The Liquidity Dynamics of Global Capital Markets and Alternative Investments

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We believe that structural changes in financial markets, as a side effect of the 2008 crisis, have altered the liquidity landscape for many assets. During crisis periods liquidity becomes constrained compared to conditions prior to market stress; substantially so if the crisis is abrupt and/or severe. However, recent events following announcements signaling a potential reduction in monetary stimulus by the US Federal Reserve resurfaced adverse liquidity conditions comparable to those experienced in the crisis years. This occurred despite the economy and the banking system continuing to operate normally.

In this paper, we discuss the fundamental liquidity conditions that followed the monetary policy comments in May–June of 2013. We examine the impact for fixed-income assets and follow with an analysis pertaining to Fund of Funds (FoF) strategies and considerations for portfolio construction in these investments. As part of our investigation, we perform a case study of real fund liquidity by relying on publicly available data for a registered fund. To conclude, we revisit liquidity implications for so-called “liquid alternatives,” products which attempt to emulate hedge fund strategies or returns while promising greater liquidity than standard strategies. We note that real liquidity is sourced at the underlying security level and that this liquidity has a variable price that is sensitive to both the availability of risk capital and the prevailing market conditions at a point in time. The results suggest that during periods of market stress, the price of liquidity is shown to increase.
In June of 2013, the realization by the markets that accommodative monetary policy in the United States might be coming to an end saw the return of concerning liquidity dynamics across multiple markets. Liquidity conditions that were experienced in the depths of the financial crisis resurfaced in a non-crisis period, motivating us to take a closer look into the potential causes of the new liquidity dynamic.

In our recent Letter from the Manager, Taper Talk Exposes Liquidity Issues, we reported on some of the market conditions that were experienced following US Federal Reserve (the Fed) Chairman Bernanke’s comments regarding the timeline that would bring quantitative easing (QE) and large scale asset purchase (LSAP) programs to an end. We now examine these conditions in greater depth. We specifically referenced liquidity risk and its implications for portfolio construction.

Of note is the degree to which regulatory and structural shifts have changed the market’s ability to perform its price discovery and risk transfer functions in an orderly way.

In this paper, we focus on the changed liquidity conditions prevailing in today’s market. We share anecdotal evidence of constrained liquidity during the recent period and invite the reader to consider the implications for portfolio construction. We observe data from several SEC Form N-Q filings, where registered Fund of Funds (FoF) are required to disclose their holdings, and perform a liquidity case study showing the impact of adverse liquidity events and the implications for investors. We also revisit considerations for hedge fund tracking procedures.

What Is Liquidity Risk?

Liquidity risk refers to the impact that buying or selling an asset or security in the market has on its price. Those assets that cannot be readily bought or sold at prevailing market prices due to structure, valuation uncertainty, complexity, uniqueness, or size are considered illiquid.

Real estate and private equity are examples of illiquid assets because of their structure. Their investment time horizons are measured in multiple years. They have large transaction sizes, do not trade regularly, and have complex settlement and specialized valuation procedures.

In contrast, large-capitalization equities and bonds with large amounts outstanding are typically liquid. Securities with smaller amounts outstanding are structurally similar to their larger brethren. But their smaller size means larger investors are not typically involved, leading to narrower ownership and lower secondary market volumes. As a result, small-capitalization stocks and smaller corporate bond issues have higher liquidity risk than large-cap stocks or government bonds.

Liquid securities would typically have reliable daily trading volumes with transparent daily valuation. But even such securities can have highly variable liquidity at the individual security level as a function of risk appetite and the availability of risk capital in a given market at a given time. For example: two-year US Treasury Notes are liquid, but a particular issue, for example a 30-year US Treasury bond with an off-market coupon (either higher or lower than prevailing rates) and only two years to maturity, may not be liquid. Recently issued mortgage-backed securities were historically very liquid. But in the spring of 2007, when the Bear Stearns Mortgage Fund was experiencing significant depreciation and large scale defaults, they became temporarily illiquid.

Why Are Illiquid Assets Attractive Investments?

Illiquid assets frequently appear to offer the best risk/return profile. Over time the IRRs (internal rates of return) often achieved by these assets make them seem attractive for inclusion in a portfolio, particularly when coupled with their low correlations to liquid stocks and bonds.

In addition, illiquid assets often appear attractive to mean-variance optimizers because the standard deviation (risk) of an illiquid asset generally tends to be underestimated. This inaccuracy occurs because a completely illiquid asset offers no trading or no reliable revaluation process. This results in little movement in price, and therefore, very low or zero standard deviation. This in turn causes covariance to be misestimated, thereby making the assets appear to be more attractive.

Accordingly, using these metrics in a portfolio optimization framework will generate weights that are too high for illiquid asset classes, as the output of mean-variance optimization will assign high weights to assets with standard deviation and correlation characteristics typically found in illiquid assets. This error has led many to over-invest in real estate, private equity and in those hedge funds with strategies that are overly sensitive or overexposed to the impulses of shifting market liquidity.

Liquidity and Financial Markets

During the 2008–2009 financial crisis, the failure of the price discovery mechanism in many markets meant that securities failed to clear. There were many instances where there were no prices, or prices that were so punitive that trades simply did not happen. Instruments that were previously freely traded ceased to trade. Market-makers stopped their central task of making prices available.

We believe these risks are as real today as they were then. Significant structural shifts—some derived from legislation and others from market participants’ activities—have occurred in the markets since 2008. One outcome of the Dodd–Frank Act is a higher cost of regulatory capital that discourages banks from participating in risk trades and having risky instruments on their balance sheets. Furthermore, the Volker Rule seeks outright prohibitions on bank ownership of securities under certain circumstances. As a result, both the number of dealers and their inventories have declined, affecting the asset price discovery mechanism and the market’s ability to absorb supply.

While periods of dislocation and discontinuous pricing conditions are not unusual in the history of markets, new dynamics include:

- The lack of risk capital available to absorb positions, thereby reducing dealers’ capacity to operate as market makers and inventory positions.
- The concentration of investments that have accumulated in fixed income and dividend-paying products over the last few years at historically high prices (low yields).
• The proliferation of mutual funds and ETFs and the flow-through impact they have on markets when investors transact in these products. According to data from the Federal Reserve Bank of New York, US dealer inventories of corporate bonds have declined from a peak of approximately $234 billion in 2007 to $55 billion as of March 2013. At the same time, the growth in US credit mutual fund assets has accelerated dramatically. This has resulted in a significant mismatch between mutual fund assets and dealer inventories, increasing dislocation risk in the event of outflows.¹ For example, in 2007 dealer inventories represented nearly 50% of US credit mutual fund assets. Today, as inventories declined these now represent approximately 7% of mutual fund assets.

If we overlay dealer inventories with the asset growth experienced by credit mutual funds, as shown in Exhibit 1, the growing discrepancy in liquidity need versus available capacity becomes starkly visible. Dealers now operate with a fraction of their former inventories and risk limits which directly impacts traded volumes in the market.

![Exhibit 1](image)

**US Credit Mutual Fund Assets & Dealers’ Inventories**

As we stated earlier, liquidity is a function of both volume and price. A recent study² shows that the reduction in dealer inventories has a direct impact on the price of immediacy (i.e., the ability to absorb supply and demand into inventory). This study observes the portfolio process undertaken by index tracking/benchmarking bond funds and measures the cost of rotating holdings under varying conditions. Mutual funds rely on dealers to make prices which facilitate rotations and liquidations. The bonds shown to dealers for pricing are categorized in the study as those that are “good” or capable of being traded with immediacy and those that are less desirable and trade less frequently and, therefore, need to be held by the dealer in inventory. At the dealer, a cost of capital is charged for holding inventory. The imputed cost is effectively passed on to the seller and is built into the dealer’s bid-offer spread. It roughly reflects the dealer’s assessment of the time it would take to re-sell the bond out of inventory, plus some additional margin for the risk of holding inventory which can change in value over time. The increased cost (spread) of immediate liquidation for bonds that can be turned over instantly is up to 15% while the cost increase for riskier bonds (that take time to sell and are therefore more likely to be kept in inventory) is up to 100%. We believe this frictional increase is directly attributable to the Basel III standards and the Volker Rule.

Other research published on the topic³ quantifies the cost as follows: “Before the crisis, the liquidity component was small for investment grade, ranging from 1 basis point (bp) for AAA to 4 bp for BBB. For AAA bonds the contribution remained small at 5 bp during the crisis—consistent with a flight-to-quality into those bonds. More dramatically, the liquidity component for BBB bonds increased to 93 bp, and for speculative grade bonds rose from 58 to 197 bp.”

Anecdotal evidence—based on our conversations with numerous market participants—of the poor market conditions that prevailed after Chairman Bernanke’s statement is plentiful and significant negative price movements were observed in multiple markets. Some observations in late June include: Parcels of corporate bonds in the $2 million to $10 million range failed to find a clearing price (or were eventually found at significantly lower levels and after several days); larger-than-usual price concessions were observed in some AA-rated municipal bonds; and in the non-agency mortgage bond market large secondary market transactions resulted in no bids for 50% to 60% of the securities for sale (as indicated on a list of securities for which the seller is seeking buyers, referred to as “bid list”), as compared to historical levels of only 10% of the securities receiving no bids.

Rather than wholesale liquidations that impaired the market’s ability to operate, there was a general inability of the market to price and absorb relatively small parcels. Risk controls had some market makers withdraw completely from certain pricing activities.

The appearance of these conditions in the market during a non-crisis period suggests a very real liquidity risk for many asset classes, especially in fixed income and mortgage-backed securities. We believe a clear lesson from both the research and anecdotal evidence is that the market’s ability to price and cope with volume liquidations is less than it has been historically. What the market experienced in June could well be an indication of what might be expected as tapering is implemented.

Our beliefs were reinforced by the recently released July 2013 report by the US Treasury to the Treasury Borrowing Advisory Committee that summarizes prevailing conditions in fixed-income markets as follows:

• Market turnover has if anything increased since the financial crisis
• But liquidity is about much more than turnover
  – Tendency to disappear abruptly when really needed
• Primary liquidity not really a problem; major issues all in secondary
• Neither turnover nor the street have been able to keep pace with the massive expansion in markets
• Regulations have created multiple constraints likely to curtail liquidity when it is really needed:
  – Most have pushed liquidity towards Treasuries, reducing it in risky assets:
    - Basel risk-weightings, swaps clearing, LCR [liquidity coverage ratio] requirements

¹ The proliferation of mutual funds and ETFs and the flow-through impact they have on markets when investors transact in these products.
² A recent study shows that the reduction in dealer inventories has a direct impact on the price of immediacy (i.e., the ability to absorb supply and demand into inventory).
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– Now, supplementary leverage ratios risk curtailing it even in Treasuries: dealers likely to meet requirements by reducing assets rather than raising capital

• Effects of regulations to date have been offset by Fed policy pushing investors in the opposite direction:
  – Significant demand for fixed income assets in general, and risky assets in particular

• Technology and shifts in market structure have added to the appearance of liquidity, but done little to add depth

• Potential for significant dislocation when investor flows reverse

**Tapering, Liquidity, and the Risk to Fixed-Income Securities**

The liquidity risks we describe previously can apply to many asset classes, but we would like to examine the risk to capital in fixed income markets in the context of the liquidity conditions the market recently experienced.

Morningstar reported that US mutual fund asset flows for June 2013 saw investors withdrawing $43.8 billion from taxable-bond funds and $16.4 billion from municipal-bond funds, making June the worst month on record for bond funds in terms of total outflows. Long-term funds overall shed $47.3 billion, the largest monthly outflow since $105.6 billion in October 2008. In addition ETFs had withdrawals of $12 billion with most asset classes being adversely affected. June saw the worst period of concentrated redemptions experienced by bond mutual funds since 2008.

Exhibit 2 illustrates the impact of higher yields in the 10-year Treasury on bond mutual funds and ETF flows. The chart helps visualize the relationship of how outflows occur in fixed income products as higher interest rates negatively impact bond prices.

If history is any guide, there may be more of such outflows to come if rates climb to “normalization” levels. In the December 2012 Lazard Insights, *The Interest Rate Conundrum,* a normal interest rate level was discussed in greater depth, and proposed as the relevant rates for 2% inflation. Since 1925, US bond market rates have been higher than 3% approximately 72.5% of the time. They have been greater than 4% roughly 52.5% of the time and greater than 6% approximately 32.5% of the time, as shown in Exhibit 3. Even with current yields more than 40% above recent lows, bonds continue to be at abnormally low levels.

Another way to think about the anomalous current bond yields is to compare them to the valuation of stocks. If stocks have an average P/E (price to earnings) ratio of approximately 15 times based on one year’s forward estimates, and if the yield on the 10-year US Treasury bond is 2.55%, then for bonds, the implied P/E is 39.22 (resulting from the computation 1/0.0255).6

As the time line for tapering unfolds and support via asset purchase programs is withdrawn from the markets, we believe it is reasonable to expect selling pressure in interest rate and bond markets. The negative impact on bond prices resulting from an increase in rates can be extreme.

In a “normal” interest rate environment for 2% inflation, typical historical ranges for US Treasury yields would be between 2% and 4.75% depending on maturity. If yields revert to these normal ranges, implying rate increases of between 1% and 3.5%, the losses implied by the price reduction on the bonds would range from -4% to as painful as -20%, with longer maturity securities experiencing the most severe losses.

**Liquidity and Fund of Funds**

During the financial crisis, we saw how a combination of low rates from accommodative monetary policy, imprudent use of leverage and/or losses on investments combined to “break the buck” (i.e., the funds’ net asset value dropped below $1) in money market funds, one of the simplest of all traditional asset management products. We also saw the impact of investor withdrawals on these vehicles forcing the sale of securities at inopportune times and prices. Clearly the management of fund liquidity is a much different exercise when dealing with outflows even for the simplest of strategies. It follows that the more complex the strategy or underlying set of securities, the more potential there...
is for discontinuous pricing and liquidity risk at both the fund and security levels.

Managers of alternative asset strategies were not immune to these problems. Prior to 2008, as long as money was flowing consistently into FoFs, portfolio construction and portfolio liquidity terms remained untested. Once outflows began, the mismatch between portfolios and investment manager terms became obvious, as real portfolio liquidity was inadequate relative to the promised liquidity. This problem applied equally to many traditional investment products and individual hedge funds when they discovered that changing market conditions made many of their individual securities less liquid than originally assumed.

At that time, many FoFs modeled the liquidity they offered to their investors based on the simple average of the notice periods and redemption frequencies offered by the various hedge fund managers in their portfolio. This “average liquidity” approach works as long as redemptions are orderly, spread-out, and combined with a mix of inflows as time and inflows greatly facilitate the rebalancing of the portfolio. These had been the prevailing characteristics while the industry was in growth mode.

However, when circumstances change, in our view, the deficiencies of this approach become apparent. The average liquidity model doesn’t work when redemptions are concentrated, time is of the essence, inflows become outflows, and changing market conditions radically alter the liquidity of previously liquid investments or instruments.

The ex-ante assumption made by many FoF managers was that their blended terms (i.e., the combined effect of the different liquidity terms of the investments made) would be typical of the most-liquid portions of the portfolio. The belief was that strategy diversification alone was enough for prudent portfolio management. But many failed to consider that diversification by strategy brought with it varying liquidity terms that under times of stress amplified the risks to the average liquidity model. Experience showed that the blended terms generated overall liquidity that was closer to the more illiquid portions of the portfolio. For those managers with portfolios comprising investments concentrated in less liquid strategies or strategies with securities more susceptible to liquidity gaps, the problem was worse. Exhibit 4 attempts to illustrate how liquidity changes for a FoF portfolio as underlying funds/strategies experience trouble exiting positions.

In 2008, the assumptions for liquidity that had been made by many FoF operators utilizing an average liquidity model proved incorrect. Consequently, many hedge funds implemented restrictions to the liquidity they provided to their investors: gates, side-pockets, distributions in-kind, and the outright suspension of redemptions were common.7

**Fund of Funds Liquidity – A Case Study**

There is very limited publicly available data on the portfolio holdings of FoFs and even less data relating to the liquidity of those portfolios. The most reliable source comes from SEC Form N-Q filings. There is a small universe of SEC registered FoFs that are required to file these data and there appears to be some discretion in how liquidity exposures are described. We examined those filings submitted by several registered FoFs. We found several instances of portfolios that were susceptible to the types of portfolio liquidity risks explained throughout this paper, and we describe one highly illustrative example hereunder. Observations were made of the filings and other public records to supplement the analysis, allowing us to estimate the underlying portfolio and liquidity of that fund. The data provide context and offer potential explanations for the changes in portfolio holdings between the different filing periods. While this analysis reflects only one fund, based on our observations, we believe it is indicative of many other similar funds. We present the differing liquidity profiles that evolved for a seemingly liquid fund in order to highlight some of the portfolio issues we believe investors need to consider.

The observed fund followed an investment model popular with many university endowments. The fund’s objective was to invest in a diversified array of assets, from stocks, bonds, hedge funds and real estate, natural resources and private-equity funds. This asset allocation strategy experienced success for some time and as a result became loosely known as the endowment investment model.

The table in Exhibit 5 helps illustrate liquidity over differing time frames and the types of strategies, assets, or funds that this type of fund invested in, as well as the typical liquidity terms for those types of investments.

The fund was marketed heavily to the mass affluent as a way to access the university endowment investment model. Over time, the fund attracted in excess of 17,000 investors and managed approximately $4–5 billion. However, a period of disappointing returns resulted in investor redemptions and losses of approximately 25% (or $1 billion) of its assets in the first eight months of 2012. Once outflows exceeded inflows, the fund was forced to limit investor liquidity. This was also noted in the media: “In October, the fund told investors that with-
drawals had exceeded what it had gathered in new money during the ‘past several quarters.’ The fund also notified clients that they would get back 5% of their money during the first quarter.”

Taking data from SEC filings, in Exhibit 6 we examined how the fund’s liquidity profile and the notional amounts for various liquidity periods dramatically shifted over the period from September 2011 to March 2013. The liquidity profile of the fund for September 2011 is represented by the blue shaded area and as of March 2013 by the grey shaded area. An analysis of the fund’s holdings suggests that in addition to using inflows to offset outflows, some of the funds more liquid holdings were used to facilitate investor redemptions. The orange columns show the amount of notional liquidity by period as a function of the investments disclosed in the fund’s September 2011 SEC filing. The dark blue columns show the amount of notional liquidity by period as a function of the investments disclosed in the fund’s March 2013 SEC filing.

By aggregating the orange columns representing cash holdings (14.4%), quarterly holdings (30.0%) and semi-annual holdings (23.8%) it appears that in 2011 the fund was sufficiently liquid. If one were to add the potential investor inflows then there would appear to be an even higher margin of safety. But this is a misleading conclusion for several reasons:

• For both the September 2011 and March 2013 periods, the liquid category remains unchanged at 14.4%. While not clear from the filings, one potential explanation is that this could be due to commitments that are earmarked for capital calls from the illiquid categories. If so, the average liquidity calculation has to be reduced by the amount of the fund’s callable commitments and the callable amount added to the illiquid holdings category. If this were to happen, the illiquid holdings for September 2011 would increase to 36.2% and for March 2013 increase to 59.2%.

• In order to access the full liquidity implied in the quarterly and semi-annual categories, full redemptions of these more liquid investments would need to be submitted. Anything less (i.e., submitting partial redemptions of liquid investments) and the portfolio manager’s ability to raise capital to meet redemptions would be pushed into the future by another quarter, half year, or more.

The 2011 liquidity profile is clearly vulnerable to a slowdown in inflows, a concentration of redemptions or an extended period of redemptions. Redemptions met from the more liquid parts of the portfolio would have the effect of increasing the size of illiquid holdings in the portfolio for the remaining investors. This dynamic is amplified as redemptions accelerate and inflows or new subscriptions decelerate.

From the September 2011 filings, it appears that approximately 37% of the fund could be liquidated within one quarter and up to 60% within half a year. However to achieve that level of liquidity, the liquid holdings would have to be fully redeemed, leaving virtually 100% of

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Exhibit 5
Liquidity Terms and Corresponding Strategies

<table>
<thead>
<tr>
<th>Liquidity Terms</th>
<th>Example of Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>Cash, Liquid Securities</td>
</tr>
<tr>
<td>Monthly</td>
<td>Long Only, Long/Short Equities, CTAs, GM</td>
</tr>
<tr>
<td>Quarterly</td>
<td>Long/Short Equities, CTAs, GM</td>
</tr>
<tr>
<td>Semi Annual</td>
<td>Long/Short Equities, CTAs, GM</td>
</tr>
<tr>
<td>Annual</td>
<td>Relative Value, Arbitrage, Event Driven</td>
</tr>
<tr>
<td>Monthly w/Lock-up</td>
<td>Event Driven, Mortgage, OTCs, Structured Products</td>
</tr>
<tr>
<td>Quarterly w/Gate</td>
<td>Event Driven, Mortgage, OTCs, Structured Products</td>
</tr>
<tr>
<td>Quarterly w/Lock-up</td>
<td>Event Driven, Mortgage, OTCs, Structured Products</td>
</tr>
<tr>
<td>Annual w/Lock-up</td>
<td>Event Driven, Mortgage, OTCs, Structured Products</td>
</tr>
<tr>
<td>Illiquid</td>
<td>Private Equities, Real Estate</td>
</tr>
</tbody>
</table>

This information is for illustrative purposes only. CTAs are commodity trading advisors, GM is global macro strategies, and OTCs are over-the-counter derivatives. Source: Lazard

Exhibit 6
Liquidity Profile for an “Endowment” Fund

As of March 2013
This information is for illustrative purposes only. This information is not intended to reflect any product or strategy managed by Lazard. Past performance is not a reliable indicator of future results. Source: SEC, Lazard
the remaining portfolio either locked-up or permanently illiquid and giving the remaining investors grounds for serious concerns. In fact, something close to this did occur, although the fund’s restriction on withdrawals protected it from such a result.

The September 2011 filing showed assets under management of nearly $4.8 billion and the March 2013 filing, approximately half that number. As can be seen from the graph in Exhibit 6, the liquidity profile suggesting high liquidity also changed, resulting in a much heavier portfolio allocation to illiquid strategies.

We previously noted that certain illiquid assets can often be incorrectly overweighted in a portfolio. We have also seen that market liquidity for an array of strategies and instruments is not as robust as it used to be. Consideration must be given to these realities when constructing a portfolio and adjustments made so that the real liquidity of the fund and its investments are appropriate for the liquidity offered to investors. The average liquidity model has been seen to founder when stressed by concentrated or continuous redemptions. Accordingly, we believe due consideration must be given to the amount of absolute liquidity that can be generated in a portfolio at a point in time.

Liquidity and “Liquid Alternatives”

Earlier this year (in our February 2013 Lazard Insights paper), we examined products that package “hedge-fund-like” exposures into vehicles with “better” liquidity than typical hedge funds or fund of funds. These products are frequently referred to as “liquid alternatives.” We showed that during periods of market turbulence, the bid-offer spread or exit price for a sample of liquid alternatives products was severe, with almost 14% of total trading days showing spreads greater than 1.0% and as high as 23.0% in extreme conditions, such as the “flash crash” of 2010.

We revisited the data for the period immediately prior and immediately following Chairman Bernanke’s June tapering statement and found that the bid-offer spread rose from 0.6% to 2.8%. This change is similar to the deterioration of spreads found in other markets at that time, confirming that “liquid” alternatives are not exempt from variability in liquidity in periods of stress.

Many of the products that use statistical modeling techniques attempting to replicate hedge fund returns while advertising higher liquidity remain untested during periods of market stress. Their risk is generated primarily at the underlying security level. Collecting assets into a pooled vehicle that is priced daily and is available to trade at that price, does not increase the liquidity of the pool’s underlying assets. Large inflows can make it temporarily easy for issuers or holders to sell since the dominant flow is buying. But this liquidity’s illusory nature becomes clear if/when performance and flows reverse. Available data, such as bid-offer spreads or trade volume, suggests the liquidity promise of these products could be in jeopardy during periods of extended uncertainty, extended redemptions, or market duress.

The history of these products is still limited, but the record suggests that they are consistently underperforming “standard” hedge fund products (i.e., hedge fund tracking indices that reflect the performance of the industry broadly, without regard for enhanced liquidity). In Exhibit 7 we show the performance series of various hedge fund indices. The HFRX and HFRU are two investable indices which track hedge funds with a similar range of strategies and performance objectives with the only difference being that the HFRU tracks products designed to be more liquid (bi-weekly to daily). The IQ Hedge Multi Strategy Tracker tracks a proprietary index that seeks to replicate the returns of multiple hedge funds while offering daily liquidity. Lastly, the HFRI is a non-investable index that includes the performance of over 2,000 hedge funds with a wide variety of styles and liquidity profiles.

The data in Exhibit 7 support the idea that there is a “cost” in performance for liquidity. At the same time, our analysis suggests that the promise of liquidity can be misleading if not in some cases, illusory. Investors might want to consider whether apparent liquidity that can disappear when it is most needed is worth the price it bears.

### Exhibit 7
Hedge Fund Indices Performance

<table>
<thead>
<tr>
<th></th>
<th>Annualized Return (%)</th>
<th>Standard Deviation (%)</th>
<th>Sharpe Ratio</th>
<th>Maximum Drawdown (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFRI Fund Weighted Index</td>
<td>7.79</td>
<td>6.20</td>
<td>1.24</td>
<td>-8.97</td>
</tr>
<tr>
<td>HFRU Hedge Fund Composite Index</td>
<td>2.97</td>
<td>3.11</td>
<td>0.96</td>
<td>-5.00</td>
</tr>
<tr>
<td>HFRX Aggregate Index</td>
<td>5.70</td>
<td>4.54</td>
<td>1.25</td>
<td>-7.74</td>
</tr>
<tr>
<td>IQ Hedge Multi Strategy Tracker</td>
<td>2.52</td>
<td>5.12</td>
<td>0.51</td>
<td>-4.93</td>
</tr>
</tbody>
</table>

As of 30 June 2013
This information is for illustrative purposes only.
This information is not intended to reflect any product or strategy managed by Lazard.
Past performance is not a reliable indicator of future results. Indices have no fees.
One cannot invest in an index.
Source: Lazard, HFR, Pertrac
Conclusion

Investor behavior and market activity in June has effectively provided us with a look at the types of risks and conditions we might experience as tapering is implemented, and a glimpse of what could occur in the case of further unexpected events in the market.

Chairman Bernanke’s 19 June testimony had an impact on all markets. The effects on fixed-income markets were especially severe despite the fact that the markets were not experiencing “crisis” conditions. The moves exposed the reality of the structural weaknesses of market liquidity and price discovery conditions currently prevailing across many asset classes, even supposedly liquid securities.

The potential for knock-on effects across asset classes due to these deficiencies is very real and has significant implications for hedge fund portfolio construction and for investors in hedge fund portfolios and other pooled alternative investment vehicles. The risks do not solely attach to hedge fund-related investments. They apply equally to those assets and securities where the underlying liquidity has been impacted by the changed environment for markets today.

Investors would be wise to examine their likely liquidity experience in different market conditions and not to be seduced by liquidity that looks good in principle, but is costly and may be likely to disappoint in practice.

Notes

6. The S&P 500 Index P/E as of 8 August 2013 is 19.3, the historical average is 15.5 and the median is 14.5.
7. Gates and Suspensions: Gates and Suspension terms can be mandatory or discretionary. There are many variations and combinations that are deployed by hedge funds depending on their specific strategy, the liquidity of the instruments traded, and the fund’s investment horizon.
9. Lock-up refers to a period of time, typically one year but potentially longer, when an investor would not have access to their capital and the normal liquidity terms would not apply.
11. The HFRI Fund Weighted Composite Index is a global, equally-weighted index of over 2,000 single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in US Dollar and have a minimum of $50 Million under management or a twelve (12)-month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.

The HFRU Hedge Fund Composite Index is designed to be representative of the overall composition of the UCITS-Compliant hedge fund universe. It is comprised of all eligible hedge fund strategies; however, not all strategies are equally represented. The underlying constituents are equally weighted. The HFRU Indices are rebalanced on a quarterly basis.

HFRX Aggregate Index is the equally weighted index across all sub-strategy and regional indices. Hedge Fund Research, Inc. (HFR) utilizes a UCITS III compliant methodology to construct the HFRX Hedge Fund Indices. The methodology is based on defined and prededtermined rules and objective criteria to select and rebalance components to maximize representation of the Hedge Fund Universe. HFRX Indices utilize state-of-the-art quantitative techniques and analysis; multi-level screening, cluster analysis, Monte-Carlo simulations and optimization techniques ensure that each Index is a pure representation of its corresponding investment focus.

The IQ Hedge Multi Strategy Index attempts to replicate the risk-adjusted return characteristics of hedge funds using multiple hedge fund investment styles, including long/short equity, global macro, market neutral, event-driven, fixed income arbitrage, and emerging markets. The Fund does not invest in hedge funds and the Index does not include hedge funds as components.

Important Information

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