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The benefits of private equity replication

Abstract

This paper develops and then analyzes an approach to creating liquid private equity.

Randolph B. Cohen, PhD
MBA Class of 1975,
Senior Lecturer of
Entrepreneurial Management
Harvard Business School

Co-Founder,
Head of Investment Strategy
PEO Partners, LLC

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Introduction

We define liquid private equity as a portfolio of publicly traded liquid assets that have return characteristics and performance drivers similar to private equity. We will use the term "private equity" to refer to the leveraged buyout business which constitutes the majority of all private equity. Venture capital, real estate private equity and other private equity sleeves will not be considered here.

Historically, private equity has been an attractive investment vehicle, generally outperforming stock market indices by 2-3% per year over the past 20 years. It also has relatively low correlation with stock indices, thereby offering attractive diversification to investors already invested in stocks and has significantly lower volatility than the stock market, particularly during stock market crashes.

We will create a liquid private equity portfolio that will aim to deliver all these return components of private equity by making investments similar to those of private equity managers. We will show that our portfolio does this by making logical arguments as to what the expected performance of this approach would be (theory) and looking historically to see how such an approach would have performed (empirical analysis).

A deeper understanding of private equity's performance

The standout feature of private equity performance from the perspective of many investors is the high returns of the asset class, typically 200 to 300 basis points ahead of the stock market across an economic cycle. Some private equity critics argue that such outperformance is unsurprising given that private equity is levered, after all: stocks typically outperform any reasonable borrowing costs, and so leverage will add somewhat to performance.

However, we think private equity is so immensely attractive because, even though the investments are levered, when stock markets perform very poorly, private equity drops significantly less than the public markets. This is most striking in the three large crashes that have occurred this century - the tech wreck, the global financial crisis, and the COVID-19 crisis. The global financial crisis was a particularly pronounced case. In 2008, the Russell 2500 Index (representing U.S. small-mid cap stocks) dropped 46%*, while private equity indexes were down only about 15%. This would be exceptionally impressive even for an unlevered investment and represents a staggering outperformance for a portfolio that employs leverage, as private equity does.

Many investors think private equity has such strong relative performance in crashes because of the industry's use of mark-to-model accounting. That is, private equity firms value the positions they hold by analyzing the underlying companies and their prospects, using discounted cash flow formulas, comparable analysis and other tools. It often seems to market observers that the stock market overreacts, sometimes massively, to bad news. These "animal spirits" of the market can lead to extreme crashes despite circumstances that some think should have led to more modest drops. In private equity, it is asserted that cooler heads can prevail, and analysis can properly recognize that, for example, the value of the companies held in the portfolio has only fallen 15%, even though the public markets have dropped so much more. And, of course, the fact that PE fails to plummet along with equity markets helps reduce PE's co-movement with stocks, as well as its volatility.

Public-market investors sometimes complain that, even if it is true that private equities' marked values are more accurate than what we see in publicly traded stocks, it is not fair that public investors such as mutual funds do not get to take advantage of the same mark-to-model approaches. But the simple fact is, publicly traded stocks such as those held in our liquid private equity portfolio will indeed be marked-to-market, even if those markets are being overwrought or otherwise irrational. This important obstacle to delivering PE-type performance in a liquid form can be overcome using derivatives via a collar options strategy, more of which will be discussed later.

* In Canadian dollar terms. Source: Morningstar Direct.

The theory: private equity's outperformance and liquid private equity's opportunities

Private equity is so popular because the industry has discovered many ways to add value for its investors. In this paper, we identify six major sources of value added by private equity. Consequently, liquid private equity has a great deal to live up to.

Let's start with two crucial sources of value added for traditional private equity that, fortunately for liquid private equity, can be matched fairly straightforwardly in public markets. The first source of alpha that private equity provides is due to the fact that, industry wide, leverage buyout firms are excellent at selecting sectors (industries) of the market that will perform well in the future. This was established well in a recent paper by Kritzman and Kinlaw and has been supported by follow-up research by Gretel and others.

Kritzman and Kinlaw show that if you employ a public market strategy of buying the industries in the weights that private equity assigns to them, you will significantly outperform the market. This makes sense because private equity firms have people running many different companies across all the different sectors of the economy and they are constantly getting feedback from those managers. If what is bubbling up to private equity firms is that healthcare has exciting opportunities, but energy does not, then they are making investments in healthcare but not as much in energy. It is then only logical that it would now be a good time to buy healthcare in the public markets and not buy as much energy. Kritzman and Kinlaw demonstrate that this indeed holds and that significant investment edge accrues to private equity managers through their industry selection.

This is good news for liquid private equity since the individual deals of private equity managers are publicly announced. It is possible to compile the deals data and determine what industry allocations private equity is delivering at any given time. By doing so, public market investors, such as liquid private equity investors, can copy the industry allocations of private equity and capture these benefits.

The second alpha generating method of private equity that can be replicated by liquid private equity is the underlying characteristics of the companies they choose to invest in. One might put it this way: private equity investors are smart, intuitive, quantitative investors. As demonstrated in a recent paper by Erik Stafford of Harvard Business School, private equity tilts towards low multiple companies that have high profitability, high payout ratios and other characteristics that are well documented in academic research and on Wall Street as leading to good returns. Consequently, it is no surprise that the companies that private equity selects to invest in perform well. And once again, it is possible for liquid private equity to capture these benefits by looking at the companies chosen by private equity and then choosing public-market firms that offer these same characteristics, in terms of multiples, profitability and other measures.

The third alpha source for private equity that we have identified is the ability to select individual companies, over and above the edge they generate from picking the right types of companies in terms of industry and individual stock characteristics. After all, private equity firms get to legally invest based on their inside information. They can spend months inside the company, watching every element of how the company is organized, the quality of management, performance, new inventions and innovations, and so on. It is no surprise that having this quantity and quality of information would be an advantage when investing.

The fourth alpha source is the operational improvements that private equity makes in companies after their deals are closed. Private equity firms can "roll-up" a series of companies in an industry to create economies of scale and market power, they can take regional companies and bring them to a national or global market, they can implement best practices, etc. The third and fourth sources of alpha cannot be replicated by liquid private equity.

However, private equity is not easy. It is an intensely competitive space in which target firms are often subject to interest from a variety of potential buyers, all wanting to get the deal done. This can lead to bidding wars and even to the so-called "winner's curse," in which the highest bidder sometimes overpays for the asset. Control premiums in private equity can be very high, typically 30% or more, and this reduces the net benefit that private equity accrues from the edge they have in company selection and operational improvements. We think it's likely that, on average, the value added by private equity is sufficient to overcome the control premium. After all, private equity's practitioners are exceptionally talented and hard-working. Certainly, the top performing PE managers are, and it's likely that even on average, PE adds some net value beyond what liquid PE can manage.

We have discussed four forms of private equity alpha, but that's not all private equity does: the industry adds value in at least two other ways. We believe that our liquid private equity portfolio can take advantage of these forms as well. We have already discussed one of these important ways, which is that private equity is able to use mark-to-model accounting to deliver a smoother performance curve (with smaller drops in crashes) than what we tend to see in public markets. This smoothing can be matched by liquid private equity through the use of a collar options strategy, which involves the purchase of protective put options and the selling of out-of-the-money call options (discussed further on page 5).

Finally, as we have discussed previously, the leverage that private equity employs is an advantage. This leverage increases average returns because stocks — and private companies as well — tend to outperform the fixed income returns that constitute the borrowing costs for the leverage. Since private equity leverage is generally modest, it is fairly easy to replicate in public markets. It is straightforward to take a diversified portfolio of public equities and lever it 1.25-1.5 to 1, which we will also do in our liquid private equity portfolio.

At this point, we observe that traditional private equity has some potential advantages over liquid private equity. They might add significant value over and above their control premium through company selection, they may add an additional chunk of value through operational improvements and they may add value through mark-to-model accounting that avoids the cost of insuring the portfolio against crashes. There is considerable uncertainty as to the magnitude of these three effects. But our best understanding is that they are significant and lead to traditional private equity offering higher gross performance than liquid private equity. However, investors do not experience gross performance, they experience net. As mentioned above, running a private equity firm requires a strong team of exceptional individuals, and those people must be rightly compensated for their efforts. That compensation, through private equity fees, appears to be of similar magnitude to the summed sources of edge that traditional private equity offers. Consequently, average traditional private equity is likely to offer net returns similar to, but likely no better than, those of liquid private equity.

Importantly, when we talk about liquid private equity matching the performance of traditional private equity, we mean that we try to match the performance of average traditional private equity. There is no attempt in this paper to argue that liquid private equity will outperform the very best private equity firms, the "top quartile" of private equity investments. Top quartile private equity very substantially outperforms average private equity. It can be difficult for allocators to consistently select managers who will be in the top quartile on a forward-looking basis rather than just historically. If an investor has that ability and has access to private equity, it is likely that they will be able to deliver returns far in excess of either average traditional private equity or of liquid private equity.

We believe that liquid private equity can match the performance of average private equity, and further, that average private equity is plenty good enough to be an extremely valuable addition to the portfolio of anyone who lacks access to private equity.

Creating liquid private equity

The basic technique we employ for creating liquid private equity consists of four stages. The first stage is to identify the holdings and characteristics of private equity by extracting that information from private equity holdings data. Here we refer to the holdings of all leveraged buyout firms combined into one large portfolio, and to identify the characteristics held in that portfolio, such as industry allocation, typical size of investment, leverage and other risk measures for investments, etc.

The second stage is to use quantitative methods to identify a set of publicly traded stocks and weights for those stocks, so that the stock portfolio is closely matched to the holdings and characteristics of the private equity combined portfolio. So, as an example, if the private equity industry holds 14% of capital in healthcare companies and 8% in energy companies, we might want to choose a public-markets portfolio with similar allocations to these and other industries. If the private equity industry holds companies that would typically be categorized as small and mid-cap stocks (if they were publicly traded), then those are the sorts of stocks that we should purchase in order to develop our liquid private equity portfolio.

In stage three, we lever the portfolio modestly in order to replicate a crucial salient feature of private equity – its leverage. How levered is private equity? There is some controversy surrounding this question. Many simple measures suggest that typical private holdings are levered more than 2:1 compared to similar publicly traded stocks. A company that would have 30% debt if it were traded in the public markets might under leveraged buyout conditions be at 70% debt, or 2.3 times as levered. Some researchers argue that the amount of leverage employed by private equity is actually lower than this amount if sufficient care is taken to compare apples to apples on the underlying risk levels of the companies in question. That is, they argue that private equity firms buy low risk companies and therefore that these companies would be more levered in public markets than it might initially appear. Liquid private equity therefore might choose a leverage level more in the 1.25 to 1.5 range rather than up above two, in order to match leverage levels of private equity more appropriately.

Finally, in stage four, we overlay the public market securities we matched in stage two with a "collar" hedge strategy. In a collar approach, one purchases protective put options that ensure that in large market drops, the portfolio loses less than it otherwise would. Those puts can be expensive, so to mitigate the cost a collar strategy has a second "leg" which sells out-of-the-money call options to help fund the protective put cost. Selling calls means that if the market shoots up rapidly, we don't capture 100% of the gain. This gives a return pattern that is similar to private equity, which tends to show performance that is smoother than the stock market in both big drops and rapid rises.

The empirical analysis of simulated returns

Figure 1 below shows three lines. The dark blue line is the simulated performance of our liquid private equity portfolio. The light blue line is the performance of the Russell 2500 Index. Finally, the orange line shows the performance of traditional private equity. This is based on our simple model that we developed that first matches the industry allocations of traditional private equity in public markets at any given time. It then chooses, within each industry, a portfolio of stocks that have the basic low multiple, high quality characteristics associated with private equity in our data. Our model assumes a simple hedging strategy and leverage of 1.4 times, that is, for every $100 invested in the strategy, we hold $140 in long equity positions, plus a hedge overlay.

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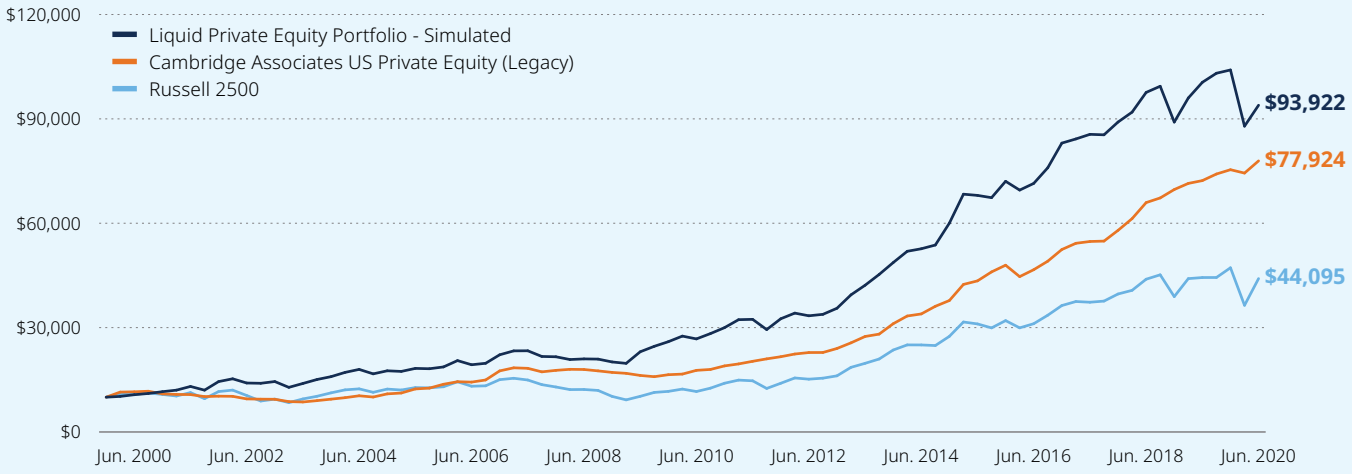
Figure 1 | Simulated performance



Source: Cambridge Associates, Morningstar Direct, Mackezie Investments, PEO Partners

The risk and return characteristics presented above are hypothetical and do not represent the investment performance or the actual accounts of any investors or any mutual funds. The securities selected and asset allocations used to create the back tested results were selected with the full benefit of hindsight, after their performance over the period shown was known. The results achieved in our simulations do not guarantee and should not necessarily be relied upon as an indication of future investment results for any of Mackenzie Funds.

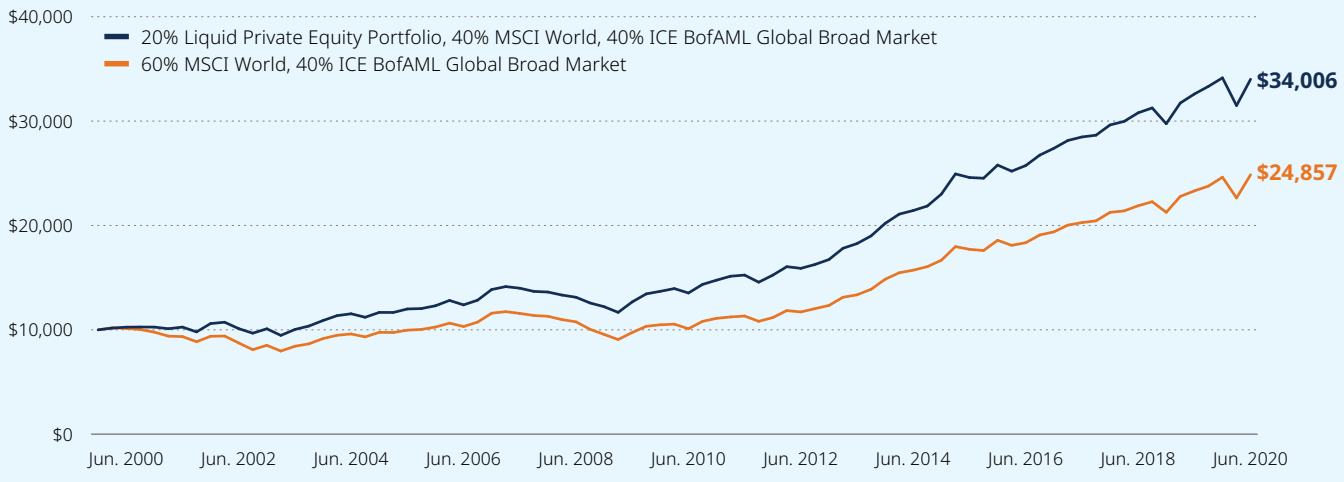
Looking at the chart, several interesting points stand out. First, we can see that traditional private equity significantly outperforms the Russell 2500 Index while being quite a bit less volatile, explaining why traditional private equity has been such an attractive investment for those who have access to it.

Second, liquid private equity offers similar average returns to traditional private equity over the period since the beginning of the century, while significantly exceeding the Russell 2500 Index. Liquid private equity is more volatile than traditional, though of course, these numbers are reflective only of the marked values of the portfolio. If one believes that traditional private equity has true market values that are more volatile than what we observe from the mark-to-model accounting, it may be that liquid private equity, with its hedge overlay, is closer to the real volatility of traditional private equity than the time-series shows.

Finally, liquid private equity is highly correlated with traditional, which makes sense because liquid private equity buys the exact same kinds of companies that traditional private equity buys and uses a hedge to ensure similar modest drops in crashes.

The effect of the low correlation with stock markets that both liquid and traditional private equity enjoy, combined with the tail risk hedge, is that either traditional or liquid private equity substantially adds to a portfolio that consists primarily of stocks, or stocks and bonds. This point is highlighted in **Figure 2**, which shows the performance of a portfolio that holds 60% stocks, 40% bonds (orange line) and of a portfolio that holds 40% stocks, 20% liquid private equity, and 40% bonds (dark blue line). We can see that the portfolio that includes liquid private equity not only has substantially higher returns than the stock and bond-only portfolio, but also has somewhat lower volatility and overall risk.

Figure 2 | Simulated 60/40 portfolio returns



Source: Cambridge Associates, ICE, Morningstar Direct, Mackenzie Investments, PEO Partners

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Conclusion

The goal of this paper was to understand a method for developing liquid private equity and to consider the ways in which such a portfolio would perform, along with its pros and cons. First, we walked through why traditional private equity is such an attractive asset class and why we want to create a liquid private equity portfolio.

Second, we showed that the advantages that traditional private equity has over anything that can be done in public markets are quite real. However, because implementation of traditional private equity requires so much talent and hard work, and because that talent and hard work must be compensated via fees, in the end, the net performance of liquid private equity, while not on the level of the very best traditional private equity managers, is generally consistent with the average performance of private equity. It is therefore an extremely attractive potential addition to portfolios of investors who either; don't have access to private equity; have access to private equity but lack the expertise to select the very best private equity managers in advance; or who do select topnotch private equity managers but who need a liquid tool to assist them in managing their portfolio effectively.

Third, we laid out the basic approach, involving selecting a diversified portfolio of stocks with characteristics similar to those of the companies held in private equity portfolios, levering modestly and then overlaying a hedge.

Finally, we showed that such a simulated portfolio historically would have delivered similar average returns to that of traditional private equity with, relative to the Russell 2500 Index, higher overall average returns, reduced downside risk and modest correlation. Consequently, liquid private equity has the potential to play a valuable role in the portfolios of investors who lack access to traditional private equity.

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The simulated performance information that shown, as well as the simulated portfolio attributes on this document, reflects the results generated by the proprietary quantitative security selection model (the "Model") and not the returns of any actual trading. Results of actual trading are likely to vary, perhaps substantially, from those of the Model, and typically are less favorable than simulated results. The Model operates using a number of different investment factors, the composition of which may be altered from time to time and relies on a variety of data inputs selected. The Model is currently comprised of factors: Valuation, Quality and Informed Investor. The Model generates various buy and sell ratings in respect of each trading day and the performance information reflects the resultant trading activity over each quarter during the period. Each quarter end, the model ranks stocks within each industry group according to the composite score of valuation, quality, informed investor factors and held the top certain percentage of names within each industry group. Stock weights within the industry group are proportional to the market cap. The weights allocated in each industry group is based on the PE industry weighting computed using the private equity data from a third-party provider. The option overlay provides downside protection during market corrections. The option overlay strategy is a systematic collar consisting of buying put options to help manage equity downside while writing short-term call options to finance the cost of the put protection.

It is typical for investment advisers using quantitative security selection models to alter the factors within the model from time to time; however, the simulated performance information assumes the consistent and unchanged application of the now-current version of the Model during all periods presented. The current version of the Model postdates the beginning of the simulated performance period and, therefore, benefits from hindsight (that is, some or all of the simulated performance period, applies a version of the Model that was able to take into account the actual performance and conditions of the markets during the period reflected in the performance). Because the Model used in generating the simulated performance was developed with the benefit of hindsight, the Investment Advisor has the opportunity and incentive (whether or not conscious) to design the Model and select assumptions and periods in such a manner as to show the most favorable returns, and may not be able to remove such bias from the model construction process and the generation and presentation of the simulated performance information.

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