

Worst-Performing Index

Nasdaq-100 Index | Russell® 2000 Index | S&P 500® Index

Sometimes referred to as *Market-Linked Investments*, structured products provide investors the potential to earn returns linked to the performance of an underlying reference asset or group of assets. One common type of underlier is a “worst-performing” or “worst-of” basket where the underlier is comprised of a basket of securities, but only the performance of the worst-performing asset is considered on the observation date.

While investors gain exposure to the underlying indices, any dividends paid by the indices are not passed through to the investor. Carefully review the offering document(s) for complete details regarding the terms of the investment, including coupon payments, participation, principal protection (if any), and associated risks.

Historic Index Gains/Losses – Nasdaq-100 Index (NDX), Russell® 2000 Index (RTY), and S&P 500® Index (SPX)

The table below illustrates the number of times (based on total rolling periods measured from the beginning to the end of the defined time periods) the worst-performing of the specified indices gained or lost within the certain percentage ranges over the past 30 years. Data based on a 12-month rolling rate of return for 1, 3, 5, 7, and 10 years, respectively.

Year	Total Obs ¹	Total Gains	Total Losses	0 to 10%	10 to 20%	20 to 30%	30 to 40%	40 to 50%	>50%	0 to -10%	-10 to -20%	-20 to -30%	-30 to -40%	-40 to -50%	>-50%
1	348	225	123	87	84	37	11	4	2	48	26	19	13	9	8
3	324	249	75	29	40	49	57	35	39	15	10	20	7	6	17
5	300	210	90	15	16	18	34	16	111	32	25	11	7	4	11
7	276	240	36	17	41	32	19	13	118	3	8	6	9	5	5
10	240	212	28	9	6	8	2	5	182	1	3	3	7	9	5

The table below illustrates the percentage of times (based on total rolling periods measured from the beginning to the end of the defined time periods) the worst-performing of the specified indices gained or lost within the certain percentage ranges over the past 30 years. Data based on a 12-month rolling rate of return for 1, 3, 5, 7, and 10 years, respectively.

Year	Total Obs ¹	Total Gains	Total Losses	0 to 10%	10 to 20%	20 to 30%	30 to 40%	40 to 50%	>50%	0 to -10%	-10 to -20%	-20 to -30%	-30 to -40%	-40 to -50%	>-50%
1	348	64.7%	35.3%	25.0%	24.1%	10.6%	3.2%	1.1%	0.6%	13.8%	7.5%	5.5%	3.7%	2.6%	2.3%
3	324	76.9%	23.1%	9.0%	12.3%	15.1%	17.6%	10.8%	12.0%	4.6%	3.1%	6.2%	2.2%	1.9%	5.2%
5	300	70.0%	30.0%	5.0%	5.3%	6.0%	11.3%	5.3%	37.0%	10.7%	8.3%	3.7%	2.3%	1.3%	3.7%
7	276	87.0%	13.0%	6.2%	14.9%	11.6%	6.9%	4.7%	42.8%	1.1%	2.9%	2.2%	3.3%	1.8%	1.8%
10	240	88.3%	11.7%	3.8%	2.5%	3.3%	0.8%	2.1%	75.8%	0.4%	1.3%	1.3%	2.9%	3.8%	2.1%

Source: FactSet, data from 1/1/1993 to 12/31/2022. Percentage gains and losses are based on the closing price of the worst-performing index on a rolling 12-month basis (annualized average returns for the defined period) and do not include dividends. The table is for illustrative purposes only. The NDX, RTY and SPX are each an unmanaged group of equity securities and are considered leading indices. An investment cannot be made directly in any individual index. Past performance is no guarantee of future results.

¹ “Total Obs” is defined as total observations or total rolling periods observed.

Index Definitions

Nasdaq-100 Index ²

Includes 100 of the largest domestic and international non-financial companies listed on the Nasdaq Stock Market based on market capitalization. The Index reflects companies across major industry groups including computer hardware and software, telecommunications, retail/wholesale trade and biotechnology.

Symbol: NDX

No. Constituents: 101

Launch Date: February 1, 1985

NDX Sector Breakdown ²

Technology	61.7%
Consumer Discretionary	19.3%
Health Care	5.7%
Telecommunications	4.0%
Industrials	3.9%
Consumer Staples	3.5%
Utilities	1.0%
Energy	0.5%
Real Estate	0.2%
Basic Materials	0.2%
Financials	0.0%

Russell 2000® Index ³

Stock market index comprised of 2000 small-capitalization companies. The Index is made up of the bottom two-thirds of the Russell 3000® index, a larger index of 3000 publicly traded companies that represents nearly 98 percent of the investable U.S. stock market.

Symbol: RTY

No. Constituents: 1,984

Launch Date: January 1, 1984

RTY Sector Breakdown ³

Industrials	18.5%
Health Care	15.1%
Financials	14.7%
Consumer Discretionary	13.2%
Technology	12.6%
Energy	8.3%
Real Estate	6.3%
Basic Materials	3.9%
Consumer Staples	3.0%
Utilities	3.0%
Telecommunications	1.5%

S&P 500® Index ⁴

Widely regarded as the best single gauge of large-cap U.S. equities and serves as the foundation for a wide range of investment products. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalization.

Symbol: SPX

No. Constituents: 503

Launch Date: March 4, 1957

SPX Sector Breakdown ⁴

Info. Technology	28.2%
Health Care	13.2%
Financials	12.5%
Consumer Discretionary	10.6%
Communication Services	8.8%
Industrials	8.4%
Consumer Staples	6.6%
Energy	4.4%
Materials	2.5%
Real Estate	2.4%
Utilities	2.4%

² Nasdaq-100 Index source, Nasdaq Global Indexes, as of 6/30/2023. Data updated quarterly.

³ Russell 2000® Index source, FTSE Russell Index Factsheet, as of 8/31/2023. Data updated monthly.

⁴ S&P 500® Index source, S&P Dow Jones Indices LLC, as of 8/31/2022. Data updated monthly.



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