

# BENCHMARK STUDY

December 11, 2019

Benchmark Efficacy Study – ERS vs S&P 500  
December 31, 1988 – January 31, 2020  
Completed – Sep 18, 2020

Preventing significant investment losses is impossible without using an objective and reliable method to identify and measure investment risks.

Equity Risk Sciences designs and continuously tests computer models to identify, measure and quantify risks.

Fiduciaries have the duty of “utmost care”.  
ERS helps fiduciaries prevent and reduce losses.

ERS employs big-data predictive analytics, proprietary statistical methods and actuarial science to identify, measure and quantify the relationship between the changes (trends) on financial statements and future price changes.

*ERS has demonstrated our proprietary risk ratings allow investment professionals to reduce risk and capture more gains.*

# ERS'S BENCHMARK EFFICACY STUDY

## ERS'S PREDICTIVE ANALYTICS -VS- S&P 500 INDEX



❁ **Study Objective:** Test ERS's Predictive Analytics technology against the long-term performance of the S&P 500 index.

❁ **Inclusions:** Volatility, total loss ratios, average depth of losses, net performance and probabilities of gain and loss.

❁ **Time:** 314 5-year periods: 12/1988 through 1/2015, monthly

**Sample:** 1,000 largest companies by market cap in each period

- Minimum market cap of \$100 million
- If fewer than 1,000 companies met this criteria, all were used

**Study Method:**

- ERS assigned each company an **Equity Risk** rating at the beginning of each period.
- Grouped companies in each period into portfolios based on their **Equity Risk** ratings, excluding companies with
- Calculated each company's 5-year rate of return in each period
- Calculated each portfolio's average return, volatility, total loss ratios, average depth of losses and probabilities of gain and loss

This study provides statistical validation that  
**ERS's proprietary predictive analytics technology produces far greater profitability than the S&P 500 Index, reduces volatility and reduces losses in flat, rising and falling markets.**

# EFFICACY OF ERS'S TECHNOLOGY

Over the 314 study periods, ERS's technology produced the greatest outperformance during periods when ERS's average portfolio Price Risk rating (PRI) was the lowest. This is a very significant fact.

Conversely, in periods when ERS's portfolios had incrementally higher Price Risk ratings, ERS's portfolios did not outperform as significantly.

These results demonstrate the efficacy and value of ERS's risk-rating technology.

## Efficacy of the Price Risk Indicator

ERS's PRI rating	No. periods	Average Return	Average S&P 500	Average Alpha
10 or less	12	199%	75%	124%
10 to 15	62	149%	107%	42%
15 to 20	52	116%	77%	38%
20 to 25	48	74%	36%	37%
25 to 30	70	54%	23%	31%
30 to 35	51	44%	21%	23%
35 to 40	11	39%	35%	4%
40 or more	8	42%	49%	-7%

# BENCHMARK STUDY SUMMARY

## 1) When the S&P 500 Index Fell:

The S&P 500 fell in 83 out of 314 5-year periods; its average decline was -11.7%. In those 83 periods, ERS's portfolios fell just twice, producing an average gain of 32.2%.

## 2) When the S&P 500 Index Rose:

The S&P 500 index rose in 231 out of 314 5-year periods; its average gain was 76.8%. In those 231 periods, ERS's portfolios produced an average gain of 109.3%.

## 3) Over all 314 periods:

The S&P 500's average gain was 53.4%.  
ERS's portfolios was produced an average gain of 88.9%.

**IN 314 5-YEAR TESTS, OVER 30 YEARS IN RISING, FALLING & FLAT MARKETS  
ERS'S TECHNOLOGY AVERAGE ANNUAL PROFITS: 88.9% VS 53.4% ON THE S&P INDEX**

Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI
12/88	68%	150%	11.5	3/91	72%	202%	14.0	6/93	152%	131%	11.0	9/95	146%	75%	10.9
1/89	62%	161%	13.0	4/91	74%	112%	15.0	7/93	150%	169%	10.6	10/95	146%	77%	10.7
2/89	62%	122%	11.8	5/91	72%	201%	16.1	8/93	107%	122%	10.4	11/95	117%	49%	11.3
3/89	51%	131%	11.7	6/91	81%	208%	14.4	9/93	122%	125%	11.1	12/95	114%	81%	11.3
4/89	46%	118%	12.1	7/91	65%	165%	14.8	10/93	135%	138%	12.3	1/96	115%	79%	11.1
5/89	42%	101%	12.5	8/91	65%	73%	14.4	11/93	152%	100%	12.2	2/96	94%	80%	10.6
6/89	40%	127%	12.5	9/91	77%	200%	13.4	12/93	164%	133%	12.2	3/96	80%	76%	10.2
7/89	32%	105%	12.5	10/91	80%	156%	13.7	1/94	166%	113%	12.5	4/96	91%	75%	11.1
8/89	35%	115%	12.1	11/91	102%	206%	13.7	2/94	165%	83%	11.7	5/96	88%	102%	11.9
9/89	33%	98%	11.6	12/91	78%	146%	14.1	3/94	189%	148%	11.2	6/96	83%	117%	11.2
10/89	39%	130%	11.0	1/92	92%	166%	15.9	4/94	196%	172%	11.3	7/96	89%	150%	10.0
11/89	31%	157%	11.8	2/92	92%	87%	15.6	5/94	185%	194%	9.7	8/96	74%	124%	9.7
12/89	30%	94%	12.3	3/92	88%	128%	14.1	6/94	209%	260%	9.6	9/96	51%	68%	9.9
1/90	43%	142%	12.8	4/92	93%	118%	13.9	7/94	190%	257%	10.1	10/96	50%	106%	10.0
2/90	47%	180%	12.8	5/92	104%	212%	13.9	8/94	178%	217%	10.0	11/96	51%	90%	10.4
3/90	47%	135%	12.9	6/92	117%	167%	13.4	9/94	177%	202%	9.9	12/96	55%	80%	10.9
4/90	56%	129%	12.7	7/92	125%	150%	14.1	10/94	189%	153%	10.2	1/97	44%	71%	12.2
5/90	48%	120%	13.6	8/92	117%	153%	12.5	11/94	206%	186%	9.3	2/97	40%	55%	10.0
6/90	52%	261%	13.4	9/92	127%	179%	12.8	12/94	220%	179%	9.1	3/97	52%	96%	8.7
7/90	58%	327%	13.3	10/92	118%	128%	13.5	1/95	196%	186%	9.7	4/97	34%	116%	9.7
8/90	74%	405%	11.5	11/92	121%	127%	14.6	2/95	180%	282%	9.5	5/97	26%	79%	10.9
9/90	91%	385%	10.2	12/92	123%	107%	15.1	3/95	199%	269%	9.6	6/97	12%	38%	11.7
10/90	91%	408%	10.4	1/93	123%	129%	15.9	4/95	182%	276%	10.2	7/97	-4%	52%	13.3
11/90	88%	298%	12.0	2/93	137%	147%	14.0	5/95	166%	173%	10.7	8/97	2%	46%	12.3
12/90	87%	101%	12.6	3/93	144%	136%	13.2	6/95	167%	172%	11.2	9/97	-14%	14%	13.3
1/91	85%	94%	12.9	4/93	153%	154%	12.6	7/95	155%	74%	11.4	10/97	-3%	34%	13.8
2/91	74%	89%	13.9	5/93	142%	141%	12.3	8/95	170%	91%	10.5	11/97	-2%	36%	12.8



**IN 314 5-YEAR TESTS, OVER 30 YEARS IN RISING, FALLING & FLAT MARKETS  
ERS'S TECHNOLOGY AVERAGE ANNUAL PROFITS: 89.6% VS 56% ON THE S&P INDEX**

Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI	Date	S&P 500	ERS's Portfolio	Avg. ERI
12/97	-9%	33%	12.3	3/00	-21%	55%	22.5	6/02	52%	140%	16.3	9/04	-5%	26%	17.2
1/98	-13%	6%	12.8	4/00	-20%	49%	21.9	7/02	60%	168%	14.3	10/04	-8%	15%	19.1
2/98	-20%	20%	12.0	5/00	-16%	41%	19.7	8/02	61%	158%	14.3	11/04	-7%	10%	17.9
3/98	-23%	6%	12.4	6/00	-18%	46%	18.7	9/02	87%	170%	12.9	12/04	-8%	10%	18.7
4/98	-18%	19%	13.7	7/00	-14%	45%	17.8	10/02	75%	176%	15.7	1/05	-9%	2%	18.2
5/98	-12%	45%	11.0	8/00	-20%	29%	18.7	11/02	58%	157%	15.2	2/05	-8%	14%	18.2
6/98	-14%	40%	11.4	9/00	-14%	38%	18.4	12/02	67%	193%	14.0	3/05	-1%	12%	16.9
7/98	-12%	82%	10.7	10/00	-16%	29%	16.2	1/03	61%	169%	14.9	4/05	3%	30%	16.2
8/98	5%	126%	8.2	11/00	-5%	59%	12.5	2/03	58%	135%	13.8	5/05	-9%	23%	15.8
9/98	-2%	114%	8.7	12/00	-5%	62%	13.3	3/03	56%	139%	13.5	6/05	-13%	15%	15.7
10/98	-4%	93%	10.1	1/01	-6%	38%	16.9	4/03	51%	142%	16.3	7/05	-11%	0%	18.3
11/98	-9%	73%	10.5	2/01	3%	41%	12.2	5/03	45%	111%	16.0	8/05	-14%	8%	17.6
12/98	-10%	46%	17.6	3/01	12%	48%	12.5	6/03	31%	45%	16.3	9/05	-7%	7%	18.3
1/99	-12%	47%	17.1	4/01	5%	36%	14.2	7/03	28%	52%	18.4	10/05	-2%	15%	17.9
2/99	-8%	59%	16.4	5/01	1%	24%	12.9	8/03	27%	84%	19.2	11/05	-6%	18%	18.6
3/99	-12%	59%	18.5	6/01	4%	19%	14.1	9/03	17%	62%	19.0	12/05	1%	12%	18.7
4/99	-17%	42%	19.7	7/01	5%	27%	14.0	10/03	-8%	42%	22.3	1/06	0%	8%	20.5
5/99	-14%	40%	19.0	8/01	15%	36%	12.7	11/03	-15%	34%	22.2	2/06	4%	17%	18.8
6/99	-17%	55%	21.3	9/01	28%	84%	10.4	12/03	-19%	17%	22.8	3/06	2%	5%	19.8
7/99	-17%	54%	19.3	10/01	30%	66%	12.5	1/04	-27%	14%	23.6	4/06	4%	14%	19.5
8/99	-16%	55%	18.1	11/01	23%	63%	14.9	2/04	-36%	10%	22.4	5/06	6%	20%	16.4
9/99	-13%	60%	18.1	12/01	24%	27%	16.7	3/04	-29%	17%	21.6	6/06	4%	21%	15.8
10/99	-17%	57%	17.7	1/02	27%	40%	18.4	4/04	-21%	31%	21.0	7/06	1%	28%	15.1
11/99	-15%	43%	19.0	2/02	27%	55%	16.8	5/04	-18%	29%	18.0	8/06	-7%	27%	15.1
12/99	-18%	71%	23.5	3/02	24%	69%	18.8	6/04	-19%	12%	18.6	9/06	-15%	8%	15.1
1/00	-15%	63%	21.7	4/02	38%	79%	19.7	7/04	-10%	24%	17.8	10/06	-9%	16%	16.9
2/00	-12%	72%	22.1	5/02	43%	84%	18.3	8/04	-8%	21%	16.8	11/06	-11%	3%	16.8

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12/06	-11%	9%	16.3	3/09	135%	149%	9.1	6/11	59%	57%	16.6	9/13	73%	113%	23.6
1/07	-9%	15%	17.8	4/09	116%	86%	11.9	7/11	68%	53%	17.0	10/13	54%	91%	26.4
2/07	-3%	15%	16.9	5/09	109%	91%	12.4	8/11	78%	80%	14.1	11/13	53%	63%	26.2
3/07	-1%	25%	16.7	6/09	113%	110%	12.2	9/11	92%	85%	12.4	12/13	36%	41%	27.4
4/07	-6%	10%	18.0	7/09	96%	90%	14.5	10/11	70%	61%	15.7	1/14	52%	51%	26.5
5/07	-14%	5%	16.8	8/09	96%	116%	15.1	11/11	76%	77%	15.4	2/14	50%	24%	27.3
6/07	-9%	-1%	15.7	9/09	87%	103%	16.5	12/11	78%	62%	15.4	3/14	51%	24%	27.2
7/07	-5%	8%	16.7	10/09	95%	119%	17.4	1/12	74%	80%	18.0	4/14	56%	24%	25.9
8/07	-5%	18%	16.3	11/09	89%	119%	18.1	2/12	73%	60%	18.4	5/14	43%	19%	24.1
9/07	-6%	31%	16.9	12/09	85%	124%	18.4	3/12	68%	56%	18.6	6/14	50%	20%	26.0
10/07	-9%	24%	18.8	1/10	86%	104%	19.2	4/12	71%	58%	19.0	7/14	54%	30%	24.0
11/07	-4%	29%	16.9	2/10	91%	119%	19.0	5/12	84%	77%	15.8	8/14	46%	8%	23.7
12/07	-3%	25%	16.2	3/10	77%	111%	19.8	6/12	78%	73%	17.0	9/14	51%	19%	21.5
1/08	9%	42%	15.1	4/10	76%	115%	20.7	7/12	79%	92%	17.5	10/14	51%	15%	22.6
2/08	14%	46%	14.1	5/10	93%	98%	16.9	8/12	76%	75%	17.6	11/14	52%	15%	23.1
3/08	19%	46%	13.5	6/10	100%	112%	15.1	9/12	75%	85%	17.7	12/14	57%	17%	23.0
4/08	15%	41%	15.8	7/10	91%	115%	16.0	10/12	82%	121%	17.8	1/15	62%	23%	23.6
5/08	16%	47%	16.1	8/10	88%	137%	13.2	11/12	87%	123%	17.7				
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8/08	27%	66%	13.8	11/10	76%	56%	16.8	2/13	79%	110%	20.8				
9/08	44%	81%	11.4	12/10	63%	86%	17.5	3/13	68%	90%	21.0				
10/08	81%	114%	9.1	1/11	51%	33%	20.4	4/13	66%	86%	22.6				
11/08	101%	170%	8.0	2/11	46%	62%	19.8	5/13	66%	96%	22.6				
12/08	105%	182%	8.0	3/11	55%	76%	19.2	6/13	69%	103%	22.2				
1/09	116%	143%	8.6	4/11	51%	36%	19.5	7/13	67%	74%	24.6				
2/09	153%	172%	8.4	5/11	56%	54%	17.6	8/13	78%	112%	22.0				

# CONCLUSIONS

## ERS'S TECHNOLOGY

**Reliably** identifies risks long before major price declines.

**Reliably** identifies exceptionally durable companies at very favorable prices.



Greatly Reduces Losses



Greatly Improves Profitability

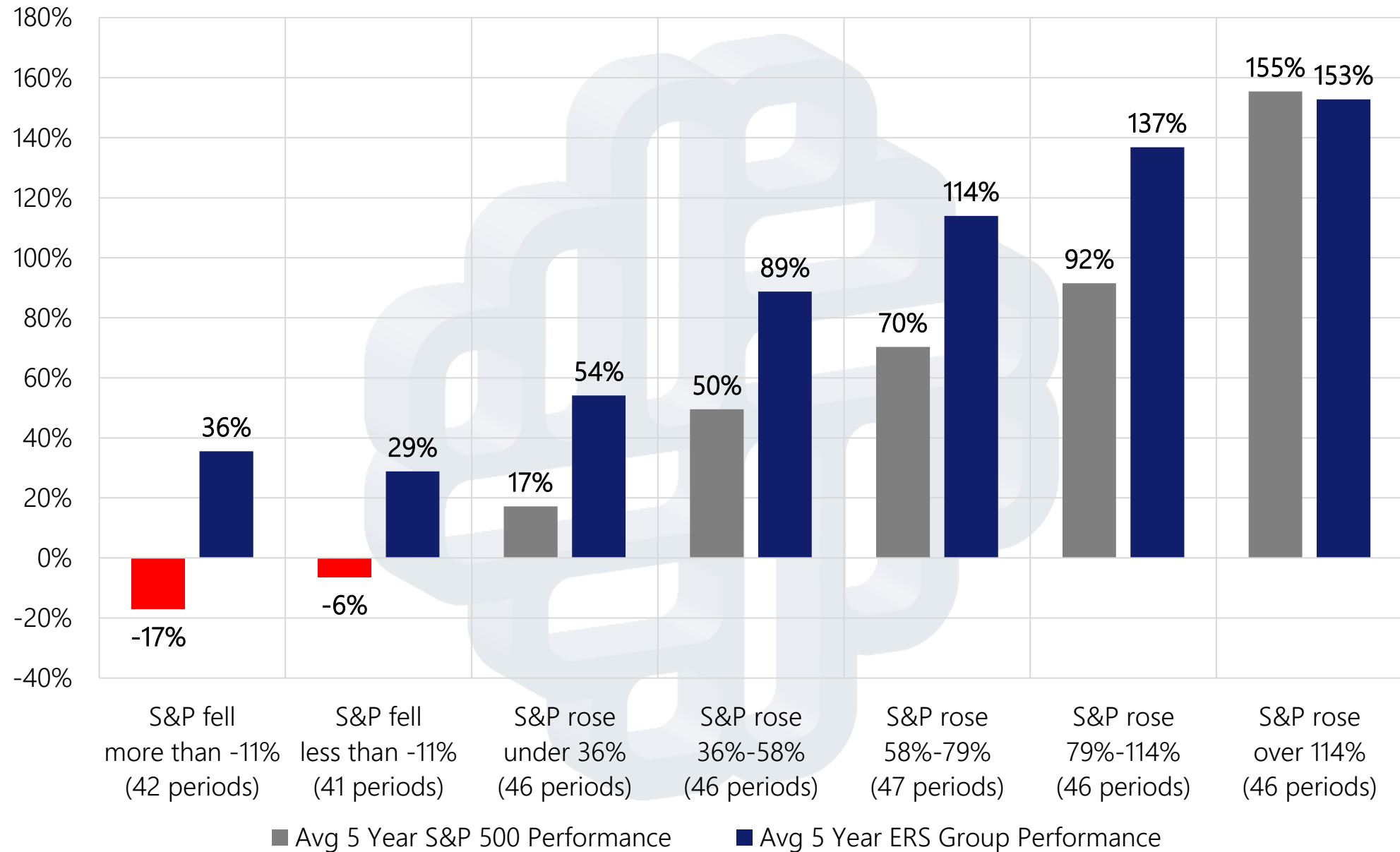
**NO OTHER RESEARCH IS AS RELIABLE  
OR AS VALUABLE.**



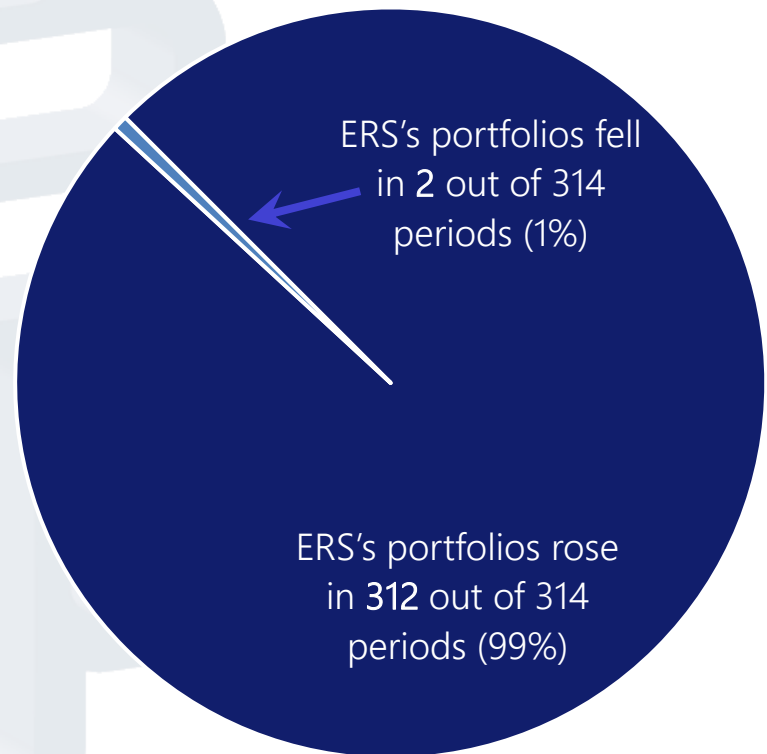
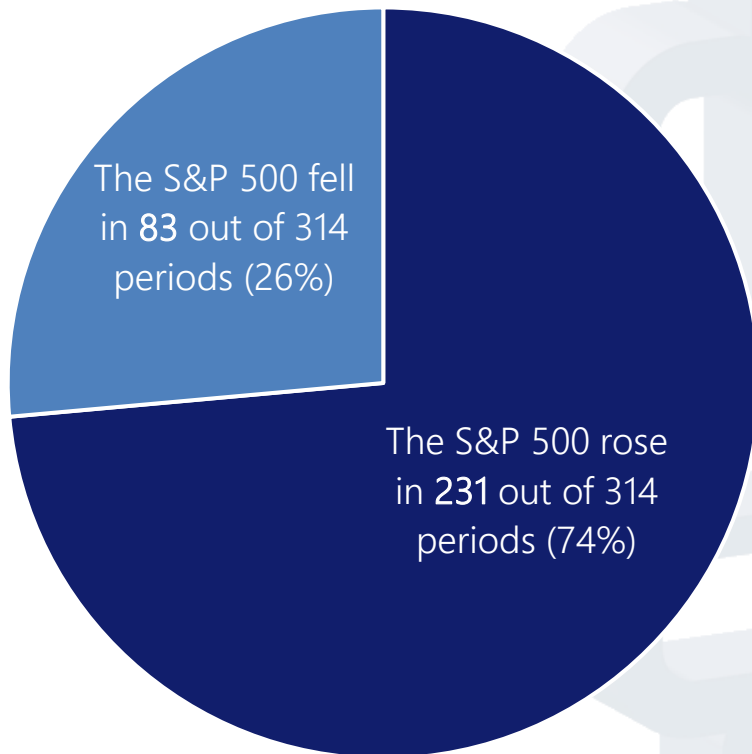
# APPENDIX

- A) The Alpha of ERS's Portfolios by 7 Categories
- B) 83 Periods When the S&P 500 Fell
- C) 226 Periods When the S&P 500 Gained
- D) Average Alpha of ERS's Portfolios

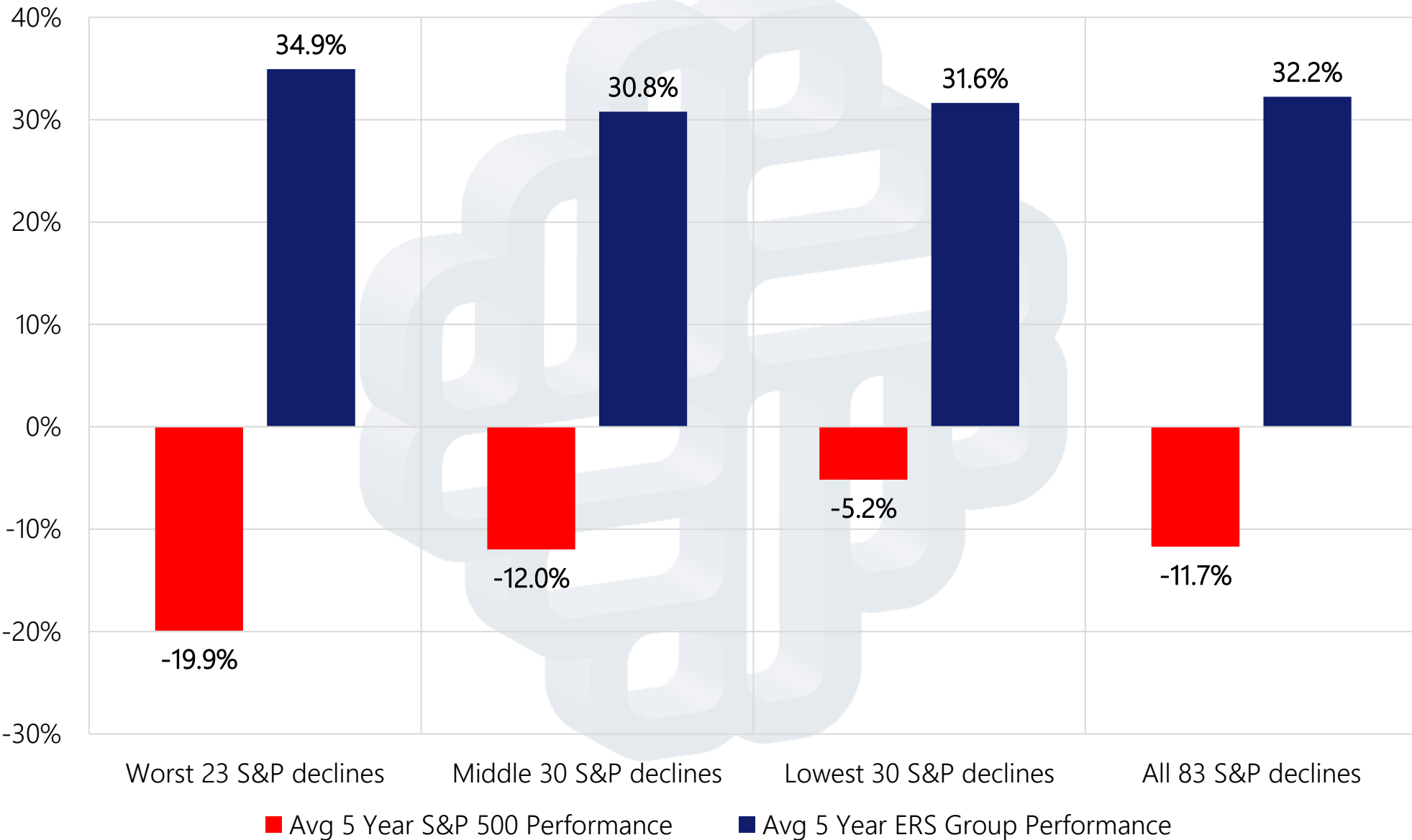
# THE ALPHA OF ERS'S PORTFOLIOS BY 7 CATEGORIES



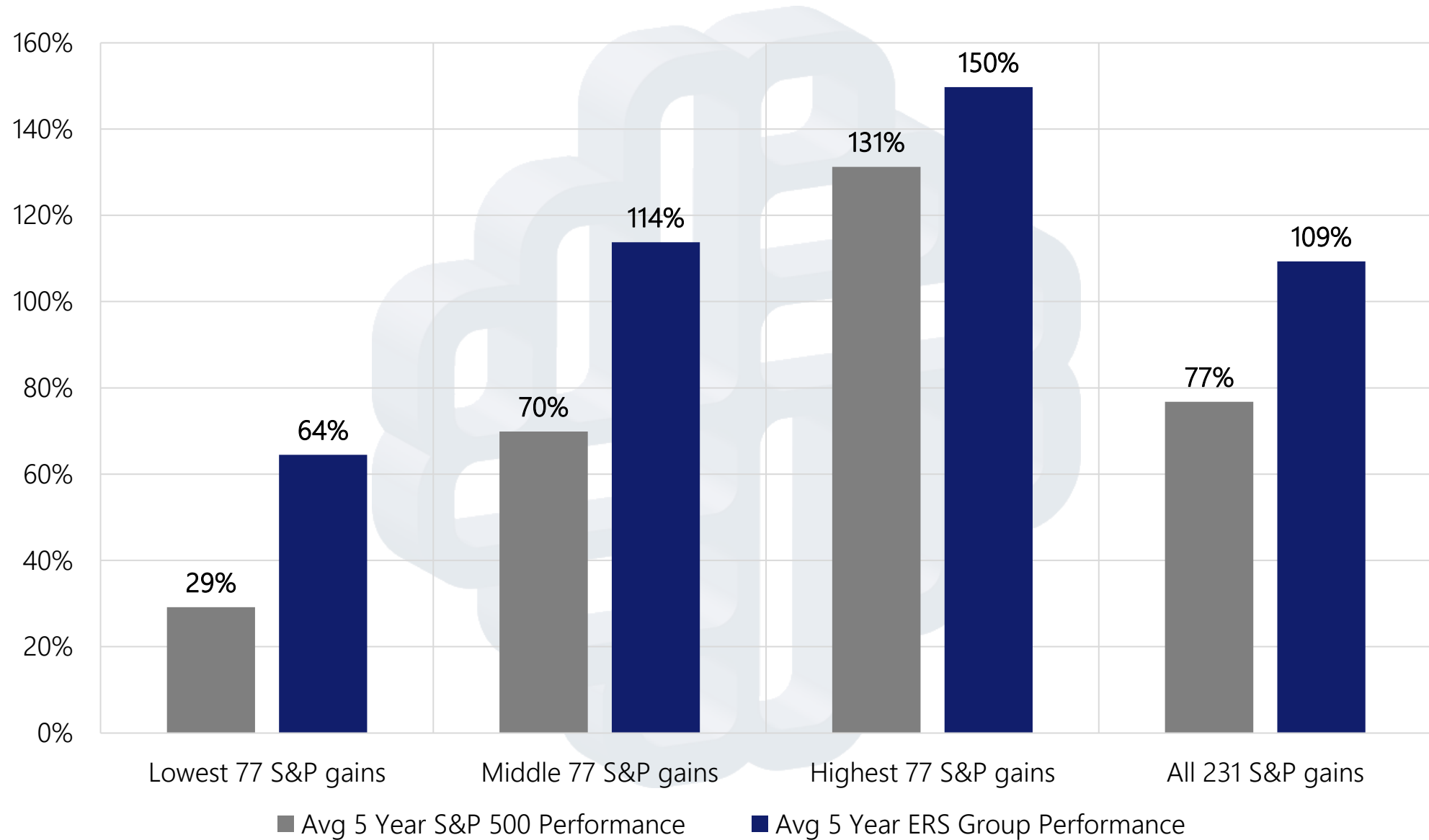
# ERS'S PORTFOLIOS PROVIDED REMARKABLY CONSISTENT PROFITABILITY



# IN THE 83 PERIODS WHEN THE S&P 500 FELL, ERS'S PREFERRED STOCKS OUTPERFORMED

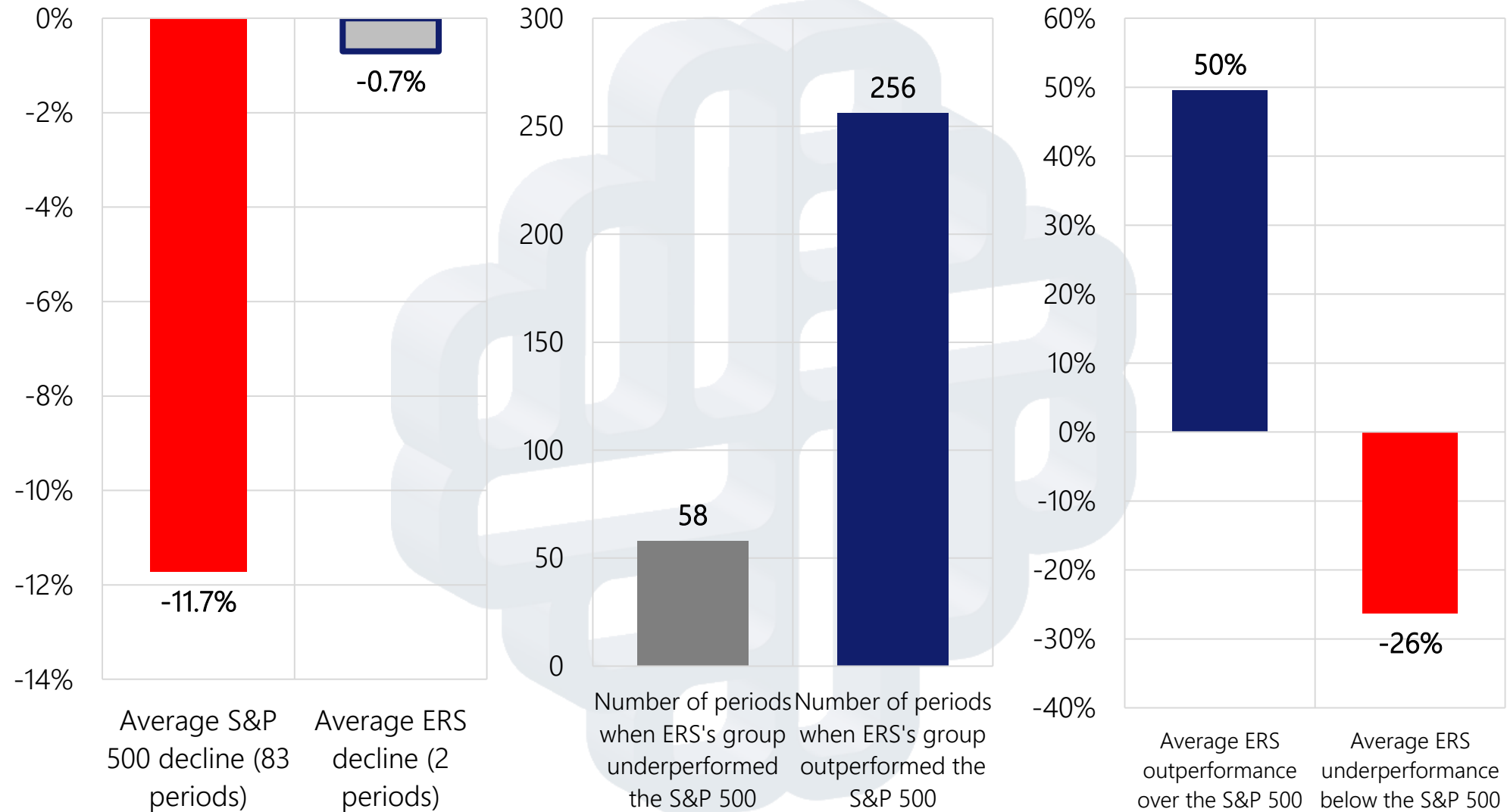


# IN THE 226 PERIODS WHEN THE S&P 500 GAINED, ERS'S PREFERRED PORTFOLIOS OUTPERFORMED





# AVERAGE ALPHA OF ERS'S PORTFOLIOS



# CALL US TODAY FOR A DEMONSTRATION OF OUR TECHNOLOGY



*I welcome your call.*  
Raymond M. Mullaney  
President & CEO