

Behavioral Aspects of Dollar Cost Averaging (DCA)

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.

[http://www.acsu.buffalo.edu/~keechung/Lecture%20Notes%20and%20Syllabus%20\(MGF633\)/Dollar%20Cost%20Averaging%20Proof.pdf](http://www.acsu.buffalo.edu/~keechung/Lecture%20Notes%20and%20Syllabus%20(MGF633)/Dollar%20Cost%20Averaging%20Proof.pdf)

Advocates of DCA

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

Opponents of DCA

1. 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.
2. 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?
3. The mathematics of dollar-cost averaging, while appealing, misses an important point. 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 DCA

Dollar-cost averaging (DCA) is very popular among investors. A possible explanation for this popularity lies in the behavioral aspects of dollar-cost averaging.

1. DCA helps ease the anxiety associated with the loss

Consider 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.

2. DCA 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. 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. Actions taken 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.

3. DCA can help cope with cognitive biases

Investors tend to extrapolate recent trends in stock prices into the future. This tendency stems from a cognitive error called "representativeness." Investors became optimistic about future stock prices after increases in stock prices and pessimistic after decreases. 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.

4. DCA can help investors deal with the self-control issues

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.