

US EQUITY MARKET STRUCTURE: AN INVESTOR PERSPECTIVE

APRIL 2014

The US equity market is one of the best functioning and most efficient markets globally. The market operated effectively and efficiently throughout the extreme stress of the global financial crisis in 2007-2008, and has shown improvement along a number of dimensions. These improvements have come during a time of dramatic change and technological evolution that has occurred since the adoption of SEC Regulation ATS (Reg ATS) in 1998 and the implementation of Regulation National Market System (Reg NMS) in 2007.

- ▶ Institutional trading costs have declined and are among the lowest in the world
- ▶ Bid-ask spreads have narrowed significantly
- ▶ Liquidity, as measured by shares and dollar volumes traded, has generally increased
- ▶ The market has kept pace with the precipitous increases in message traffic and the speed of execution

These market improvements have been the result of thoughtful regulation which promotes competition, innovation and transparency. BlackRock supports the recent steps that policy makers have taken to further enhance transparency and the stability of the market. The development of circuit breakers, kill switches, and more robust system compliance and integrity will improve investor confidence and the resiliency of the market. Likewise, Large Trader Reporting, the Consolidated Audit Trail, post-trade reporting of ATS¹ volumes, and the SEC Market Information Data Analytics System (MIDAS) will provide regulators with the necessary tools to monitor the activity of key market participants and assess the impact of market structure changes.

However, we recognize that there are still some market structure issues that market participants and policy makers have identified as needing focus, based on new concerns that have been recently raised. These key issues are discussed in this *ViewPoint* along with our recommendations to further improve market quality and stability. Policy makers should use a holistic approach in assessing the potential benefits and impacts associated with proposed measures as there is a high degree of connectivity in the current ecosystem given that many issues are intertwined.

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BLACKROCK®



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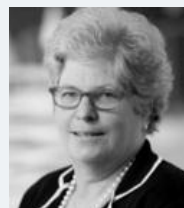
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¹ For a glossary of terms used within this *ViewPoint*, please see page 8.

Key Market Structure Issues

Fragmentation

Over the past two decades, a series of SEC regulations have promoted competition among US equity market centers. These regulations have had a variety of positive effects for investors including the reduction of explicit trading costs, tightening of bid/offer spreads, and introduction of innovative trading platforms. In the 2010 Concept Release on Equity Market Structure, the SEC noted that policy makers must strike the appropriate balance between promoting competition and moderating the adverse effects of fragmentation. And while investors have benefitted from these changes, it is also important to recognize that these regulations have fostered a complex and highly fragmented market where trade order flow must navigate 13 exchanges, 40+ dark pools, and a handful of Electronic Communication Networks (ECNs).

Asset managers, such as BlackRock, have a “best execution” obligation to their clients. This drives the need to connect, directly or indirectly, with multiple trading venues so that client orders can benefit from whichever venue has the best execution quality. The ability to place orders in all venues comes at a cost—and is particularly concerning when the likelihood of execution on some of the venues is very small.

Three exchange groups operate 10 of the 13 different exchanges in the US equity market. Do all of these trading platforms provide uniquely different offerings for investors? Five of the 13 US exchanges do not even maintain a 1% market share, yet these venues receive the benefits of being an exchange, such as market data revenue sharing. Should there be a minimum volume threshold required in order to maintain exchange status and the attendant benefits? There are real costs associated with accessing an exchange, ranging from payment for direct market feeds to managing routing logic.

These costs are borne by brokers but they are ultimately passed on to end-investors. Furthermore, the complexity added by each additional venue increases the overall risk of technological mishaps.

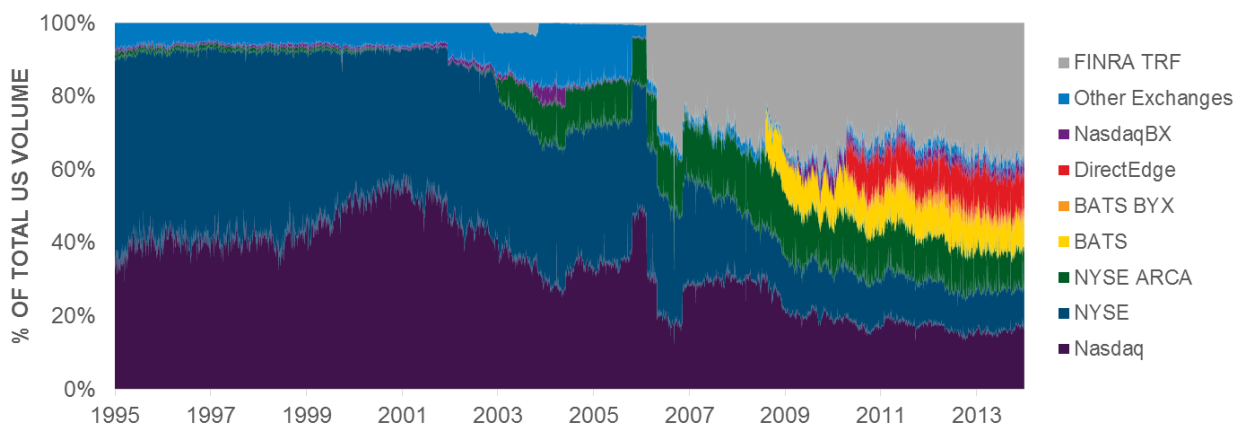
BlackRock welcomes competition and choice, but at the same time recognizes that the market may have tilted too much towards inordinate complexity, placing a burden on investors. BlackRock encourages policy makers to examine whether exchanges should be required to maintain a minimum market share in order to retain “exchange status” and any associated benefits. Rationalization and simplification in the exchange landscape would remove needless complexity, reduce costs and the burden to the brokerage community, ultimately benefiting investors.

High Frequency Trading

BlackRock is firmly opposed to predatory High Frequency Trading (HFT) practices which seek to manipulate the market or disadvantage end-investors. These practices constitute market abuse and should be treated as such in law. Exchanges and regulators need to establish a robust framework to police and identify abuses, and to act on manipulative practices when found. Furthermore, regulators need to assess where loopholes may exist and work to close them.

However, “high frequency trading” encompasses a wide variety of trading strategies and care must be taken to differentiate predatory practices from practices that benefit end-investors. For example, “electronic market making” is a type of HFT that brings tangible benefits to our clients through tighter spreads and by delivering intermediation in a fragmented trading landscape. Additionally, HFT is difficult to distinguish from computer-based trading tools such as algorithms or smart order routers which are used by market participants to execute orders for institutional and retail investors. All are characterized by low latency and

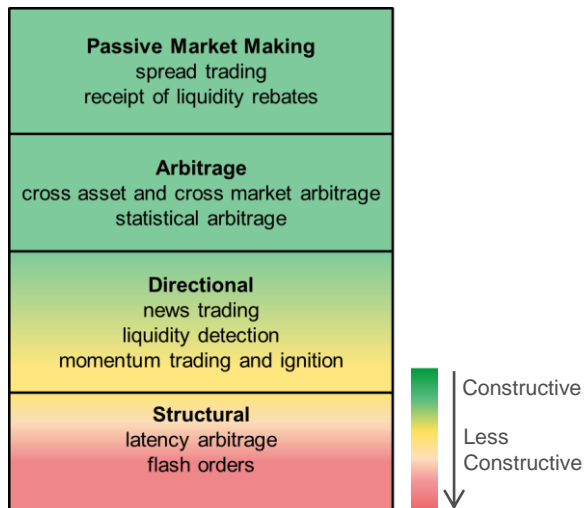
Figure 1: US EQUITY MARKET SHARE OVER TIME



Source: Credit Suisse Trading Strategy

infrastructures and automated order management. But, electronic market making and algorithmic trading are both activities which are legitimate elements of market structure and help asset managers to achieve best execution for clients. As such, BlackRock urges regulators to consider carefully how HFT should be defined and the impact that policy decisions will have on these beneficial market activities.

Figure 2: HFT STRATEGIES



Source: BlackRock. Note that the HFT strategies listed were defined by the SEC in its Concept Release on Equity Market Structure, available at: <http://www.sec.gov/rules/concept/2010/34-61358.pdf>.

Dark Pools/Off-Exchange Trading

Dark pools are a class of Alternative Trading System (ATS) that allow investors to source liquidity away from traditional exchanges in venues where bids and offers are not displayed. Dark pools provide anonymity and opportunity for price improvement through the use of hidden orders. This reduces information leakage and signaling risk for investors which lowers transaction costs. ATSs also allow investors to exert more choice over the opposing buyer and seller for a trade and potentially avoid inappropriate liquidity providers, such as predatory HFT strategies. BlackRock has been selective and vigilant in its choice of liquidity partners in dark pools. Although dark pools have increasingly been characterized as a negative element of US equity markets, BlackRock believes that dark pools are an invaluable execution tool for large orders and stocks which may be more difficult to trade due to wide spreads or low liquidity. Some participants believe that trade sizes in dark venues need to be larger than lit markets in order to deliver value. But rather than focus on individual fill sizes, we believe that it is the aggregate liquidity supplied by dark venues which influences market impact overall. Investors should be generally indifferent to receiving 10 fills of 300 shares vs. 1 fill of 3,000 shares provided that execution quality and aggregate liquidity are equivalent.

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The most polarizing debate with respect to dark pools is on the subject of price discovery. Does a high percentage of volume executed in the dark impair price formation and market quality for that security? BlackRock emphasizes that any consideration of this issue should apply to all dark liquidity, not just dark pools. Exchanges also support hidden order types which account for 11% to 14% of exchange-based volume,² while non-ATS over-the-counter trading of stocks represents nearly 17% of total dollar volume.³ Although there is no pre-trade transparency, all dark transactions are immediately reported to a consolidated tape via one of the Trade Reporting Facilities (TRF) thus contributing to post-trade price discovery. Additionally, the market provides self-correcting counterbalances against excessive dark trading activity. If market makers or investors observe that a security traded at the wrong price or spreads widen, they have an economic incentive to post more aggressively or improve their quote in the lit market.

BlackRock supports greater transparency in dark pools to the extent that it is not detrimental to the benefits obtained from dark execution. The Financial Industry Regulatory Authority (FINRA) has enacted several new rules that will provide greater transparency into dark pool execution. On May 12, 2014 dark pool operators will begin reporting volume on a delayed basis.⁴ This is a significant first step towards understanding dark pool dynamics and standardizing metrics. Furthermore, dark pools and ATSs should also provide more clarity on matching priority, determination of National Best Bid and Offer (NBBO), available order types, routing arrangements, subscribers, services, market data feeds, and fees and rebates. Such disclosure would not limit the flexibility of ATS to make rule changes or harm client orders. Under Reg ATS, these venues are already required to file this information with the SEC via Form ATS, however, this information is not available to the public. BlackRock believes that public disclosure of dark pool operations is warranted to help improve understanding of routing behavior, identify potential conflicts, and raise investor confidence.

Odd Lots

BlackRock believes that policy makers have substantially improved transparency by beginning to disseminate odd lot executions on the consolidated tape. Odd lot transactions have grown rapidly since a seminal academic study brought

² SEC Data Highlight 2013-02, Hidden Volume Ratios, October 9, 2013.

³ Tuttle, L., 2014. "OTC Trading: Description of Non-ATS OTC Trading in National Market System Stocks".

⁴ FINRA Rule 4552.

HFT Impact on Investors

HFT affects all investors.

However, for virtually all retail investors, we expect there should be no negative impact on their trades from HFT; small orders will under normal market conditions get filled immediately at the NBBO (National Best Bid and Offer).

For institutional investors, there is risk that transaction costs may be inflated due to predatory HFT activity. Achieving best execution is of paramount importance to asset managers such as BlackRock, given that transaction costs directly impact our ability to deliver alpha performance and/or track a benchmark. BlackRock employs various strategies to mitigate predatory HFT activity wherever possible, leveraging *technology, trading tactics and transaction cost analysis*.

- ▶ *Technology* involves the use of order management and execution management systems to access a broad range of execution venues—venues from low touch direct market access to high touch liquidity provision strategies. This technology allows traders to see market liquidity and depth across all available venues simultaneously. It also

ensures that transactions occur only with approved counterparties. If it can be determined that a counterparty is an inappropriate trading partner, trading can be restricted.

- ▶ Experienced traders have a wide variety of *Trading Tactics* to choose from in order to customize the execution approach to adapt to market dynamics. Tactics range from sourcing natural liquidity through block trading to direct access to ATS platforms to use of algorithmic execution tools – which are regularly tuned and modified to achieve the best results for clients.
- ▶ *Transaction Cost Analysis* measures execution quality with respect to price before, during and after a trade is completed. Using this data, trading performance outliers can be used to determine if a particular counterparty, tactic or venue is no longer appropriate. BlackRock, for example, has over 10 years and \$30 trillion of execution data which we use every day to systematically analyze transaction costs and look for opportunities to improve execution quality.

to light an exclusion bias.⁵ This trend has been further buoyed by the decline in stock splits and increase in share buybacks which have contributed to higher overall stock prices. According to the SEC MIDAS platform, odd lot executions for equities account for 18% to 24% of transactions, which is a meaningful proportion of daily trading activity.⁶ Yet, although executions are now publicly reported, we still have a two-tiered market as it pertains to odd lots. The consolidated quote feeds still do not include odd lot bids and offers. In addition, odd lot quotes are not protected from being traded-through while round lots are protected per the Order Protection Rule in Reg NMS.⁷

Odd lots historically traded on a separate market, but this differential structure has been all but eliminated over time. All orders now trade on the same electronic books and exchange systems treat odd lots the same as round lots and mixed lots for the purposes of ranking and execution. Odd lot pricing structures have been discontinued and exchanges have filed to remove the concept of an Odd Lot Dealer. As a result, there are no structural reasons why odd lot orders should be treated differently from round lot orders. Additionally, BlackRock notes that odd lot executions are prevalent with all market participants since an institutional round lot becomes an odd lot residual after interacting with an

odd lot order.⁸ We have corroborated that the incidence of odd lot executions in our own trading activity mirrors the statistics observed in the SEC MIDAS dataset. In certain stocks, the frequency of odd lot transactions is very pronounced; for example, nearly 60% of Google trades are odd lots and this represents over 25% of share volume in Google.⁹ In Reg ATS, we have a regulatory regime where policy makers are concerned about order display and fair access when volumes breach a 5% threshold. Odd lot activity has more than exceeded these limits in a number of names. It seems incongruous that this segment of the market is not afforded the same protections that are extended to other orders.

BlackRock supports removing all distinctions for odd lots in order to extend Reg NMS protection to every order in the market. This would improve transparency, reduce complexity, and eliminate the two-tiered market which exists today largely for historical reasons.

Tick Size Pilot

BlackRock is supportive of efforts to understand the effect of market regulation on market quality and capital allocation. However we believe that policy makers must establish clearly defined criteria and quantifiable metrics for evaluating the

5 O'Hara, M., Yao, C., and Ye, M., 2011, "What's Not There: The Odd-Lot Bias in TAQ Data", Cornell University.

6 SEC Data Highlight 2014-01, Odd Lot Rates in a Post-Transparency World, January 9, 2014.

7 A trade-through is an execution of a trade at a price inferior to a protected quotation for an NMS stock. An odd lot bid is not considered a protected quote under Reg. NMS. See also, NMS FAQ available at <http://www.sec.gov/divisions/marketreg/nmsfaq610-11.htm#sec7>

8 For example, if BlackRock places an order to buy 100 shares and a 1 share sell order executes against this bid, the result will be a residual, unprotected odd lot bid for 99 shares. The fact that a small transaction can circumvent the Order Protection Rule on the balance of an order is cause for concern.

9 These are average daily percentages in 3Q 2013 for GOOG, as determined by the SEC MIDAS dataset.

success or failure of any new initiatives. For example, the various proposals for a pilot program for minimum tick size appear to lack a measurable outcome and could unintentionally increase costs for investors, both retail and institutional alike.¹⁰ The current minimum tick size of one cent does not mean that all stocks trade at the minimum possible spread. Many stocks trade at spreads wider than a penny due to the higher volatility and lower liquidity in those names; the average spread on a stock in the Russell 2000 Index is 4.7 cents per share. Artificially mandating wider spreads will make stocks more expensive to trade for all investors.

Additionally, the market ecosystem has changed materially with advances in electronic trading and market making. Market makers today are generally specialist technology firms, not traditional investment banks. A wider spread pilot program could increase profits for market makers, but not for the firms that produce research and underwrite issuance. It is difficult for us to come to the conclusion that a fixed spread would lead to increased capital allocation and job formation for small companies. BlackRock favors allowing market forces to determine spreads based on risk and liquidity and we recommend that policy makers proceed with caution on a tick size pilot.

Technology and Infrastructure Oversight

Although the equity market has largely kept pace with the evolution in technology, many of the systems which bring participants and venues together into one unified national market were designed and implemented when the exchange landscape was less complex. In times of stress, the current infrastructure can be taxed to the point of failure as observed in the market halt on August 22, 2013.¹¹ BlackRock believes that this calls for greater focus on ensuring the stability and robustness of the platforms which underpin the equity market. These platforms are not limited to exchanges, but include all participants who directly access the market. Proposed Regulation Systems Compliance and Integrity (Reg SCI) is a move in the right direction towards addressing these systems and technology concerns, however, the scope of Regulation SCI, as proposed, is extremely broad.¹² BlackRock believes that the policy would be more effective if it expressly identified and targeted those systems which pose single points of failure such as the Securities Information Processor (SIP), primary exchange opening and closing auctions, central clearing and settlement systems, and other critical infrastructure.

Policy makers should encourage redundancy in market infrastructure and alternative suppliers or vendors for services. BlackRock pursues similar resiliency and business continuity in our systems and would expect no less from market platforms of such paramount importance. We believe that regulators should also establish relevant performance metrics and ensure that the operation of these critical market utilities meets expectations. The SIP, for example, should have minimum performance standards for latency and capacity in order to ensure that it receives adequate support and funding to keep pace with changes in market structure.

Summary of Recommendations for Improving Investor Confidence

In addition to the market structure recommendations noted above, we recommend policy makers target five areas of focus that will have the greatest impact on investor confidence in the US equity market:

- ▶ **Equal access to trade information:** Trading venues should provide access to information to all participants *at the same time*; select participants should not be allowed to receive information from a trading venue that is not available to all participants.
- ▶ **Simplify order types:** Certain types of market orders may provide some participants with signals about large institutions' intentions. These participants can then use these signals in trades that "jump ahead" of the broader market. Simplification of order types could eliminate this behavior.
- ▶ **Address message traffic congestion:** Market participants should agree and establish order-to-trade ratios to ensure that quotes represent true economic interest. Doing so would help curb behavior that is both potentially misleading and a stress on the overall market.
- ▶ **Align sell-side and buy-side incentives:** Changes to exchange access fees paid by brokers that would ensure best execution for clients and reduced cost.
- ▶ **Require market participants to improve electronic trading safeguards:** Such measures could include additional circuit breakers, "kill" switches, better testing and more robust compliance systems, among others.

10 Proponents of increasing tick sizes believe that wider spreads, by increasing profit for market making firms and underwriters, albeit while increasing transaction costs for investors, will help foster a financial "ecosystem" for smaller companies. See, e.g., H.R. 3448: Small Cap Liquidity Reform Act of 2013.

11 On that date, an outage of the Securities Information Processor for NASDAQ listed securities led to a 3 hour halt in trading.

12 Proposed Regulation SCI would apply to certain self-regulatory organizations (including registered clearing agencies), ATSS, plan processors, and exempt clearing agencies subject to the SEC's Automation Review Policy (collectively, "SCI entities"), and would require these SCI entities to comply with requirements with respect to their automated systems that support the performance of their regulated activities. SEC Release No. 34-69077, File No.S7-01-13.

Recommendations for Improving Investor Confidence

Equal Access to Trade Information

BlackRock supports open access to the equity markets – but access should be provided fairly and evenly. BlackRock is concerned that an uneven playing field is created by offering different market data feeds to some participants while these feeds are not readily available to most others due to a cost or technology hurdle.¹³ This timing gap (or latency between feeds) may contribute to preferential market participation by those firms that are able to gather and digest such information. The data feeds that are available publicly and privately should be in sync so that one market participant does not have an undue information advantage over another.

Simplify Order Types

BlackRock encourages policy makers to examine the complexity of exchange order types and the impact that they have on end investors. Overall, BlackRock supports innovation and competition in order types which improve available liquidity or assist in achieving better execution for investors. We recognize that many order types also help market participants to manage fragmentation, adapt to the speed of the market, and maintain compliance with Reg NMS.¹⁴ However, BlackRock is concerned that certain order types may inordinately provide participants with information about large institutional orders and circumvent legitimate trade execution. For example, NYSE Arca's initial design for the PL Select Order proposed an order which "would be skipped and can be traded through" against incoming orders which are more aggressive or larger in size, essentially allowing a market maker to not honor their quote.¹⁵ Order types such as these harm larger orders and are inconsistent with the Order Protection Rule of Reg NMS and the principles of a fair and level playing field.¹⁶ BlackRock strongly believes that such discriminatory orders types should be eliminated because they are detrimental to market structure and disproportionately convey information about confidential client orders.¹⁷

The proliferation in new order types and resulting modifications to order prioritization and matching logic has

dramatically increased complexity in the market. This inadvertently disadvantages the ecosystem of pre-existing order types and the market participants who use them, which undermines public confidence in the market. Even the exchanges which design these order types do not fully understand the impact they have on the order book. This was underscored by NYSE Arca's request in December 2012 to revise the PL Select Order less than 3 months after it was implemented:

Based on the few weeks of experience with the new order type, the Exchange has identified an unintended business consequence in connection with the fact that PL Select Orders do not interact with incoming orders that are larger than the size of the PL Select Order. Specifically, in limited situations, the existence of a PL Select Order may prevent certain incoming opposite side interest from posting to the Arca Book.¹⁸

BlackRock believes that closer scrutiny by regulators is warranted for proposals to modify exchange rules or add new order types. Further, we feel that exchanges have an obligation to be more comprehensive and transparent in their communication to the public about new order types, their interaction with existing orders, their impact on the order book, and the rationale for or constituents promoting the proposed changes. BlackRock would also support efforts to curtail order complexity and simplify exchange mechanics where there are opportunities to retire less used or obsolete functionality.

Address Excessive Message Traffic

In a recent study, HFT was researched and discussed as a vulnerability to equity market structure.¹⁹ The article provided empirical evidence which shows HFT activity to be positively correlated with fragmentation, volumes and tick sizes while negatively correlated with volatility and concluded that further analysis is required to assess the actual contribution of HFT to liquidity and to analyze the potential risks and benefits linked to this activity. BlackRock appreciates the rigor of such analysis and agrees that more research should be conducted to establish the inherent risks and benefits of HFT. Specifically this analysis should include the impact of messaging volume and order-to-trade ratios. The

13 Some of the informational timing advantage has been addressed by providers of economic data and media outlets ending the practice of the advance (measured in seconds) release of information to those willing to pay more. The SEC has also acted to ban flash "indications of interest" orders. "Elimination of Flash Order Exception from Rule 602 of Regulation NMS" SEC Release No. 34-60684; File No. S7-21-09.

14 Intermarket Sweep Orders (ISOs) allow investors to rapidly sweep protected orders across fragmented markets. Price sliding orders such as DirectEdge's Hide Not Slide ensure compliance with Rule 610(d) of Reg NMS which requires exchanges and members to avoid displaying quotations that lock or cross any protected quotation in an NMS stock.

15 As proposed in SEC Release No. 34-67101; File No. SR-NYSEArca-2012-48, NYSE Arca Equities Rule 7.31(h)(7) would define the PL Select Order as "a PL Select Order [which] will not interact with an incoming order that: (i) has an immediate-or-cancel time in force condition, (ii) is an ISO, or (iii) is larger than the size of the PL Select Order."

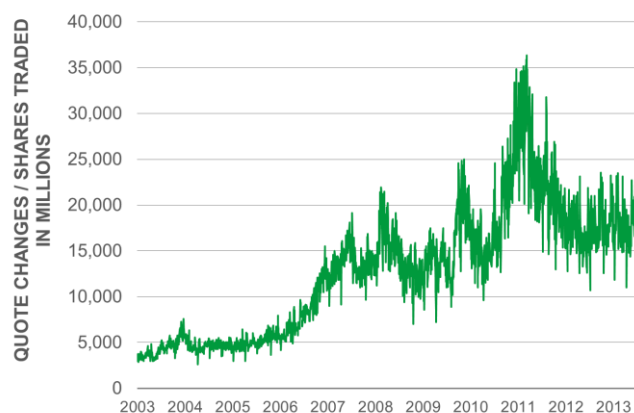
16 Rule 611(a) of Reg NMS requires trading centers to prevent trade-throughs on that trading center of protected quotations in NMS stocks that do not fall within one of the allowed exceptions.

17 Although NYSE Arca has subsequently revised the PL Select Order, discriminatory order types still exist on other exchanges. Both NASDAQ's Supplemental Order and DirectEdge's Route Peg Order also use contra order size as a condition for execution.

18 SEC Release No. 34-68385; File No. SR-NYSEARCA-2012-133.

19 European Securities and Markets Authority Report on Trends, Risks and Vulnerabilities, No. 1, March 2014. available at: http://www.esma.europa.eu/system/files/2014-0312_trends_risks_vulnerabilities.pdf

Figure 3: NUMBER OF NBBO QUOTE CHANGES PER MILLION SHARES TRADED



Source: Credit Suisse Trading Strategy

sophistication of high frequency traders is such that their models can be calibrated to industry agreed upon order-to-trade ratios. Monitoring order-to-trade ratios would add to market stability, enable better controls for message traffic and help to distinguish between those that are truly adding liquidity and those that are not acting in the best interest of the market. The high degree of fragmentation in the market contributes to excessive message traffic, and simplifying the exchange landscape as discussed above would reduce message traffic congestion.

Align Sell-Side and Buy-Side Interests

BlackRock supports a review of exchange access fees because we believe that existing pricing models significantly influence the order handling and routing practices of broker-dealers. This, in turn, creates a potential conflict of interest for brokers between achieving best execution for clients and reducing cost. It is important that any examination should consider the impact of all related economics and incentives for providing or accessing liquidity such as access fee caps, maker-taker/taker-maker models, and payment for order flow.

Institutional clients typically employ fixed commission models with their brokers-dealers who consequently bear the actual costs of trading in the form of exchange access fees or communications charges.²⁰ This environment fosters an inherent conflict of interest for the broker-dealers between balancing their best execution obligations to clients and routing orders in a manner which reduces trading costs for the broker-dealer. This disequilibrium has been further exacerbated by innovations and the evolution in pricing structures since the adoption of Reg NMS. Most venues are motivated to maximize the liquidity displayed in

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their order book by offering the largest possible rebate which in turn drives access fees toward the limit. Taker-maker models have also emerged where incoming orders that execute against (take) the liquidity of resting orders receive a rebate, while non-marketable resting orders that provide liquidity (make) at a price are charged an access fee. In this ecosystem, the choice of order aggression or venue for posting a bid/offer can result in access fee disparities of as large as 0.5 or 0.6 cents per share, which makes this a significant component of cost relative to the commissions that broker-dealers capture.²²

Although we support further evaluation of exchange pricing models, BlackRock believes that competition among execution venues and incentives for providing liquidity have had a positive impact on market structure. Incentives to provide liquidity promote price discovery in public markets, tighter spreads and competition and choice among trading venues. It is not the maker-taker model, but rather the magnitude of impact from access fees and misalignment of economic interests among market participants that raises concern. Reducing the access fee caps is one solution that would narrow the price disparity and lessen the impact of cost in routing decisions. This may also curb the usage of off-exchange venues, such as dark pools and internalizers, as a major benefit of these trading platforms is their cost efficiency relative to exchanges. The value of liquidity and therefore the need for incentives and rebates is not the same across all stocks. Regulators should review whether highly liquid stocks require any rebates at all. Another policy option would be to clarify a broker-dealer's obligations to clients by identifying the circumstances when consideration of rebates and access fees are inconsistent with best execution. Achieving best execution for clients should be the sole objective in order handling practices and BlackRock encourages the policy makers to consider initiatives which reinforce this requirement.

Require Market Participants to Improve Electronic Trading Safeguards

Reg SCI is an important step in establishing technological stability, however as previously stated, it is broad in scope. Electronic safeguards need to be tailored to each market participant as a "one-size-fits-all" solution will not

20 "Cost plus" arrangements also exist where a broker passes all rebates and access fees to their customers. But these structures are not pragmatic for many institutions due to the complexity in administering and allocating fees which exchanges determine on an ex-post basis (at the end of the month) in order to assess volume discounts.

21 Rule 610(c) of Reg NMS limits the fees that any trading center can charge for accessing its protected quotations to 0.3 cents.

22 By order aggression we are referring to the decision to rest a non-marketable bid/offer vs. submitting a marketable order which removes displayed liquidity.

ensure the stability of markets. Exchanges, ECNs and clearing systems whose activities are central to the market need the most robust safeguards, while other market participants, such as brokers and investors, may need less comprehensive safeguards, tailored to their level of interaction with the markets. In either case, a principles based approach by regulators as to the type and form of controls will assure that controls can evolve along with the markets.

Looking at today's market environment, there are several opportunities to improve safeguards immediately. Exchanges should implement kill switches if it is apparent that they are being impaired or flooded with erroneous orders. Clearing members should be able to manage credit exposures on a real time basis. Better testing environments for electronic strategies and liquidity programs should also be available.

Overall we need a control environment that allows all participants to proactively manage systematic risk as well as kill switches and volatility limits to guard against real time issues.

Conclusion

The US equity market is not broken or in need of large scale change. Investors will be best served by targeted changes which fine-tune rules and practices to improve market structure, stability and allocation of capital. Liquidity is critical to a well-running market and liquidity is, among other things, a function of confidence. A holistic approach to improving various aspects of the equity market structure will increase investor confidence and thereby improve the functioning of the US equity markets.

GLOSSARY OF TERMS

Term	Definition
Alternative Trading System (ATS)	As defined by the SEC, alternative trading systems "operate similar to registered exchanges" by bringing together buyers and sellers of securities but are "private, available only to chosen subscribers". See http://www.sec.gov/rules/final/34-40760.txt
Electronic Communication Network (ECN)	A type of ATS for trading listed stocks and other exchange-traded products. ECNs display orders onto the consolidated quote, unlike dark pools which are another type of ATS.
National Best Bid and Offer (NBBO)	Best (highest) available bid and best (lowest) available offer price when buying and selling securities across all US exchanges and ECNs.
Odd Lots (for equity securities)	Generally, orders or executions for less than the standard trading unit of 100 shares.
SEC Market Information Data Analytics System (MIDAS)	MIDAS is a system that collects and processes data from exchange feeds and the consolidated tape to produce analysis and insight which assists the SEC to monitor and understand the market. It was unveiled by the SEC in 2013. Research and data from MIDAS can be accessed at http://www.sec.gov/marketstructure .
Trade Reporting Facilities (TRF)	Trade Reporting Facility (TRF) is a FINRA-sponsored mechanism for the reporting of transactions effected otherwise than on an exchange to which a FINRA member is a party.

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