20.9*	*31.0*	*-5.2*	*21.1*	*12.7*	*0.5*	*12.6*
SSgA Russell 1000 Value Index-NL	11.4	-7.6	25.1	2.8	26.5	-8.3	13.7	17.2	-3.8	13.3
Russell 1000 Value Index	*11.5*	*-7.5*	*25.2*	*2.8*	*26.5*	*-8.3*	*13.7*	*17.3*	*-3.8*	*13.5*
SSgA Russell 1000 Growth-NL	42.7	-29.2	27.5	38.4	36.3	-1.8	30.1	7.1	5.5	13.0
Russell 1000 Growth Index	*42.7*	*-29.1*	*27.6*	*38.5*	*36.4*	*-1.5*	*30.2*	*7.1*	*5.7*	*13.1*
SSgA Russell 2000 Index-NL	17.0	-20.3	14.9	19.9	25.5	-11.0	14.6	21.4	-4.5	4.9
Russell 2000 Index	*16.9*	*-20.4*	*14.8*	*20.0*	*25.5*	*-11.0*	*14.6*	*21.3*	*-4.4*	*4.9*
Total International Developed Market Equity	**16.6**	**-16.4**	**10.9**	**9.2**	**23.1**	**-14.8**	**27.3**	**1.6**	**2.0**	**-4.7**
MSCI EAFE (Net)	*18.2*	*-14.5*	*11.3*	*7.8*	*22.0*	*-13.8*	*25.0*	*1.0*	*-0.8*	*-4.9*
SSgA MSCI EAFE Index-NL	18.5	-14.2	11.4	8.2	22.4	-13.6	25.4	1.3	-0.6	-4.7
MSCI EAFE (Net)	*18.2*	*-14.5*	*11.3*	*7.8*	*22.0*	*-13.8*	*25.0*	*1.0*	*-0.8*	*-4.9*
SSgA MSCI EAFE Small Cap Index-NL	13.4	-21.1	9.9	12.2	24.7	-17.8	33.0	2.2	9.4	-4.9
MSCI EAFE Small Cap (Net)	*13.2*	*-21.4*	*10.1*	*12.3*	*25.0*	*-17.9*	*33.0*	*2.2*	*9.6*	*-4.9*
International Emerging Market Equity Assets	**30.3**	**-21.2**	**-1.5**	**24.6**	**15.8**	**-17.9**	**31.8**	**11.7**	**-17.9**	**-4.4**
MSCI Emerging Markets (Net)	*9.8*	*-20.1*	*-2.5*	*18.3*	*18.4*	*-14.6*	*37.3*	*11.2*	*-14.9*	*-2.2*
GQG Partners Emerging Markets	30.3	-21.2	-1.5	33.9	--	--	--	--	--	--
MSCI Emerging Markets (Net)	*9.8*	*-20.1*	*-2.5*	*18.3*	*18.4*	*-14.6*	*37.3*	*11.2*	*-14.9*	*-2.2*

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
Investment Grade Bond Assets	**6.8**	**-13.1**	**-0.2**	**9.2**	**8.9**	**-0.1**	**3.5**	**2.7**	**0.8**	**6.1**
Blmbg. U.S. Aggregate Index	*5.5*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*	*3.5*	*2.6*	*0.5*	*6.0*
Longfellow Investment Grade Bond	6.8	-13.1	-0.2	9.2	8.9	-0.1	--	--	--	--
Blmbg. U.S. Aggregate Index	*5.5*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*	*3.5*	*2.6*	*0.5*	*6.0*
High Yield Bond Assets	**12.1**	**-13.0**	**5.8**	**8.6**	**15.5**	**-3.7**	**6.8**	**11.5**	**-0.2**	**4.1**
Credit Suisse High Yield Index	*13.6*	*-10.6*	*5.5*	*5.5*	*14.0*	*-2.4*	*7.0*	*18.3*	*-4.9*	*1.9*
Lord Abbett High Yield Core	12.1	-12.9	5.8	8.6	--	--	--	--	--	--
Blmbg. U.S. Corp: High Yield Index	*13.4*	*-11.2*	*5.3*	*7.1*	*14.3*	*-2.1*	*7.5*	*17.1*	*-4.5*	*2.5*
TIPS Assets	**3.9**	**-12.0**	**5.9**	**10.9**	**8.4**	**-1.3**	**3.0**	**4.6**	**-1.4**	**3.6**
Blmbg. U.S. TIPS	*3.9*	*-11.8*	*6.0*	*11.0*	*8.4*	*-1.3*	*3.0*	*4.7*	*-1.4*	*3.6*
SSgA TIPS-NL	3.9	-12.0	5.9	10.9	8.4	-1.3	2.9	4.4	-1.4	3.6
Blmbg. U.S. TIPS	*3.9*	*-11.8*	*6.0*	*11.0*	*8.4*	*-1.3*	*3.0*	*4.7*	*-1.4*	*3.6*
Emerging Market Debt Assets	**13.3**	**-15.3**	**-4.0**	**5.5**	**14.9**	**-7.1**	**13.1**	**10.0**	**-15.2**	**-8.5**
50% JPM EMBI GD / 50% JPM GBI-EM	*11.9*	*-14.8*	*-5.3*	*4.0*	*14.3*	*-5.2*	*12.7*	*10.2*	*-7.1*	*0.7*
Metlife Emerging Markets Debt	12.6	-13.3	-3.7	6.1	14.5	-6.6	13.4	--	--	--
MetLife Custom Benchmark	*10.7*	*-13.5*	*-2.9*	*5.4*	*13.7*	*-4.0*	*10.6*	*10.0*	*-3.8*	*1.9*
Aberdeen Emerging Markets Bond Fund	13.8	-16.6	-4.0	5.0	15.3	-7.5	12.7	--	--	--
JPM EMBI Global Diversified	*11.1*	*-17.8*	*-1.8*	*5.3*	*15.0*	*-4.3*	*10.3*	*10.2*	*1.2*	*7.4*

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
Real Estate Assets	**-9.8**	**7.8**	**19.4**	**0.5**	**8.1**	**8.3**	**8.4**	**9.0**	**13.8**	**12.8**
NCREIF ODCE (Net)	*-12.7*	*6.5*	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*
Intercontinental U.S. REIF	-16.0	7.4	20.0	1.0	8.2	9.3	7.5	10.9	12.7	--
NCREIF ODCE (Net)	*-12.7*	*6.5*	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*
AEW Core Property Trust	-8.5	7.8	20.8	0.3	5.1	6.6	6.6	7.6	12.8	--
NCREIF ODCE (Net)	*-12.7*	*6.5*	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*
AEW Partners IX, L.P.	6.5	5.6	--	--	--	--	--	--	--	--
NCREIF ODCE (Net)	*-12.7*	*6.5*	*21.0*	*0.3*	*4.4*	*7.4*	*6.7*	*7.8*	*14.0*	*11.5*
Private Equity Assets	**3.0**	**11.1**	**46.1**	**25.3**	**15.7**	**13.7**	**11.8**	**6.3**	**0.8**	**13.5**
Preqin Private Equity 1Q Lagged	*6.2*	*2.9*	*44.7*	*17.0*	*10.2*	*15.7*	*18.0*	*10.2*	*10.9*	*16.4*
Ascent Venture Partners - Fund V										
Ascent Venture Partners - Fund VI										
Constitution Capital Partners Ironsides III										
Constitution Capital Partners Ironsides IV										
Constitution Capital Partners Ironsides V										
Constitution Capital Direct IV										
Constitution Capital Direct V										
Constitution Capital Co-Investment Fund VI, L.P.										
Goldman Sachs PEP 2005										
HarbourVest Partners VIII										

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
HarbourVest Partners IX										
HarbourVest X Buyout Fund										
HarbourVest Partners XI										
HarbourVest Fund XII										
Infrastructure Assets	**8.4**	**8.2**	**17.4**	**3.1**	**14.6**	**--**	**--**	**--**	**--**	**--**
CPI +3% (Unadjusted)	*6.4*	*9.6*	*10.2*	*4.4*	*5.3*	*5.0*	*5.2*	*5.1*	*3.7*	*3.8*
IFM Global Infrastructure (U.S.), L.P.[CE]	8.4	8.2	17.4	3.1	14.6	--	--	--	--	--
CPI +3% (Unadjusted)	*6.4*	*9.6*	*10.2*	*4.4*	*5.3*	*5.0*	*5.2*	*5.1*	*3.7*	*3.8*
Cash										
Cash STIF										

Benchmark History

From Date	To Date	Benchmark
Metlife Emerging Markets Debt		
02/01/2002	Present	30.0% JPM GBI-EM Global Diversified, 35.0% JPM CEMBI Broad Diversified, 35.0% JPM EMBI Global (USD)

Risk Return Statistics

	3 Yrs (%)	5 Yrs (%)
	Total Retirement System	Total Retirement System
RETURN SUMMARY STATISTICS		
Maximum Return	4.6	5.7
Minimum Return	-4.4	-6.5
Return	5.7	9.6
Excess Return	3.8	7.7
Excess Performance	4.5	2.6
RISK SUMMARY STATISTICS		
Beta	0.6	0.7
Upside Risk	6.6	7.6
Downside Risk	5.1	5.3
RISK/RETURN SUMMARY STATISTICS		
Standard Deviation	8.2	8.9
Sortino Ratio	0.7	1.4
Alpha	4.8	4.7
Sharpe Ratio	0.5	0.9
Excess Risk	8.2	8.9
Tracking Error	5.7	5.2
Information Ratio	0.7	0.4
CORRELATION STATISTICS		
R-Squared	0.9	0.9
Actual Correlation	0.9	1.0

Appendices

MEKETA

Corporate Update | 4Q.2023

Corporate Update

7
Offices

235+
Employees

245+
Clients

$1.8T
Assets Under Advisement

$200B
Assets in Alternative Investments

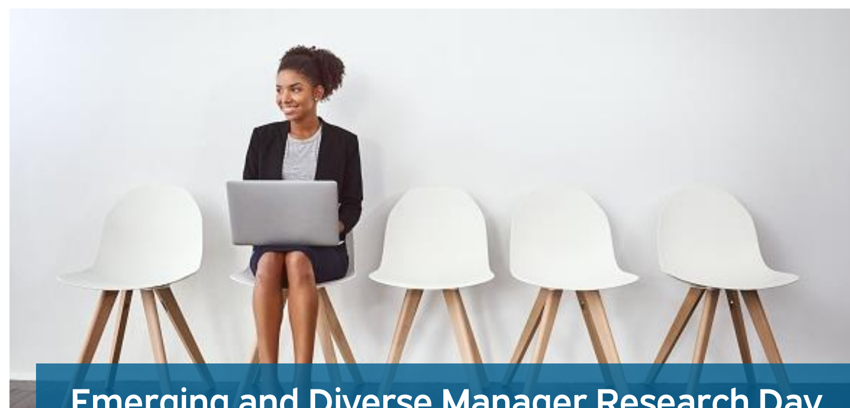
98%
Client Retention Rate

5:1
Client | Consultant Ratio

Meketa Investment Group is proud to work for over 15 million American families everyday!

UPCOMING EVENTS

Q4 Investment Perspectives Webcast
April 2024



Emerging and Diverse Manager Research Day
April 2024

Client and employee counts as of December 31, 2023; assets as of September 30, 2023.
Client retention rate is one minus the number of clients lost divided by the number of clients at prior year-end.

THOUGHT LEADERSHIP

Read our December Connectives "Navigating US China Tensions with Dynamic Portfolio Levers"

Sifting through economic, financial, and political factors is proving to be increasingly challenging for institutional investors as sentiment toward China continues to turn negative in western governments.

While some US investors have decided to actively underweight or even exit China altogether, others are seeking dynamic portfolio and manager solutions.

Read more here:
https://meketa.com/news/meketa-connectives-navigating-us-china-tensions-with-dynamic-portfolio-levers/

Read our recent white paper "Opportunities in Critical Minerals"

The push toward net-zero emissions has expedited the need for green energy and technology. At the forefront of this green energy boom are critical minerals, the essential inputs to all types of green technologies, especially electric vehicles ("EVs") and EV batteries.

This research note provides an overview of critical minerals, their uses, current market size, as well as describes the unique opportunity that critical minerals may provide for investors.

Read more here:
https://meketa.com/leadership/the-opportunity-in-critical-minerals/

Watch our recent webinar "Mission Driven Investing Manager Research Day Roundtable"

As part of Meketa's first Public and Private Markets Mission Driven Investing Manager Research Day, we hosted a one-hour roundtable discussion with a panel of institutional investors speaking about their experiences with mission driven investing. The panel includes perspectives from investors who invest broadly in mission-driven investments, as well as specifically for economic development in a particular state or region and as informed by religious values. Discussion topics include impact and return goals, mission related investment structures, best practices in manager due diligence and other areas relevant for the mission driven investor.

Read more here:
https://meketa.com/leadership/december-2023-mission-driven-investing-manager-research-day-roundtable/

MEKETA VALUES CULTURE

Whether looking for new team members or getting to know our current fellow team mates better, Meketa values the people we work with.




MEKETA IN THE NEWS

Pensions&Investments

Asset owners lean on consultants to be educated about ESG

By Palash Ghosh | 11.20.23

Read full article here

Meketa assists clients in understanding different approaches to sustainability, including focusing on integrating material sustainability financial risks and opportunities, seeking investments that also offer impact on a given environmental or social themes, and investing in products for socially responsible ends that do not include a performance expectation to meet or exceed a market beta, said Sarah Bernstein, head of sustainability. "Some pension funds have specific requests, for example how to respond to ESG and/or anti-ESG legislation; provide analysis on options to address climate risks and opportunities; or address diversity, equity and inclusion concerns," she added.

One area that is seeing a lot of interest from investors is opportunities around the energy transition. Lisa Bacon, managing principal, private markets consultant and infrastructure program lead at Meketa, said deploying capital into renewables and related infrastructure has been going on for a number of years even before "energy transition" and "decarbonization" became common terms.

In fact, "as both governmental entities and corporates in the U.S. and abroad have established more ambitious goals for reducing greenhouse gases and reaching net-zero carbon emissions, demand for private capital to support investments in assets and companies that will help meet these goals has also increased," Bacon said. "Opportunities have also arisen in the natural resources sector involving alternative fuels, metals and minerals for batteries and electric chargers, and other sustainable inputs and activities." Bacon added that Meketa and its clients want to be investing in the areas "where economic activity is increasing and where growth potential supports attractive risk-adjusted returns."

Impact of higher rates top of mind for institutions

By Palash Ghosh | 11.20.23

Read full article here

Aside from rising interest rates, noted Frank Benham, director of research at Meketa, his firm's clients are also concerned about the potential for an economic hard landing, as well as both political and economic risks in China.

Regarding China, Amy Hsiang, director of public markets manager research at Meketa, said clients are interested in learning more about emerging markets. "Whether or not translates to actually increasing allocations to emerging markets, only time will tell," Hsiang said. "We have not seen clients actively avoid China."

"Clients are increasing exposure to select alternatives like private credit and private equity. This needs to be balanced with an understanding of each clients' liquidity needs to ensure the portfolio can deliver on all commitments through a market cycle." John A. Haggerty, director of private market investments at Meketa, noted that in times of uncertainty and market volatility, the issue of placing value on alternative assets naturally receives more scrutiny. "Private market performance lags public market performance in both up markets and down markets," he said. "So, the gaps have been greater in recent years with the stock market swings, negative in 2022 and positive for much of 2023."

FUNDfire

Corporate Pensions at 'Inflection Point' as Funded Statuses Improve

By Bridget Hickey 11.28.23

Read full article here

Corporate pension sponsors are at an "inflection point" when it comes to deciding about the future of their plans, said Jonathan Camp, a managing principal at investment consultant Meketa.

Companies may choose to hedge their liabilities or transfer risk. Almost 90% of corporate pension respondents to a recent survey by MetLife said they were interested in completely divesting all their defined benefit plan liabilities.

However, the news earlier this month that International Business Machines, better known as IBM, is reopening its defined benefit pension as a cash balance plan has sparked a conversation within the industry about whether other companies will follow suit.

Companies that are over-funded may opt to follow in IBM's stead, Camp suggested. He added that one client, (unnamed), re-opened its pension plan more than a year ago.

"The benefit of just keeping your frozen pension plan on your books is that it's very easy to open it back up in a different form in the future, versus if you terminate your plan," he said. "It will be interesting to see, if now that we have this first mover publicly, if other companies think to themselves, 'well, you know, I can do that too'."

The Magnificent Seven

What are the Magnificent Seven?

→ The Magnificent Seven are a basket of mega-cap stocks that currently dominate the equity market.

- Five of the seven companies are considered leaders in the technology industry.
- The other two (Amazon and Tesla) are heavily intertwined with technology and generally considered leaders in the industry.

→ They include:

- Alphabet (Google)
- Amazon
- Apple
- Meta (Facebook)
- Microsoft
- Nvidia
- Tesla

A Brief History of the Acronyms

→ FAANG, originally FANG, was a term used to describe some of the highest-growth tech stocks of the 2000's.

- It included Facebook (now Meta), Amazon, Apple (added later), Netflix, and Google (now Alphabet).

→ A changing market environment and re-branding of several companies prompted a shift in acronyms in 2021.

- Netflix was dropped and Microsoft was added, changing the acronym to MAMAA.[1]

→ In 2023, this group of MAMAA stocks was expanded to include Nvidia and Tesla, which together became The Magnificent Seven.

Timeline of Tech Stock Acronyms

2013

→ The term FANG is coined.

- Facebook (now Meta)
- Amazon
- Netflix
- Google (now Alphabet)

2017

→ Apple is added to FANG, expanding it to FAANG.

2021

→ FAANG drops Netflix, adds Microsoft, and rebrands to MAMAA.

- Meta
- Amazon
- Microsoft
- Alphabet
- Apple

2023

→ The Magnificent Seven term emerges. (also known as MAMA ANT)

- Alphabet
- Amazon
- Apple
- Meta
- Microsoft
- Nvidia
- Tesla

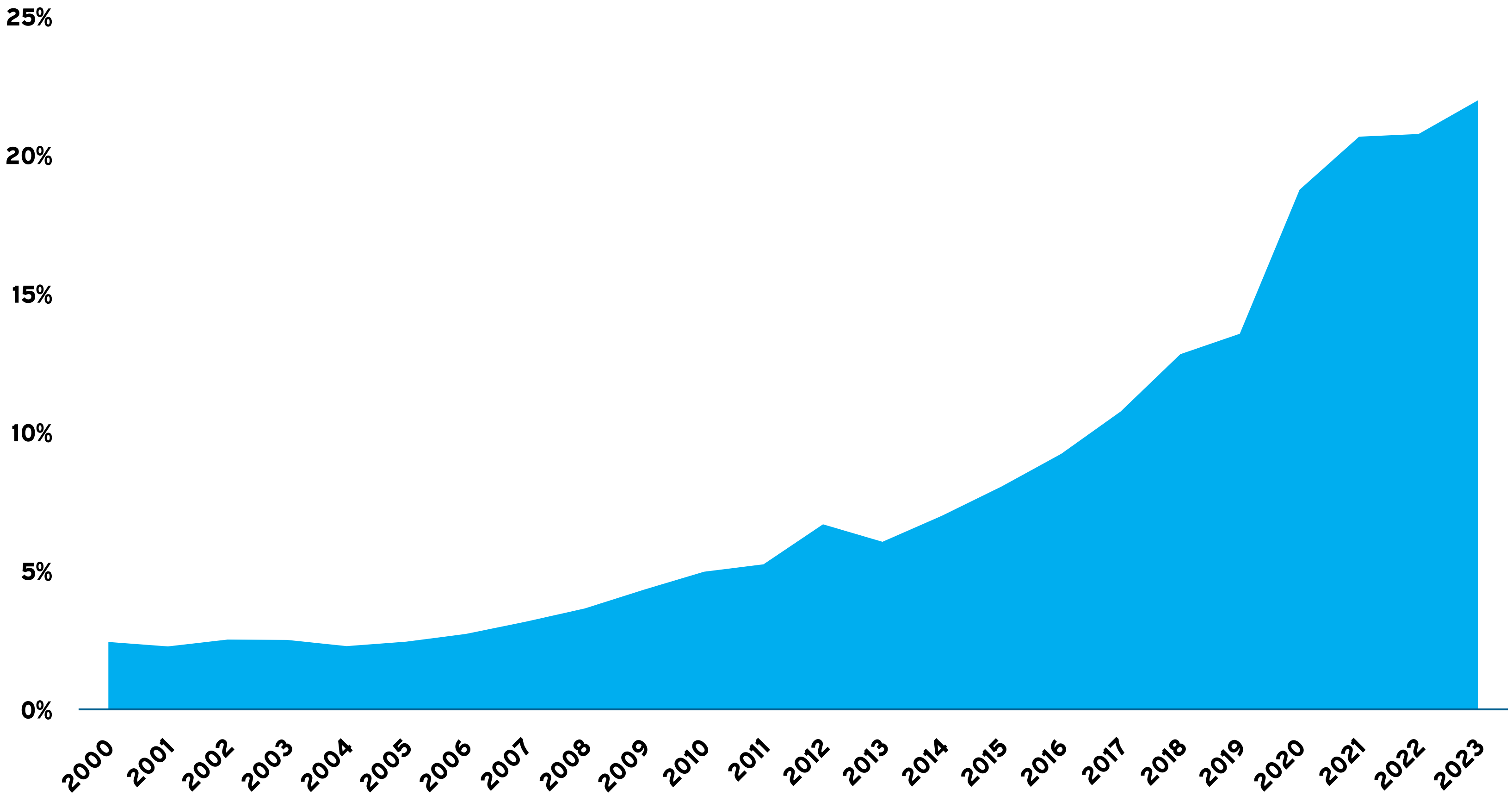
[1] Source: Forbes, "What Happened to FAANG Stocks? They Became MAMAA Stocks," November 2023.

What is the Magnificent Seven's Relative Weight?

→ As of December 31, 2023, the Magnificent Seven cumulatively represented 22% of the Russell 3000 index.

→ However, these seven stocks were not always as dominant as they are today.

The Magnificent Seven's Index Weight in the Russell 3000[1]



[1] Source: FactSet, as of December 31, 2023. Note that Alphabet Class A and C were combined into one category for this analysis. Includes all seven stocks at their weight in the index at that time; note that not all seven companies were publicly listed for the full period shown.

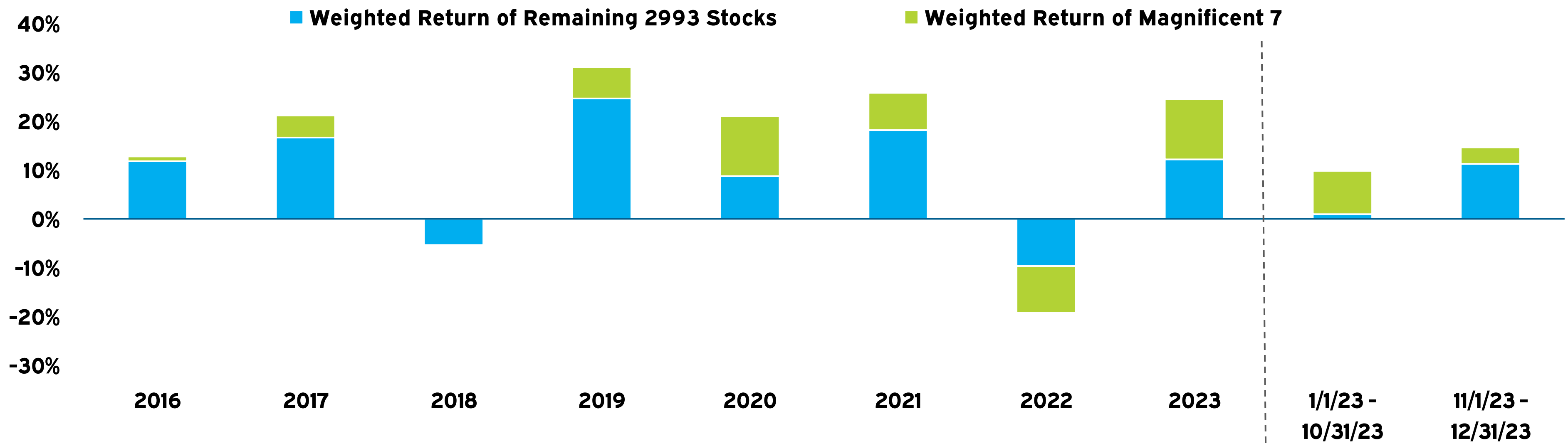
Is the Magnificent Seven Driving the Stock Market?

→ It is not unusual for the largest stocks in the market to represent an outsized share of performance.

→ The Magnificent Seven represented nearly all the Russell 3000's return from January to October 2023.

- This was somewhat atypical and has led to concerns about market concentration.
- However, in the rally at the end of 2023 (November through December), their influence declined.

The Magnificent Seven's Contribution to Russell 3000's Return[1]



[1] Source: FactSet, as of December 31, 2023. Alphabet Class A and C were combined into one category for this analysis. In 2018, the Russell 3000 returned -5.21% while the Magnificent Seven returned 0.16%.

Stock Market Concentration

→ The Magnificent Seven have not always been such a dominant force.

- Several of them were not even founded until the early 2000's.

→ This limited history makes it difficult to conduct a thorough analysis.

→ To gain a longer-term historical context, it would be helpful to evaluate market concentration.

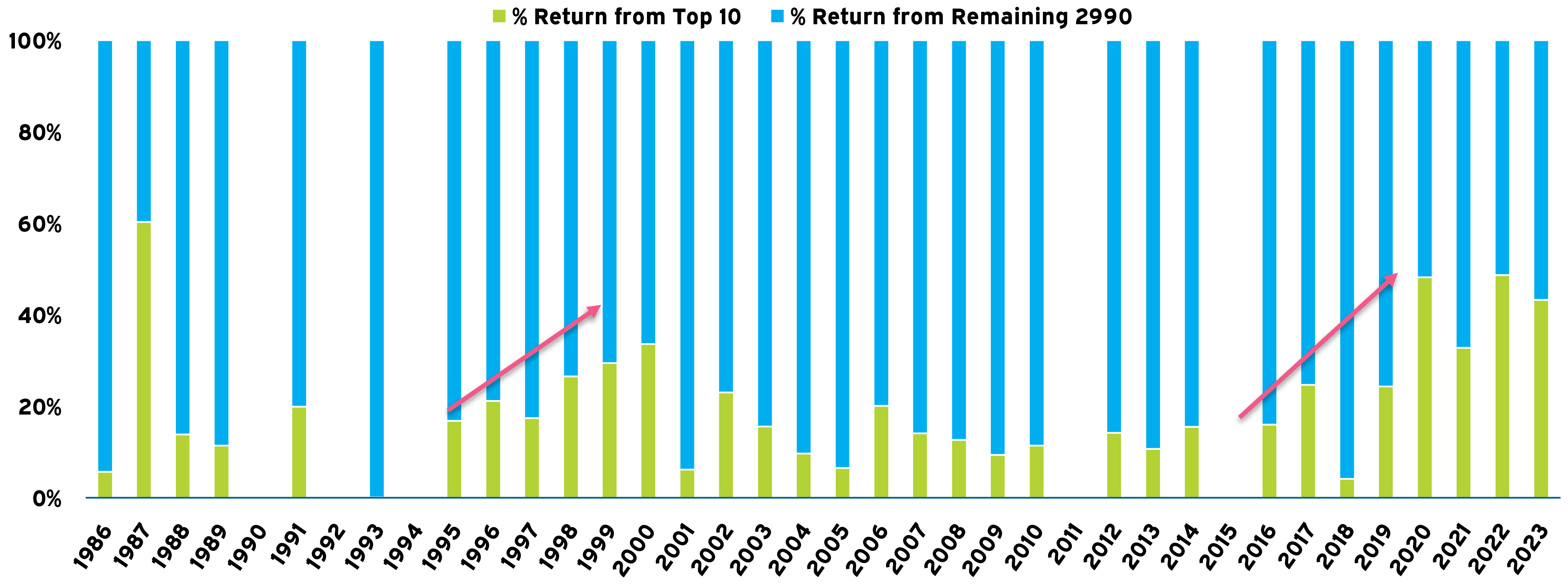
- For example, look at the index's ten largest stocks.
- This would, by default, include the Magnificent Seven stocks in recent years.

Historical Influence of the Top 10 Constituents on US Equity Returns

→ Since 2018, the top ten constituents' influence on the Russell 3000's returns have grown, coinciding with the rise of The Magnificent Seven.

→ The dot-com bubble was the last time the top ten's influence on returns was this high for a sustained period.

% Contribution to Annual Return of the Russell 3000[1,2]



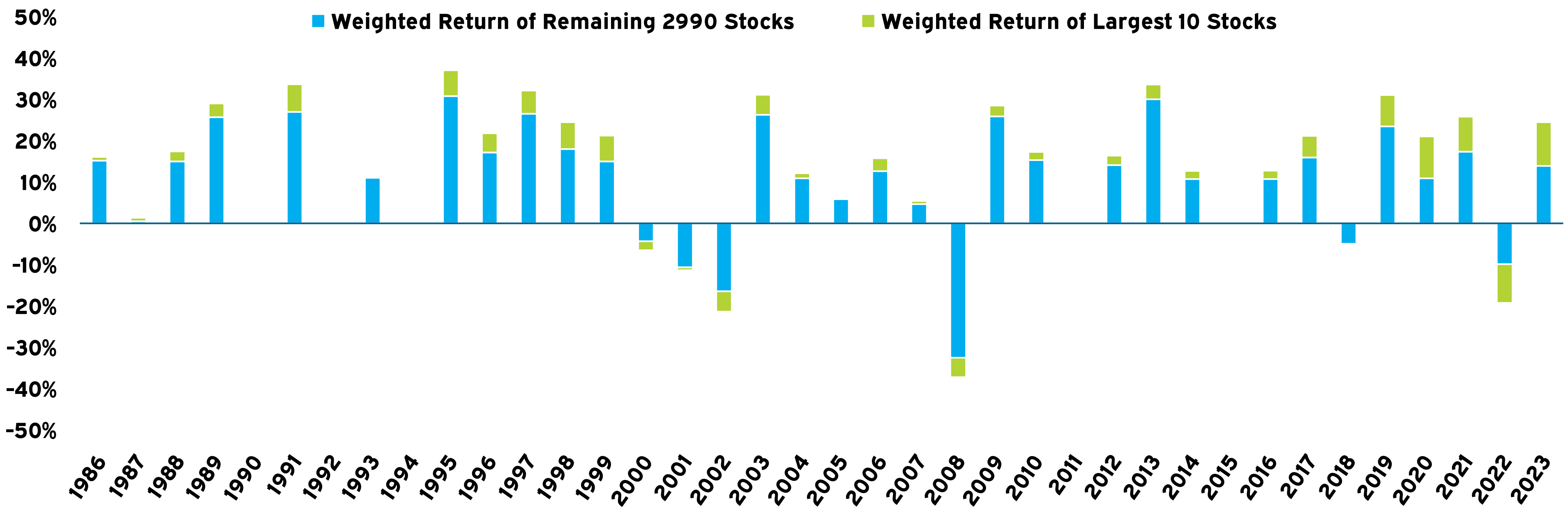
[1] Source: FactSet, as of December 31, 2023. Note that Alphabet Class A and C were combined into one category for this analysis.
[2] In years 1990, 1992, 1994, 2011, and 2015, the top 10 and the rest moved in opposite directions, making the stacked column not meaningful; hence they were excluded from the chart.

Historical Contribution of the Top 10 Constituents to US Equity Returns

→ While 2023 stands out for the top ten contributing such a large share of returns, it is part of a trend.

- The last five years have all been in the top ten years ranked by absolute contribution to return by the largest ten stocks in the Russell 3000 since 1986.[1]

Contribution to Annual Return of the Russell 3000[2,3]



[1] Ranking excludes years 1994, 2011, and 2015 due to the top 10 stocks having higher returns than the Russell 3000.
[2] Source: FactSet, as of December 31, 2023. Note that Alphabet Class A and C were combined into one category for this analysis.
[3] In years 1990, 1992, 1994, 2011, and 2015, the top 10 and the rest moved in opposite directions, making the stacked column not meaningful; hence they were excluded from the chart.

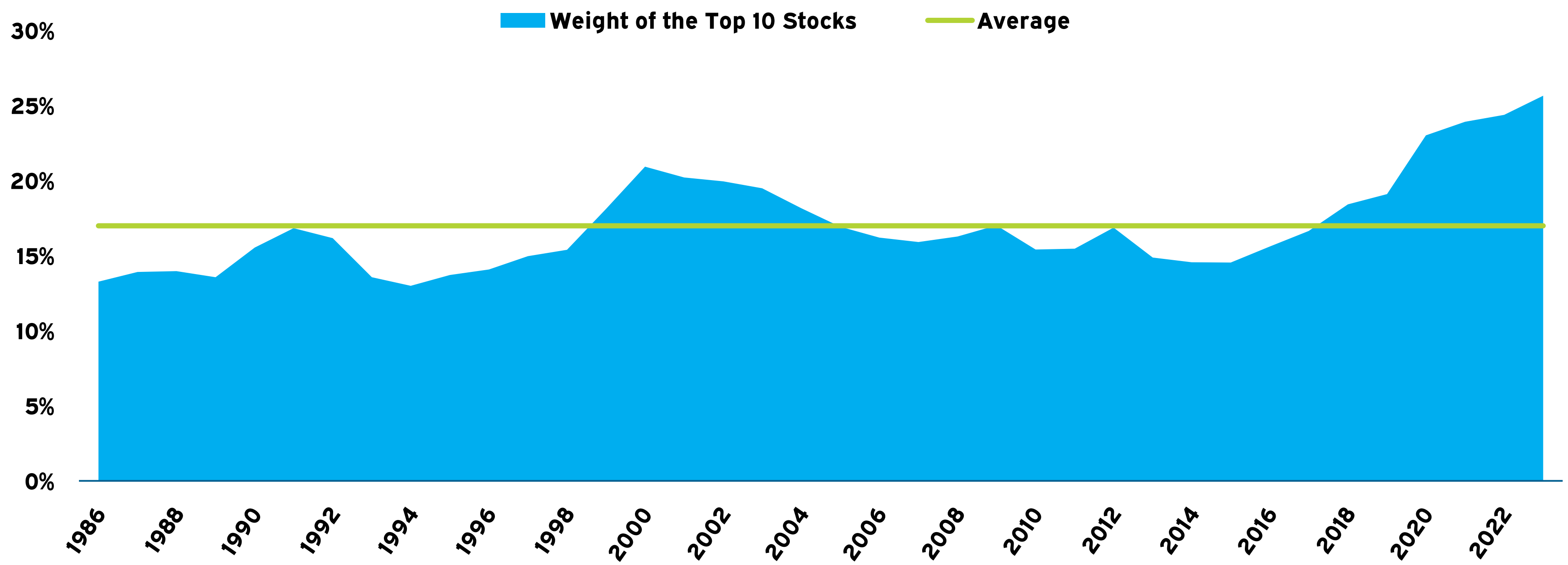
How Concentrated is the Market in Historical Context?

→ The index weight of the ten largest constituents has been cyclical, with periods of both peaks and troughs.

→ Since 1986, the average combined weight of the ten largest constituents in the Russell 3000 is ~17%.

→ There have only been two periods above this average: 1999 to 2004 and 2018 to 2023.

Historical Total Weight of the Russell 3000's Top 10 Constituents[1]



[1] Source: FactSet, as of December 31, 2023. Note that Alphabet Class A and C were combined into one category for this analysis.

What if we Look Back Even Further?

→ In the longer history of the US stock market, there have been many companies at different periods who accumulated a larger than average share of the market cap.

→ But this was often concentrated in just one or two companies, such as US Steel or AT&T (aka, Ma Bell).

- It is unprecedented for the ten largest names to have such a large weight.

→ There have been periods where the market was even more concentrated in a single sector.

- Railroads dominated the US stock market from the Civil War until World War I.

Top Heavy in Tech

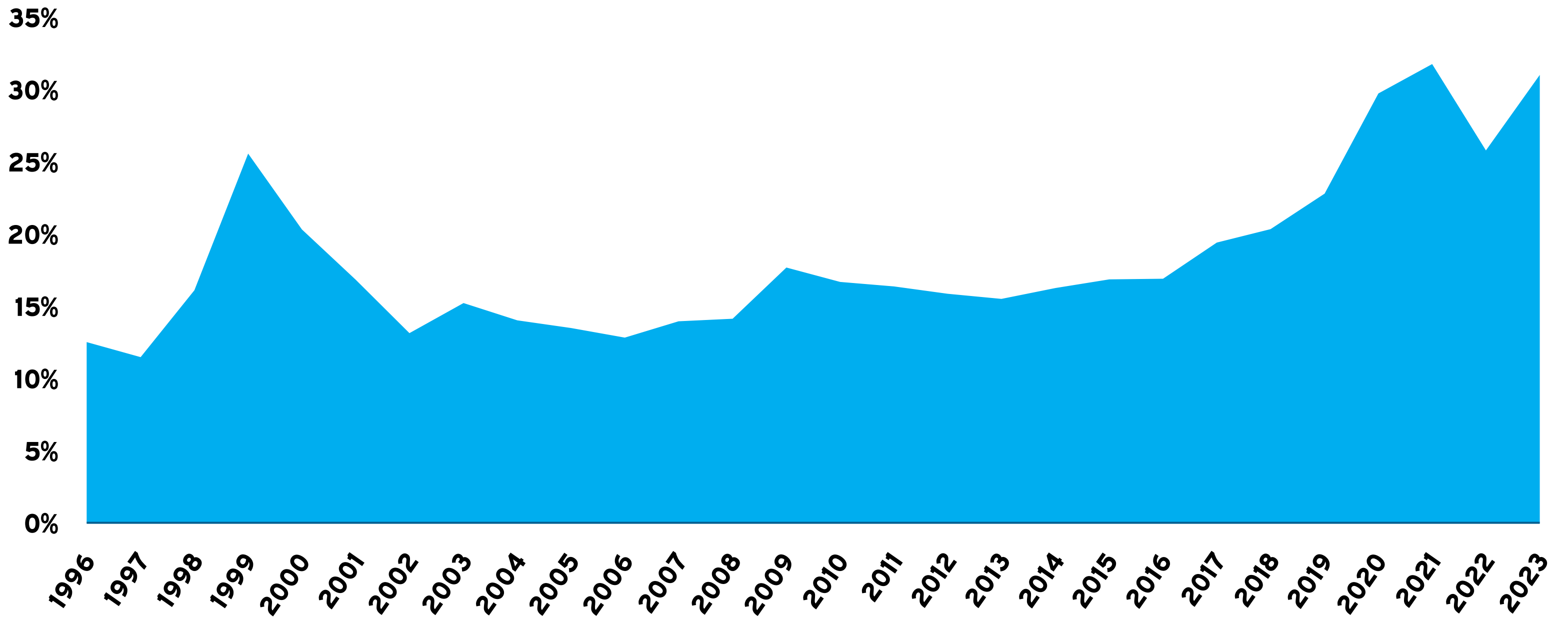
→ The sharpest increases in market concentration coincided with an affinity for stocks in the technology industry.

→ The first of these periods - the late 1990s' through early 2000s - was the peak of the dot-com era.

- After the dot-com bubble burst, the weight of the tech industry in the index dropped.

→ In recent years, the technology industry's relative weight has surpassed that of the dot-com era.

Tech Industry Composition of the Russell 3000[1]



[1] Source: FactSet, as of December 31, 2023. See the Appendix for more details on the sectors and sub-sectors included in Technology. Note that Alphabet Class A and C were combined into one category for this analysis.

Why These Stocks? Why Now?

→ The common theme of the FAANG stocks and the Magnificent Seven has been technology.

- These companies are on the leading edge of figuring out how best to use emerging technology to provide services demanded by their customers.
- Importantly, many have built diverse business models and/or shown an ability to adapt to change.

→ The COVID-19 pandemic further boosted the demand for these stocks.

- Many of these companies offered solutions for remote work, e-commerce, entertainment, and communication in a socially distanced world.

→ The release of ChatGPT in late 2022 made generative AI an overnight sensation.

- It has ignited the race for companies to develop and bring their own, unique generative AI products to market.

Might History be Repeating Itself?

→ Might this period resemble the dot-com period, where many of the most-hyped stocks were ultimately not those who benefitted the most from emergent technology?

→ Or might the Magnificent Seven maintain their growth trajectory, continuing to evolve and learning how to use new technologies?

Dot-Com Bubble	Today
→ The unprecedented growth in widespread internet adoption led to exponential demand for online services and products. → This benefited firms who provided these internet services. → It also benefited those companies who were building the "infrastructure" needed for the internet, such as Cisco, Intel, IBM, and Microsoft. → The bubble burst when many smaller internet-based companies failed to generate profits or revenues, and investors lost confidence in their future.	→ Generative AI is a potentially transformative technology, like the internet. → This benefits firms who make generative AI tools, such as Microsoft, Meta, and Alphabet. → It also benefits companies who make the components necessary for AI, like Nvidia, the largest US designer of the high-end chips needed to power AI.

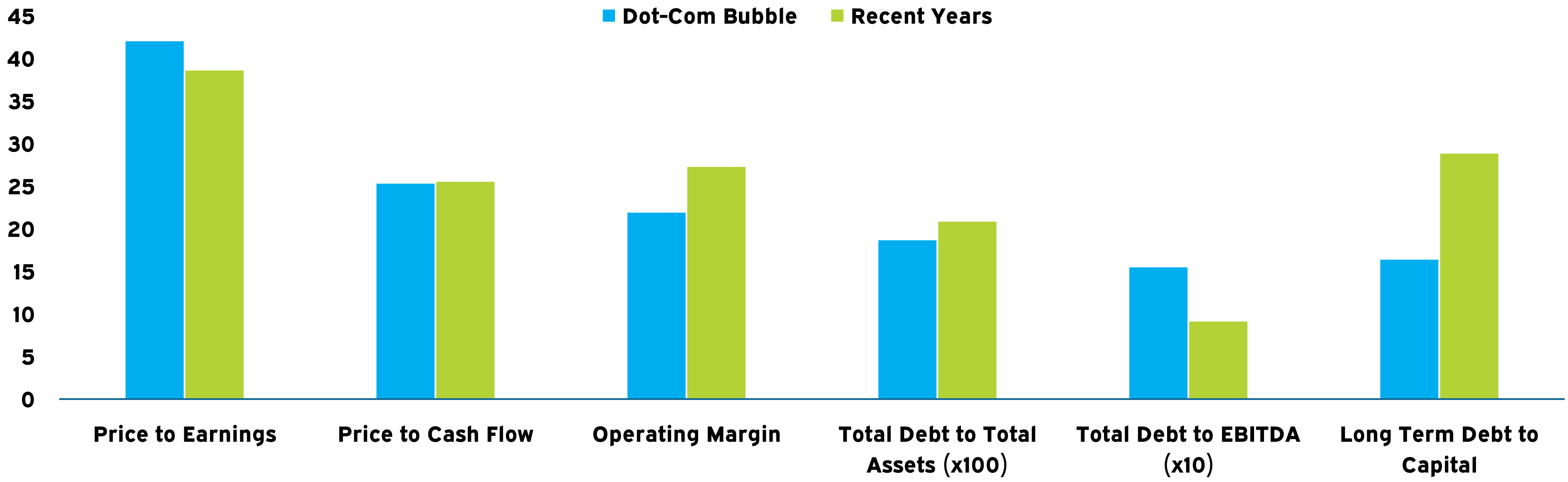
How do the Financials Match Up?

→ When comparing several key financial ratios of the ten largest stocks during the dot-com bubble to those of recent years, they are relatively in line with each other.

→ One key takeaway is both periods have a similar debt to assets, but recent years have a lower debt to income.

- This may signify that the top ten companies are more financially stable now than during the dot-com bubble.

Average Financial Metrics of the Top 10 Stocks in the Russell 3000[1]



[1] Source: FactSet. Period for the Dot-Com Bubble is 1998 to 2002. Period for Recent Years is 2018 to 2023. Total Debt to Total Assets and Total Debt to EBITDA are multiplied by 100 and 10, respectively, for the purposes of viewing this chart. Price to Earnings, Price to Cash Flow, and Operating Margin are as of September 30, 2023. All other ratios are as of December 31, 2023.

What is the Risk?

→ If history is any guide, only a few of the Magnificent Seven will continue to outperform.

- The inherent "creative destruction" of capitalism has a history of dethroning the largest companies.[1]

→ Some will be among the "winners" who learn how to adapt to and benefit from emerging technological trends.

- Microsoft is worth more than 6x its peak value from the dot-com era.

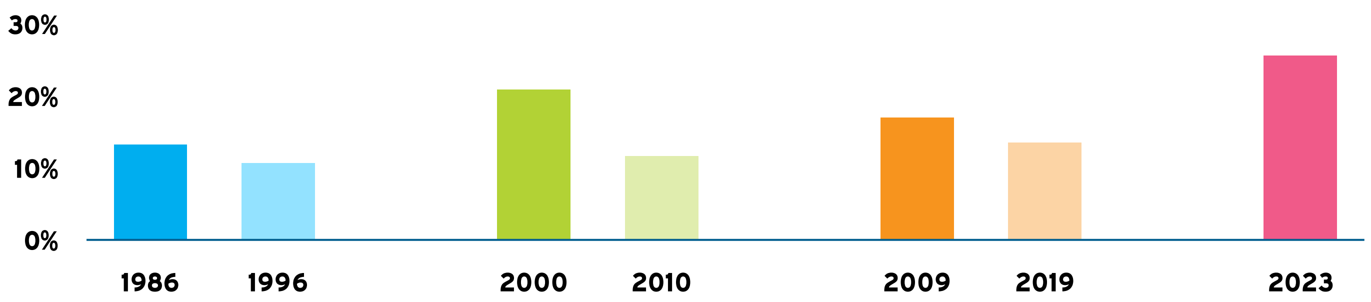
→ Others will fail to evolve or execute, and they will likely fall behind.

- Cisco Systems has never regained its peak value from 2000.

→ With so much of the market concentrated in such a small number of stocks, the decline of even a few would be painful for all investors in the stock market.

→ Yet investors have survived many past cycles of concentration and changes in market leadership.

Weight of the Top 10 Largest Stocks in the Russell 3000 & Weight of Same 10 Stocks a Decade Later[2]



[1] According to MSCI, only one-quarter of stocks have historically kept pace with the market after reaching the top ten.
[2] Source: FactSet, as of December 31, 2023. Note that Alphabet Class A and C were combined into one category for this analysis.

Summary

→ The Magnificent Seven are a group of seven mega-cap stocks generally positioned in the tech sector.

→ Their cumulative weight in the US stock market has been growing.

→ Likewise, the returns of the largest names in the market have been driving the overall market's returns to a greater extent than they have in two decades.

- Notably, the Magnificent Seven accounted for nearly all the index's return from January through October 2023.
  - This high influence of the largest stocks on returns has become the new norm in recent years.

→ The Magnificent Seven is not the first time that concentration in the market has spiked.

- The last major peak coincided with the dot-com bubble.

→ Parallels between today and the exuberance of the dot-com era beg the question of whether these companies will be the ones who benefit most from emerging technologies such as AI.

Appendix

Breakdown of the Russell 3000 Tech Industry & Sectors

→ The tech industries and sectors of the Russell 3000 are listed below:

- Technology (pre-2020)[14]
  - Diversified Technology
  - Electronics
  - Information Technology
  - Telecommunication
- Technology (2020 to current)
  - Software and Computer Services
  - Technology Hardware and Equipment
- Telecommunications (2020 to current)
  - Telecommunications Equipment
  - Telecommunications Service Providers

[14] Note, in 2020, the Russell 3000 changed their classification system so that Telecommunications became its own industry (separate from Technology) and the remaining tech sectors were re-named and re-classified.

List of all the Stocks that made the Top 10 in the Russell 3000 During the Dot-Com Bubble and Now

Dot-Com Bubble (1998-2002)	Today (2018-2022)
→ General Electric	→ Apple
→ Coca-Cola	→ Microsoft
→ Exxon Mobil	→ Alphabet
→ Intel	→ Amazon
→ Merck	→ Meta Platforms
→ Altria Group	→ Berkshire Hathaway
→ Microsoft	→ JPMorgan Chase
→ Procter & Gamble	→ Johnson & Johnson
→ IBM	→ Exxon Mobil
→ Johnson & Johnson	→ Bank of America
→ Pfizer	→ Visa
→ Cisco Systems	→ Procter & Gamble
→ Lucent Technologies	→ Tesla
→ AT&T	→ NVIDIA
→ Citigroup	→ UnitedHealth Group
→ AIG	
→ Time Warner	
→ Walmart	

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Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate+Beta*(market return-Risk Free Rate)].

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays $5 a year interest on each $100 par value. To figure its current yield, divide $5 by $95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay $100 for the bond that can be bought now for $95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\%\ \text{(discount)}}{5\ \text{(yrs. to maturity)}} = \begin{array}{l}1\%\ \text{pro rata, plus}\\ 5.26\%\ \text{(current yield)}\end{array} = 6.26\%\ \text{(yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.