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Potential Disruptions in Stock Market Liquidity

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Many indicators and factors impact stock market liquidity. In comparison to other periods, this economic cycle is more complex given the historically low level of interest rates, global central bank easing of monetary policy, increased global debt levels, high-frequency trading (HFT), algorithm-based artificial intelligence (AI) trading models, and large inflows to passively managed investments. Interest rates are rising as in previous cycles, but they are doing so from levels that are far lower than in the past. HFT now accounts for around half of all domestic equity trading by some estimates,[1] and many major financial institutions have replaced portfolio managers and traders with AI-based trading models. Inflows to passive investing have surged, with passive and quantitative investing doubling versus a decade ago, according to a study by JP Morgan.[2]

This article reviews multiple economic indicators of market liquidity, which often show deterioration late in the economic cycle as monetary policy becomes less accommodative and interest rates rise. It includes some observations about how HFT and AI-based models may affect market liquidity in the future. It also considers how the unprecedented inflow of assets into passive investing may affect liquidity as we approach the end of an economic and stock market cycle. Finally, the article notes several alternative strategies that are designed to protect portfolios from potential disruptions in liquidity.

This article reviews multiple economic indicators of market liquidity, which often show deterioration late in the economic cycle as monetary policy becomes less accommodative and interest rates rise.

MONETARY POLICY AND INTEREST RATES

U.S. Federal Reserve (Fed) monetary policy has become less accommodative in recent months. The Fed's goal is to gradually increase, or "normalize," interest rates over the next several years. Assessing how much interest rates must rise to adversely impact the economy—and determining the Fed's willingness to continuing its tightening process—is difficult because this process is beginning from some of the lowest interest-rate levels in U.S. history. Nonetheless, it remains fundamentally true that the cost and availability of money should have an impact on the supply and demand for stocks.

Let's begin by looking at the growth rate of industrial production compared to the growth rate of money supply. If the growth of money supply remains above that of industrial production, it means there is still enough liquidity to fuel the economy. On the other hand, if the growth of money supply drops below the growth of industrial production, it often means that there is not enough liquidity to support economic growth.

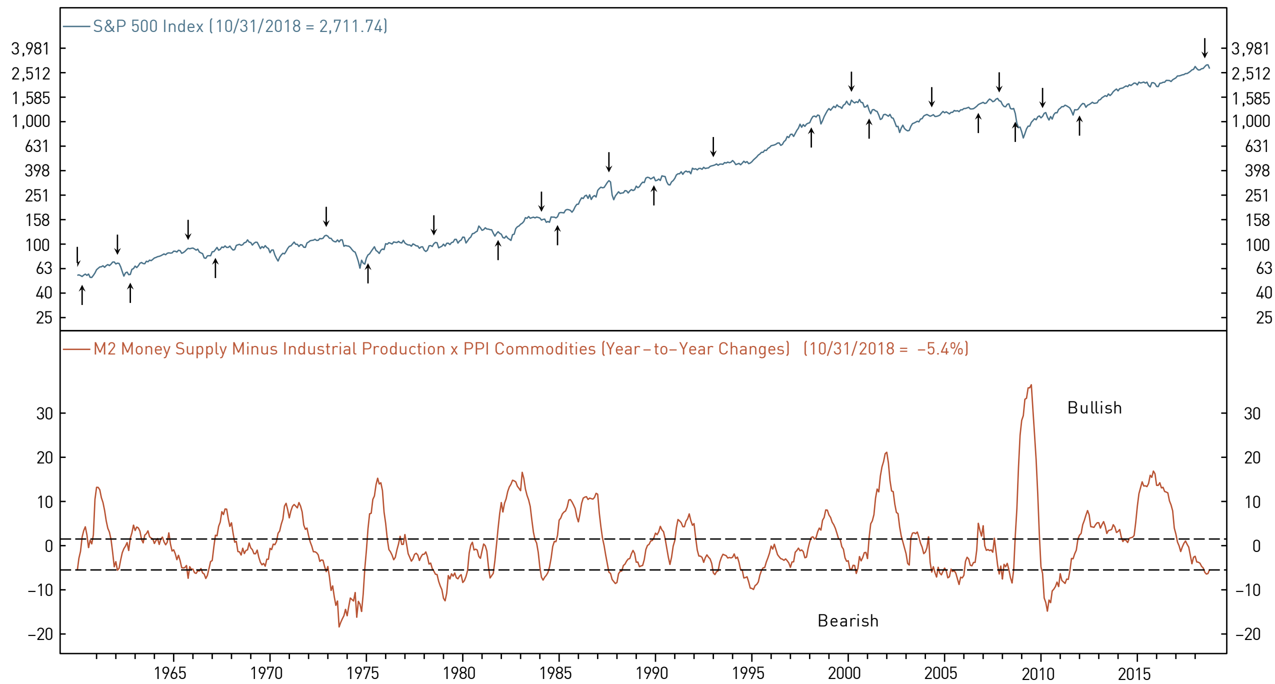
One relationship to assess this metric is real money supply (M2) minus industrial production on a year-over-year basis (see figure 1). We have adjusted for the low level of interest rates and inflation by multiplying this relationship by the Producer Price Index (PPI). When M2 has risen rapidly compared to industrial production (above 1.5 on figure 1), the S&P 500 historically has risen at an annual rate of 12.02 percent. When M2 has dropped below industrial production on a year-over-year-basis by 5.5 percent (i.e., the indicator was –5.5 percent), the S&P 500 has declined an average of 5.81 percent on an annual basis. As of October 31, 2018, this indicator is at –5.4 percent, which is close to a reading that may adversely affect liquidity.

Major global central banks, notably the People's Bank of China, the European Central Bank (ECB), and the Bank of Japan, still are expanding their balance sheets and providing liquidity to the capital markets. The resulting global liquidity has offset some of the tightening by the U.S. Fed. Nonetheless, the ECB has indicated a tapering of monetary accommodation beginning in late 2018–2019, and other central banks

Figure 1

S&P 500 INDEX VS. EXCESS LIQUIDITY GROWTH

Model Strategy:
Bullish = Excess Liquidity
Buy signal (100% long S&P 500) when liquidity growth rises above 1.5%
Bearish = Economic Growth Exceeds Liquidity Growth
Neutral signal (100% long commercial paper) when model falls below –5.5%



S&P 500 Index Performance, January 31, 1960 to October 31, 2018

Excess Liquidity Growth is	%Gain/ Annum	% of Time
Above 1.5	12.02	38.86
–5.5 to 1.5	8.30	41.98
Below –5.5	–5.81	19.17
Buy/Hold = 6.84% Gain/Annum		

Model Strategy Performance, Long Only, January 31, 1960 to October 31, 2018

Signals	% Gain/ Annum	% Profitable	% Gain/ Trade	Trades/ Annum	% of Time
All	8.5	92.0	24.1	0.4	100.0
Buy	9.7	83.3	36.8	0.2	61.8
Neutral	6.6	100.0	12.4	0.2	38.2
Buy/Hold	6.8	—	—	—	—
Last Signal: Neutral (July 31, 2018 = 3983.50)					

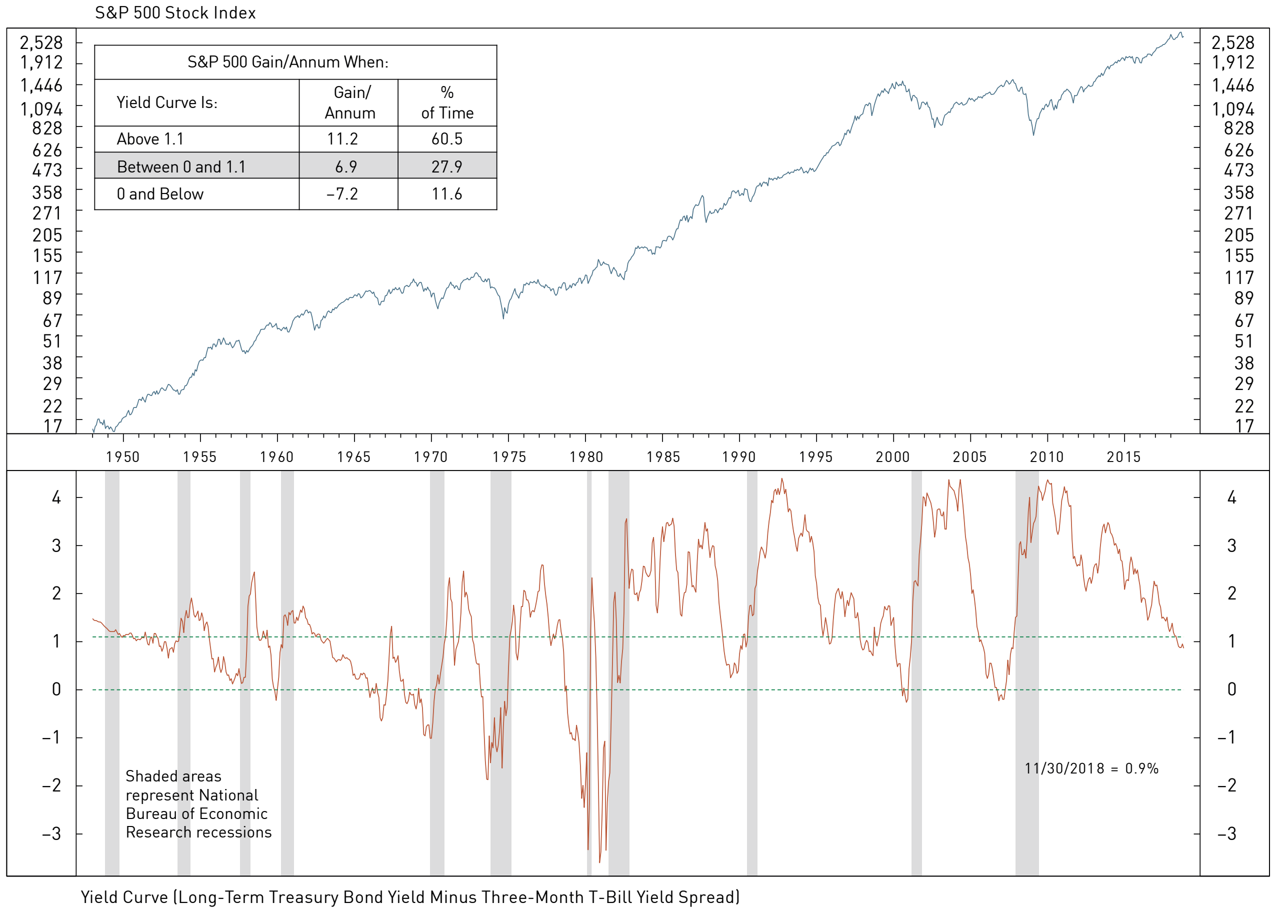
For illustrative purposes only. Past performance is not indicative of how the index will perform in the future. The index reflects the reinvestment of dividends and income and does not reflect deductions for fees, expenses or taxes. The index is unmanaged and is not available for direct investment.
Sources: Ned Davis Research, S&P Dow Jones Indices. Monthly data, January 31, 1948–November 30, 2018 (log scale).

may follow its lead in coming months. Already, more than half of all global central banks have begun tightening, according to Ned Davis Research.

Another way to evaluate economic growth and liquidity is to analyze the yield curve (see figure 2). Historically, an inversion of the yield curve (when short-term interest rates rise above long-term rates) often has indicated that economic growth is beginning to slow and often has preceded recessions. We already have seen an inversion in the five-year to two- and three-year end of the curve. Historically, when the spread between short-term rates and long-term rates narrows, the statistical probability of poorer stock market performance increases. As of November 30, 2018, the spread remained in positive territory at 0.9 percent—still almost 100 basis points away from inverting. In addition, there often has been a lead time of six months to two years from the point at which the yield curve inverts and a top in the stock market.[3] Since 1948, when the spread has narrowed to 1.1 percent (close to where it is now), the average annual return on the S&P 500 has dropped to 7.1 percent from an average annual rate of 11.2 percent when the spread remains above 1.1 percent. Historically, when the yield curve does invert (i.e., goes below 0.0), the S&P 500 has had a negative annual return of 7.2 percent.

Figure 2

THE YIELD CURVE



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Sources: Ned Davis Research, S&P Dow Jones Indices. Monthly data, January 31, 1948–November 30, 2018 (log scale).

GLOBAL LIQUIDITY CONCERNS

In its June 2018 Annual Economic Report, the Bank for International Settlements (BIS) points out several concerns that bear upon global market liquidity. Although the BIS Report focuses primarily on bond market liquidity, disruptions in global bond markets inevitably would impact U.S. capital markets as well.

First, the BIS report indicates that global debt levels have increased to 217 percent of gross domestic product, up from 179 percent a decade ago. Government borrowing has increased, but corporate leverage has exploded, particularly among high-risk borrowers in western countries and emerging market companies, most notably in China. This surge could produce defaults if interest rates rise or growth slows. The BIS report cites a McKinsey study that states, “Even at today’s low interest rates, 20 to 25 percent of corporate bonds in Brazil, China, and India are at higher risk of default.” If interest rates rise 200 basis points, “that share could increase to 30 to 40 percent.”[4]

Second, the BIS report says post-financial-crisis reforms have discouraged private sector banks and brokers from holding risky assets, making them less willing to step in and make markets. The BIS report notes that trading also has migrated to anonymous electronic platforms where there is frenetic activity from HFT groups, none of which are likely to want to act as buyers and sellers of last resort in a crisis.

Third, the BIS report calculates that bond funds of western countries hold nearly 25 percent of their assets in risky securities rated BBB or lower—more than double the level from a decade ago. Funds that promise daily redemptions to their investors now hold more than 16 percent of U.S. corporate debt in the United States, up from 7 percent in 2005. Regulators are pressing asset managers to build liquidity buffers to counter this duration risk, but the opposite has occurred: The BIS report calculates that international bond funds have just 6 percent of their assets in liquid assets, down from 25 percent a decade ago.

The BIS report concludes that markets that seem flush with liquidity in good times still could freeze if a shock occurs: "Structural changes in the provision of immediacy services may not be visible in standard measures of market liquidity, masking the risks associated with holding assets that may turn out to be illiquid in some scenarios."

HFT AND AI-BASED TRADING MODELS

In the past we have witnessed periods of high market volatility attributable to computer-based program trading (notably during the 1987 stock market decline and subsequent flash crashes). However, the enormous increase in HFT and, more recently, the prevalence of AI computer trading models is far greater now than in previous cycles.

Goldman Sachs recently suggested that computerized trading may exacerbate the volatility of the next stock market decline. Charles Himmelberg, co-head of global markets research at Goldman Sachs, cited recent evidence that high-frequency traders may be forced to withdraw liquidity during periods of market stress to avoid being adversely affected. "In our view," Himmelberg said, "this at least raises the risk that as machines have replaced people, and speed has replaced capital, the inability of the market's liquidity providers to process complex information may lead to surprisingly large drops in liquidity when the next crisis hits."[5]

Flash crashes in the past have affected even the biggest, most liquid markets. On May 6, 2010, the S&P 500 dropped 10 percent in a matter of minutes (the Dow Jones Industrial Average dropped more than 1,000 points); on October 15, 2014, the U.S. 10-year Treasury yield declined 15 percent (from 2.20 percent to 1.85 percent), and on October 6, 2016, the British pound declined 30 percent versus the U.S. dollar in one day.[6] Most recently, on February 5, 2018, the Cboe Volatility Index® (VIX) shot up from 16 to almost 40, and the ProShares VIX Short-Term Futures exchange-traded fund (ETF), a short-volatility product, plunged 83 percent, wiping out more than $1 billion in market value. Credit Suisse liquidated its short volatility fund after a 93-percent drop (its market value had topped $2 billion before the drop). Horizons ETF Management Canada, Nomura Europe Finance, and dozens of exchange-traded products tied to the VIX triggered limit rules and stopped trading as volatility spiked.

Our conclusion from this research is that the long economic expansion and almost uninterrupted stock market advance since the financial crisis may have helped to disguise an underappreciated rise in market fragility.

Goldman Sachs research further found that "HFTs systematically withdraw liquidity when 'complex' (non-routine) information is known to be in the market."[7] Thus, Goldman Sachs suggests that the greater moderation in the economy—namely, that the economy is on a slower but more predictable growth path—may overlook the risk that the markets themselves are a rising source of risk.

Our conclusion from this research is that the long economic expansion and almost uninterrupted stock market advance since the financial crisis may have helped to disguise an underappreciated rise in market fragility. Liquidity, and not leverage, now may pose a potential systemic risk.

PASSIVE INVESTING AND FLOWS INTO ETFs

Nearly 60 percent of equity-fund assets are now passively managed—double the level of a decade ago.[8] Vanguard alone owns positions greater than 5 percent in 491 of the 500 stocks in the S&P 500. Nobel laureate and Yale professor Robert Shiller has compared this huge increase in passive investing to seeing a green light at an intersection and crossing the street without looking both ways.[9] He notes that the stock market is supposed to efficiently allocate capital to the most deserving companies, i.e., the companies that generate the most after-tax profit per dollar of capital, the highest return on invested capital, and the like. Shiller has said that index investing disrupts this process. When an index fund or ETF receives inflows, the money is invested based upon the index allocation without any consideration of fundamentals or valuation.

Further, with cap-weighted indexes, passive index funds must buy stocks that already are overweight and may be overexposed to a few large securities, as has happened with the big tech companies that now dominate the major U.S. indexes. This dynamic has created a momentum play as passive funds have been forced to buy the largest capitalization stocks. However, the momentum play could work in reverse if and when the stock market undergoes a correction or bear market. In the event of this type of reverse momentum in ETFs, a liquidity mismatch between ETFs and the underlying securities could arise. Small-cap stocks and other less-liquid securities may pose a threat to ETFs that track them, but even more-liquid shares might be affected. If a large investor tries to sell its ETF position in a single day, there might not be immediate buyers for such a large holding. The price impact might be substantial, causing the ETF to fall to a price below the value of the assets it owns, resulting in disruptions in the market.

The central problem with passive investing is that it does not offer a method of managing systemic risk. Passive investing provides a method of diversifying portfolios among various asset classes, which can be effective in reducing non-systemic risk, but offers no way of addressing the risk of a more general stock market decline or global financial crisis.

ALTERNATIVE STRATEGIES AND PORTFOLIO CONSTRUCTION

Alternative investment strategies may help protect portfolios from market volatility caused by disruptions in market liquidity. Many alternative strategies are designed to manage downside volatility and can provide low or negative correlations to the general market. To the extent that these strategies are able to mitigate downside volatility, they may cushion the effects of potential shocks to the system. Equity strategies that can be considered in portfolio construction and asset allocation include the following:

Equity long/short strategies offset a long stock portfolio with short positions in stocks that are considered overvalued or that are expected to perform poorly as compared with the market and the rest of the portfolio. Most of these strategies are long-biased, but they can adjust long and short positions based upon market conditions. The majority of the portfolio is usually composed of long positions in stocks that have upside potential, and the short positions can add value by mitigating the overall downside risk of the portfolio.

Market neutral and relative value strategies are designed to balance long and short positions so that the total portfolio has little correlation to the market. They emphasize stock selection—the relative value of the long and short positions—but the portfolio has a neutral exposure to the market. Like equity long/short strategies, these portfolios will hold long and short positions. Equity long/short strategies are usually long-biased, but market neutral and relative value strategies usually maintain their market neutral exposure and are adjusted only minimally for changing market conditions.

Global macro strategies are usually top-down and emphasize long and short positions spread across diverse sectors and asset classes. The process for selecting these areas for investment can be fundamental, quantitative, or a combination of the two. Global macro strategies often capture returns from diverse asset classes and sometimes will combine a top-down approach with bottom-up security selection.

Most tactical strategies do not use individual stock selection but rather use index ETFs and futures contracts in order to adjust the overall exposure of the portfolio to the market, which adds to the overall liquidity of the portfolio.

Tactical strategies are usually more fully top-down approaches, emphasizing avoiding downside risk through adjustments in market exposure. Most tactical strategies do not use individual stock selection but rather use index ETFs and futures contracts in order to adjust the overall exposure of the portfolio to the market, which adds to the overall liquidity of the portfolio. Some of these strategies can allocate partially or completely to cash and take sizeable short positions in an attempt to provide positive returns in difficult markets.

Commodity trading advisors generally use rules-based systematic trading strategies to capture trends in the markets. These strategies usually employ top-down strategies that use futures contracts in a wide range of commodities including currencies, financial futures, and agricultural commodities. Unlike global macro and tactical strategies, however, these strategies often use systematic model-based systems to capture trends in the market, identify inflection points, track reversions to the mean, and more. In addition, these strategies often are uncorrelated or even negatively correlated with the stock market.

SUMMARY AND CONCLUSION

The market's liquidity position is more fragile today than it has been in many years. The long economic expansion and almost uninterrupted stock market advance since the 2008–2009 financial crisis may have helped to disguise an underappreciated rise in market fragility. Liquidity, and not leverage, now may pose a potential systemic risk.

U.S. monetary policy is tightening, albeit gradually, from interest-rate levels that are among the lowest in U.S. history. Global central banks are continuing to add liquidity to the markets and the gradual tightening by the Fed has been offset in part by this additional liquidity.

Of more concern is the potential withdrawal of liquidity from the markets by high-frequency traders and algorithm-based trading models. Global debt levels have increased, and while government borrowing has increased, corporate leverage has exploded, particularly among high-risk borrowers in western countries and emerging market companies. International bond funds now hold less-liquid and riskier securities than a decade ago. The massive inflows into passive market indexes and ETFs in recent years are a potential cause for concern when the economic and stock market cycle enters a downturn. The

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flash crashes of recent years provide some evidence of market fragility.

Investment consultants and investors would be wise to review their portfolio construction processes, begin stress-testing their portfolios, and consider introducing defensive strategies into their asset allocations as the economic and stock market cycle reaches maturity. Alternative investment strategies, which began as hedge fund structures but now are widely available as mutual funds or liquid alternatives, have the potential to manage downside risk and cushion the potential volatility of disruptions in liquidity.

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ENDNOTES

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