Let's Talk Liquidity

Opportunities in a New Market Environment

AIMA

Research study in partnership with AIMA.

STATE STREET

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Foreword

We are delighted to introduce this new research, "Let's Talk Liquidity: Opportunities in a New Market Environment." Drawing on the findings of a major survey commissioned by State Street and the Alternative Investment Management Association (AIMA), it explores the evolving market liquidity environment, driven by regulatory change and other factors.

We canvassed the views of 300 institutional asset owners, managers and hedge funds to explore how the current environment is driving innovative approaches and paving the way for new liquidity providers to emerge.

To reflect the diversity of insight across the industry, we also interviewed several financial industry participants, who were happy to speak on the record regarding these themes. We thank them for their participation.

The findings of this research are highly encouraging. Against a backdrop of structural evolution in markets, the industry is increasingly getting to grips with the resulting challenges. Asset owners and managers continue to enhance how they measure, model and report differing forms of liquidity, from market liquidity to fund liquidity. They are also looking to adapt investment strategies and increase portfolio diversification.

The report considers important new trends and potential future developments, including a growing role for hedge funds and other non-bank institutions as market liquidity providers.

Our survey results also highlight the ways in which technology and digital innovation are driving positive change. Electronic venues are helping to connect supply and demand participants more efficiently, and facilitate new partnerships that support the evolution and strength of the financial industry as a whole.

We hope this paper and survey findings make a useful contribution to broader industry dialogue about market liquidity issues. We are pleased to share this report with you.

George Sullivan
Global Head, Alternative Investment Solutions, State Street Corporation

Jack Inglis
CEO, AIMA

Introduction: Understanding the New Liquidity Environment

The 2008 financial crisis sparked a concerted effort from regulators to improve the resilience of the global financial industry. They have sought to safeguard against any repeat of the turmoil that hit the global economy.

They introduced comprehensive regulatory reforms — notably Basel III and the Dodd-Frank Wall Street Reform and Consumer Protection Act — that have required banks to strengthen their capital positions and curb their proprietary trading activities.[1]

Historically low interest rates and slow rates of growth in the global economy have further constrained banks' activities as they seek to maximize their return on equity. With weaker balance sheets and shareholder pressure to improve profitability, banks have rationalized their business models, including traditional prime brokerage offerings.

Many banks may no longer be able to perform their traditional roles as liquidity providers and market makers in certain security types. Fixed income, currency and commodities trading have come under particular pressure.

Regulation and banks' consequent retrenchment have fundamentally changed market liquidity conditions.[2]

In a new State Street survey of 300 institutional asset owners (including pension funds, insurance firms and endowment funds), asset managers and hedge funds, 30 percent of respondents say that their portfolio has become less liquid in the past three years.[3] It is not a short-term blip: nearly half (48 percent) of respondents say that decreased market liquidity is a secular shift that is here to stay.

This shift has serious ramifications for investors globally. They are seeking to develop the right strategies and tools to help them succeed in this complex new environment. This includes improving the way they measure and report on liquidity risk, and reassessing how they manage risk in their investment portfolios. More broadly, a new liquidity environment is emerging in which trading roles have been transformed, new market entrants are emerging, and electronic platforms and peer-to-peer lending are changing the way firms transact their business.

[1] See Appendix on pages 25-26 for further background on key regulatory initiatives that have impacted liquidity conditions.

[2] For further discussion on the impact of regulations, reference AIMA and S3 Partners, "Accessing the Financial Power Grid — Hedge Fund Financing Challenges Under Basel III and Beyond," January 2016.

[3] State Street 2016 Liquidity Survey. See Appendix on pages 25-26 for full details of this research. All figures come from this survey unless otherwise noted.

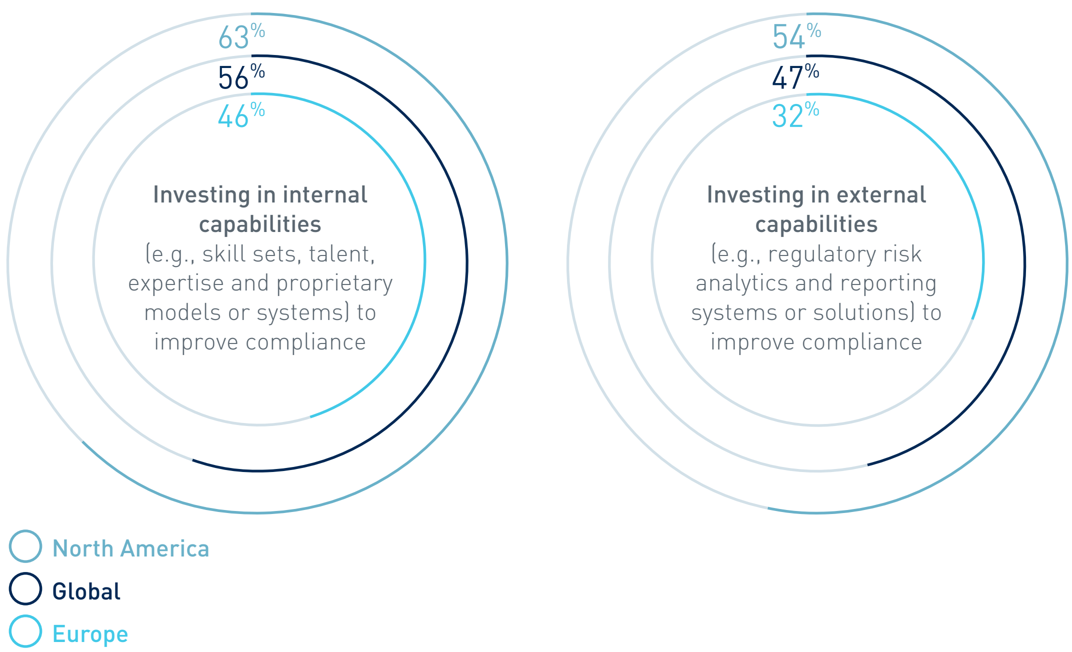
Investing in Compliance

New regulation requires firms to invest in their compliance systems, people and technology solutions.

In North America and Europe, where financial market regulation is arguably more wide-ranging than in other regions, our survey reveals that institutional asset owners and managers are continuing to upgrade their internal and external capabilities to strengthen regulatory compliance. Regional differences in these findings may be explained by the different regulatory timetables and priorities in each region. North American institutional asset owners and managers in particular are investing heavily in regulatory compliance, as they keep pace with a wave of recent regulations in these markets.

Regulatory scrutiny is also shifting to new areas of the industry. The need to invest in regulatory compliance will be particularly strong for any non-bank entities that aim to take on market-making roles in the new market landscape. More than 60 percent of hedge funds surveyed, for example, say they will invest in internal resources to cope with the impact on their firms of increased regulation — underscoring their readiness to assume this new role.

Actions to Improve Compliance



Section 1

Rationalizing the Risk

Liquidity risk is now top of mind for executives in the investment industry. More than half of our survey respondents say they are spending more time in conversations with senior management about liquidity relative to one year ago. But what challenges do institutional asset owners and managers face when measuring and reporting on the risk created by new liquidity conditions? How can they gain a deeper understanding of their liquidity risk that will shape their investment strategies going forward?

More than three-fifths of respondents say current market liquidity conditions have impacted their investment management strategy, with nearly a third rating this impact as significant. The increasing complexity of investment portfolios can make it difficult to see the full picture of portfolio liquidity — especially where these exposures are allocated across multiple funds, asset classes and third-party managers.

"There will need to be a greater focus on understanding the depth of the liquidity within markets and across various asset types, and particularly what liquidity would look like in stressed market situations," says Mark McKeon, global head of investment analytics, State Street Global Exchange. "But equally there's a need to see what happens to redemption patterns under both normal and stressed conditions. This is driving the industry to upgrade the tools and models they use to measure and report on liquidity risk across today's complex portfolios."

A Clear View on Liquidity Risk

The need to measure and report liquidity at both the security and fund levels has become a core competency, but many institutional asset owners and managers are finding it challenging. Some 42 percent of all respondents say they face either a significant or moderate challenge in reporting their liquidity position to their board or regulators (see Figure 1) and require an urgent overhaul of their systems for measuring and reporting on liquidity risk. A substantial group (44 percent) of respondents plan to invest to improve their risk-reporting capabilities.

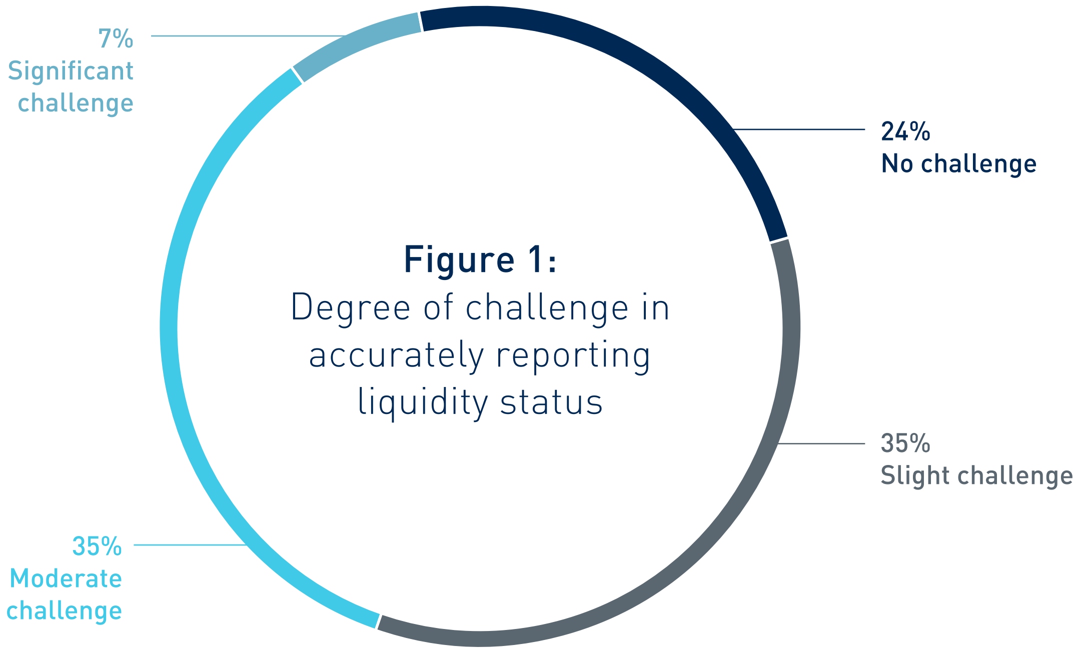


Figure 1: Degree of challenge in accurately reporting liquidity status

Source: State Street 2016 Liquidity Survey

Powerful risk analytics are vital to help investors understand a fund's investment strategy and portfolio positioning, and to enable its managers to navigate a changing liquidity environment. Keeping investors well informed may reduce the likelihood that they will withdraw money from funds at times of increased volatility and uncertainty.

To adequately communicate their portfolio position to stakeholders, investors and managers need a real-time, granular view of liquidity risk, which involves:

- Creating a centralized view of institution-wide liquidity
- Minimizing the impact of market shock by analyzing the effects of changes on cost and liquidity
- Valuing portfolios and asset classes by integrating portfolio valuation and scenario analysis
- Identifying optimized solutions to meet the institution's liquidity and capital needs
- Having transparency of the analytics model and the liquidity scoring methodology

Stress-testing the Strategy

Another key priority for any liquidity risk measurement framework is being able to stress-test key risk measures, including various measures of liquidity, across different market conditions. This kind of stress testing combines historical and forward-looking knowledge, including statistical data, empirical observations and expert judgment.[4]

"It's very important to realize that structural changes in risk can appear very quickly," says Helmut Paulus, chief executive officer and chief investment officer at Quoniam Asset Management. "It's why a risk model is just as important as an alpha-generating investment model."

He adds that investment decision-making processes need to incorporate not only real-time risk assessments but also reliable market liquidity estimates: "The security-specific liquidity estimate has to be part of the investment decision, not something that comes after that decision. Only by understanding, estimating, measuring and reporting liquidity risk are institutional asset owners and managers able to manage the liquidity profile of their investment portfolios in the increasingly dynamic way that market conditions demand."

[4] "Liquidity Risk Stress Testing," BearingPoint, 2013.

Section 2

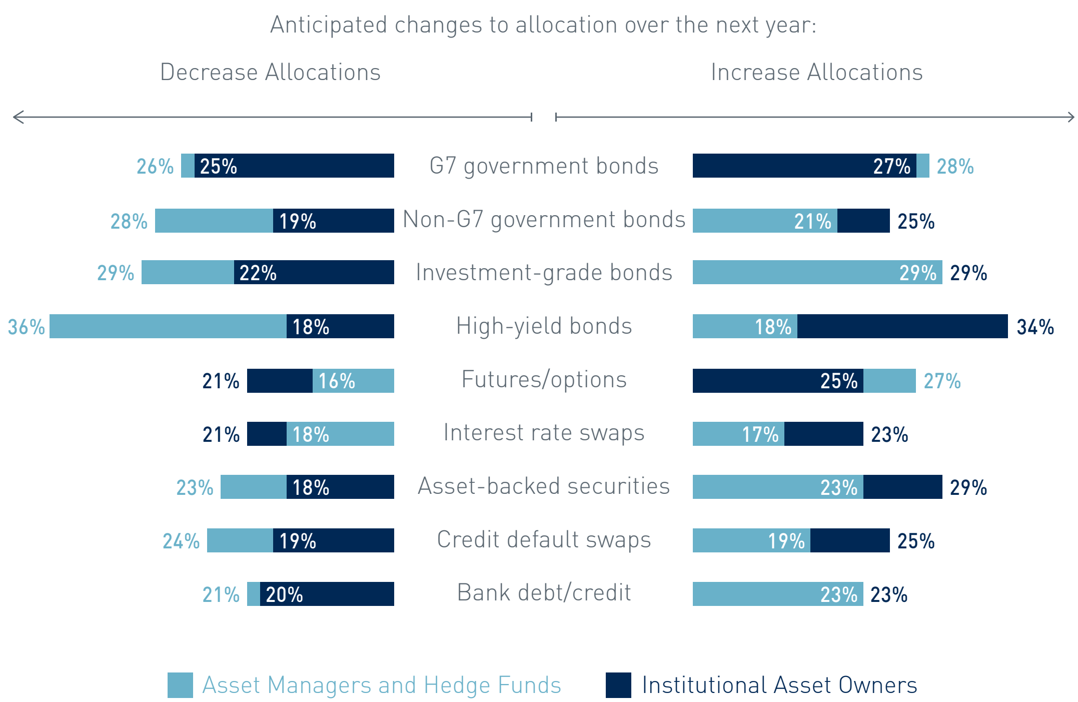
Optimizing the Portfolio

Decisions on asset allocation are being revised in light of today's market liquidity dynamics. This presents both challenges and opportunities for long-term investors.

More than half (51 percent) of institutional asset owners and managers say that over the next three years there will be more liquidity bifurcation — where liquidity concentrates in more liquid securities at the expense of less-liquid ones. More than a quarter (26 percent) of respondents in the survey believe that market liquidity will decline for the security types in which they currently invest.

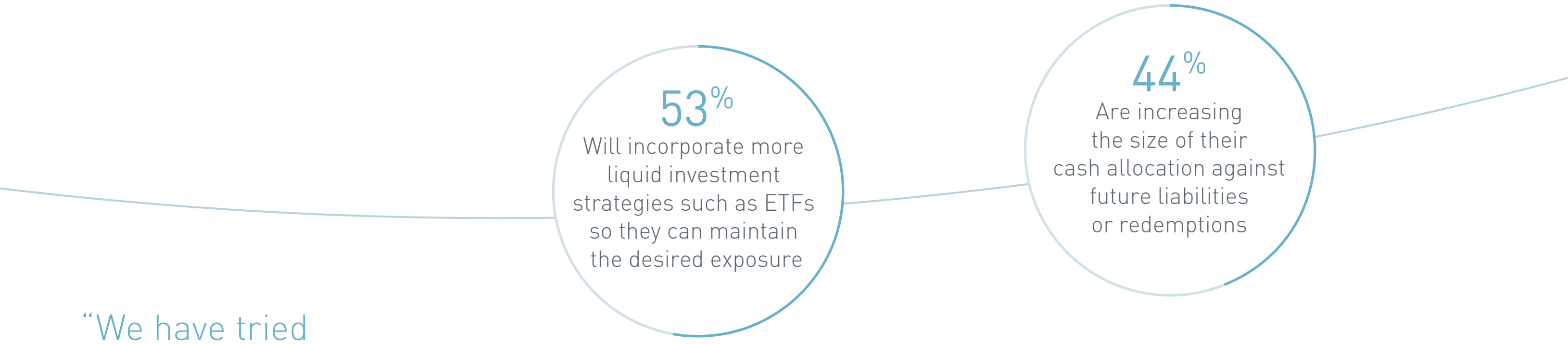
Many institutional asset owners and managers are adapting their investment strategies accordingly. Figure 2 illustrates the shifts they expect to make over the coming year across a variety of credit and rate instruments. Notably, more than one-third of institutional asset owners expect to increase their allocation to high-yield bonds, as their portfolios continue to be tested by the challenges of a prolonged low-interest-rate environment. But the appetite for high yield is notably lower among asset managers and hedge funds.

Figure 2: Institutional investors and managers are repositioning their portfolios



Source: State Street 2016 Liquidity Survey

Figure 3: Investors and managers are increasing their liquidity position over the next year



Source: State Street 2016 Liquidity Survey

"We have tried to resist this hunt for yield as much as possible because, in general, I think you are not compensated to take the risk in fixed income at the moment, whether it's interest rate risk, credit risk, or liquidity risk. However, as central banks continue to buy up bonds in the market, some investors are forced to take on more risks in their portfolios."

JUHA NIEMELÄ
Head of Fixed Income, Ilmarinen

Liquid Versus Illiquid Exposure

Some institutions are adopting a more defensive liquidity position to ensure they will be protected for the next cycle of market stress. They are asking deeper questions about how liquidity risks are modeled and compensated.

"Liquidity risk, given market turbulence, is a major risk for any fixed income portfolio," says Juha Niemelä head of fixed income at Finnish mutual pension insurance company Ilmarinen. He adds that, in his view, now that market shocks are appearing with increasing regularity, liquidity risk may no longer be worth it from a return perspective.

Many institutional asset owners and managers plan to increase their allocation to more liquid investment strategies over the next year (see Figure 3).

The popularity of bond ETFs has grown as investors seek opportunities for yield and are attracted by the liquidity benefits that ETFs provide. However, some industry observers have expressed concern around the growth of the category, as they fear a disorderly market environment if investors decide to reduce their exposure en masse. They ask whether structures that offer intraday liquidity on inherently illiquid security types are creating a mismatch for investors, or an illusion of liquidity.[5]

The liquidity characteristics of the underlying assets — i.e., understanding the exposure on a position level — should always be considered by investors before investing in any fund. David LaValle, US head of SPDR® ETF Capital Markets at State Street Global Advisors, explains: "Investors should be thoughtful about the liquidity profile of the asset class they're looking to gain exposure to. Once they assess that, there's a separate, product-focused conversation to have. Often, those two types of risk are conflated and so it's critical to decouple them."

[5] "Do Bond ETFs Only Provide an Illusion of Liquidity?" State Street Global Advisors, 2015.

> "We view our ability to take on illiquidity risk as one of our core competitive strengths."
>
> ALEX SCHOENFELDT
> Head of Alternatives and Private Equity, British Airways Pension Investment Management Ltd.

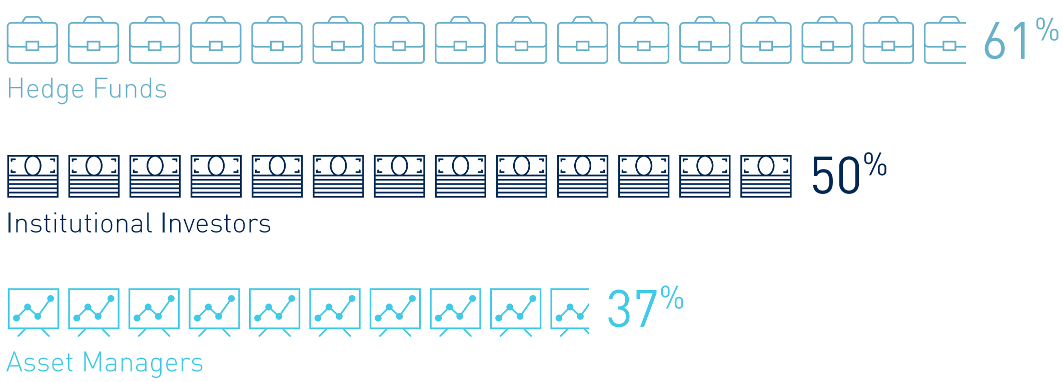
ETFs have important structural characteristics that aid liquidity. This includes the process for their creation and redemption, and the existence of several dozen market makers, Authorized Participants (AP), arbitrageurs and other investors who collectively help maintain an orderly secondary market in ETF shares. In addition, providers who offer rigorous, rules-based methodologies, and who are able to respond to market events quickly and transparently, can help to promote liquidity and stability in the market.

Increasingly, many institutional investors are also considering liquid alternative strategies to help diversify portfolios and drive their portfolio returns. These strategies have seen significant growth in recent years. They typically share some of the characteristics and upside potential of hedge fund strategies, packaged within more liquid and regulated vehicles, including 40 Act funds in the US and Undertakings for Collective Investment and Transferable Securities (UCITS) in Europe. Figures from Eurekahedge indicate that assets under management for UCITS hedge funds reached $286.4 billion as of April 2016 — an increase of 40 percent over the past five years.[6]

Boosting Investment Returns

While some institutional asset owners and managers plan to place increased emphasis on liquid assets, others will opportunistically allocate more to fast-growing illiquid asset classes, such as private equity and real estate, over the next year (see Figure 4).

Figure 4: Reduced market liquidity is prompting institutions to seek illiquid investment opportunities in the pursuit of potential higher returns



Source: State Street 2016 Liquidity Survey

[6] The Eurekahedge Report, May 2016.

"I haven't seen any consistent shift or evolution of investment processes to accommodate new market liquidity conditions. You would have thought that the kind of decisions that investors are choosing to make, or the reasons they're choosing to act, would change, rather than just making the same investment decisions as before but trading in smaller size."

DAVID STEWART
Head of UK Pension Solutions, Santander Asset Management

The total universe of alternative investment assets under management had grown to $7.4 trillion by the end of 2015 — an increase of $500 billion on the previous year.[7] Global institutional investors continue to be a significant driver of this increased demand, despite widespread redemptions in the first half of 2016. They are looking for portfolio diversification, higher returns, reduced volatility, inflation hedging and income-generating investments.

Pension funds, in particular, have long-term investment horizons and some may be well positioned to take advantage of the illiquidity premium of alternative investments. Their percentage allocations will depend on their liability profile, risk appetite and cash demand.

According to recent research by AIMA, investors in hedge funds are increasingly open to locking up their capital for a longer period of time in exchange for paying a reduced fee.[8]

In this arrangement, the client reduces the fee drag on performance, while the committed capital gives greater freedom to the hedge fund manager, who does not need to hold as much cash to meet potential redemption requests. Furthermore, tying up capital can allow investors to benefit from illiquidity premiums as they surface across markets. This is particularly pertinent for strategies involving activism, distressed assets or credit investing. For hedge funds pursuing these approaches it is not uncommon to see lock-up terms of five years or more — similar to the terms offered under a private equity arrangement.

As ever, there is no one-size-fits-all strategy. Each institution needs to find its own way to balance risk and return in a fast-changing investment environment. Only by excelling in the analysis and management of liquidity risk can investors and managers make carefully informed decisions about their portfolio investments.[9]

[7] "Preqin Investor Outlook: Alternative Assets H1," Preqin, 2016.

[8] AIMA, RSM, "In Concert: Exploring the Alignment of Interests Between Hedge Fund Managers and Investors," September 2016. A global survey of 120 hedge fund managers.

[9] For further discussion on a framework to estimate the investor-specific value of liquidity, which can be used to inform asset allocation decisions, reference Bac Van Luu, Yazid Sharaiha, Nikolay Doskov, Chirag Patel and David Turkington, "The Shadow Price of Liquidity in Asset Allocation — A Case Study," *Journal of Investment Management*, Second Quarter 2014.

Managing Cash and Collateral

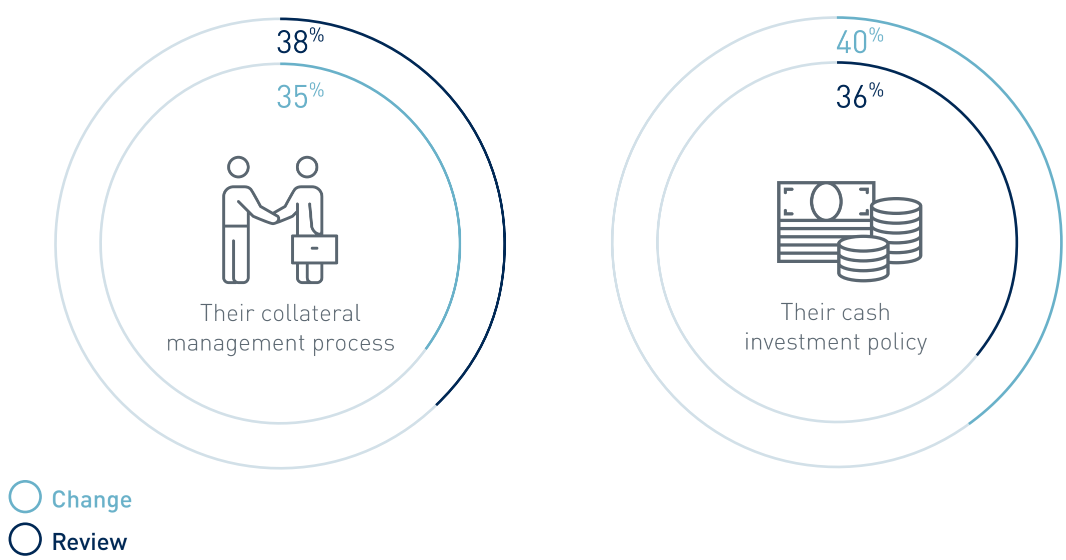
Treasurers and cash managers are reassessing how they manage cash, and how this influences their investment guidelines.

Regulation is causing more than a third of institutional asset owners and managers to review their collateral management processes and cash investment policies (see Figure 5).

At the same time, issues around collateral management increasingly affect investment choices and are becoming a focus for the front office. Low interest rates and a lack of supply of lower-risk bonds — a result of central bank quantitative easing programs — are pushing some investors to buy riskier fixed income securities to maintain yield on their cash. They also face geopolitical volatility that creates currency swings — affecting cash flow, their global operations and liquidity.

As cash management has become more complex, and regulation has increased the capital cost of holding cash on the balance sheet, investors and managers need to establish more flexible and dynamic policies to manage their cash — and their risks. For example, they are taking measures to ensure that their portfolio liquidity position helps them to cover their liabilities.

Figure 5: Regulation is causing cash and collateral management overhauls over the next year or more



Charts do not include those respondents that specified "Yes, have taken action within the past year" or "No, have not taken or plan to take action."

Source: State Street 2016 Liquidity Survey

Section 3

New Rules, New Tools

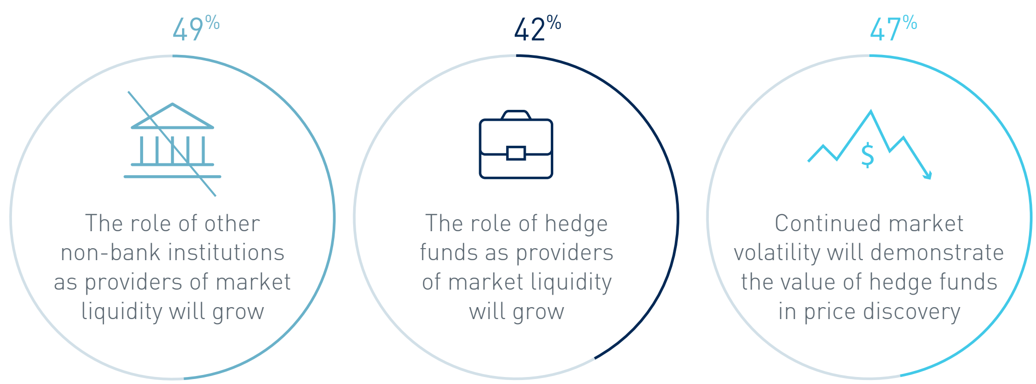
The shift in liquidity conditions is driving far-reaching changes across the industry. Market roles are changing, new entrants are taking on new responsibilities, and electronic and peer-to-peer platforms are revolutionizing the way firms transact business.

> "I believe one of the future roles here that the industry will have is creating new platforms."
>
> LOU MAIURI
> Global Head of Global Markets and Global Exchange, State Street Corporation

In today's liquidity "toolbox," as well as new buy-sell relationships, traditional approaches to market liquidity will still coexist with innovative approaches. "Existing relationships and methods will continue to be important, but the industry will need to be open to new relationships and use new tools and approaches to encourage ample market liquidity," says State Street's Paul Fleming, global head of hedge funds in Alternative Investment Solutions.

Our research finds that new relationships are increasingly likely to be developed with non-banking entities, including hedge funds,[10] that will play a role as providers of market liquidity (see Figure 6).

Figure 6: More non-bank institutions are expected to participate in the new era of market liquidity



Source: State Street 2016 Liquidity Survey

[10] For further discussion on the increasing influence of private credit funds in financing activity, reference AIMA, Deloitte and the Alternative Credit Council, "Financing the Economy 2016," July 2016. This report gives dimension to the increasingly important role of non-bank financing in today's market environment.

"Banks have pulled back service in many areas, creating a significant commercial opportunity for new entrants to fill the gap."

PAUL HAMILL
Global Head of Fixed Income, Currencies and Commodities, Citadel Securities

Liquidity Roles are Evolving

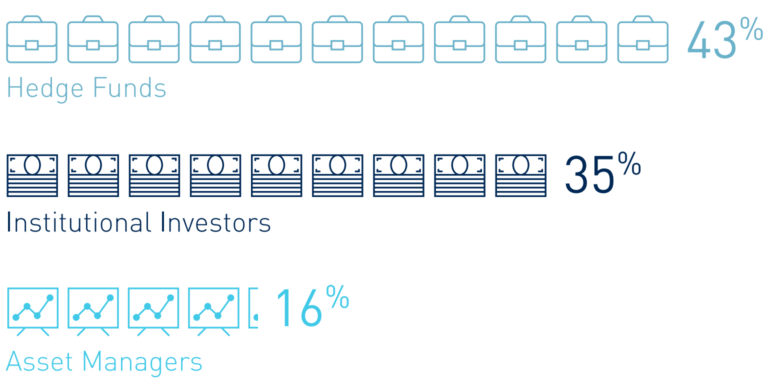
As market roles change and new entrants arrive, the rules of the investment business are changing. Market participants are taking on new and different responsibilities, and new channels are opening up. Broker-dealers have traditionally taken execution risk, for example, but this role is shifting to other groups including institutional investors.

Non-bank entities and institutional asset owners are providing liquidity in categories where the market conditions and economics are favorable for them to take such a role. With a typically long-term investment horizon, a pension fund may, for instance, choose to be a provider of liquidity, rather than a consumer, where the specific opportunity and resources are right.

With the shift from the principal, over-the-counter (OTC) bond market to a hybrid principal-agency model, the characteristics of this new model may include explicit commissions and longer trading horizons. There may be greater uncertainty over the execution price of some security types.

This change will create new opportunities. More than half of all institutional asset owners say that continued market volatility will demonstrate the value of hedge funds in price discovery. For their part, 43 percent of hedge funds say they would evaluate becoming market makers in certain securities (see Figure 7).

Figure 7: Market-making appetite, by institution type



Source: State Street 2016 Liquidity Survey

"There are two different dynamics we're talking about. One is capacity and liquidity, introducing different market participants. And the other is automation and electronification. You put the two together and you get to a very interesting place."

ALEX LAWTON
Head of Securities Finance EMEA, State Street Corporation

Citadel Securities, an electronic market-making firm owned by Citadel LLC, which also runs a hedge fund business, has become active in the interest rate swaps and cash treasuries markets. Smaller, cash-rich entities — such as insurance companies or mortgage providers that are long on cash — have also started to offer repo services.

New entrants have the opportunity to reshape market liquidity. "A healthier market ecosystem will have a variety of players, including banks" says Paul Hamill, global head of fixed income, currencies and commodities, Citadel Securities.

The Buy Side As Price Makers

Market makers have traditionally been on both sides of the trade, setting a price at which they are willing to buy or sell. As more buy-side firms become price makers, they'll need to invest in more fixed income trading capabilities, new skill sets and enhanced analytics.

Potential market makers have, for example, found their capabilities tested by a lack of access to finance. "Some non-banks have not filled the gap in pricing of certain instruments in the forward and swaps markets, because they've been unable to easily secure leverage," says Alex Schoenfeldt, head of alternatives and private equity at British Airways Pension Investment Management.

The ability of non-bank institutions to replicate the traditional broker-dealer approach might also be limited by their balance sheet size as well as regulatory costs. Where there are limitations, the expanding role of electronic platforms may open up new sources of liquidity.

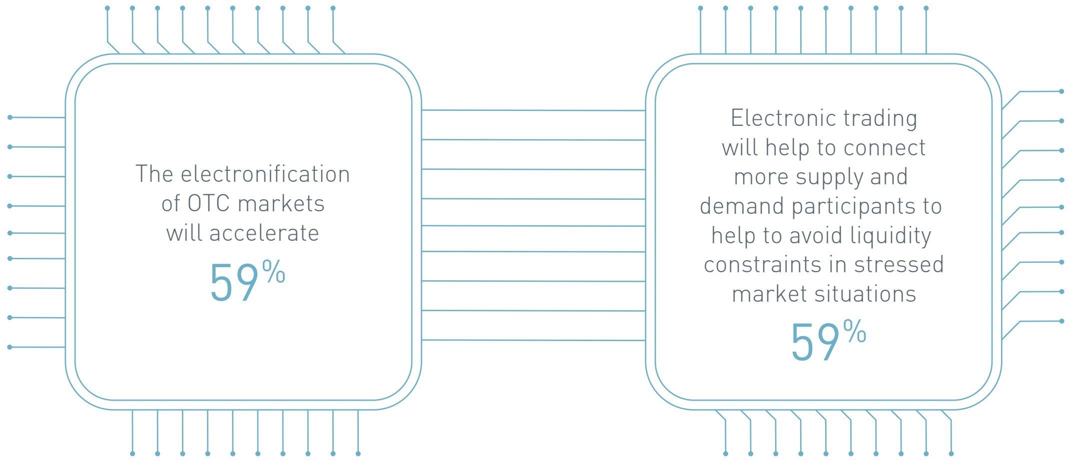
Electronic Trading Increases Connections

Technology advances are driving increasingly sophisticated electronic trading platforms, which are efficiently connecting buyers and sellers across the investment value chain. They are becoming as widespread in credit markets as they are in equities markets.

Nearly 6 in 10 institutional asset owners and managers think the electronification of the OTC market will increase, and the same proportion expects that electronic trading will help avoid liquidity constraints in stressed markets (see Figure 8).

Nearly half (48 percent) of all managers say that market liquidity factors are encouraging them to use these electronic trading platforms. The platforms help to increase transparency on bid-ask spreads and create more clarity about product pricing. They can also improve the efficiency of information flow, increasing visibility and choice.

Figure 8: Electronic platforms will enhance market liquidity by efficiently matching buyers and sellers



Source: State Street 2016 Liquidity Survey

One of the main reasons that electronic trading has grown in popularity is that it can help reduce trading costs and manage risks, including credit risk.

"These platforms are very important in helping participants find the actual sources of liquidity," says David Stewart, head of UK pensions solutions at Santander Asset Management. "Electronic platforms may not generate more liquidity, but they make liquidity easier to find."

The lack of pre-trade data available from electronic trading venues has traditionally hindered buy-side institutions from price-making. However, more data on trades is becoming available. For example, institutional asset owners are obliged to report any transaction to the US Securities and Exchange Commission (SEC) under the Trade Reporting and Compliance Engine (TRACE) framework. Data reporting is also starting to gain traction in Europe, as data is processed from post-trade settlement platforms. In addition, MiFID II will usher in expanded pre- and post-trade transparency measures that may impact liquidity in certain markets.[11]

Increased data transparency will improve market quality for liquid assets by increasing competition, broadening market access and reducing dependence on traditional market makers. But electronic trading may not be the appropriate solution for all securities — particularly illiquid securities, which could suffer from information leakage. For these securities, as a recent Bank for International Settlements report found, there's still a role for bilateral dealer-client relationships.[12]

[11] See Appendix on pages 25-26 for further background.

[12] "Electronic Trading in Fixed Income Markets," Bank for International Settlements, January 2016.

"The entry of new liquidity providers benefits the market and should be encouraged. To do this, we need to make sure that market infrastructure, including trading and clearing venues, is open and accessible to all market participants."

PAUL HAMILL
Global Head of Fixed Income, Currencies and Commodities, Citadel Securities

The Power of Peer-to-Peer

Just as well-known peer-to-peer platforms such as Airbnb and Uber have revolutionized retail and travel, in investment there is the potential for technology platforms to disrupt incumbent players.

"If your business is going to be creatively disrupted, you want to do it yourself instead of being disrupted by someone else," says Alex Lawton, senior managing director and head of securities finance, EMEA at State Street. "It's inevitable that technology will innovate how we transact, so across the industry we have to find ways to innovate proactively ourselves."

The more market participants transact in the unregulated peer-to-peer platforms, the more these platforms will see increased adoption rates and improving confidence levels about counterparties. Alternatively, the peer-to-peer route could be managed within the regulated banking market, which may reduce concerns over counterparty and execution risks.

Increased peer-to-peer investment platforms are likely to bring together new players, from both the bank and the non-bank spheres. Whatever their appetite for counterparty risk, market participants will find an increasing number of venues that support new ways of transacting and providing greater market efficiencies.

The new liquidity environment is driving major changes across the industry. New solutions are emerging to help provide new sources of liquidity, and new players are stepping forward to perform a market-making role. Institutional asset owners and managers will need to understand where they want to compete and what role they want to play in this rapidly evolving environment.

Conclusion

Mapping a New Terrain

Recent regulations have driven deep and lasting changes to the way capital markets operate. Liquidity management has come into even sharper focus as a priority, with investors and managers developing new strategies to manage risk that still enable them to deliver optimal returns.

Institutional asset owners and managers recognize that conditions will not return to "normal," with more than 1 in 4 (26 percent) of our survey respondents expecting a continued deterioration of market liquidity conditions in the coming years. In response, they are adapting to this new environment with innovation and creativity, by focusing their efforts in three areas:

Rationalizing the Risk

- The new environment requires institutional asset owners and managers to develop a 360-degree view of their liquidity position across today's complex multi-asset portfolios.
- They will need to invest in a combination of advanced analytical tools, sophisticated risk modeling capability — across both assets and redemption patterns — and the ability to report in near real time on shifting liquidity conditions.

Optimizing the Portfolio

- Institutional asset owners and managers are shifting their allocation strategies to take account of new liquidity conditions.
- Liquid assets such as ETFs, liquid alternatives and certain hedge fund strategies are becoming more attractive, but investors need a holistic strategy that balances risk with return across the whole portfolio.
- Those investors with the appropriate risk profile may also want to see more illiquid assets in their portfolio, underscoring some of the opportunities that exist in this environment.

“We will see the buy side demanding more and more innovation in liquidity provision as the market continues to evolve.”

PAUL HAMILL
Global Head of Fixed Income, Currencies and Commodities, Citadel Securities

New Rules, New Tools

- As banks step back from some traditional roles, hedge funds and other non-bank entities are stepping forward as market makers, enhancing liquidity and market efficiency.
- New solutions and platforms such as peer-to-peer lending are emerging to provide alternative sources of liquidity.
- In common with other examples of technology-led transformation across the industry, electronic venues will help to connect supply and demand in new ways — driving disintermediation and forging new, innovative partnerships.

The new liquidity environment is causing many players in the investment industry to think again about the fundamentals: what roles they play, where they invest, and how they transact their business. With liquidity likely to remain a top issue for many years to come, the smartest players will be creative in their approach and long-term in their outlook, using technology to connect and serve the market in new ways. Innovative solutions and approaches are now emerging that augur well for the long-term health of the industry, and that can help to reinforce confidence among institutional asset owners and managers alike.

Appendix: Key Post-financial Crisis Regulation Impacting Liquidity

> "We're seeing constructive dialogue between the industry and regulators to achieve balance between the critical, competing objectives of financial stability, ample liquidity and economic growth."
>
> LOU MAIURI
> Global Head of Global Markets and Global Exchange, State Street Corporation

Basel III

Background: Basel III is an international accord that seeks to strengthen capital and liquidity requirements in the banking sector. The Basel Committee on Banking Supervision finalized Basel III in late 2009, and its various requirements are applicable on a phased-basis, extending to January 2019. Significant changes to Basel III are, however, likely by early 2017, and the timetable for local adoption of these changes is uncertain. Key components of the accord include higher minimum capital requirements, the introduction of a uniform leverage ratio, and the implementation of both short-term ("liquidity coverage ratio" or LCR) and longer-term (net stable funding ratio" or NSFR) quantitative measures of liquidity risk.

Liquidity Impact: Implementation of Basel III has increased capital requirements, limited leverage, and increased liquidity requirements on large banks, which regulators believe increases both the safety and soundness of individual institutions and global financial stability. Concerns have been raised, however, regarding the impact of the new banking regulatory standards on financial markets, particularly with respect to market-making by banks in derivatives and fixed income and the ability of banks to accept cash deposits from institutional investors. In addition, the need for banks to hold substantially increased levels of "high quality liquid assets" to meet new liquidity standards, combined with other new regulatory mandates such as those for swaps collateral, could contribute to growing scarcity of such assets going forward.

Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank)

Background: The Dodd-Frank Act was signed into law in July 2010 and introduced sweeping changes to the regulatory framework for banks and financial markets in the US. The Act creates higher prudential standards for so-called "systemically important financial institutions" (SIFIs), including new capital and liquidity standards, requirements for "living wills," and stringent stress testing. In addition, the Act established a new regulatory regime for dealing, trading, and reporting of swaps, and, through the "Volcker Rule," significantly limited proprietary trading and sponsorship of alternative investment funds by banks.

Liquidity Impact: The Dodd-Frank Act's new prudential standards for large banks and new regulatory regime for swaps, while generally regarded as appropriate responses to flaws exposed in the financial crisis, are creating concern regarding future market liquidity, particularly for fixed income securities. The Volcker Rule's limits on proprietary trading by banks, in particular, are creating concerns that banks may be unable to perform traditional market-making activities in the future, particularly in times of financial stress.

Markets in Financial Instruments Directive (MiFID) II/MiFIR

Background: MiFID II/MiFIR represents a complete overhaul of the current EU securities markets framework. The revised framework includes the regulation of trading venues and trading practices, pre and post-trade transparency requirements, extensive transaction reporting obligations, and investment research and investor protection provisions, including with regard to product design and product distribution. Specifically, MiFID II proposes the introduction of a liquidity calibration that determines whether financial instruments are deemed liquid or not. This, in turn, triggers specific trading and transparency requirements. MiFID II/MiFIR will become applicable on 3 January 2018.

Liquidity Impact: It is expected that the revised rules and requirements with regard to pre and post-trade requirements will have an impact on liquidity. The same is true of the changes to the market structure in response to rules applicable to trading venues. One possible specific impact is that market makers may be less incentivized to provide liquidity in less liquid instruments such as corporate bonds due to the risk of exposure from increased pre and post-trade transparency.

US Securities and Exchange Commission (SEC) Liquidity Risk Rule

Background: Consistent with growing supervisory interest in the risk profile of asset management activities, the SEC has implemented new liquidity risk management rules for open-ended funds. Effective on a phased basis beginning December 2018, the new rules include a three-day minimum liquid asset requirement, the bucketing of portfolio assets according to their liquidity value, and limits on the ability of open-ended funds to hold large amounts of illiquid assets.

Liquidity Impact: Investment firms will have to ensure that they can monitor minimum levels of liquidity within their open-ended funds, develop a tailored liquidity analysis for each fund, and prepare detailed liquidity risk management programs for senior management and board approval.

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About the Research

For this study, State Street commissioned Longitude Research to conduct a global survey of 300 institutional asset owners and managers in June and July 2016. Of this number, 150 were asset owners, including pension funds, insurance companies, and endowments and foundations, and 150 were asset managers. These included 50 hedge funds.

In total, the respondents represented 14 countries worldwide. Approximately 35 percent of respondents were based in the Americas, 40 percent in Europe and 25 percent in Asia Pacific.

In addition to the survey, we conducted a range of in-depth interviews with select leaders across the industry. All direct quotes that appear in this report are drawn from these interviews.

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