Mesirow

Thoughts about the liquidity of small issue high yield bonds

The true liquidity costs of small cap high yield bonds are often exaggerated. In fact, small cap bonds are just slightly less liquid over all but the shortest run, and a small cap portfolio can be run with lower total liquidity costs than a large cap portfolio.

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Summary

1. Over time and especially today, small cap bonds pay higher than average yields, with the so-called but mis-named "liquidity premium" being in excess of their historical incremental default risk. They also exhibit greater dispersion in realized returns, and are thus attractive to active managers with the requisite skill seeking to exploit these sources of value. Such a strategy must trade off these benefits against the possible cost of illiquidity.
2. Under real world conditions captured in the TRACE database of trades, portfolios of small cap bonds (under $500 million outstanding) are only slightly less liquid than portfolios of large bonds (over $1 billion outstanding.) The true incremental cost of the excess illiquidity is far smaller than the higher incremental yield available in the small cap segment of the market.
3. Measured correctly by comparing the daily trading volume relative to the total issue size outstanding, small cap bonds trade only 14% less often than large bonds.
4. Large managers tend to hold very large issues, and a large manager liquidating a large (e.g., $100 million) position in a large cap bond generates a higher percentage liquidity cost than a small manager liquidating a $10 million position in a small bond.
5. Some volatile periods often described as "illiquid" are in truth experiencing a conceptually different phenomenon – price discovery.
6. At times of marketwide panic selling, as in 2020, illiquidity is inevitable and is one of the unhedgeable risks that investors must accept in exchange for the historically high promised (and delivered) returns in the high yield market. But those who stay the course have historically recovered losses from market selloffs at an astoundingly fast rate.

As specialists in small and mid-cap bonds, we are often asked about the presumably inferior liquidity of this sector of the high yield bond market. Some allocators speak as if there is a difference in kind, not in degree, between these sectors and the large cap bonds which represent well over half of the total market. Ironically, several of the allocators who turn away from small cap bonds do so in favor of private lending… where individual assets and entire portfolios are truly illiquid, and their fund may be subject to a long lockup provision.

In this paper, we approach liquidity as an optimization problem. We will show that small issues pay a meaningfully higher average yield than large issues, a premium which exceeds their incremental default losses. But they can be harder to buy or sell in the short run, so a holder is exposed to the chance that he will drive up the purchase price as a position is accumulated or drive down the price as a position is sold, especially if it is sold under a tight deadline. These price influences are considered "indirect trading costs," as opposed to the direct trading cost consisting of the bid/ask spread taken by the brokerage function. We believe that many investors overvalue liquidity, especially at the margin, and that investors who are not market timers and especially investors who have long-term liabilities should favor small cap bonds more than they do. An investor who overvalues liquidity and favors large cap issues will thus achieve lower risk-adjusted returns over time.

What the "liquidity premium" is and isn't

We must begin with a rigorous definition of liquidity and the so-called "liquidity premium." In economics, "liquidity" represents the ability of an investor to buy or sell a security in a given block size, over a given interval, without moving the market price (much) via his own trading. This idea of price sensitivity is distinct from the bid/ask spread costs imposed by the interposition of a market maker or agent between the buyer and seller. In a large and perfectly competitive market like the Treasury market, there is very high liquidity. In an individual issue from a high yield issuer, there is less, but high yield bonds are much closer to Treasurys than many private market assets.

The observed difference between large and small bond yields or credit spreads is commonly thought of as the "liquidity premium." That is an oversimplification, because it assumes that the bonds are otherwise identical in risk, and there are systematic differences between large and small bonds in the industries they represent, their credit statistics, the complexity of their capital structures, and the willingness of different market participants to hold them. The pure "liquidity premium" is the additional yield a holder requires, either explicitly or implicitly, to hold a bond which he knows may require him to sell at a price lower than the equilibrium price immediately before he initiates his own sales, *holding all of these other variables constant*. The rub is, this important concept is not directly measurable. It should be distinguished, for example, from what we call the "unfamiliarity premium." Large household names are relatively easy for a portfolio manager to form an opinion as to their value. There is abundant free equity research in the case of public companies, there is extensive news coverage, there are large studies published by industry consultants, and there may be many quite comparable bonds if the issuer is from an industry which has accessed the high yield bond market often. Conversely, a small issuer from a small industry will be much less known, and the unfamiliarity of its story and even its industry means that an analyst must do much more work to form an opinion of value, and perhaps be much less confident of his estimate once it has been made. Even if the portfolio manager never intends to sell the issue (and thus move the market to generate an indirect trading cost which would represent a true liquidity cost,) he will rationally require a greater yield on a small bond to compensate him for both the higher cost of becoming informed and the increased risk that his opinion of value (that is, the yield in relation to his estimate of default risk) will turn out to be mistaken. The unfamiliarity premium is not a zero-sum game; it is a genuine source of net value added to those who embrace small companies, even slightly riskier companies, that are not followed by others. Private debt, where even higher promised yield and realized returns are available for assets which are truly illiquid, is simply a logical extension of this value hypothesis.

Optimizing the tradeoff between small cap excess return and liquidity

In our work, we attempt to capture excess compensation (that is, excessive in relation to our estimate of default risk) for this "unfamiliarity premium" while not subjecting the overall portfolio to excessive liquidity risk. This is conceptually a tradeoff, an optimization problem, not a maximization problem. As noted above, large issues from firms which already have multiple issues outstanding tend to be efficiently priced, because there is a large number of investors already well informed about the issuer and the new

issue is a very close substitute for already existing bonds from that issuer. Many holders have followed the company for a long time, yields on very comparable issues are readily visible, and there is no "unfamiliarity premium" to be had. It stands to reason that such bonds are comparatively liquid because the incremental purchaser of an offered block is likely to be one of many existing holders, not a new investor who must take time (days or weeks) to form his own opinion of value. Small bonds with fewer "comps" are not followed at all by many major asset management companies, who do not wish to expend analyst and portfolio manager time on an issue where they will not be able to accumulate their normal position size, or where they fear they will not be able to sell a large position without moving the market several points. *This leads to greater dispersion of value in small cap issues* – a greater percentage of poorly known, poorly understood bonds which are therefore more likely to be either overvalued or undervalued simply because there are fewer interested parties to drive their prices toward efficiency. For an active manager who aims to hold a small percentage of the total bonds in the index, this is the target rich environment for cheap bonds…and it is in this precinct of the market that superior credit skills can be most consistently parlayed into excess returns.

How would one think about the tradeoff between "unfamiliarity premium" and liquidity costs? A simple example would be a small cap bond whose yield appears to be 100bp too cheap on a fundamental basis. How much of that apparently excess return is necessary to compensate for its incremental liquidity cost in a steady-state portfolio? Our portfolio has a comparatively low turnover ratio of 40 percent. If we believe that a sale of that entire position would move the market price by half of a percentage point, a statistic which can be measured over time in our trading, the annualized a priori indirect liquidity cost (again excluding the direct bid/ask spread) of that issue would be .5% * 40% = 20bp and therefore the perceived value added from unfamiliarity, *net of the resultant incremental liquidity cost*, would be 80bp. We would systematically prefer that small cap bond to a large bond which was efficiently priced (and thus bears no unfamiliarity premium) but whose cost of liquidity would be approximately zero. So the correct pure liquidity premium depends on 1) the long-run average price delta caused by the future sale, which in turn depends on the time over which the manager is usually able to sell a position, and 2) the overall turnover rate of positions in that portfolio. Managers with low turnover and who liquidate positions slowly rather than urgently, and who thus incur lower total indirect trading costs than frequent and active traders, require lower liquidity premiums and can thus retain more of the fundamental excess yield.

Now this approach, if followed strictly, would result in a portfolio which might consist entirely of small and relatively illiquid bonds. What is needed is a tool to think about the aggregate need for liquidity at the portfolio level. Fortunately, the existence of FINRA's TRACE ("Trade Reporting and Compliance Engine") database, which records the vast majority of individual trades in a manner comparable to the tape on a stock exchange, allows us to think about this in a quantitative way.

How much liquidity is "enough?"

A sophisticated client once asked us (and its specialist large cap bond manager) to conduct a simulation experiment: how rapidly could we liquidate a "vertical slice" of the portfolio to raise $100 million without moving the market with any of our trades? The vertical slice stipulation meant that we could not just sell our largest and most liquid issues, but rather had to sell the same percentage of each issue we held, so that after the partial liquidation the remaining portfolio would have the same composition as it had before the sales. The exercise specified that our sales could only amount to 35% of the average trading volume in each bond – that is, we would passively respond to market bids rather than depressing those bids by aggressively offering bonds at a pace larger than the normal daily flow in the bond could easily absorb. The hypothesis was that as a small bond specialist, we would return capital at a much slower pace than a specialist in large, very liquid issues.

The results of the experiment were surprising, and are presented below as Figure 1. By the end of the first day of the liquidation, we could raise 36% of the desired $100 million. By the end of the first five-day week, proceeds were 82% of the target, and by the end of the second week they were at the 93% level. By the end of a month of 22 trading days, we would be left with a "tag end" of 3% truly illiquid bonds.

FIGURE 1: **CUMULATIVE LIQUIDATION PROCEEDS OF A $100 MILLION PORTFOLIO**

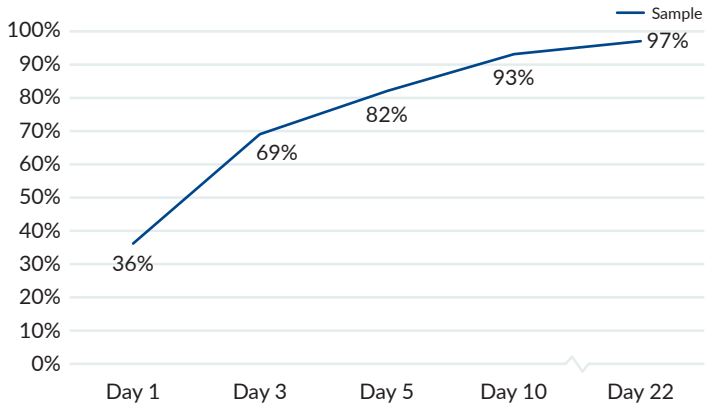
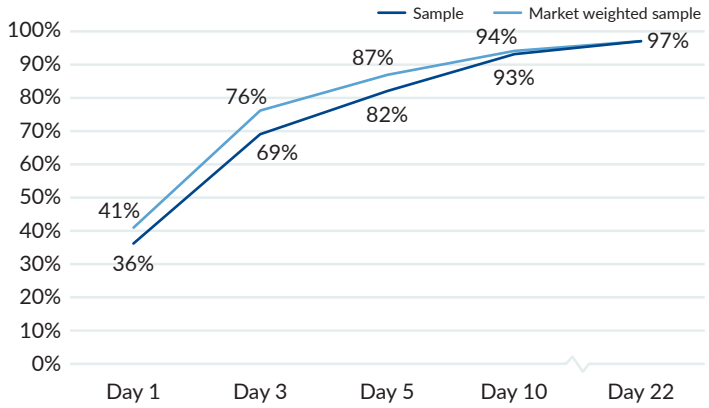


FIGURE 2: **CUMULATIVE LIQUIDATION PROCEEDS OF A $100 MILLION PORTFOLIO**



Source: TRACE and MHY. The above represents a proposed experimental or model portfolio that is not reflective of any actual trading or client experience. Model, hypothetical and/or simulated performance information and results do not reflect actual trading or asset or fund advisory management and the results may not reflect the impact that material economic and market factors may have had, and can reflect the benefit of hindsight, on MHY decision-making if MHY were actually managing client's money. Any securities contained or investment strategies used in the model performance results provided herein do not relate or only partially relate to the advisory services currently offered by MHY. MHY's clients may have had results materially different from the results provided. Past performance is not indicative of future results. Please refer to the disclosure page at the end for additional, important information.

This raised a different question: How much faster would that liquidation have been if we held the same proportional mix of small, mid-cap, and large bonds as the market, instead of our normal heavy overweighting of small and mid-cap issues? That is, could we quantify along a time axis the relative *amount* of illiquidity in our names? We could model this by holding our position sizes (and their number) constant but substituting in a randomly selected set of issues from the index…so that we would have, numerically, an identically structured portfolio, except that it would not contain our usual overweight positions in small and mid-cap bonds. As we hold about 100 issues, there was little sampling error in our trials.

The result of that experiment is shown in Figure 2, juxtaposing the day-by-day "market weighted" portfolio's proceeds with our small cap portfolio's. By day three, the cumulative cash raised was 87% – not far ahead of our presumably illiquid portfolio. By end of the second week, our small cap portfolio had nearly caught up with the "market" portfolio at 93%, and in both cases there is the same 3% "tag end" of illiquid bonds which would require over a month to sell.

Is that "enough" liquidity? That depends on the client's economic need for liquidity, and the reason for the liquidation. If the client has stable, long-dated liabilities, like a pension fund, and tends to make portfolio shifts at a measured pace, we believe that a small cap portfolio with a moderate (10-20%) allocation to large (>$1 billion face value) provides adequate liquidity,[1] and allows for a maximization of alpha from the unfamiliarity premium and the greater dispersion of value in the small cap segment of the market. We think the vast majority of value-conscious institutional investors should be satisfied with this rate of return of their cash; we note that most such portfolios routinely grant timeframes of weeks or even months to ramp *up* a portfolio.[2]

But what if the client is market timer, and is interested in a rapid portfolio liquidation because it fears the market is about to take a tumble? Well, we can superimpose the two liquidation timelines developed in Figures 1 and 2 on an actual historical time of rapid market decline and see the difference in realized proceeds. During the recent Covid-driven selloff in March 2020, the market fell about a point per day for three weeks, by far its most precipitous decline in history. During this month, trading volume for all size cohorts increased significantly relative to 2019, so market liquidity did not dry up. It turns out that the slightly delayed pace of liquidation in our small cap portfolio during such a

1. A key reason we even hold this many large, liquid bonds is that if we want to rapidly buy an attractive bond which is very temporarily available in the secondary market, we do not need to urgently sell a small cap bond to raise cash to make that buy.

2. Portfolios larger than $100 million would require a longer liquidation period, but for subtle reasons this relationship is not linear. In practice, we can tailor the size composition of any separately managed account to achieve a desired liquidity profile.

rapid point-per-day market decline would have entailed a very modest reduction in proceeds – the slightly delayed sales at lower prices in the small cap portfolio would have imposed a net incremental *one-time* liquidity cost of just 50bp. Comparing that worst-case cost to the *annual* 80bp of credit-driven excess return we can add from exploiting the unfamiliarity premium, we again conclude that even in the most historically stressful scenario for an active investor who is very time-sensitive, the opportunity cost of holding efficiently priced large bonds is so large that they should always be underweighted.

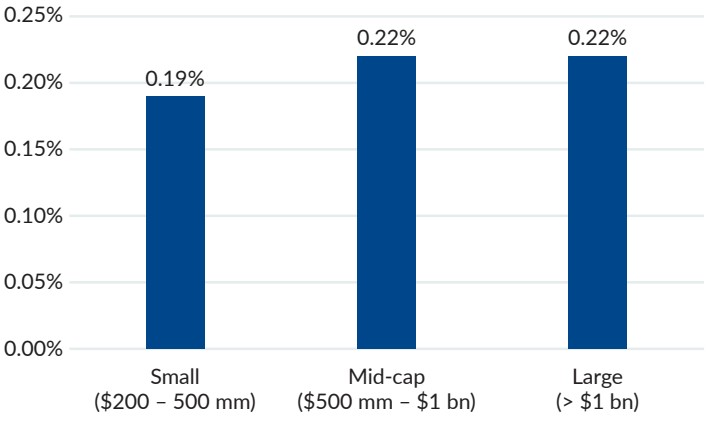
We can look at a more normal negative return month in the high yield market and repeat the simulated parallel liquidations of a small cap and market weighted portfolio too. Prior to 2020, the ten worst months in the 34 year history of the Credit Suisse High Yield index averaged a return of -6.78%. In such a month, the slightly delayed pace of liquidation of the small cap portfolio (and thus slightly lower realized sale prices) would have resulted in trivial incremental liquidity costs of 15bp. Individual cases of illiquidity at the level of a single bond bring a frustration level which is out of proportion to the reality of the problem. When we look at the portfolio-wide cost of illiquidity in a systematic and quantitative way, either in a "steady state" or a portfolio liquidation under duress scenario, it is vastly overblown in the popular image of our market.

Do small bonds really trade much less actively than big bonds?

The results of our portfolio liquidation experiment, counterintuitive even to us, prompted us to use additional TRACE data to analyze daily trading volumes for every bond in the high yield index. But it is not just raw dollar turnover that is interesting. Rather, we want to see the daily trading volume *as a percentage of the bond's total size outstanding*. The idea is that a large bond that trades a large average daily total dollar volume does indeed have a larger set of providers of liquidity (buyers) but it likewise has a greater set of liquidity demanders (sellers.) Recall that the economic question is, which bonds can be sold with a minimum effect on market prices? And what produces that price effect is a sudden imbalance in the flow of bids and offers *relative to each other*. So large bonds could actually create higher liquidity costs if block sizes there are "lumpier," especially if their managers trade with greater urgency.

The results of our analysis of TRACE, using daily trading data assembled over approximately 235 trading days in 2019, are that large bonds do trade more often than small ones (as a percentage of the issue size,) *but the difference is quite small*. See Figure 3.

FIGURE 3: **AVERAGE DAILY TURNOVER AS A PERCENT OF ISSUE SIZE**



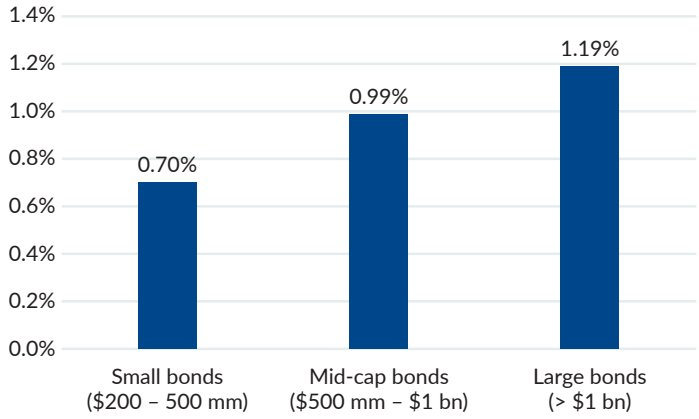
Source: TRACE and MHY

As stated above, liquidity costs occur when there is a sudden imbalance between bids and offers, especially bids and offers requiring rapid execution at whatever market price results. The incremental large block offered (and the market's fear that the seller may follow up on a sale with an immediate additional offer which will further affect the price) creates an imbalance that reduces a bond's price. Conversely, an incremental large bid pushes up the price, imposing liquidity costs on the buyer.

We cannot directly observe the market-moving liquidity costs of individual trades in any portfolio except our own, or even an average liquidity cost of many trades, because bond prices change from hour to hour in response to new information, both macro information which moves the entire market and security-specific news. So just looking at the change in price since the last trade does not cleanly isolate only the pure incremental effects of transactions on the price.[3] But there is an intuitive proxy for liquidity costs to be found in the relative volatilities of returns for small, mid-cap, and large bonds. Figure 4 presents the weekly return volatilities for these segments of the market, using Credit Suisse High Yield Index data from 2011 to November 2020.

3. This type of analysis can be done with studies of the correlations between block sizes and upticks or downticks in an extremely actively traded market like the NYSE, but trading in the high yield bond market is not frequent and dense enough to draw real conclusions.

FIGURE 4: **WEEKLY VOLATILITY OF RETURN BY SIZE COHORT**



Source: Credit Suisse

These are surprisingly large differences, and they are monotonic. The fact that large bonds are so much more volatile on a week-to-week basis, despite their overall lower default rates over long periods of time, suggests that there are more bid/ask imbalances generated among large bonds than small ones. We believe that time-sensitive investors who demand fast execution, and who move in an out of markets rapidly, such as mutual fund investors redeeming their shares or hedge funds engaging in capital structure arbitrage, impose much larger demands for near-instant liquidity and tend to favor large bonds because they know that large bonds have greater daily flows in absolute dollars, when what really matters is the average daily volume as a percentage of the amount outstanding. Their exaggerated preference for large bonds creates the exploitable unfamiliarity premium for us and higher than average liquidity costs for them, which are borne by whichever side of the trade is acting under a greater sense of urgency.

The activity of exchange-traded high yield bond funds, which overwhelmingly invest in large issues and are in some cases required by their charters to own large issues exclusively, has compounded this high demand for large bond liquidity. ETF shares are rarely created or redeemed via a cash transaction with the fund itself, as would be done in an open-end mutual fund. Rather, shares are created or redeemed via an arbitrage process in which a large market maker tenders cash bonds to the fund in exchange for newly created shares or acquires cash bonds by tendering existing ETF shares back to the fund. They do this to profit from small differences between the trading value of the ETF and the market value of its underlying portfolio. The ETFs pre-announce "baskets" of dozens of specific large bonds they will agree to buy or sell in this process of creating or redeeming shares, and arbitrageurs conduct electronic auctions to assemble (or sell) those baskets. These auctions take place very quickly, often within minutes, because speed is of the essence; the arbitrage only works if they can execute the large number of trades in the cash bond market in response to deltas between the cash bond and ETF prices which change continuously during the day.[4]

What's the context of the sale that requires liquidity?

In the portfolio liquidation experiment described above, we looked at liquidity from the point of view of an institutional holder wishing to make a routine rebalancing trade (or, in the extreme case, a full liquidation) in order to reduce its exposure to the high yield market over a matter of days. But a much more common sort of sale is a decision by a portfolio manager to sell (or buy) and individual bond for fundamental credit reasons. These smaller decisions, which occur almost daily in many actively portfolios, are where the vast majority of total liquidity costs are incurred by all accounts which are not market timers jumping in or out of the market. (The market timers tend to use ETFs, and although ETF shares themselves are very liquid, they can incur high liquidity costs within their portfolios in the rapid-fire arbitrage process described above.)

In this type of sale, a critical question is whether the portfolio manager is acting under time pressure or not. If the manager's decision to sell an issue is due to his anticipation of imminent security specific news (e.g., an earnings report,) he will want to trade urgently, before the news becomes public and moves the market price down. In such a case, he will offer his block aggressively, perhaps offering a multiple of the average daily trading volume. This is the classic situation where large liquidity costs can be generated…the offering must be low enough to attract attention and, in some sense, communicate the urgency of the seller. Bond salesmen may pass along the offering to their accounts with the helpful aside that "the seller is motivated." More frequently, a manager wants to sell a position not because he fears the imminent release of price-moving news, but rather in

4. This share creation/redemption process was specifically designed so that arbitrage would cause ETF shares to trade very close to their underlying net asset values, unlike a closed end find where large premiums or discounts can persist over time.

response to the actual announcement of news, or a simple reappraisal of that bond in response to accumulated news or changes in relative value, rather than in response to any specific market-moving news. In such a situation, his trading need not be urgent and he is more likely to sell at a slower pace, specifically to reduce his liquidity costs. Almost all of our sales are of this type.

An even more critical consideration in the case of a sale of a specific name for credit reasons is the size of the entire block to be sold, and this is driven in large part by the size of the manager. A manager who decides to sell bond A because he believes it has become overvalued will logically sell the bond from all accounts it manages. In the case of a small boutique manager, the total position to be sold may be $10 million in size. But it is very common for very large managers to have positions exceeding $100 million in a single bond just in the publicly visible portfolio listings published by their mutual funds. It is not just the total size of the issue that drives liquidity costs – it is the size of the block to be moved *in relation to that issue size*. If the boutique manager's $10 million block comprises 3.3% of a total issue size of $300 million, while the large manager's block of $100 million comprises 10% of a billion dollar issue, it will be readily seen that liquidity costs in the supposedly more liquid bond will be greater because of the much larger relative block size. In fact, we would hypothesize that the price impact of a block sale would increase exponentially, not linearly, with the size of the block as a percentage of the issue size. This is in part because when a very large holder is known to be selling his holdings, potential buyers of the bonds know that 1) additional identical bonds may be forthcoming, which will drive the price down even lower, and 2) large holders are perceived to be more likely to know a company well, and perhaps even have quasi-private information, which subjects the buyer to the additional risk of information asymmetry.

Just as the block size is an extremely important factor in total liquidity costs in a portfolio, we have stressed above that the aggregate portfolio turnover rate is also intuitively important. Even if small cap bonds had materially higher liquidity costs per dollar traded, a portfolio turnover ratio lower than the market average of about 110 percent can easily bring total indirect (price influence) liquidity costs well below that of a more intensively traded large cap portfolio. Although direct liquidity costs (the bid/ask spread) are not a subject of this paper, high turnover portfolios also incur higher liquidity costs of this type.

How should we think about liquidity when major news affects a particular bond?

There are times when a major event – a casualty loss, an earnings surprise, a legal verdict, or even a virus – creates temporary severe illiquidity in a bond whose price may fall by ten or even fifty points. This is to be expected. Each holder or potential holder must recalibrate his estimate of the bond's fundamental value, any change in its future risk profile, and his assessment of what is going through other holders' minds at the same time to formulate the new price at which he would buy or sell. And this may take place against a fast-moving backdrop of parallel risks to other holdings in his portfolio (for example, other issuers in the same industry who might now face the same surprising new risk.) What ensues is not really illiquidity in the classical sense – the bond after the announcement is *fundamentally different from what it was immediately before the news*, so comparing it to that prior price is not a meaningful thing to do. Rather, what occurs is a messy and unstructured process which economists call "price discovery." It is human nature not to be the first mover in such a volatile situation. We hear bromides like "Let's not catch a falling knife" or "Let's see where the new price settles in before we do anything hasty." In a normal time, perhaps 20 holders or potential holders might be willing to transact if a bond price were to move by a point or two. During price discovery, 18 of those might wait until the first two move tentatively onto the dance floor and the first new transaction price becomes observable on the TRACE ticker. And we see succeeding transaction prices in such cases move quite fitfully within a few hours or days to a new equilibrium as other traders, now more comfortable in acting, buy or sell as their judgment drives them. And in these trades there will be a significant amount of illiquidity because few investors are willing to act as price leaders during price discovery on large new blocks. This is certainly a time of much higher relative risk, but it must be pointed out that the providers of liquidity in such fluid situations can be large beneficiaries of that illiquidity if their own estimate of the new equilibrium price is better than average. These periods thus act as force multipliers for superior credit skill – but only the earliest price leaders, who act during the price discovery stage, will systematically capture these unusual bonuses. Once a new equilibrium price is established with multiple sizable trades, these large opportunistic gains are no longer available. Every portfolio manager has at some time lamented "I should have bought all I could back when it was at 60."

Sudden marketwide reductions in liquidity

The nightmare scenario many investors have in mind when they think in a general way about liquidity is the sudden loss of liquidity across the entire market. This might occur, for example, when many investors exit the market at once in response to some macro event.

An example would be the Covid moment in the first three weeks of March 2020, when the market declined about 20 percent in 20 days – as noted above, the most sudden loss in the market's history. During this period, mutual funds sustained the most rapid rate of redemptions in their history, and the above-described redemption arbitrage mechanism for ETF shares likewise produced a large sudden increase in bonds for sale. But it is a mistake to think of that episode as one of illiquidity. During those three weeks, TRACE records that the daily trading of volume was actually *dramatically up across all market segments*. Daily volumes of large bonds traded rose 64 percent above their 2019 average, mid-cap trading increased by 45 percent, and small cap trading increased by 26 percent. The problem was not, as many portfolio managers loudly complained, that the market was illiquid. Rather, they could not transact at the prices they wanted, or even at the price of the preceding trade, precisely because the market was in the throes of the price discovery process and the price paths, as well as the frequency of trading, of individual bonds became chaotic.

This risk is inherent in the high yield market, and it is not unique to our market. When investors with redemption rights in a daily liquidity vehicle flee, new entrants must be almost instantaneously induced to take the other side of those panic sales at a time when the market is plunging. The Wall Street desks cannot provide a sufficient buffer by acting as massive purchasers; their average inventories amount to less than one percent of the bonds outstanding, a small fraction of the net fund redemptions in March 2020, and evidence indicates that when investors flee the market, market makers see the trend and act as net sellers themselves. They amplify, instead of buffering, the market momentum. Most institutional investors are not procedurally capable of making large new allocations quickly. So it falls to the smaller subset of investors who can make fast decisions – hedge funds, multi-asset funds, contrarian individual mutual fund investors, and sophisticated institutions that are not bureaucratic – to make large new allocations in the presence of panic in order to clear the market. And a large price movement is necessary to produce that brave countervailing inflow.

So this is a risk which must be faced and accepted by high yield investors who do not want to be part of a wave of panic selling. It is part of the reason the high yield market has consistently promised (and delivered) higher long term returns than investment grade bonds. The very good news is that historically, investors who have stayed the course during rapidly declining markets have recovered their losses very rapidly. The ten largest drawdowns in the history of the high yield market have taken an average of just *five months* to fully recover. The largest decline ever, the 33 percent plunge during the Great Recession in 2008, took just nine months to be fully reversed. The second largest decline, during 2020, took just seven months. The only permanent losers were investors who were so intimidated by the boogeyman of illiquidity that they joined the small minority of holders who demanded liquidity when it was momentarily at its most expensive.

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