



Market Analysis, Research & Education

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Dollar-Cost Averaging: The Bear Market Solution

Investment Strategy Put to the Test During Equity Market Downturns

Next in an ongoing Behavioral Finance series

The decline of major U.S. equity market indexes into bear market territory—a 20% drop from the most recent peak—typically raises the anxiety levels of investors and prompts some to deviate from well-conceived investment strategies (see previous articles in MARE's *Behavioral Finance* series). Dollar-cost averaging is one long-term strategy that investors often fail to adhere to during significant equity market downturns, as heightened fear causes many to stop purchasing stocks for their portfolios. The following article examines the

effectiveness of maintaining a dollar-cost averaging strategy into U.S. stocks by evaluating how this approach would have fared during past bear markets.

The Dollar-Cost-Averaging Approach

By definition, dollar-cost averaging refers to investing a fixed amount at regular intervals (e.g. monthly), regardless of market movements and, by doing so, more shares are purchased when security prices are low, and fewer shares are purchased when prices are high. This strategy is intended to moderate the volatility of a portfolio over time by minimizing one's exposure to the risk associated with investing a large sum of capital in one asset (or asset class) just prior to a sudden decline in the asset's value.

Analytical Assumptions: Bear Markets and Investor Scenarios

In all likelihood, the current bear market that became official in July 2008¹ has many people contemplating their commitment to dollar-cost averaging. With the arrival of any bear market, there are key questions investors typically ask themselves: Where does the stock market go from here? Is this a bottom, or is the market headed lower? The two bear markets analyzed in this article are representative of both scenarios—an extended bear market that got significantly worse after hitting the 20% threshold, and a bear market that was brief and ended shortly after reaching "bear" territory.

This analysis includes some hypothetical scenarios designed to represent typical behaviors of individual investors who had originally made a calculated decision to pursue dollar-cost averaging as a long-term strategy. For the purposes of easily identifying

KEY TAKEAWAYS

- Dollar-cost averaging—investing a fixed amount at regular intervals—is a long-term strategy that investors often fail to adhere to during significant equity market downturns.
- Investors who sit on the sidelines when the market declines fail to benefit from purchasing stocks when they are effectively "on sale."
- An analysis of investor behavior during past bear markets shows that investors who maintained a dollar-cost averaging strategy into stocks ended up with portfolios worth more than those who stopped making regular contributions.
- More specifically, investors who stuck to dollar-cost averaging during bear markets outperformed those who didn't, regardless of whether those investors exhibited good or bad timing by shifting their new investments to cash, and regardless of the length and the magnitude of the market's decline.

the different investor scenarios presented in this article, the following labels have been provided:

- **The Stay-the-Course Investor** – Maintains dollar-cost averaging throughout a bear market.
- **The Bear Market Dodger** – Effectively avoids the bear market by shifting 100% of new contributions to cash before incurring any losses, and shifts 100% of new contributions back into stocks as the market resumes a long-term uptrend.
- **The Bear Market Refugee** – Shifts all new contributions to cash at the onset of a bear market (20% drop), and shifts 100% of new contributions back into stocks as the market resumes a long-term uptrend.
- **The Doomsday Capitulator** – Shifts 100% of new contributions to cash at the bear market's cyclical low point, and shifts 100% of new contributions back into stocks as the market resumes a long-term uptrend.

The Stay-the-Course Investor remains dedicated to dollar-cost averaging into stocks throughout the entire time periods shown in this article. The other three scenarios represent investors who deviated from dollar-cost averaging at different times—Bear Market Dodger (effectively avoided bear market with good timing), Bear Market Refugee (withheld investments in stocks after bear market signal; average-to-poor timing) and Doomsday Capitulator (threw in the towel at the worst-possible time). Our assumption is that each investor had a starting balance of \$10,000 entirely invested in equities, and was making monthly

contributions of \$500 per month to stocks prior to the arrival of a bear market. These investment parameters reflect the situation of an investor using dollar-cost averaging to accumulate wealth or save for a long-term goal, such as retirement or a college education.

2000-02: The Big Bear Market – Long & Deep

The bear market that occurred during the early part of this decade was one of the most severe ever, crushing a multi-year period of exceptional gains that occurred in the 1990s. From 2000 to 2002, the S&P 500 Index fell 47%.ⁱⁱ For many, both young and experienced, the period remains a painful reminder of the pitfalls associated with irrational investment behaviors.

MARE set out to see how the aforementioned investors who maintained dollar-cost-averaging strategies throughout the 2000-2002 bear market would have fared. For the three market-timing investor scenarios that chose to shift their future contributions to cash (*Bear Market Dodger*, *Bear Market Refugee* and *Doomsday Capitulator*), we chose a common date on which all three investors resumed their contributions back to stocks: January 2004. This date was chosen based on historical analysis on how long it typically takes investors to feel comfortable buying stocks again after a bear market.ⁱⁱⁱ Starting with a balance of \$10,000 on January of 2000, each of the four investors amassed the balances shown in Exhibit 1, below.

The analysis suggests that maintaining a dollar-cost-averaging (*Stay-the-Course Investor*) approach to stock investing through the extended bear market of 2000-2002 would have proved to be a worthwhile

EXHIBIT 1: During the 2000-2002 bear market (and through January 2004), dollar-cost averaging into stocks proved worthwhile.

Investor Type	Post Bear Market Portfolio Balance (as of January 2004)	% Shortfall vs. Stay-the-Course Investor (as of January 2004)	Projected Balance Shortfall vs. Stay-the-Course Investor After 30 years*
Stay-the-Course Investor <i>Maintained dollar-cost averaging into stocks.¹</i>	\$33,502	-	-
Bear Market Dodger <i>Shifted to cash contributions prior to start of bear market.²</i>	\$33,357	-0.4%	-\$2,671
Bear Market Refugee <i>Shifted to cash contributions after 20% market decline.³</i>	\$31,799	-5.1%	-\$31,380
Doomsday Capitulator <i>Shifted to cash contributions at stock market bottom.⁴</i>	\$31,616	-5.6%	-\$34,752

Hypothetical stock returns based on S&P 500 Index performance from January 2000-January 2004.

* Stay-the-Course Investor projected balance after 30 years from January 2004: \$617,331. Projected growth rate calculated by using the S&P 500 Index's long-term average annual total return of 10.2% (1927-2008). Source: Ibbotson, FMRCo. (MARE) as of 8/31/08.

[1] Maintained dollar-cost averaging of \$500/month into equities. [2] Shifted 100% of new contributions to cash as of April 2000, then shifted 100% of new contributions back into equities as of Jan 2004. [3] Shifted 100% of new contributions to cash as of March 2001, then shifted 100% of new contributions back into equities as of Jan 2004.

[4] Shifted 100% of new contributions to cash as of Oct 2002, then shifted 100% of new contributions back into equities as of Jan 2004.

strategy. (*Bear in mind, past performance is no guarantee of future results.*) By buying more shares at lower prices throughout the equity market downturn, the Stay-the-Course Investor was able to reap bigger portfolio gains when the market recovered. Those investors who shifted to cash contributions after the market declined didn't benefit from purchasing stocks when they were effectively on sale, and those with the worst timing (*Bear Market Refugee and Doomsday Capitulator*) experienced the biggest shortfalls. What's perhaps most surprising about the results is that the Stay-the-Course Investor even slightly outpaced the Bear Market Dodger—the omniscient investor who stopped contributing to the stock market prior to the downturn, and thus avoided the extended bear market.

Maintaining dollar-cost-averaging through the bear market of 2000-2002 proved to be worthwhile. By buying more shares at lower prices throughout the equity market downturn, an investor was able to reap bigger gains when the market recovered.

While the three underperforming scenarios may appear to lag by only small percentages (-0.4%, -5.1% and -5.6%, respectively), these setbacks can amount to significant dollars over an extended period of time.

For example, consider the Bear Market Refugee, who shifted contributions to cash at the onset of a bear market. This investor ended up with a portfolio value worth \$1703 less (-5.1%) than one who maintained a dollar-cost averaging plan into stocks. While that may not seem like a major setback to some, if you take the portfolio balances of the two investors (as of January 2004) and assume a compounded 10% average annual rate of return for stocks over the next 30 years, the Bear Market Refugee ends up with a portfolio shortfall of more than \$31,300.^{iv} It's also important to bear in mind that dollar-cost-average investors who are prone to deviating from the strategy and attempt to time the market's downturns may be likely to do so again in the future. Repeating this behavior could exacerbate the long-term underperformance of a portfolio relative to a more disciplined, stay-the-course approach.

1990: The Short Bear Market – A Brief Step Back

The bear market of 1990 was a fast and furious pullback. The S&P 500 Index hit a peak in July 1990, but fell through the 20% bear threshold only a few months later, in October 1990. By February 1991, however, the index had returned to its previous July 1990 high, which we chose as a reasonable re-entry point for the market-timers (*Editor's note: Historical behavioral patterns show that investors have tended to invest more capital in stocks when a rebound is underway.*)^v Exhibit 2 (below) shows how three dollar-cost-averaging investors**, each with

EXHIBIT 2: During the 1990 bear market (and through March 1991), dollar-cost averaging into stocks proved worthwhile.

Investor Type	Post Bear Market Portfolio Balance (as of March 1991)	% Shortfall vs. Stay-the-Course Investor (as of March 1991)	Projected Balance Shortfall vs. Stay-the-Course Investor After 30 years***
Stay-the-Course Investor <i>Maintained dollar cost averaging into stocks.¹</i>	\$19,117	-	-
Bear Market Dodger <i>Shifted to cash contributions prior to bear market.²</i>	\$18,689	-2.2%	-\$7,930
Bear Market Refugee <i>Shifted to cash contributions after 20% market decline³</i>	\$18,345	-4.0%	-\$14,303

Hypothetical stock returns based on S&P 500 Index performance from January 1990-March 1991.

** A Doomsday Capitulator scenario is not pertinent to this short and "shallow" bear market because the S&P 500 Index did not go lower than a 20% decline (which reflects the Bear Market Refugee investor).

*** Stay-the-Course Investor projected balance after 30 years from March 1991: \$354,186. Projected growth rate calculated by using the S&P 500 Index's long-term average annual total return of 10.2% (1927-2008). Source: Ibbotson, FMRCo. (MARE) as of 8/31/08.

[1] Maintained dollar-cost averaging of \$500/month into equities. [2] Shifted to 100% of new contributions to cash as of July 1990 (well-timed exit at S&P 500 Index peak), then shifted 100% of new contributions back into equities as of Feb 1991 (reentry after S&P 500 rebounded to previous peak). [3] Shifted 100% of new contributions to cash as of October 1990 (official bear market point/20% down), then shifted 100% of new contributions back into equities as of Feb 1991 (reentry after S&P 500 rebounded to previous peak).

a beginning balance of \$10,000 as of January 1990, would have fared throughout this bear market.

As these hypothetical scenarios illustrate, the Stay-the-Course Investor who maintained a dollar-cost-averaging approach to equities through this

It's important to bear in mind that dollar-cost-average investors who are prone to deviating from the strategy and attempt to time the market's downturns may be likely to do so again in the future. Repeating this behavior could exacerbate the long-term underperformance of a portfolio relative to a more disciplined, stay-the-course approach.

short 1990 bear market prevailed. The portfolio balances of the Bear Market Dodger (-2.2%) and the Bear Market Refugee (-4.0%) both lagged behind,

as they once again failed to benefit from buying cheaper shares ahead of a market recovery.

Investment Implications

The results of this analysis show that dollar-cost averaging can be a prudent course for long-term investors, regardless of whether a bear market ended soon after its official designation or got progressively worse. In addition, our back-testing of hypothetical scenarios shows that market-timing investors did themselves more harm than sticking to a dollar-cost-averaging strategy, regardless of whether they exhibited good or bad timing by shifting their new investments to cash during a bear market. With the stock market now down more than 20% from its October 2007 high, it's too late for dollar-cost-averaging investors to perfectly avoid the bear market (*Bear Market Dodger*), leaving investors with only two alternatives: stick with dollar-cost averaging (*Stay the Course Investor*) or choose to deviate from that strategy by trying to time the market. The results of historical behavioral patterns have shown that regardless of how quickly the stock market recovers, those investors who've pursued dollar-cost averaging are likely to benefit the most when the market resumes its long-term upward trend. ■

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Investment decisions should be based on an individual's own goals, time horizon, and tolerance for risk. Past performance is no guarantee of future results.

[i] The Dow Jones Industrial Average and the S&P 500 Indexes first closed down 20% (on July 11, 2008) from their most recent highs. Source: FMRCo (MARE).

[ii] S&P 500 Index return from March, 2000 through October, 2002. Source: FMRCo (MARE).

[iii] Market timing investors shift 100% of contributions back into stocks as of January 2004. This date is chosen because it is prior to February 2004, which reflects the month in which the amount of money invested in U.S. money market mutual funds (as a percentage of overall mutual fund industry assets) declined to its average level for the period January 1998-May 2008. A new bull market began in October 2002, when investors, in the aggregate, maintained a near-record level of money invested in cash-like money-market funds. MARE's assumption is that market timers would have shifted back into stocks as it became clear that stocks were rebounding and prior to the industry's money market assets returning to its average level.

[iv] A 10% average annual total return for S&P 500 Index (from Jan 1927 – August 2008) is used to calculate projected balance. Source: Ibbotson, FMRCo (MARE) as of 8/31/08.

[v] Historically, investors on average tend to put more money into stocks after the stock market has begun an upward ascent (See MARE articles, *The Perils of Herding to Cash*, *Behavioral Finance: Overcoming Loss Aversion*, and *Behavioral Finance: The Urge to follow the Herd* @ www.fidelity.com/marketanalysis).

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