Portfolio Deployment: Immediate Deployment or Dollar-Cost Averaging

Investors with substantial uninvested capital, perhaps from a significant liquidity event or charitable donation, face two key decisions: determining the optimal investment strategy for their needs, and then deciding when this should be implemented.

Introduction

A core tenet of our investment philosophy is that no investor can consistently make risk-on and risk-off timing calls, but the reality is when you have a large sum of money to invest, it can feel like you are being forced to make a market timing call. This issue is not a new one, but with market sell-offs, shocks and volatility, as well as the ability to earn reasonable returns on liquid, low-risk assets in a higher interest rate environment, investors are paying particular attention to this age-old question.

It is well-documented[1] that so-called lump-sum investing ("LSI"), a strategy whereby an investor deploys all their cash in one tranche, has the highest prospective returns. However, many investors adopt an approach known as dollar-cost averaging ("DCA"), the practice of spreading your investment over fixed increments at regular intervals, regardless of the market fluctuations, thereby gradually building exposure to risk within the portfolio.

In this article we analyse these approaches further, discuss the implications for long-term investors, and attempt to find a solution that strikes a balance between risk/return dynamics and behavioural factors.

Comparison of Historical Returns

We devised a back-test analysis, contemplating a hypothetical investor wrestling with the decision of how to invest their cash. Going back to 1935, we compare how an investor would have fared with either a DCA or an LSI approach at all 936 potential monthly "entry points" that have occurred between 1935 and the present day[2]. For the LSI approach, we assume the portfolio is fully invested immediately[3] and remains invested. For the DCA approach, we assume the portfolio is deployed over two years at equal quarterly intervals, with the uninvested balance held in cash[4] until it is invested.

Whilst the analysis and assumptions are simple by design, we consider these two archetypes to be representative of each approach. We believe the conclusions of the analysis are generalisable to any 'risk-on' investment strategy regardless of the precise parameters of the target portfolio. We have also chosen to consider this question primarily in the context of liquid investments, and we recognise that there are a different set of considerations and constraints when deploying a portfolio in illiquid markets.

As can be seen in Exhibits 1 and 2, an investor taking an LSI approach over the period of analysis would expect to achieve a higher average rate of return over any time horizon, although with a worse "left-tail" of outcomes (i.e., the worst 5% of outcomes are more

Exhibit 1: Average (Mean) Return is Higher for LSI than DCA over Any Measurement Period

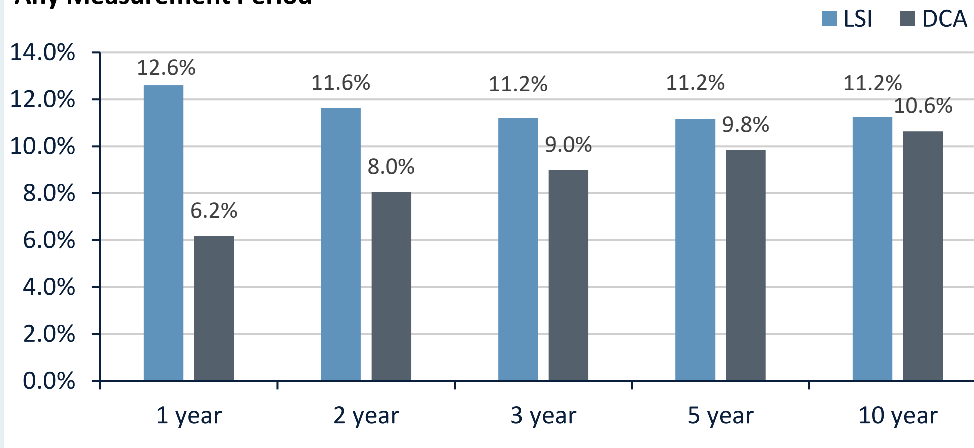
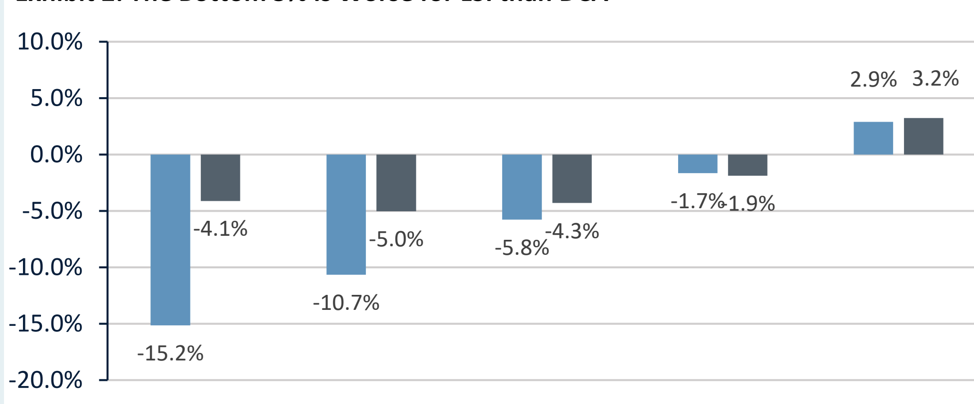


Exhibit 2: The Bottom 5% is Worse for LSI than DCA



[1] Constantinides (1979); Rozeff (1994); Shtekhman, Tasopoulos and Wimmer (2012; Carlson (2018); Lauricella (2019).

[2] We simulate returns for a portfolio invested according to DCA or LSI for every month from January 1935 to January 2012 (in order to compare 10-year returns).

[3] In this case we have assumed a target portfolio of 100% S&P 500.

[4] Earning interest based on 3-month US Treasury Bill rates.

severe for an LSI approach as compared to a DCA approach). Whilst the differences between the two approaches are meaningful over shorter investment periods, they become less significant as the time horizon increases (i.e., the impact of the deployment decision diminishes as the deployment period becomes a smaller proportion of your total investment horizon).

These conclusions accord with our investment intuition; over a sufficiently long time horizon a portfolio that is fully invested is expected to outperform a portfolio of cash, in exchange for higher risk. Naturally, the periods which saw a DCA approach outperform a LSI approach were those which began with a large equity market drawdown, where cash outperformed equities.

In addition to the analysis above, we also modelled the impact on returns of varying the period over which a DCA-based approach is deployed. As one might expect, deploying over a shorter period leads to an improvement in average returns (as it more closely resembles an LSI approach with more time spent invested in higher-returning equities), and vice versa. We also considered a third ‘hybrid’ approach, whereby an investor takes a DCA approach, but deployment is accelerated upon certain market decline triggers. The results of such an approach are highly dependent on the precise rules governing acceleration (e.g., quantum of market decline which would trigger an acceleration, the rate at which the investment is accelerated upon such a trigger, etc.), although we did find that it is possible to improve the returns of a pure DCA approach whilst mitigating some of the downside risk of the LSI approach, as can been seen in Exhibit 3.1 and 3.2.

Our analysis found that by accelerating some of your remaining uninvested cash at certain market drawdown triggers, it is possible to improve the returns of the DCA approach. Typically accelerating less and at a smaller drawdown trigger led to a greater improvement in return; however, downside risk is higher when smaller drawdown triggers are adopted and greater levels of acceleration are applied. While the results of this analysis are mixed, it suggests that if an investor is willing to forego some of the downside protection afforded by the DCA, they may be better off making smaller accelerations at smaller drawdown triggers (say -10%) than waiting for large market drawdowns before accelerating their investment. Ultimately though, if an investor is willing to accept greater downside risk, they may as well deploy their capital immediately.

Exhibit 3.1: Average Annual Ten-Year Return at Different Levels of Acceleration

Level of Acceleration	Market Drawdown from Peak			
	0%	-10%	-20%	-30%
0%	10.64%	10.64%	10.64%	10.64%
50%	11.19%	10.75%	10.69%	10.70%
100%	11.24%	10.68%	10.63%	10.65%

Exhibit 3.2: The Bottom 5% of Returns for Different Acceleration Strategies

Level of Acceleration	Market Drawdown from Peak			
	0%	-10%	-20%	-30%
0%	3.23%	3.23%	3.23%	3.23%
50%	3.01%	2.98%	3.03%	3.14%
100%	2.90%	2.86%	2.92%	3.14%

All things considered, the exercise indicates that the difference between outcomes for the various deployment approaches is relatively minor over longer-term time horizons when compared to the much larger potential impacts of portfolio risk level, asset allocation and manager outperformance. However, given many investors tend to assess performance over shorter-term periods (typically 1, 3 and 5 years), there is often a justifiable focus on deployment choices soon after the establishment of a portfolio, which might cause an investor to consider halting or reversing their investment strategy.

It is also worth noting that historic returns over the period considered in our analysis may not be representative of future returns. Our long-term forecasts are for developed market equities to return 8% p.a. and cash to return 3.5% p.a. over the next 10 years, whilst the period of analysis saw returns of c. 12% p.a. for equities and 3% p.a. for cash. In an environment where equities are expected to outperform cash by a narrower margin (4.5% p.a. prospectively, versus c.9% p.a. over the period of our analysis), the decision between LSI and DCA becomes even more fraught as the benefits of LSI (emanating from the excess return of equities over cash) are smaller but the risks (emanating from the propensity of equities to experience drawdowns) remain.

Behavioural considerations

It is impossible to ignore the behavioural factors behind the continued popularity of DCA. The concepts of regret aversion, where the potential for regret can drive decision making (or lack thereof), and prospect theory or loss aversion, which postulates that losses and gains are valued differently by investors, are key drivers behind the popularity of DCA. Furthermore, investors tend to feel more personally responsible (or ascribe more responsibility to their advisors) for a loss than a gain. Another consideration for some charities or endowments might be that a donor may reconsider a second donation if they have seen their first donation decline in value. The rules-based DCA approach therefore helps mitigate some of these issues.

We accept that all investors are, to differing degrees, affected by these behavioural factors, and believe that the worst possible outcome would be for an investor to crystallise losses at an inopportune time if their portfolio experiences a decline soon after it is deployed and they feel unable to ‘stay the course’. As a result, it is necessary to adopt a strategy that an investor is willing to continue regardless of events early in the deployment.

Conclusion

As investors, we recognise that it is essential to take risk in order to achieve portfolio return objectives. With a fully invested portfolio, we are continuously making the implicit decision to remain invested as opposed to de-risking and putting the portfolio in cash. Similarly, as a new investor looking to deploy a portfolio from cash, ignoring behavioural considerations would point to deploying your full investment immediately to benefit from the higher expected returns.

However, the reality of regret and loss aversion, coupled with the ability to earn higher returns on cash in the current environment, mean that many investors would prefer to tranche their investments over a deployment period, in recognition of the fact that this makes them more able to 'stay the course' as their portfolio is deployed. In this case, it is possible to mitigate the return drag from a pure DCA approach by agreeing in advance to accelerate deployment if certain market drawdown triggers are met. The most likely worst outcome over the long term would be for an investor to stay out of the market (and fully in cash), so at the very least, the DCA approach provides a framework for avoiding this.

Post-Script: Illiquid Assets

This article has focused solely on liquid assets which can be almost instantaneously deployed. However, investors pursuing an endowment-style investment model will invest in illiquid assets, where deployment pace is typically outside the investor's control. As such, when deploying portfolios targeting a meaningful allocation to illiquid investments, we would typically advocate initially investing in a diversified, lower-risk, liquid portfolio, spreading commitments to illiquid investments over multiple years and gradually building the illiquidity and risk of the portfolio through rotating capital from the initial portfolio to illiquid investments. The benefit of this approach is that it reduces the chance of investors being forced to crystalise losses in an equity market drawdown to fund capital calls from illiquid commitments that have been made, whilst also allowing an illiquid portfolio to achieve suitable levels of vintage diversification.

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Bibliography

Constantinides, G.M. "A Note on the Suboptimality of Dollar-Cost Averaging as an Investment Policy." The Journal of Financial and Quantitative Analysis, (June 1979), pp. 443-450.

Rozeff, Michael. "Lump-Sum Investing Versus Dollar-Averaging." The Journal of Portfolio Management, Winter 1994, pp. 45-50.

Carlson, Ben. "The Lump Sum vs. Dollar Cost Averaging Decision." A Wealth of Common Sense (blog), (May 2018).

Anatoly Shtekhman, Christos Tasopoulos and Brian Wimmer. "Dollar-cost averaging just means taking risk later." Vanguard Research, (July 2012).

Lauricella, Tom. "Dollar-cost averaging vs. lump-sum investing." Morningstar Research, (November 2019).

Statman, Meir. "A Behavioural Framework for Dollar-Cost Averaging." The Journal of Portfolio Management, (September 1995).

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