



How Investors May Gain US Equity Exposure  
with Lower Downside Risk



## The efficient market hypothesis (EMH)

states that all known information about investment securities, such as stocks, is already factored into the prices of those securities. As a result, no amount of analysis can give an investor an edge over other investors, collectively known as the market.

While we may debate the accuracy of the EMH, one aspect of the theory is worth noting. The EMH does not require that individual investors be rational. Rather, it implies that the market, as a whole, is rational and is always right.

That distinction is important. Individual investors may, and often do, behave irrationally. One such manifestation of this irrationality is “fear and greed” in the market. Greed may cause investors to remain overexposed to the equity markets when they should be paring positions. Alternatively, fear can keep investors out of the markets when they should be investing in them.

It is that second scenario, fear or concern about market downturns, that we will consider in this paper. In addition to discussing how investors may let concern about market downturns lead them to being underexposed to equities, we will propose an investment strategy that may allow investors to gain exposure to the US equity market through a product that may provide downside market protection.

## Losses Loom Larger Than Gains

In general, investors tend to be loss-averse, e.g., they prefer to avoid losses to acquiring equivalent gains. In other words, it is better not to lose \$5 than to find \$5.

## Prospect Theory

In their seminal work, Daniel Kahneman and Amos Tversky identified this tendency of individuals to be loss averse and labeled it prospect theory.<sup>1</sup> By extension, they described the behavior of “losses looming larger than gains.”

In short, prospect theory posits that gains and losses are valued differently. The general concept is that if two choices are put before an individual, both equal, but one is presented in terms of potential gains, while the other in terms of possible losses, the former option will be chosen.

Kahneman and Tversky also proposed that losses cause a greater emotional impact on an individual than does an equivalent amount of gain. Gal and Rucker described “loomed larger” as losses being experienced with greater psychological impact than gains of equivalent magnitude.<sup>2</sup>

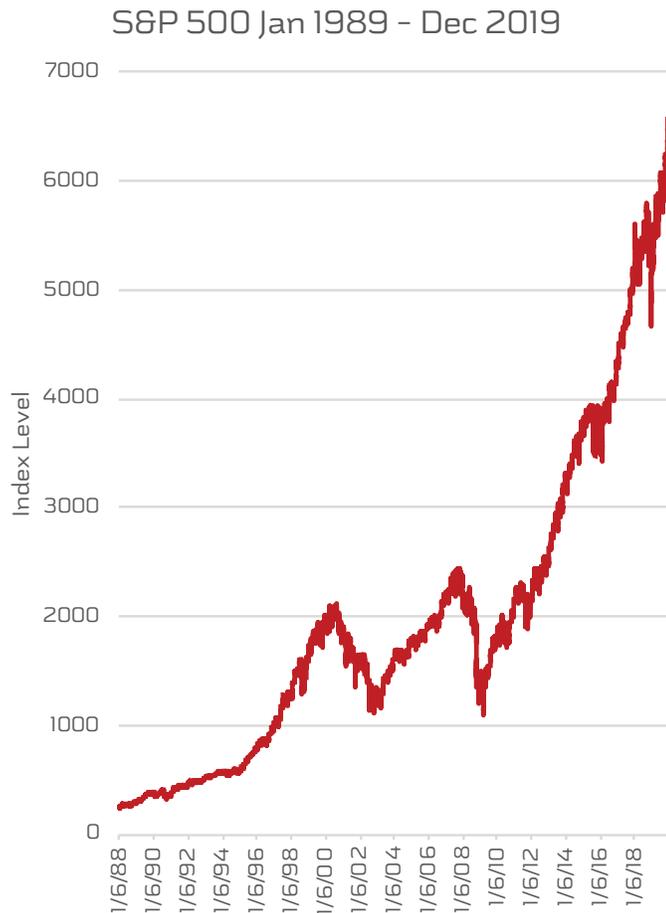
To illustrate, in his classroom, Kahneman would ask his students, “I’m going to toss a coin, and if it’s tails, you lose \$10. How much would you have to gain on winning in order for this gamble to be acceptable to you?” Most students answered \$20. The same “double the loss” requirement occurred when he asked rich people the same questions, but with larger numbers. People are willing to leave a lot of money on the table to avoid a loss.<sup>3</sup>



### Which May Affect Investing Decisions

Concerns about market declines, and the ensuing loss of capital, may cause investors to pare back their equity holdings at the wrong time. It may also prevent individuals from investing in the equity market in the first place.

Such a decision may not be in the overall interest of individuals. Why?



Source: S&P Dow Jones Indices

Chart 1

Past performance does not guarantee future results. The referenced indices are shown for informational purposes only and are not meant to represent the Fund. Investors cannot directly invest in an index

### Markets Don't Go Up in a Straight Line

Despite the attractive long-term returns of the S&P 500, there have been some bumps along the way.

For example, in the aftermath of the run-up in Internet stocks in the late 1990s, the S&P 500 declined over 49% between March 2000 and October 2002 – a period that became known as the Dot.com bust. During the Great Financial Crisis, the S&P 500 declined nearly 57% between October 2007 and March 2009.

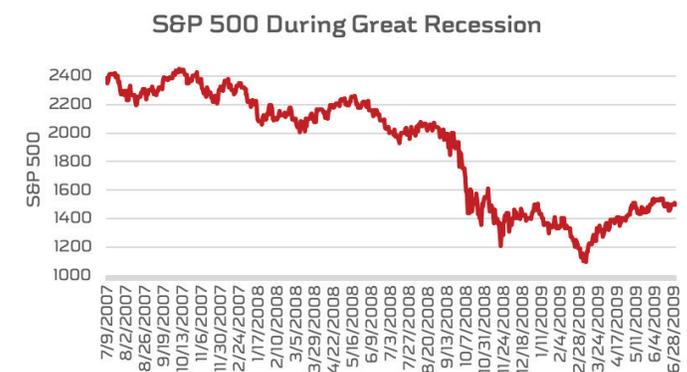
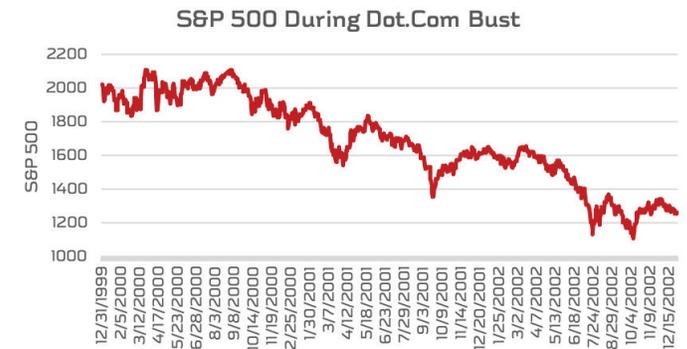


Chart 2

A lot of wealth was destroyed during these periods, and during many other market declines. Investors are rightly concerned about the effect that market declines may have on their investment portfolios.



## Wall of Worry

There are many issues that may stir an individual's concern about investing in the equity market. Corrections, bear markets, recessions, and stretched equity valuations have, in the past, led to market declines.

## Corrections and Bear Markets

In addition to the large declines experienced during the dot.com bust and the Great Recession, the market has experienced many other corrections and bear markets. A correction is defined as a

market decline of 10% while a bear market is defined as a decline of 20%.

The chart below highlights that since the S&P 500's inception in 1958, there have been 31 corrections or bear markets, indicating such a market event may occur every two years, on average. The average length of those downturns was over 200 days and, on average, it took almost a year for the market to regain its peak level again. In some cases, such as the dot.com bust and the Great Recession, it took over four years for the S&P 500 to regain its losses.

Peak Date	Trough Date	Peak Price	Trough Price	Percent Loss	Number of Days	Reach Peak Again	Number of Days
8/3/1959	9/28/1960	60.71	52.48	-13.6%	422	1/27/1961	121
12/12/1961	6/26/1962	72.64	52.32	-28.0%	196	9/3/1963	434
8/22/1962	10/23/1962	59.78	53.49	-10.5%	62	11/14/1962	22
2/9/1966	10/7/1966	94.06	73.20	-22.2%	240	5/4/1967	209
9/25/1967	3/5/1968	97.59	87.72	-10.1%	162	4/30/1968	56
11/29/1968	5/26/1970	108.37	69.29	-36.1%	543	3/6/1972	650
4/28/1971	11/23/1971	104.77	90.16	-13.9%	209	2/4/1972	73
1/11/1973	10/3/1974	120.24	62.28	-48.2%	630	7/17/1980	2,114
11/7/1974	12/6/1974	75.21	65.01	-13.6%	29	1/28/1975	53
7/15/1975	9/16/1975	95.61	82.09	-14.1%	63	1/12/1976	118
9/21/1976	3/6/1978	107.83	86.90	-19.4%	531	8/15/1979	527
9/12/1978	11/14/1978	106.99	92.49	-13.6%	63	8/13/1973	272
10/5/1979	11/7/1979	111.27	99.87	-10.2%	33	1/23/1980	77
2/13/1980	3/27/1980	118.44	98.22	-17.1%	43	7/14/1980	109
11/28/1980	8/12/1982	140.52	102.42	-27.1%	622	11/3/1982	83
10/10/1983	7/24/1984	172.65	147.82	-14.4%	288	1/21/1985	181
8/25/1987	12/4/1987	336.77	223.92	-33.5%	101	7/26/1989	600
1/2/1990	1/30/1990	359.69	322.98	-10.2%	28	5/29/1990	119
7/16/1990	10/11/1990	368.95	295.46	-19.9%	87	2/13/1991	125
10/7/1997	10/27/1997	983.12	876.99	-10.8%	20	12/5/1997	39
7/17/1998	8/31/1998	1,186.75	957.28	-19.3%	45	11/23/1998	84
7/16/1999	10/15/1999	1,418.78	1,247.41	-12.1%	91	11/18/1999	34
3/24/2000	10/9/2002	1,527.46	776.76	-49.1%	929	5/30/2007	1,694
11/27/2002	3/11/2003	938.87	800.73	-14.7%	104	5/12/2003	62
10/9/2007	3/9/2009	1,565.15	676.53	-56.8%	517	3/15/2013	1,467
4/23/2010	7/2/2010	1,217.28	1,022.58	-16.0%	70	11/4/2010	125
4/29/2011	10/3/2011	1,363.61	1,099.23	-19.4%	157	2/23/2012	143
5/21/2015	8/25/2015	2,130.82	1,867.61	-12.4%	96	7/11/2016	321
11/3/2015	2/11/2016	2,109.79	1,829.08	-13.3%	100	6/7/2016	117
1/26/2018	2/8/2018	2,872.87	2,581.00	-10.2%	13	8/24/2018	197
9/20/2018	12/24/2018	2,930.75	2,351.10	-19.8%	95	4/23/2019	120
Avg. Duration					216.5		340.9



## Recessions

As the chart below highlights, the US economy, on average, experiences a recession every seven years. Recessions are usually accompanied by large declines in the equity market. Since the end of World War II, the S&P 500 has declined by more than 30% on average during a recession.

Business Cycle Peak	Business Cycle Trough	S&P 500 Peak	S&P 500 Trough	S&P 500 Return
August 1929	March 1933	September 1929	June 1932	-86.19%
May 1937	June 1938	March 1937	March 1938	-54.47%
February 1945	October 1945	February 1945	March 1945	-6.36%
November 1948	October 1949	May 1946	June 1949	-29.61%
July 1953	May 1954	January 1953	September 1953	-14.82%
August 1957	April 1958	August 1956	October 1957	-21.63%
April 1960	February 1961	August 1959	October 1960	-13.85%
December 1969	November 1970	November 1968	May 1970	-36.06%
November 1973	March 1975	January 1973	October 1974	-48.20%
January 1980	July 1980	February 1980	March 1980	-17.07%
July 1981	November 1982	November 1980	August 1982	-27.27%
July 1990	March 1991	July 1990	October 1990	-20.36%
March 2001	November 2001	March 2000	October 2002	-50.50%
December 2007	June 2009	October 2007	March 2009	-57.69%
	Post WWII - Average			-30.64%
	All - Average			-34.58%

Source: National Bureau of Economic Research

The S&P 500 return represents the performance of the S&P 500 associated with the business cycle. The peak [trough] of the equity market may occur before or after the peak [trough] of the business cycle. Past performance does not guarantee future results.

Table 2

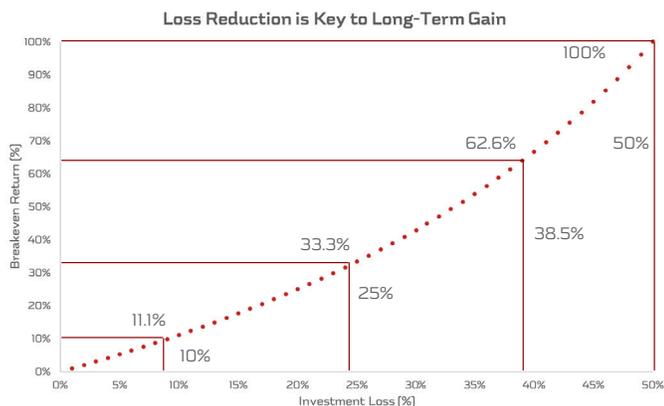
All of these statistics underscore the concerns that individuals may have regarding investing in the equity market. As a result, they may underweight, reduce, or outright avoid equities in their portfolios. Unfortunately, they may be missing out on the long-term performance potential of the equity markets.



### As Losses Increase, Greater Gains Are Required

Greater gains in the stock market are needed to offset realized losses. For example, it takes a 33% gain to offset a 25% loss and a 100% gain to offset a 50% loss.

Additionally, it may take a considerable amount of time for the equity market to return to its level before the decline. As Table 1 highlighted, on average, it took nearly a year for the S&P 500 to make back the losses that it experienced during corrections and bear markets. In some cases, such as during the Dot.com bust and after the Great Recession, it took over four years for the markets to recover.



For illustrative purposes only. Not meant to represent the Fund.

**Thus, a sound strategy to achieve attractive long-term investment gains may be to avoid, or at least mitigate, losses in the first place.**

But, is such a strategy plausible?

### Research Suggests That Lower Risk Portfolios May Outperform Over Time

According to standard financial theory, investors are rewarded for the risk assumed in their investment portfolio through superior returns. In reality, that has not been the case.

As far back as 1972, Black, Jensen, and Scholes highlighted that the basic tenet of commensurate return for risk assumed by the Capital Asset Pricing Model (CAPM) was not observed in real life.<sup>4</sup> Their research showed that returns of riskier securities were lower than those of less risky securities. This implies that constructing portfolios with less risk may yield better investment returns.

Additionally, Blitz, van Vliet, and Baltussen<sup>5</sup> highlight that low risk, and specifically, low volatility, portfolios outperformed broader equity market indices around the world with lower risk. These do particularly well in market downturns.

More recently, we have seen evidence of this in low-volatility indices. These seek to outperform the overall equity market with lower risk and volatility. These indices work on the principle that portfolios with lower risk or volatility, although they may experience lower returns during strong equity market advances, experience lower declines during market downturns that more than make up for it. Historically, they have provided equity-like returns with lower risk and volatility than the overall market.

For example, the S&P Low Volatility Index has produced a 14.35% annualized return over the ten years ending 12/31/19 versus the corresponding 13.97% return of the S&P 500. At the same time, its risk, as measured by standard deviation<sup>6</sup> was 9.16% versus the 12.37% of the S&P 500.<sup>7</sup>

This research, as well as the returns of low volatility indices, imply that avoiding losses through risk reduction may provide superior investment returns with lower downside risk.



## Sector Momentum May Provide Lower Downside Risk

Another means of achieving attractive long-term investment results with lower downside risk may be through strategies that utilize sector momentum.

Momentum is the tendency of stocks that have been experiencing positive (negative) returns to continue to experience positive (negative) returns. Just as individual stocks may experience positive or negative momentum, so may sectors of the equity market. Investing in sectors with positive momentum may offer the potential to mitigate risk and provide downside equity market protection in investor's portfolios.

Chen, Jiang, and Xhu, found that there are significant positive returns to sector momentum.<sup>8</sup> Further, they found that sector ETFs are readily available, and thus, a strategy utilizing sector returns is implementable with reasonable transaction costs.

Faber also wrote a paper highlighting the potential, above-benchmark returns that can be achieved through a strategy utilizing sector momentum.<sup>9</sup>

**How may individuals gain or maintain their US equity exposure while potentially mitigating or reducing their losses during the next market downturn?**

## Introducing the Armor US Equity Index ETF (ARMR)

The Armor US Equity Index ETF (ARMR) seeks to provide investment returns that, before fees and expenses, correspond generally to the total return performance of the Armor US Equity Index. The index is designed to provide exposure to the sectors of the US equity market that the fund's index provider believes are most likely to generate positive returns while providing downside protection and experiencing lower volatility relative to the US equity market.

### Investment Process

Individual sectors of the US equity market are evaluated utilizing a proprietary market performance indicator (MPI) to estimate those which may offer strong, long-term performance potential with lower expected downside risk. Sector momentum forms the basis for the MPI. Only sectors which score well based on the MPI are included in the index. If no sectors appear attractive based on this metric, the index will invest primarily in US Treasury obligations.

Low-cost ETFs which provide exposure to the sectors selected by the model are included in the index. ETFs may provide broad sector exposure in a cost-efficient manner and allow the strategy the liquidity to react quickly to changes in market sentiment.

The index is rebalanced monthly to reflect timely insights into market and sector risk and return.

ARMR may provide investors with exposure to the US equity market with the potential for downside protection.



**ARMOR**  
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Armor US Equity Index ETF

## Disclosures

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The Funds are distributed by Foreside Fund Services, LLC

Investing involves risk, including possible loss of principal. The Fund's return may not match or achieve a high degree of correlation with the return of the Index. To the extent the Fund's investments are concentrated in or have significant exposure to a particular issuer, industry or group of industries, or asset class, the Fund may be more vulnerable to adverse events affecting such issuer, industry or group of industries, or asset class than if the Fund's investments were more broadly diversified. Issuer-specific events, including changes in the financial condition of an issuer, can have a negative impact on the value of the Fund.

Shares of the Funds may be sold throughout the day on the exchange through any brokerage account. However, shares are not individually redeemable, and may only be redeemed directly from the Fund by Authorized Participants, in very large creation/redemption units. There can be no assurance that an active trading market for shares of an ETF will develop or be maintained. Shares may trade above or below NAV.

A new or smaller fund is subject to the risk that its performance may not represent how the fund is expected to or may perform in the long term. In addition, new funds have limited operating histories for investors to evaluate and new and smaller funds may not attract sufficient assets to achieve investment and trading efficiencies.

<sup>1</sup> Kahneman, Daniel & Tversky, Amos, Prospect Theory: An Analysis of Decision Under Risk, March 1979

<sup>2</sup> Gal, David & Rucker, Derek D., The Loss of Loss Aversion: Will It Loom Larger Than Its Gain

<sup>3</sup> Richards, Carl, Overcoming an Aversion to Loss, The New York Times, 12/9/13

<sup>4</sup> Black, Fisher; Jensen, Michael C.; Scholes, Myron, The Capital Asset Pricing Model: Some Empirical Tests, 1972

<sup>5</sup> Blitz, David; van Vliet, Pim & Baltussen, Guido, The Volatility Effect Revisited, 4/17/07

<sup>6</sup> A measure of the dispersion of returns.

<sup>7</sup> S&P 500 & S&P Low Volatility Index 12/31/19 Factsheets

<sup>8</sup> Chen, Linda H.; Jiang, George J. & Xhu, Kevin X., Do Style and Sector Indexes Carry Momentum, 8/28/11

<sup>9</sup> Feber, Mebane, Relative Strength Strategies for Investing, April 2010