Capital Markets - Equity

CPPT Advanced Program

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Outline

- Impacts of Risk on Return and Wealth Levels
  - Protecting Your Equity Portfolio in Downturns is Critical
- S&P 500 Return Patterns Exhibit Feast Often and Famine Less Often
- Extreme Days for the Market are Bunched or Clustered
  - You Cannot Miss the Worst Days without Missing the Best Days
  - It Does Not Pay to Invest in Equities if You Miss the 20 Best Days for the Market
- Structuring your Equity Portfolio
  - There are More Choices than Just Active or Passive, Especially for Large-Cap Domestic Equities, which Represent the Biggest Portion of Your Pension Plan
- Key Takeaways

Investment Terms

- **Annualized Risk**: The variation of a portfolio's returns around its average return over an annual basis (measured by standard deviation).
- **Value-Added**: The difference between the manager's annualized return and the benchmark's (S&P 500) annualized return.
- **Alpha:** Is a risk-adjusted measure of Value-Added
- **Tracking Error or Active Risk**: The annualized standard deviation of value-added, it measures the variation of a portfolio's returns relative to the benchmark. Managers with larger active bets tend to have return streams exhibiting higher tracking error.
  - **A manager with a 5% tracking error can be expected to produce positive & negative value-added in excess of 5% in 1 out of every 3 years**.

Risk Does Matter

The Mathematics of Compounding

It's Tougher to Get It Back

If You Lose	Then You Need
10%	11%
20%	25%
55%	122%
75%	300%

Actual peak to trough decline in S&P 500 during 2008 bear market.

Of an investment … **To get back to where you started**

The return to an investment is Asymmetric as losses have greater impact than gains – the more you lose, you more you must earn to get back your initial investment

Why Does Risk Matter?

A Simple Example

Two investment programs produce the same annual average return but with different levels of risk

Year	Investment A Annual Return	Investment B Annual Return
1	-6.0	-20.0
2	12.0	16.0
3	10.0	12.0
4	-7.0	-22.0
5	14.0	20.0
6	15.0	22.0
7	8.0	8.0
8	13.0	18.0
9	18.0	28.0
10	3.0	-2.0
11	10.0	12.0
12	6.0	4.0
13	-12.0	-32.0
14	18.0	28.0
15	-10.0	-28.0
16	21.0	34.0
17	23.0	38.0
18	7.0	6.0
19	5.0	2.0
20	12.0	16.0

Average Annual Return is 8% for both Investments (A and B). The Standard Deviation of B (20%) is twice the volatility of A (10%).

While the average annual return is the same for the two investments, the annualized (or geometric) return is quite different.

Volatility Matters Because It Reduces Wealth

	Investment A	Investment B	Investment C
Average Annual Return	8.0%	8.0%	7.0%
Standard Deviation of Annual Returns	10.1%	20.1%	10.1%
Annualized (Geometric Average) Return	7.5%	6.0%	6.5%
Value of Initial $1,000,000 at End of 20 Years	$ 4,273,985	$ 3,212,138	$ 3,542,465

While the Average Annual Return is lower for Investment C compared to B, the Annualized Return is actually greater than Investment B's due to Investment C's lower standard deviation.

Relationship between Risk and Return

Geometric Annualized Return = Average Annual Return
– ½ (Standard Deviation of Return)^2

Investment A: 0.075 = 0.08 – ½ (.1)^2

Investment B: 0.06 = 0.08 – ½ (.2)^2

Investment C: 0.065 = 0.07 – ½ (.1)^2

Less Annual Standard Deviation Means Higher Geometric or Compounded Annual Return and Ending Wealth Level

Worst & Second Best 12-Month Performance Highlights Negative Returns Impact

12-Month	S&P 500
Worst	
Mar 2008 - Feb 2009	-43.32
2nd Best	
Mar 2009 - Feb 2010	53.62

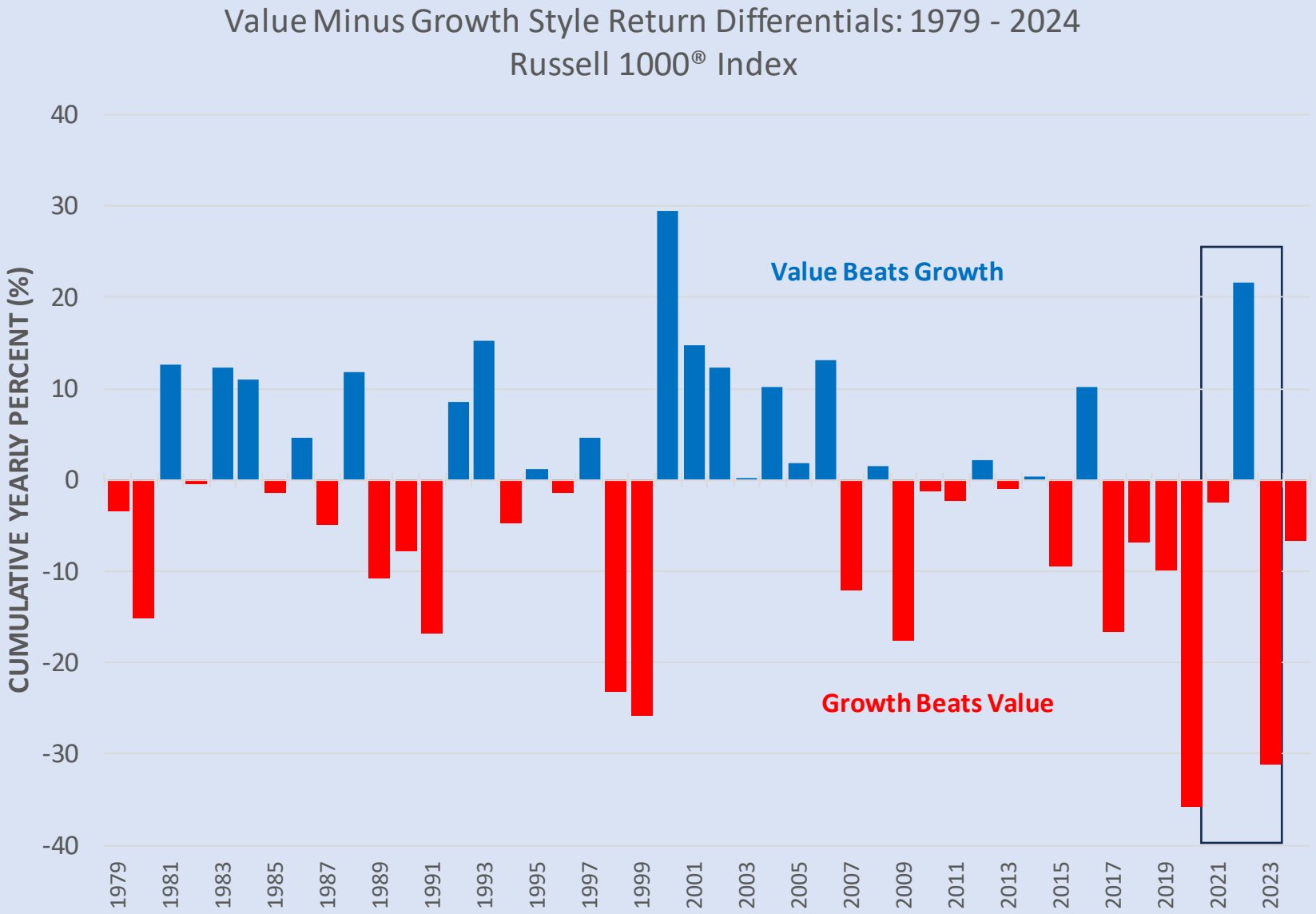
Annualized 24-Months	S&P 500
Mar 2008 - Feb 2010	-6.69

Since January 1995, there have been 336 twelve-month rolling periods through the end of December 2023.

The worst 12-month period (during the Global Financial Crisis/Recession) and the second best 12-month period for the S&P 500 were back-to-back.

While the S&P 500 advanced over 53% in its second best 12-month period and lost less than 44% over the prior 12-month period, the S&P 500 was still down MORE than 6.5% ANNUALIZED for the 24-month period.

Last 3 Calendar Years of Growth vs. Value Shows Importance of Protecting against Equity Declines



In 2021, Growth beats Value by 2.4% and it wins by 31.2% in 2023. Both were up years. Value won in 2022 by 21.6%, which was a negative market year.

By protecting against bigger market losses in 2022, Value has delivered the same 3-year annualized return for 2021-2023 as Growth (8.9%).

How Can You Protect Your Equity Portfolio?

- Think of the most recent 3-year Growth vs. Value returns where Growth wins in 2 of the 3 years by a total of 33.6% whereas Value wins in only 1 of the 3 years by a total of 21.6%
- But winning in a down year is more valuable than winning in an up year – so for the 3 years, their annualized return is the same
- Applying the same concept – going down less than the market in a down year/recessionary period is CRITICAL!

Passive Index Funds have been a great investment during the longest-ever bull market rally but may disappoint in negative market environments

S&P 500® History by Decade

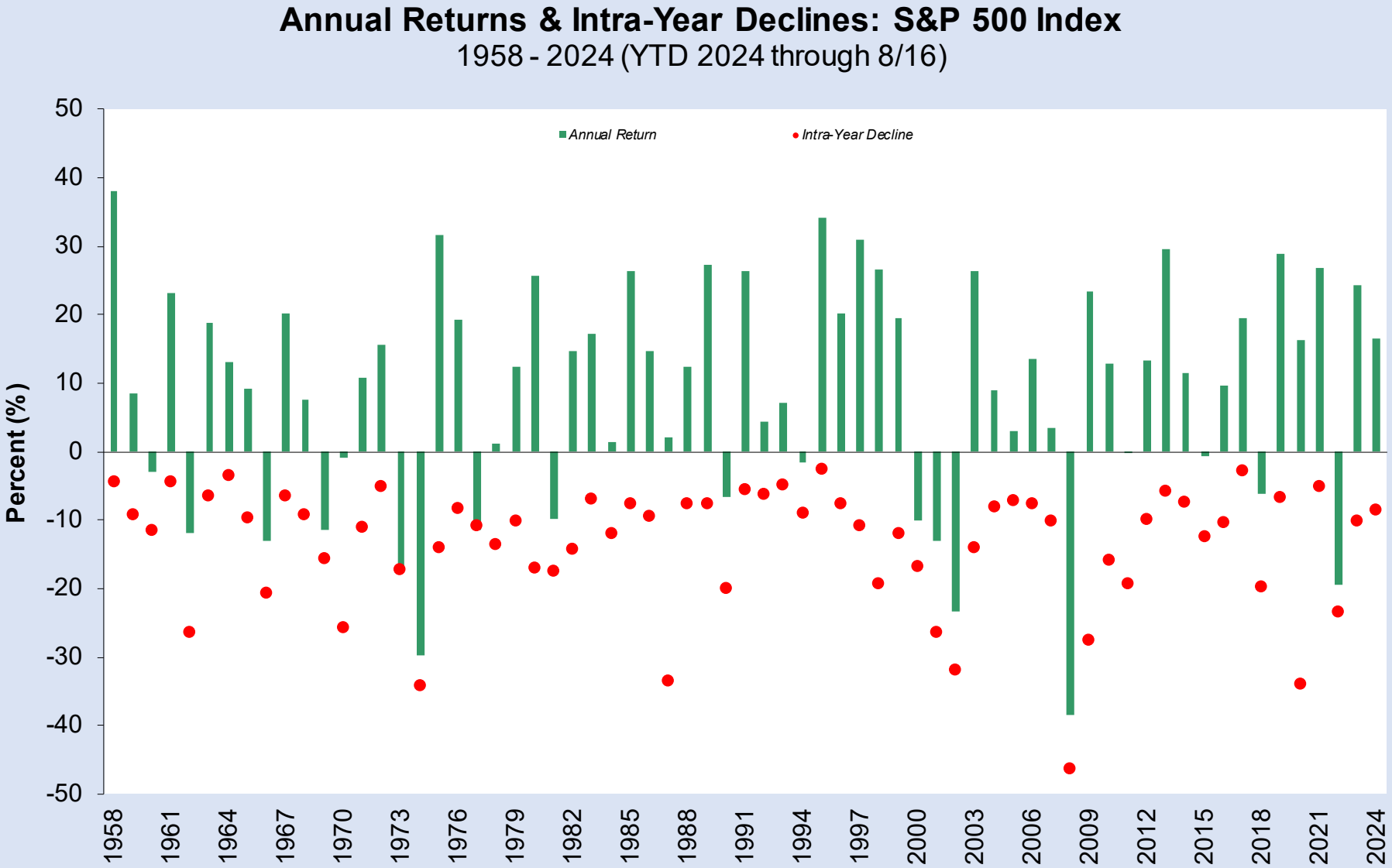
Period	S&P 500® Total Return	S&P 500® Price-Only Return	S&P 500® Income Return	Number of Negative Total Return Years	Income Component as Percent of Total
1926-1929	19.2	13.9	5.3	1	28%
1930-1939	-0.1	-5.3	5.2	6	100%
1940-1949	9.2	3.0	6.2	3	67%
1950-1959	19.4	13.6	5.8	2	30%
1960-1969	7.8	4.4	3.4	3	44%
1970-1979	5.9	1.6	4.3	3	73%
1980-1989	17.6	12.6	5.0	1	28%
1990-1999	18.2	15.3	2.9	1	16%
2000-2009	-0.9	-2.7	1.8	4	100%
2010-2019	13.6	11.2	2.3	1	17%
2020-2023	12.0	10.2	1.8	1	15%
1926-2023	10.3	6.2	4.1	26	40%

Annual S&P 500 Calendar Year Returns Feast or Famine (1926-2023)

- 98 calendar years of S&P 500 returns
  - ✓ Annualized Return: 10.3%
  - ✓ Annualized Risk: 19.7%
    - 26 years with a negative return (27%)
    - 58 years with a return >10% (59%)
    - 14 years (14% of the time) with a return between 0% and 8%

There have been NO calendar years with the S&P 500 return between 8% and 10% even though the historical return has been in that range over past 98 years

Very Long History Shows Substantial Intra-Year Draw-downs in S&P 500



Intra-Year decline is defined as the maximum decline for up to a 125-day period within a calendar year.

The average such decline is 13.5% for the S&P 500 during the 66 years between 1958 & 2023, even as the average yearly return is positive (8.8%).

How Often is the S&P 500 Down?
1962 - 2023

Calendar Frequency	Total #	Number Positive	Number Negative	% Down
Years	62	48	14	**23%**
Quarters	249	176	73	**29%**
Months	749	473	276	**37%**
Days	15,606	8,250	7,356	**47%**

The more often investors look at the market, the more often they see their portfolio values decline.

The S&P 500 is down 47% of all days and 37% of all months but only 23% of all years.

Extreme Days

Dow Industrials - Daily Performance

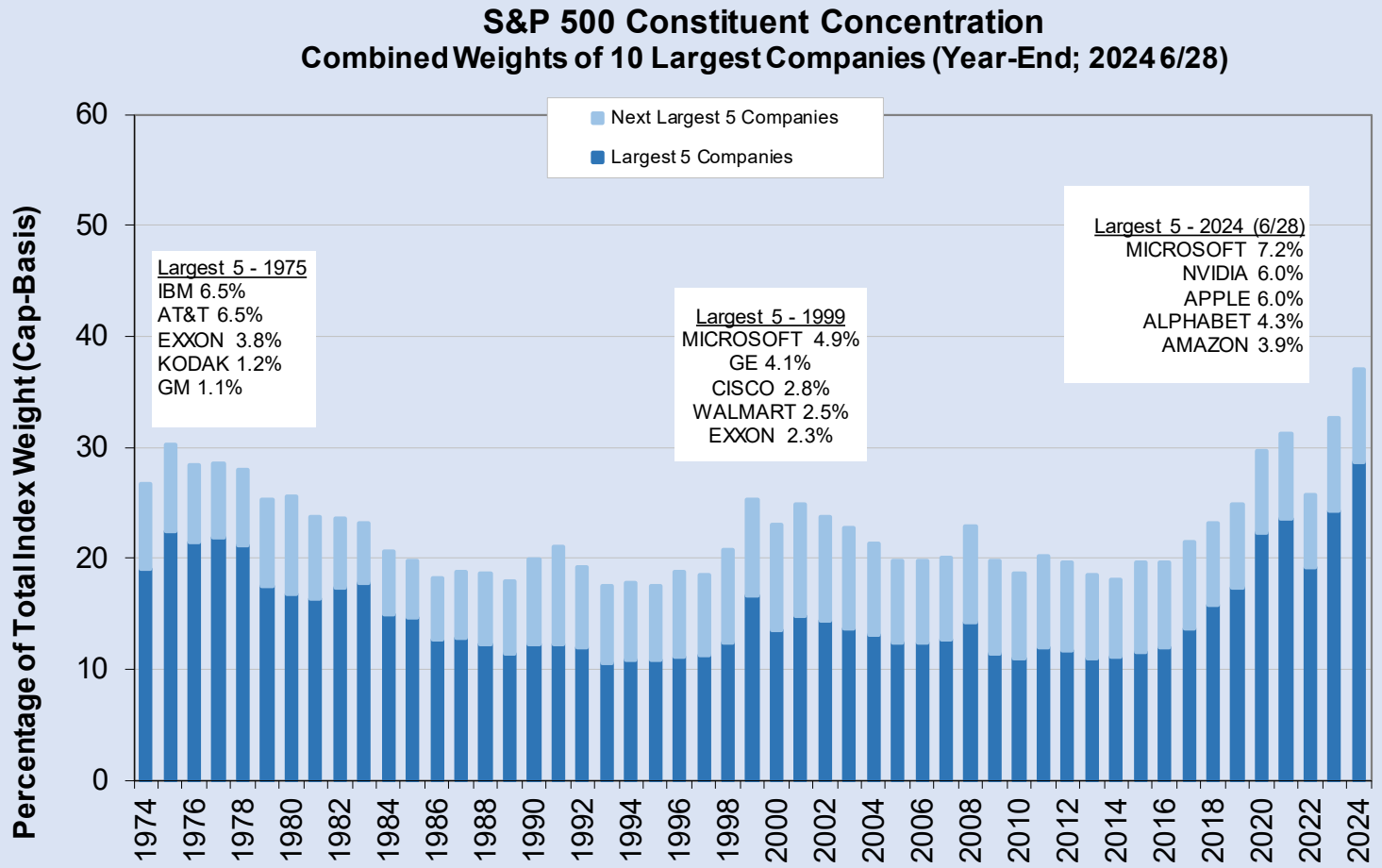
	Best Days				Worst Days			
Rank	Date	Level	Change (%)	Rank	Date	Level	Change (%)	
1	15-Mar-1933	62.1	15.3	1	12-Dec-1914	54.6	-23.5	* 4m Halt
2	6-Oct-1931	99.3	14.9	2	**19-Oct-1987**	1738.7	-22.6	
3	30-Oct-1929	258.5	12.3	3	**16-Mar-2020**	20188.5	-12.9	
4	**24-Mar-2020**	20704.9	11.4	4	28-Oct-1929	260.6	-12.8	
5	21-Sep-1932	75.2	11.4	5	29-Oct-1929	230.1	-11.7	
6	**13-Oct-2008**	9387.6	11.1	6	**12-Mar-2020**	21200.6	-10.0	
7	**28-Oct-2008**	9065.1	10.9	7	6-Nov-1929	232.1	-9.9	
8	**21-Oct-1987**	2027.9	10.1	8	12-Aug-1932	63.1	-8.4	
9	3-Aug-1932	58.2	9.5	9	14-Mar-1907	76.2	-8.3	
10	11-Feb-1932	78.6	9.5	10	**26-Oct-1987**	1793.9	-8.0	
11	**13-Mar-2020**	23185.6	9.4	11	**15-Oct-2008**	8577.9	-7.9	
12	14-Nov-1929	217.3	9.4	12	21-Jul-1933	88.7	-7.8	
13	18-Dec-1931	80.7	9.4	13	**9-Mar-2020**	23851.0	-7.8	
14	13-Feb-1932	85.8	9.2	14	18-Oct-1937	125.7	-7.8	
15	6-May-1932	59.0	9.1	15	**1-Dec-2008**	8149.1	-7.7	
16	19-Apr-1933	68.3	9.0	16	**9-Oct-2008**	8579.2	-7.3	
17	8-Oct-1931	105.8	8.7	17	1-Feb-1917	88.5	-7.2	
18	10-Jun-1932	48.9	8.0	18	27-Oct-1997	7161.1	-7.2	
19	**6-Apr-2020**	22680.0	7.7	19	5-Oct-1932	66.1	-7.2	
20	5-Sep-1939	148.1	7.3	20	17-Sep-2001	8920.7	-7.1	* 4d Halt
		AVERAGE>	10.2				-10.2	

Big daily declines & advances tend to be clustered together in time.

This historical fact is part of what makes market-timing (buying at lows and selling at highs) difficult.

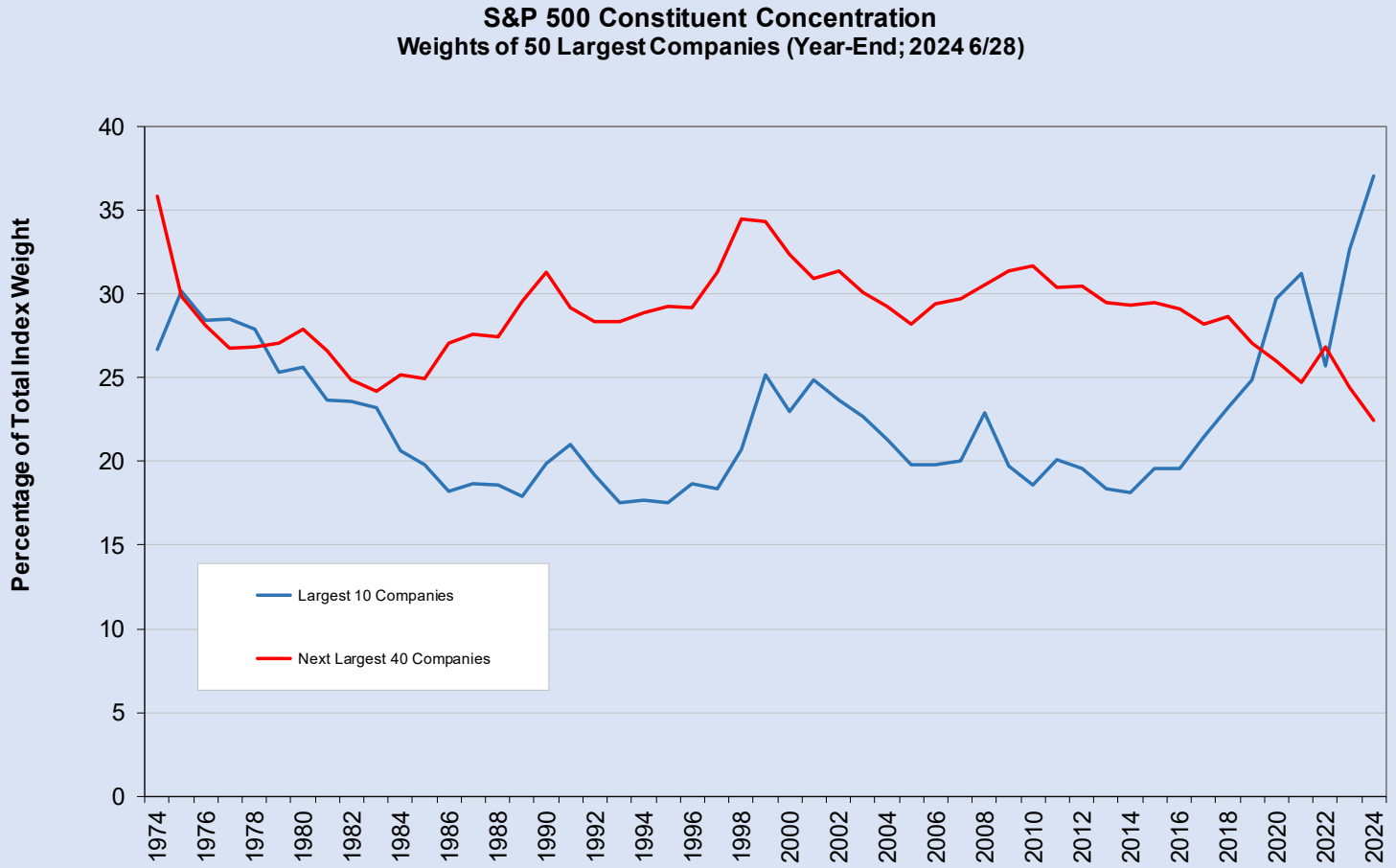
Rip Van Winkle would be a good investor because he fell asleep on December 31, 2019 and woke up on December 31, 2020 and could not sell equities in March 2020

Market Leaders Shift Over Time



The collective weight (28.6%) of the largest 5 companies in the S&P 500 is the largest since 1974.

The Passive Index is the Most Concentrated Ever



The 10 largest stocks in the S&P 500 index represent their largest weight (37%) while the next 40 largest constitute the lowest (23%) weight over the past 50 years.

The Domestic Equity Market Structure

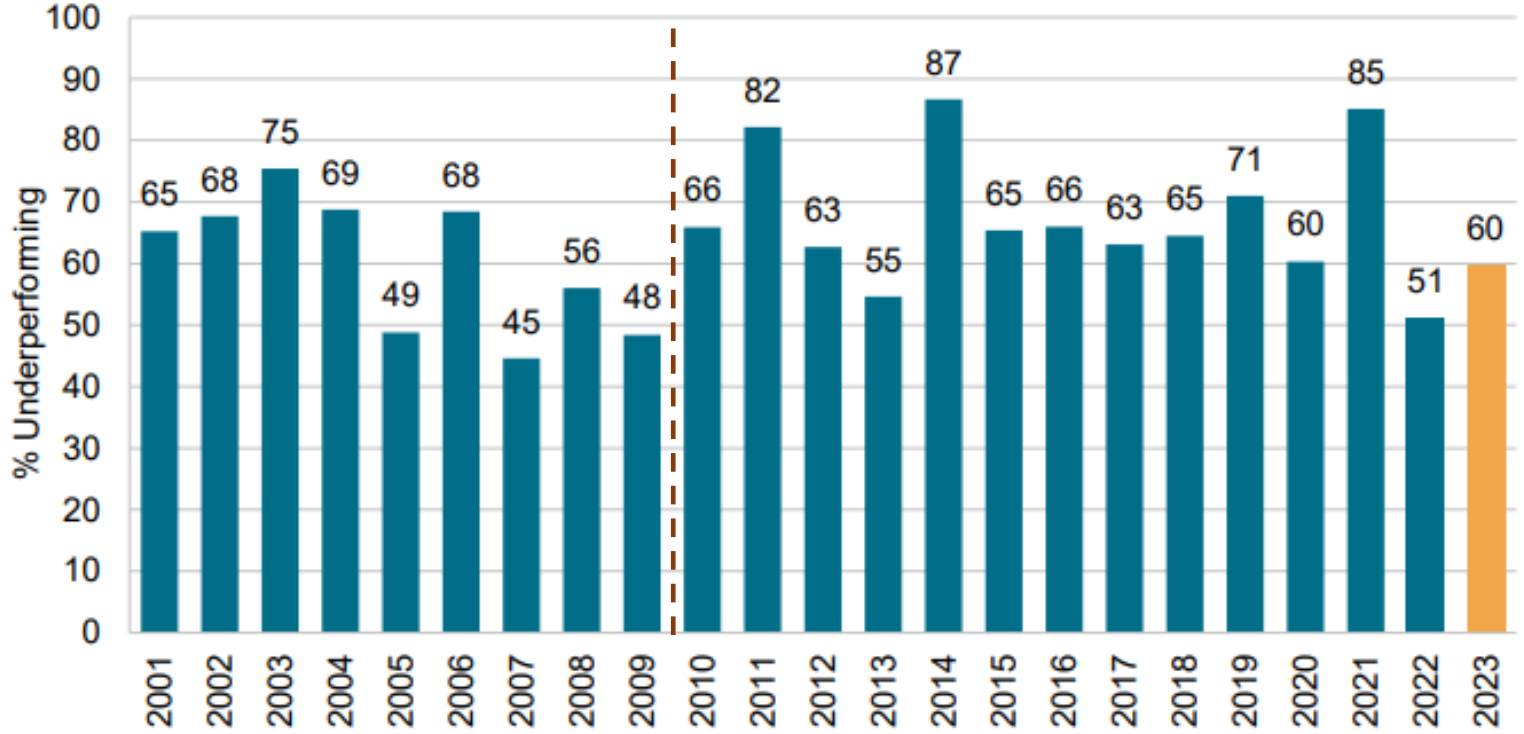
- By Market Capitalization
  - Large-cap stocks (S&P 500, Russell Top 200 or Russell 1000) represent the biggest portion (typically 70-75%) of the total market index (S&P 1500 or Russell 3000)
  - Mid-cap (S&P 400 or Russell Midcap) and small-cap stocks (S&P 600 or Russell 2000) make up the other 25-30%
- By Style (Growth vs. Value)
  - Typically, 50% of domestic equity indices (such as the S&P 500, the Russell 1000, Russell 2000, etc.) are invested in Growth and 50% in Value

Structuring Your Domestic Equity Portfolio

- Active vs. Passive
  - Typically, pension plans invest in domestic large-cap stocks via passive index strategies and invest actively in domestic small-cap stocks because the market is “fairly efficient” for large-cap compared to small-cap stocks; it is also more fee efficient as active managers charge a lot more than passive
  - However, large-cap domestic equities represent the biggest portion of most Florida public pension plans and while indexing large-cap stocks has been the best investment over the past 10+ years, the passive large-cap index is more concentrated, and therefore, riskier than it has ever been

Trying to Beat the Market is Not Easy

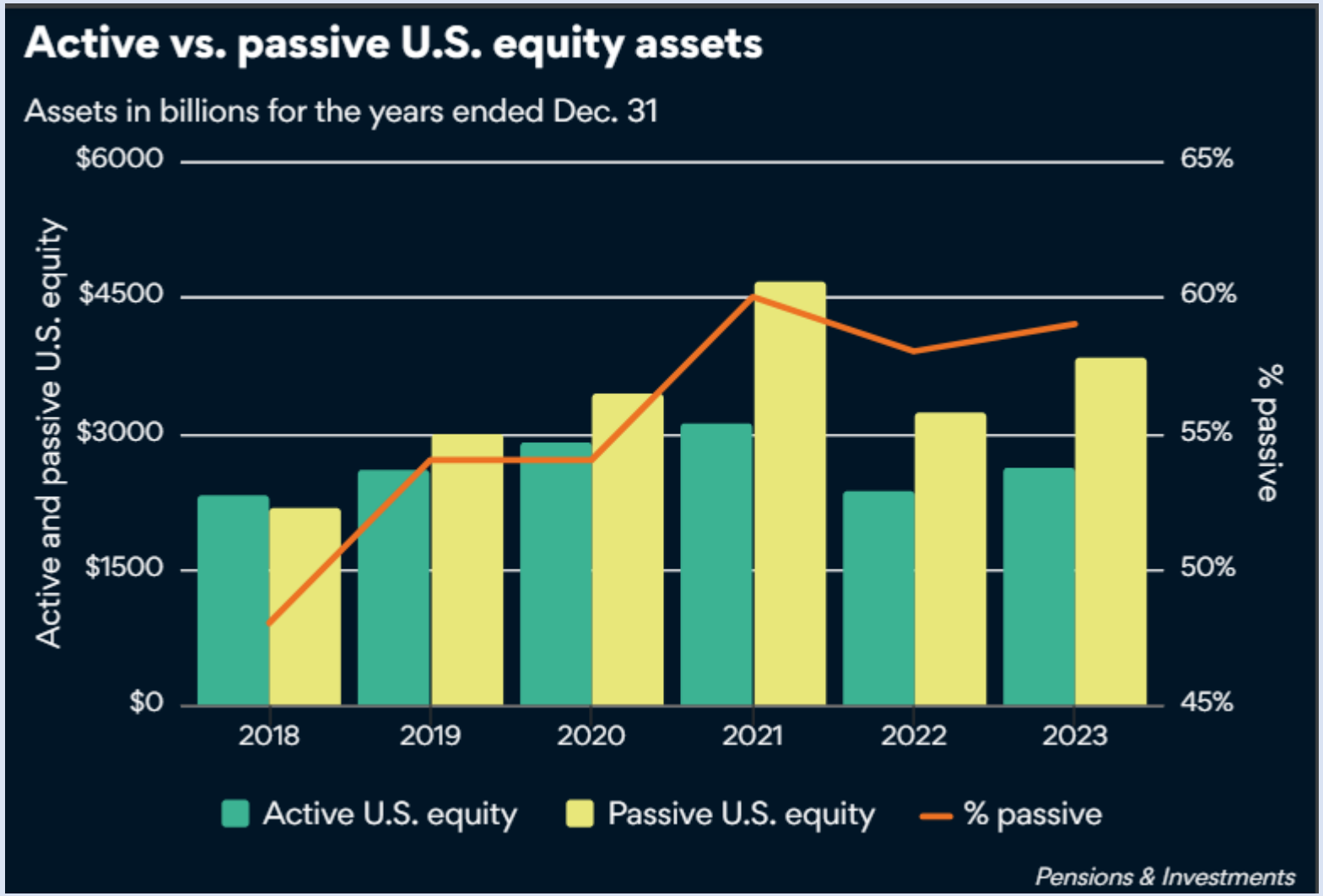
Exhibit 1: Percentage of Large-Cap Domestic Equity Funds Underperforming the S&P 500 Each Year



Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2023. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

From 2005 through 2009, active managers tended to outperform. However, more than half of all active managers have underperformed since 2010.

Passive Now Leads Active U.S. Equity Assets



In 2018, Active Equity assets were greater than Passive Equity assets.

However, underperformance since 2010 caused pension funds to move away from Active Equity strategies, resulting in dramatic growth of Passive Equity assets.

This growth in Passive Equity Assets has led to even greater market concentration as the biggest stocks get the largest investment and continue to grow.

Active, Passive & In-Between

- Active vs. passive investment management:
  - Most active managers trail benchmarks over time—do they sufficiently address downside risk? Performance is often inconsistent
  - Passive managers provide 100% of all negative equity returns giving NO downside protection and they are the most concentrated ever
- Is there a "middle ground"?
  - Enhanced Indexing
  - Rules-Based ("Smart Beta") Strategies

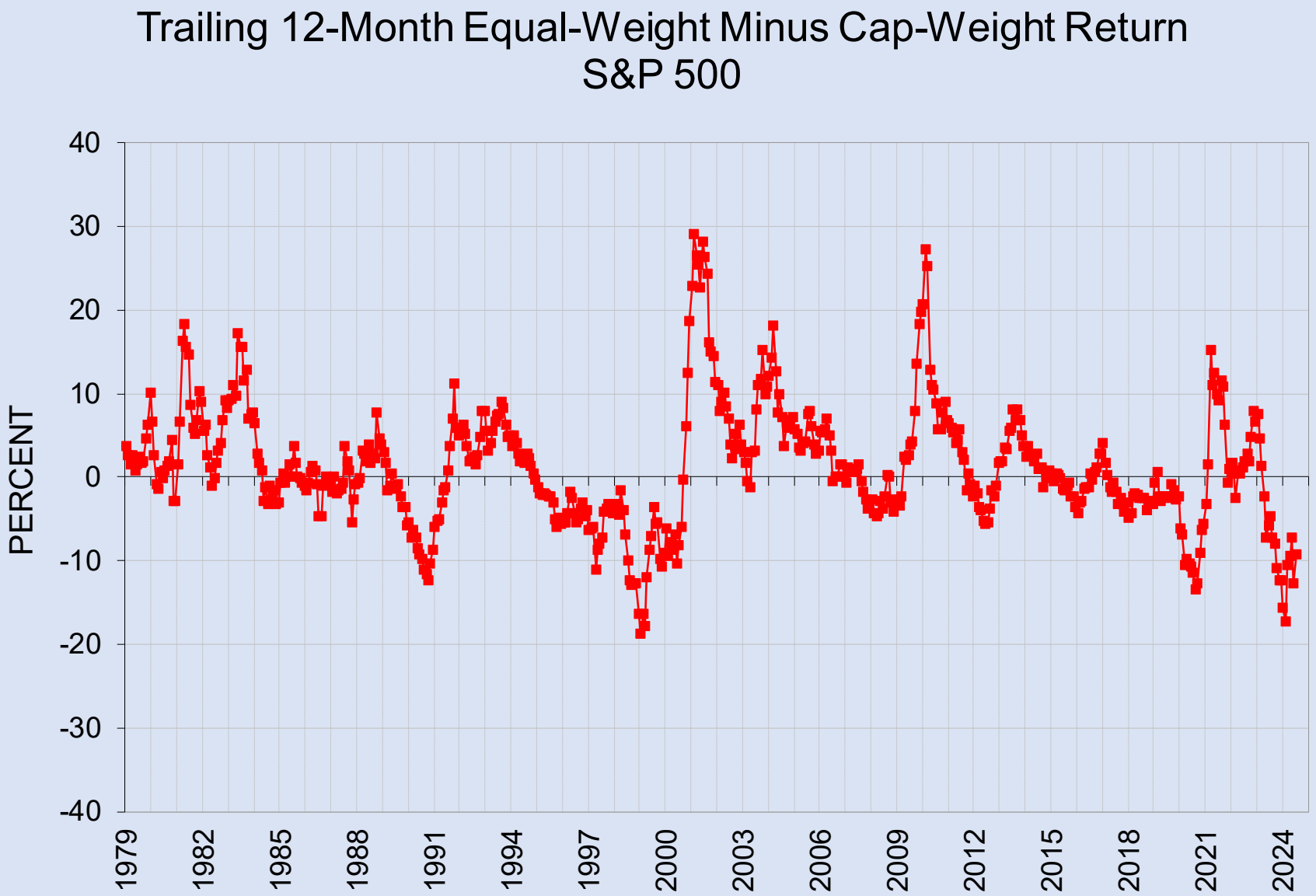
The middle ground between active and passive strategies includes Rules-Based/"Smart Beta" and Enhanced Indexing Strategies

Rules-Based or "Smart Beta" Strategies

- Rules-Based or "Smart Beta" strategies invest in segments of the market using different weighting schemes, but in a passive-manner (no active decisions)
  - The Rules-Based notion is more of a passive investment methodology
  - However, only purchasing a subset of stocks in the market or buying stocks using a different weighting scheme compared to the capitalization-weighted S&P 500 index is more of an active investment methodology with potentially high tracking error
- Examples of Rules-Based or "Smart Beta" strategies include:
  - The S&P 500 Equal-Weighted index invests in all 500 stocks with equal weights (RSP is the ETF Ticker)
  - The S&P 500 Low Volatility index invests in the 100 least volatile S&P 500 stocks with weights based on volatility (SPLV is the ETF Ticker)
  - The S&P 500 Dividend Aristocrats index invests in the subset of S&P 500 stocks who have consistently grown their dividends over the past 25 years with equal weights (NOBL is the ETF Ticker)

Rules-Based Strategies charge lower fees compared to active strategies; however, they can provide significant tracking error relative to the S&P 500.

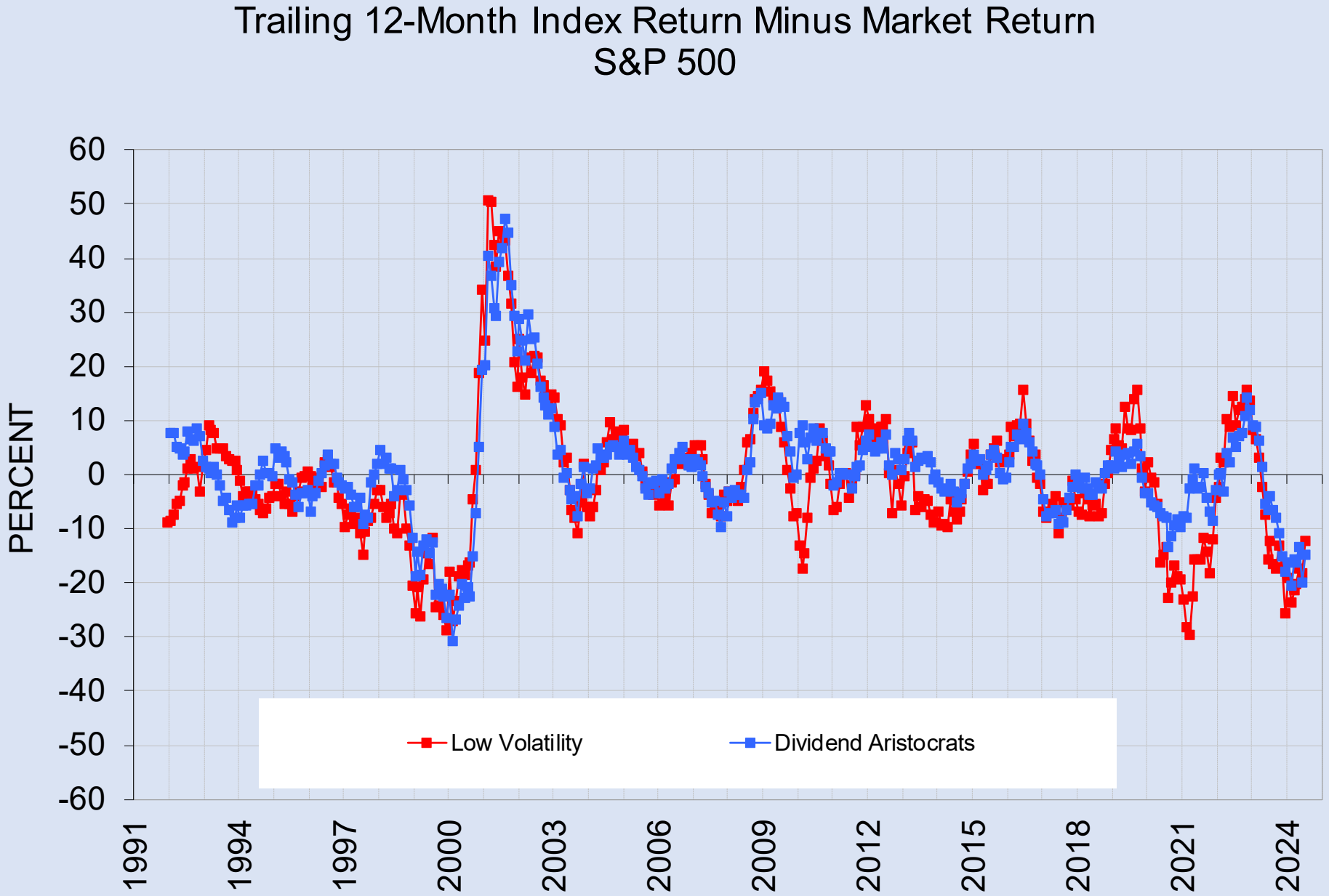
S&P 500 Equal Weight Index Relative Returns



There are many 12-month periods in which the Equal-weighted S&P 500 beats or loses to the S&P 500 index by more than 5%.

Recently, the Equal-Weighted underperformed by nearly 20%.

S&P 500 Low Volatility & Dividend Aristocrats Returns



There are many 12-month periods when the S&P 500 Low Volatility & Dividend Aristocrats win or lose by more than 5% relative the S&P 500 index. Earlier in 2024 they both underperformed by over 20%.

Enhanced Indexing

- An Enhanced Index portfolio aims to "track" an index, but also attempts to modestly outperform it with similar or less risk – "**Focus on Singles & Doubles**"
- Enhanced Index approaches may include common stock-only variants, synthetic elements (financial futures & options) and cash/leverage components - with potential to mix some of these
- Enhanced Indexing can increase the odds of success, and can reduce the odds of a large surprise
  - Due to lower tracking error relative to passive market indices, Enhanced Index strategies can generate more consistent value-added relative to Active Strategies (which tend to go in and out of favor)

Enhanced Indexing seeks to outperform passive indices while maintaining sector & risk exposures like the indices.

Enhanced Index, S&P 500 & Rules-Based Exposures

GICS SECTOR	Sample Enhanced Index Portfolio	S&P 500®	S&P 500® EW	S&P 500® Div Aris	S&P 500® LV
Communication Services	8.98	9.32	3.92	0.00	2.25
Consumer Discretionary	9.97	9.87	10.13	4.18	6.14
Consumer Staples	5.84	5.97	7.46	23.75	18.58
Energy	3.63	3.68	4.51	2.88	2.01
Financials	13.35	12.68	14.16	10.90	18.57
Health Care	12.04	12.05	12.40	10.37	9.91
Industrials	9.21	8.35	15.58	22.64	17.71
Information Technology	30.10	31.34	13.08	2.98	7.04
Materials	2.35	2.24	5.74	12.58	2.92
Real Estate	2.30	2.15	6.04	4.71	0.85
Utilities	2.22	2.35	6.66	4.73	13.76
CHARACTERISTIC					
Weighted Avg Mkt Cap ($ Mil)	811,088	890,544	96,652	93,617	138,408
Holdings Count (#)	164	503	503	66	100
Dividend Yield (%)	1.39	1.37	1.91	2.46	2.19
MSCI-BARRA S&P 500 Beta	1.01	1.00	0.92	0.71	0.58
MSCI-BARRA S&P 500 Predicted Tracking Error (%)	1.20		6.20	8.47	9.96

Sector exposures of Rules-Based Strategies are quite different and their weighted market capitalizations are much lower compared to the market -- leading to significantly higher tracking error relative to the Sample Enhanced Index Strategy, which mirrors the market's exposures (both sector & capitalization).

Please see IMPORTANT DISCLOSURES for full description of Sample Enhanced Index strategy.

Enhanced Indexing Can Provide Downside Protection with Upside Potential

- Low volatility strategies have a lower beta than the market to reduce total risk at the cost of higher active risk (i.e., tracking error)
  - Low volatility strategies provide downside protection at the cost of upside returns
  - Downside capture less than 100% but upside capture also less than 100%
  - Low Volatility strategies typically have much less risk than the overall market
- Enhanced index strategies have a beta equal to the market so they can fully participate in up markets while still protecting in down markets
  - Enhanced equity strategies typically have downside protection without giving up upside returns
  - Downside capture less than 100% but upside capture can be equal to or above 100%
  - Enhanced index strategies typically have slightly less risk than the overall market

Performance Across Market Environments
Returns & Batting Averages

Monthly Returns Analysis

January 2004 - June 2024

	Biggest Negative Months "Down" Markets	Mixed Smaller Months "Sideways" Markets	Biggest Positive Months "Up" Markets	All Months
Return Ranges (%)	-17 to -2.5	-2.5 to 2.0	2 to 13	-17 to 13
Counts (#)	40	123	83	246
Average Returns (%)				
S&P 500®	-6.21	0.42	5.06	0.91
S&P 500® Eq-Wt	-6.61	0.32	5.47	0.93
S&P 500® Div Aris	-5.12	0.39	4.59	0.91
S&P 500® Low-Vol Index	-3.99	0.64	3.32	0.79
Sample Enhanced Index	-6.11	0.49	5.10	0.97
Out-Performance Batting Average				
S&P 500® Eq-Wt	0.38	0.44	0.60	0.48
S&P 500® Div Aris	0.65	0.54	0.41	0.52
S&P 500® Low-Vol Index	0.85	0.54	0.14	0.46
Sample Enhanced Index	0.53	0.54	0.51	0.53

Equal-weighted S&P 500 wins in strong up months while Low Volatility & Dividend Aristocrats win in big down months.

Sample Enhanced Index strategy offers out-performance in all three market environments with consistent batting averages.

Please see IMPORTANT DISCLOSURES for full description of Sample Enhanced Index strategy.

Investment Mandates – Risks & Fees

Equity Manager Mandate	Total Volatility	Active Risk	Fees
Active	At or above Market	2% - 8%	25 - 100 bps
Passive Index	Equal to Market	0.1% - 0.5%	1 - 10 bps
Enhanced Index	Below or Equal to Market	1% - 2%	10 - 30 bps
Rules-Based	Below or Above Market	3% - 7%	15 - 50 bps

Enhanced Index strategies are often viewed as the sweet-spot between trying to still beat the market but taking less active risk with less fees

What is Right (Active vs. Passive) for Your Pension Plan?

Should your plan invest with Active strategies versus Enhanced Index, Rules-Based (Smart-Beta) or Passive index strategies? It depends on the following considerations:

- Your pension plan's funded status and investment policy statement's target rate of return and acceptable risk levels
- Your desire to reduce total investment management fees relative to a strictly active manager platform (active manager fees are higher relative to enhanced index, smart-beta rules-based or passive index managers)
- The ability of active managers to add value on a consistent basis relative to their benchmarks relative to their active risk
- The pension trustees' level of patience as Active manager's outperformance or underperformance typically occurs in cycles

Pension plans can combine large-cap equity active strategies with enhanced index, rules-based or passive index strategies to reduce fees and active risk

Key Takeaways

- Investing risk is asymmetric (i.e., annualized return to stocks is lower than the simple average of annual returns) with losses more costly than gains making protection on the downside critical
- Equities go down about 1/3rd of the time (29% of all quarters and 37% of all months)
- Equity investing is like “Feast or Famine” – most of the years (59%) since 1926, the market has up double-digits or higher, while it has declined in 27% of all years; rarely do you earn the long-term expected return in a calendar year

Key Takeaways continued

- Active managers often take too much active risk and there are long cycles of underperformance (since 2010)
- The problems with passive index funds is that they do not provide downside protection and the market is more concentrated today than it has ever been
- There are in-between solutions of Rules-Based Strategies (such as the S&P 500 Low-Volatility index, the S&P 500 Dividend Aristocrats index or the S&P 500 Equal-Weighted index) that are less costly compared to active managers but still bear active risk or tracking error to the market
- Another in-between solution is Enhanced Indexing, which is often viewed as the sweet spot as it is designed to protect pension plans on the downside but have more participation in up markets compared to those Rules-Based Strategies focusing on lower volatility or dividend growth themes