



Behavioral Aspects of Dollar Cost Averaging

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The Traditional View

Dollar-cost averaging is used by many financial advisors to help their clients implement their long-term investment strategies. Advisors employ dollar-cost averaging as a way to reduce risk by exposing investors to stocks gradually, during months or even years, rather than immediately. For example, if an advisor invests a client's assets all at once and the stock market crashes a week later, the client's entire portfolio is devastated. However, if assets are invested over 12 months, only one twelfth of the portfolio would have been devastated.

Dollar-cost averaging is also viewed as a method for buying stocks cheaply. There is a certain mathematical beauty to that claim. Suppose you invest \$1,000 in a mutual fund on the first day of each of three consecutive months. When you make your first purchase, the price per share is \$100 so you buy 10 shares. The price drops dramatically to \$12.50 in the following month so you buy 80 more shares. Then the price recovers somewhat to \$50 in the third month so you buy 20 more shares. Your \$3,000 investment is worth \$5,500 now, despite a decline in the share price from \$100 to \$50. (See Figure 1 below.)

Advocates of dollar-cost averaging point out that the average cost for each share bought during the three-month period is lower than the average price of the shares during the three months. This is true in all cases except where the share price is constant during all three months. Again, Figure 1 illustrates the point. The average cost for each share bought during the three months is \$27.27, but the average price of shares during the three months is \$54.17

Figure 1

Period Bought	Amount Invested	Price per Share	Number of Shares
1	\$1,000	\$100.00	10
2	\$1,000	\$ 12.50	80
3	\$1,000	\$ 50.00	20
Total	\$3,000		110

Value after third purchase: $\$50 \times 110 = \$5,500$

Average cost per share: $\$3,000/110 \text{ shares} = \27.27 per share

Average price per share: $(\$100 + \$12.50 + \$50)/3 = \54.17 per share

There are those who are not entirely convinced of the merits of dollar-cost averaging. They argue that dollar-cost averaging investors who invest their cash in the stock market over a long period may accumulate less money, because, on average, returns on stocks are higher than returns on cash. They acknowledge that investors who dollar-cost average their way into a declining market would accumulate more, but they maintain that periods of declining stock prices are outnumbered by periods of increasing stock prices.

Second, they say that an investor who has decided to be invested fully in stocks loses the "utility," or happiness, of being invested in the market by drawing

out the process. Once you have decided you want a 100% stock portfolio, why not get that portfolio right away?

Third, they say that the mathematics of dollar-cost averaging, while appealing, misses an important point. They acknowledge that the average cost of the shares bought by a dollar-cost averaging investor is always less than the average price paid for those shares. But, they say, the important issue is what you can actually sell those shares for in the market. For example, if we simply reverse the order of the share prices paid in the second and third months in Figure 1 so that the investor pays \$50 per share in the second month and \$12.50 in the third month, the outcome changes dramatically. (See Figure 2 below). The original \$3,000 investment is now worth only \$1,375. Yet the average cost of the shares bought is still lower than the average price per share. Are you happy that the average cost per share bought is less than the average price per share? Or are you sad that your \$3,000 dwindled to \$1,375?

Figure 2

Period Bought	Amount Invested	Price per Share	Number of Shares
1	\$1,000	\$100.00	10
2	\$1,000	\$ 50.00	20
3	\$1,000	\$ 12.50	80
Total	\$3,000		110

Value after third purchase: $\$12.50 \times 110 = \$1,375$

Average cost of shares held: $\$3,000/110 \text{ shares} = \27.27 per share

Average price paid: $(\$100 + \$50 + 12.50)/3 = \$54.17 \text{ per share}$

The Behavioral Perspective on Dollar-Cost Averaging

Although professionals have been arguing the merits of dollar-cost averaging for years, one thing is clear: dollar-cost averaging is very popular among investors. A possible explanation for this popularity lies in the behavioral aspects of dollar-cost averaging. So let's explore some of the research to gain insight into why dollar-cost averaging is so widely embraced by investors.

Let's start with a behavioral concept known as "framing." If investors behaved as predicted by standard finance, they would judge investment choices based on the probable impact of those choices on their total wealth. They would seek outcomes that increase total wealth while minimizing risk. In doing so their aversion to risk would remain constant. But the research shows that investors often do not behave that way.

Instead, "behavioral investors" evaluate their choices in terms of the potential gains and losses relative to reference points. In other words, a behavioral investor's choices will be affected by the frame of reference or context in which the decision is made. Here's an example to illustrate the point.

One group of investors is asked the following question:

In addition to what you already own, you have been given \$1,000. Now choose between:

- A. A sure gain of \$500, and
- B. A 50% chance to gain \$1,000 and a 50% chance to gain nothing.

A second group of investors is asked the following question:

In addition to what you already own, you have been given \$2,000. Now choose between:

- A. A sure loss of \$500, and
- B. A 50% chance to lose \$1,000 and a 50% chance to lose nothing.

From a standard finance perspective choice A and choice B are the same in the two problems. In both an investor who selects choice A will end up with \$1,500 and an investor who selects choice B has a 50% chance of ending up with \$2,000 and a 50% chance of ending up with \$1,000. So investors in the two groups ought to select choice A and choice B in the same proportions. But they don't. Instead, 84% of the investors in the first group chose A, while only 31% chose A in the second group.

The reason for the difference has to do with how the question is framed.

Researchers have found that investors are more risk averse when they are making decisions in the context of potential gains and more risk seeking when they are faced with potential losses. In the illustration above, the first group of investors is faced with a set of choices that represent gains ranging from \$0 to \$1,000. The second group is faced with a set of choices that represent losses ranging from \$0 to \$1,000. The first group, choosing among potential gains, is more risk averse so more of them select the sure gain. The second group, choosing among potential losses, is more willing to gamble for a 50% chance to avoid a loss. From a standard finance perspective, all of the choices are the

same and the investors ought to be indifferent to the context of the question. But clearly the way the question is framed makes a difference--context is important.

Now let's consider framing and choice in the context of dollar-cost averaging. Let's use the investor represented in Figure 2 as an example. That investor made an investment of \$3,000 and now that investment is worth only \$1,375--a loss of \$1,625. But this investor has another frame for analyzing his investment results. Framing the situation as the proponents of dollar-cost averaging would have it, the average cost of the shares owned is \$27.27, while the average price paid for the shares is \$54.17. So in one frame our investor is a loser. He lost \$1,625. But in another frame he is a winner. He bought shares at a lower cost than the average price per share. The first frame is real, but painful. The second frame seems illusory, but, from a behavioral perspective, is comforting and helps ease the anxiety associated with the loss.

Dollar-cost averaging also helps investors alleviate the pain of regret. Regret, is the pain we feel when we find out, too late that we would have been better off if we had made a different choice. For example, the pain of regret is the pain we feel today for our choice to keep our investments in NASDAQ when it reached 5,000 in early 2000. When an investor puts money in the stock market and the market goes down, two things happen. First, the investor suffers a kick in his wallet. He lost money. Second, the investor feels a kick in his ego. He feels the pain of regret. These bad feelings can have adverse consequences in an investment context that go beyond the feelings themselves. Regret, or even the fear of regret, can make an investor more risk averse and, therefore,

reluctant to take the actions necessary to achieve his investment goals. In addition, regret can cause blaming behaviors that can negatively impact the relationship between an advisor and client.

There is a close association between regret and responsibility for a choice. Actions taken under duress or by following rules bring less regret than actions taken on one's own initiative. Thus, following a pre-established rule is one way to reduce regret. Dollar-cost averaging involves following a rule that requires investment of a fixed amount at regular intervals. Because a dollar-cost averaging investor is simply following the method's rules, it lessens the level of responsibility and with it the pain of regret.

Dollar-cost averaging can also help cope with cognitive biases that might undermine a solid investment strategy. Obviously, the success of a dollar-cost averaging strategy depends on the ability of the investor to continue to invest in both up and down markets. Investors normally have no problem investing after a period of stock price increases. However, many have difficulty investing after a period of stock price declines, even though this may be the best time to buy.

The reason for this reluctance is that investors tend to extrapolate recent trends in stock prices into the future. This tendency stems from a cognitive error called "representativeness." Representativeness is a problem that affects both clients and advisors. One study found that investors became optimistic about future stock prices after increases in stock prices and pessimistic after decreases. The study also found that stock prices tend to go down after increases in optimism and go up after increases in pessimism.

An investor may begin a dollar-cost averaging strategy believing that there is an equal chance that the market will rise or fall in the future. But if the investor encounters several periods of falling markets, the tendency to project that trend into the future could undermine his self-control and resolve to invest. That is where the rule-based nature of dollar-cost averaging comes into play.

A dollar-cost averaging strategy, in effect, calls for the investor to make a choice at the initiation of the program and then suspend subsequent decision-making. Once the investor makes the initial decision to invest, all subsequent information is to be ignored. The investor is not asked to consider future market trends or, for that matter, any new information that might affect the decision to invest. By focusing only on the mechanics of making continuous periodic investments, the dollar-cost averaging investor can ameliorate the tendency to pull back from investing during down markets.

In like manner, dollar-cost averaging can help investors deal with the self-control issues that typically arise during the course of any investment program. For example, investors who must make choices between investing for the future and consuming now often face difficulties because consumption is so tempting. The rules associated with dollar-cost averaging can help manage the self-control problems that occur when an investor's more myopic tendencies overwhelm their more forward-looking inclinations.

Conclusion

Many advisors are strong proponents of dollar-cost averaging. At a minimum they would say that dollar-cost averaging is a practical and disciplined

way to help clients achieve their long-term financial goals. Those that question the value of dollar-cost averaging would say that, at best, a dollar-cost averaging investor is merely exchanging one big bet for a series of smaller gambles that do not, in the aggregate, reduce risk.

The popularity of dollar-cost averaging suggests that the arguments against dollar-cost averaging miss the point. The fact is that some investors are simply frozen with hesitation at the prospect of making a lump-sum investment in the market. Their anxieties cannot be overcome by the rational arguments in favor of making such a move. As a result, it may be difficult to get them to take the actions they need to take in order to secure a healthy financial future.

For these investors, dollar-cost averaging provides an alternative frame of reference that can help them embark on an investment path they might be otherwise unwilling to travel. It can also make the journey more enjoyable by reducing the anxieties they might experience along the way. And it can help them overcome the temptations that derail many well-crafted investment strategies. By better understanding how your clients see the world, you can identify those that may benefit from a dollar-cost averaging strategy.

Author's Note: This article is based on an article previously written for OppenheimerFunds by the author and Professor Meir Statman, Glenn Klimek Professor of Finance, Santa Clara University, based largely on research done by Professor Statman. The author would like to acknowledge the contributions of OppenheimerFunds and Professor Statman to the creation of this article.