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The "New Finance": Illiquidity, the Liquidity Premium, and Liquidity-Preserving Strategies

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Liquidity, the ability to convert one's investments to cash when needed, is one of the most poorly defined concepts in finance. Yet it's almost universally agreed that investors pay to get it and require a higher expected return on securities and portfolios that don't provide it. Since some of today's most attractive investment opportunities – private equity, natural resources deals, and some types of hedge funds – come with limitations on liquidity, it makes sense to look at the research that has been done on the topic of liquidity to see what valuable insights we can gain from it.

In this essay, we're going to look at liquidity from two vantage points: (1) the "new liquidity movement" in academic finance, which seeks to explain market inefficiencies and macroeconomic dislocations as liquidity events, and (2) the returns on a paper portfolio (and, later, a "live" hedge fund) that exploits differences in liquidity among publicly traded stocks. From these pieces of evidence we can draw some conclusions about the overall returns to less liquid assets. Finally, we comment on the limitations that illiquid assets place on plan sponsors, and suggest ways to overcome those limitations.

Liquidity and the "new finance"

David Adler, the Barron's reporter and polymath, has written an eloquent literature review for the Research Foundation of CFA Institute entitled "The New Field of Liquidity and Financial Frictions," available free of charge as a PDF at http://www.cfapubs.org/doi/pdf/10.2470/rflr.v7.n2.1. The new liquidity movement basically argues that the crash of 2007-2009 was one big margin call.

In traditional finance theory, "liquidity plays no role at all because it is assumed away: markets are frictionless and participants are price takers." Adler classifies liquidity concerns into those arising from *market (transaction) liquidity* and those arising from *funding liquidity*. Transaction illiquidity in the real world is caused by fees and spreads, price pressure (meaning that investors are *not* price takers), and inability to trade. Transaction illiquidity may also be contractual, as with funds that have lockup provisions.

In addition, traditional theory ignores funding illiquidity by assuming you can borrow as much as you want, at the riskless rate, to take long or short positions of any size in any asset. Since a margin call is the withdrawal of funding liquidity, traditional finance says there cannot be such a thing as a margin call – or, for that matter, any risk to an investment strategy from position limits, capital requirements, rating requirements (such as the requirement to hold only A1/P1 paper in certain portfolios, and only investment-grade bonds in others), or funding rates higher than the riskless rate.

As everyone knows, however, the real world doesn't work that way – and the crash of 2007-2009 made some financial models look foolish because the models did not allow for the possibility of events unfolding as they did. Academic finance, as a discipline, lost credibility during this period. The new liquidity theorists, having seen some of the core assumptions of conventional finance overturned, seek to build new analytical tools to study a world in which such events are possible. The departure from conventional finance is sufficiently large that some observers call the liquidity movement "the new finance," although there is an element of hype in that description; theorists, at least the good ones, always knew that their models had practical limitations.

Rather than summarize Adler's article in detail – it speaks for itself – we will turn to Ibbotson's findings, which are numerical and thus more easily described in this short essay. The reader is strongly encouraged to follow the link and read Adler's description of this exciting new field in academic finance.

Roger Ibbotson's liquidity quest: A publicly traded stock strategy that generates alpha

The Yale professor (and Ibbotson Associates founder) Roger Ibbotson, whose work with Rex Sinquefield in the 1970s first measured the equity risk premium and other important premia, has extended his method to measure the liquidity premium for publicly traded U.S. stocks. In "Liquidity as an Investment Style," available at http://mba.yale.edu/faculty/pdf/ibbotson_liquidity_as_an_investment_style.pdf, he uses trading volume as a proxy for liquidity, so in this discussion "illiquid" stocks are low-trading-volume stocks and "liquid" stocks are those that trade the most.

Sorting stocks into quartiles based on trading volume, Ibbotson and his three co-authors find the following relationship:

Exhibit 1
Returns on Liquidity-Sorted Quartiles of the U.S. Equity Market,
by Size (Capitalization) Category, 1972-2011

Quartiles		Low Liquidity	Mid-Low	Mid-High	High Liquidity
Micro-Cap	Geom. Mean	15.36%	16.21%	9.94%	1.32%
	Arithm. Mean	17.92%	20.00%	15.40%	6.78%
	Std. Dev.	23.77%	29.41%	35.34%	34.20%
	Avg. No. Stocks	323	185	132	103
Small-Cap	Geom. Mean	15.30%	14.09%	11.80%	5.48%
	Arithm. Mean	17.07%	16.82%	15.38%	9.89%
	Std. Dev.	20.15%	24.63%	28.22%	31.21%
	Avg. No. Stocks	196	193	175	179
Mid-Cap	Geom. Mean	13.61%	13.57%	12.24%	7.85%
	Arithm. Mean	15.01%	15.34%	14.51%	11.66%
	Std. Dev.	17.91%	20.10%	22.41%	28.71%
	Avg. No. Stocks	141	171	197	233
Large-Cap	Geom. Mean	11.53%	11.66%	11.19%	8.37%
	Arithm. Mean	12.83%	12.86%	12.81%	11.58%
	Std. Dev.	16.68%	15.99%	18.34%	25.75%
	Avg. No. Stocks	83	194	238	227

Source: Ibbotson, Chen, Kim, and Hu (2012).

Given that publicly traded U.S. stocks with low trading volume are not all that illiquid, the size of the observed liquidity effect is astonishing. Even in large-cap stocks, the "illiquid" ones – which for large-caps means those that trade every day, just not in great volume – provided a 300 basis point (bp) annual return advantage over the most liquid issues. Within mid-caps, small-caps, and micro-caps, the return advantage of the most illiquid quartile over the most liquid quartile was roughly 600, 1000, and 1400 bps respectively.

Exhibit 2 compares the liquidity effect with the other well-known stock market risk factors – size, valuation, and momentum. Here, the returns shown under the heading "liquidity" are for all capitalizations combined. We see that liquidity is at least as large an effect as the others. In Ibbotson's words, the findings in Exhibit 2 give liquidity "equal standing" with size, valuation, and momentum as determinants of stock returns. Further investigation shows that the effects are independent, so that liquidity is not just a proxy for one of the other effects or for a combination of them. In a related paper, Ibbotson finds that the illiquidity premium holds for non-U.S. markets too.

Exhibit 2

Returns on Risk Factor-Sorted Quartiles of the U.S. Equity Market, 1972-2011

Cross-Section	Result	Q1	Q2	Q3	Q4
Size Q1=small Q4=large	Geom. Mean	13.04%	11.93%	11.95%	10.98%
	Arithm. Mean	16.42%	14.69%	14.14%	12.61%
	Std. Dev.	27.29%	24.60%	21.82%	18.35%
Value Q1=value Q4=growth	Geom. Mean	16.13%	13.60%	10.10%	7.62%
	Arithm. Mean	18.59%	15.42%	12.29%	11.56%
	Std. Dev.	23.31%	20.17%	21.46%	29.42%
Momentum Q1=winners Q4=losers	Geom. Mean	12.85%	14.25%	13.26%	7.18%
	Arithm. Mean	15.37%	16.03%	15.29%	11.16%
	Std. Dev.	23.46%	19.79%	21.21%	29.49%
Liquidity Q1=low Q4=high	Geom. Mean	14.50%	13.97%	11.91%	7.24%
	Arithm. Mean	16.38%	16.05%	14.39%	11.04%
	Std. Dev.	20.41%	21.50%	23.20%	28.48%
Universe Aggregate	Geom. Mean	12.15%			
	Arithm. Mean	14.46%			
	Std. Dev.	22.39%			

Source: Ibbotson, Chen, Kim, and Hu (2012).

Such large return differentials are almost unheard of, and investors should rightly be skeptical of projecting backtested results like these forward. And, in fact, Ibbotson's hedge fund, Zebra Capital, which was started to exploit the liquidity effect he discovered, has found it more difficult to earn alpha than would be suggested by the backtest. (Surprise!)

One possible reason is that recent changes in market structure, notably the rise of index ETFs, have increased the liquidity of all stocks due to the fact that index fund flows cause every stock in a broad-based index to trade. This may mean a lower illiquidity premium (for traded equities) in the future, but such a premium should continue to prevail to some degree, even if it is almost certainly on a smaller scale than was observed historically.

From the size of the Ibbotson liquidity premium one can make guesses about the premium that investors require, and on average should get, from truly illiquid investments such as private equity. Consultants often use a benchmark of the S&P 500 plus 300 to 500 basis points for U.S.-based private equity, meaning that the liquidity premium is expected to be 300-500 bps for truly illiquid portfolios, with J-curves, lockups, gates, and years-long waits for the deals that provide natural liquidity to the investor. However, Ibbotson's findings, using publicly traded stocks, are suggestive of the idea that the premium for private equity-like illiquidity should be much larger.

Liquidity staging: How to hold illiquid assets and still have enough liquidity

Of course the opportunity for (but obviously not the guarantee of) very high returns from very illiquid strategies has not escaped the notice of long-term investors such as pension funds, endowments and foundations, sovereign wealth funds, and family offices. There was a rush into illiquid strategies, including both hedge funds and private equity, in the decade of the 2000s. To some extent the rush is starting again after a pause (and period of disinvestment) caused by the crash of 2007-2009. In 2008, writing from my post at the Ford Foundation, where I was director of research, I modeled liquidity – in this case, the availability of cash for spending and for meeting capital calls in private equity – as a function of various asset mixes. The results are in the article "Alternatives and Liquidity," in the Fall 2008 *Journal of Portfolio Management*.

I found that, under reasonable assumptions of asset class behavior, mixes with 15% in illiquid assets were almost guaranteed to provide enough liquidity even in a reasonable worst-case bear market, while mixes with 50% in illiquid assets were almost guaranteed *not* to. But doesn't 50% in illiquid assets leave 50% in liquid ones, which can all be sold, if necessary, to meet cash requirements? Yes, at the beginning – but as spending and capital calls consume available liquidity, the situation becomes dire toward the end of a three-year market decline, and, in my simulation, the institution runs out of cash.

My forecasts turned out to be prescient. Little did I know it (although it would be fun to say that I did know), something like a worst-case scenario was about to occur. My article took the 42% stock market decline of 1973-1974, occurring at the same time as a severe bond market decline, as the reasonable worst case. In the crash of 2007-2009, almost all of which occurred after the paper was written, the stock market fell 57% but the Treasury bond market rallied sharply, so, despite the often-repeated mantra that there was nowhere to hide, bond investors did very well – and a 60/40 equity-bond benchmark fell by only 9% in calendar 2008. But many institutions not only held large public equity positions but also extensive hedge fund and private equity positions, which provided essentially no liquidity or cash flow during the crash period.

Among the casualties of 2007-2009 were a number of major universities, which went into the crash period with massive illiquidity risk:

Exhibit 3
Asset Mix and Unfunded Commitments of Major U.S. University Endowment Funds, June 2008

	Total Endowment	Hedge Funds	Non Marketable	Unfunded Commitments	NM+UC as % of total	HF+NM+UC as % of total
Harvard	47,615	8,313	18,071	11,028	61%	79%
Yale	22,686	5,714	11,283	8,700	88%	113%
Princeton	15,918	2,746	8,238	6,100	90%	107%
Michigan	7,572	716	3,396	3,334	89%	98%
Columbia	7,205	2,935	2,861	1,622	62%	103%
Notre Dame	7,040	1,086	2,054	2,800	69%	84%
Penn	6,579	1,565	830	1,668	38%	62%
Virginia	5,101	415	1,516	2,038	70%	78%

Data as of June 30, 2008
"Non-marketable"=private equity + real estate + natural resources
"Unfunded commitments"=expected capital calls
Amounts in Millions of U.S. Dollars
Princeton hedge fund datum is estimated

We don't have data on exactly how these endowment funds performed in the crash or how hard they had to scramble for liquidity in 2009. The anecdotal evidence is that the results weren't pretty. A number of universities had to go to the capital markets to borrow, while others made drastic adjustments to spending. Liquidity is more than just a theoretical concern!

Endowments and foundations, pension funds, and similar institutions thus need to "stage" their illiquid-asset investments so that the *supply* of cash flows from all investments – liquid and illiquid – line up, in terms of timing, with the *need* for cash flows for spending, capital calls, and other uses. Moreover, it is not sufficient to have just enough cash; one needs a multiple of the required amount, because bear markets can go on for years, and hoped-for distributions from alternative investments tend to grind to a halt. The article recommends a strategy of "laddering" the alternatives portfolio, with commitments made at different times so that the portfolio becomes "self-funding" (that is, not requiring cash injections from other asset classes) over time.

Conclusion

The key to achieving a self-funding alternatives program is to avoid setting a large target allocation and feeling compelled to fill it right away. An example of a laddered strategy is the one followed by the Massachusetts Institute of Technology endowment fund, which set a five-year target over which the staff had time to grow the allocation toward the allocation they wanted. This was done in each alternatives sector—private equity, hedge funds, real estate, and natural resources. A laddering or build-up period even longer than five years may be desirable.

Summary

The conventional approach to teaching finance ignores matters of liquidity, both in terms of whether assets can be sold for cash (market or transaction liquidity) and whether leveraged assets can be acquired and held in the amount wanted (funding liquidity). This may be a helpful simplification when beginning to learn finance but is almost completely wrong in practice. Otherwise promising investment strategies can be undone by liquidity problems, something we've seen far too often as the investment world has lurched from crisis to crisis in the past few years.

But liquidity management has another side, an upside. Institutions and individuals who are properly positioned to profit from making illiquid investments can *probably* earn returns higher than those obtainable in the public markets. Theory strongly suggests the presence of an illiquidity premium, and Roger Ibbotson's empirical work with low-trading-volume public equities, which are still somewhat liquid, supports the theory. Investors should pursue the illiquidity premium as long as they do not get too carried away with it and endanger the solvency of their organization.

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