



26 Broadway, Suite 1108
New York, NY 10004

April 22, 2016

David R. Pearl
Office of the Executive Secretary
U.S. Department of the Treasury
1500 Pennsylvania Avenue, NW
Washington, D.C. 20220

RE: Notice Seeking Public Comment on the Evolution of the U.S. Treasury Market Structure Docket ID: TREAS-DO-2015-0013

Dear Mr. Pearl:

Direct Match would like to thank you for the opportunity to comment on the RFI regarding the evolution of the market structure for U.S. Treasuries. As the RFI notes, the evolution of the Treasury market has accelerated in the past few years. Some of the changes, such as increased use of technology, are plain for all to see. Others, such as the influence of recent regulatory changes on market structure and liquidity are more complex. The RFI, which furthers the work of the Joint Staff Report, is intended “to develop a holistic view of trading and risk management practices across U.S. Treasury futures and cash markets—including the various trading venues and modes of execution present in the cash market—and it seeks input on potential improvements in Treasury market policies, practices and conduct.” This is a nearly identical process that which led to the formation of Direct Match: a close analysis of the evolution of the market structure and a constructive effort to improve it.

Direct Match is an all-to-all marketplace for U.S. Treasury securities. We offer access to every participant type in the marketplace: principal trading firms, dealers, institutional investors, and others. We provide pre-trade and post-trade transparency, and we match orders in an anonymous central limit order book (“CLOB”). We believe that the structure we are putting in place represents the ideal market structure for cash Treasuries and that it will provide solutions to some of the challenges that have arisen in the market structure in the past few years.

We examined these challenges from the private sector perspective, and our analysis followed similar lines to those of the RFI, so we welcome the opportunity to offer our experience and insights to the official sector in support of its efforts. To that end, this letter first explains the fundamental principles of liquidity provision in general and then some features specific to the Treasury market. Second, it describes the various market participants with emphasis on how and why they interact. The decisions of these actors ultimately determine the market structure and so it is important to understand their incentives and constraints. Third, it describes the recent market structure changes in the context of its history and its trajectory. Fourth, it describes how all these factors

contribute to what we believe is the most fundamental issue in the Treasury market today: the extraordinary level of market fragmentation. Fifth, we offer general principles and specific suggestions for improvements that the official sector might make. Finally, we explain how Direct Match is working to achieve the same ends via private sector means.

I. The Economics of Market Making

a. In General

Liquidity providers look to maximize their risk-adjusted return on equity. Their revenues are the bid-offer spread they capture, and their costs include their cost of capital and the cost of the risk management strategy employed. From these fundamental principles, a few simple relationships hold. The wider the bid-offer spread, the more capital is drawn in to provide liquidity, which tightens spreads until it is no longer attractive to new capital. If the cost of capital increases, then bid-offer spreads have to widen in order to compensate for the increased cost. The same is true of risk. If the costs of managing risk increase, then the bid-offer spread must widen in order to cover them. Risk comes in two forms. The first is the general level of volatility of the asset. The second is the market impact or “information content” of the order flow. Low information content order flow interacts with a quote but leaves the market unchanged; high information content order flow has a high probability of moving the market against the liquidity provider. An ideal market for a liquidity provider is made up entirely of low information content order flow. If the order flow is sufficiently random, the book hedges itself over time accruing minimum risk management cost. As a result, liquidity providers generally seek out low information content order flow and avoid high information content order flow, as this reduces the cost of risk management. These economic relationships ultimately drive the decision making of all liquidity providers in the Treasury market.

Liquidity provision is also highly scalable. Assuming flow is generally random and has low information content, the more flow to which a market maker has access, the more likely the net exposure of the portfolio remains constant as new orders offset old ones before risk positions are built up enough to require the market maker to cross the bid-offer spread itself and hedge. This lowers the cost of risk management, which in turn permits the market maker to tighten its spreads or increase its volume, which in turn makes the market maker more likely to win order flow, thereby perpetuating this cycle (colloquially, “flow begets flow”). Technology also confers economies of scale. Technology that automatically quotes and risk manages positions is expensive to implement and serves as a barrier to new entrants. Once implemented, algorithms out-compete one another and require ever greater expense to remain relevant and thus favor firms with the scale to maintain large technology budgets. Both of these effects are present in the dealer to dealer (“D2D”) markets, and the “flow begets flow” model is of particular importance in the dealer to customer (“D2C”) market. Both market segments are dominated by a relatively small number of large firms.

b. Unique Features of the Treasury Market

While the Treasury market exhibits the general economics of liquidity provision described above, it also has several unique features. The first is its general level of price

opacity. Price discovery for many market participants is a more onerous task than in most other securities markets. In the Treasury market, the more easily a quote is observed, the more difficult it is to trade with it. The most widely disseminated prices are published by dealers. These quotes are indicative only for the purpose of attracting customer interest and are not tradable. The majority of actual transactions between dealers and customers are conducted over the telephone or bi-lateral electronic links on a request-for-quote (“RFQ”) basis, meaning that the quotes are tradable on a temporary and conditional basis. There are continuous tradable quotes published on the platforms operated by inter-dealer brokers (“IDBs”), but these platforms are private and generally limit access to dealers and other liquidity providers. The discrepancies between quote dissemination and accessibility mean that there is effectively no market-wide tradable price for any given Treasury security.

Compounding the difference between observable and accessible quotes is that the minimum spread is artificially wide. This has the effect of further obscuring where the true market in fact lies within the minimum increment. Dealer to customer trading often takes place within this increment, providing superficial price improvement. Since the true bid-offer spread itself is within this artificially wide increment, it is not possible for the customers to measure their execution quality against the actual prevailing market. As a result, the Treasury market has two levels of opacity: not all quotes are observable, and an artificially wide minimum increment conceals the true markets within those that are observable.

The market is further obscured by a lack of post-trade transparency. In most securities markets, after a trade has been made, one or both of the counterparties are required to disseminate to the broader market the fact that a trade has occurred. There is no such reporting requirement in Treasuries. Market participants only have knowledge of their own trades, so they have no ability to judge their execution quality relative to transactions elsewhere in the market. Despite being the one of the largest securities markets, due to the lack of a market-wide tradable price, an artificially wide minimum increment, and no post-trade reporting requirement, the Treasury market is also one of the most opaque.¹

The RFI rightly asks whether there is enough data available to the official sector and to the public. The answer to this is unequivocally no, particularly in the case of the public. The first implication is that it is difficult to measure liquidity. Liquidity is best measured by market impact, or the degree to which an order of a given size moves the market. Given how difficult it is to observe the market, it is very hard to assess the market’s overall liquidity. It is true that every firm has only its own trading data to use, but a single firm measure is less useful than it would be in other markets because the nature of the liquidity any firm receives is driven by which segments of the market it can access and it does not reflect the market as a whole. The second implication is that establishing what constitutes best execution, and holding counterparties to that standard, is for all practical purposes, impossible.

¹ Rick Ketchum in an interview given to Robin Wigglesworth in “Keep an eye on US bond trading, says FINRA’s Rick Ketchum,” *Financial Times*, April 13th, 2016

In addition to being highly opaque, the regulatory environment of the Treasury market is relatively light. This sets it apart from the rest of the U.S. securities industry. The Securities Act of 1933 designated Treasury securities “exempt” because they are backed by the Federal government and are generally lower risk than other securities. The SEC was empowered to police fraud in the Treasury market, but as the federal government is itself a public entity and the secondary market is composed almost entirely of sophisticated investors, there has been little call for this. The Government Securities Act of 1986 (“GSA”) granted rulemaking authority to the Treasury, which has used this power on occasion, often in collaboration with other regulators, but rarely with regard to market practice rules.

Not only is the Treasury market relatively free of official sector regulation, but its self-regulatory regime is also relatively light. The Treasury market is subject to FINRA and has its own self-regulatory organization, the Treasury Market Practices Group (the “TPMG”). However, only a small subset of FINRA rules apply to the Treasury market², and of these only one has to do with market conduct.³ Even as FINRA has expanded its rules, it has generally exempted the Treasury market.⁴ The closest the Treasury market comes to systematic market practice rules is the TPMG list of “Best Practices.” However, these are broad guidelines rather than formal rules and the TPMG has neither surveillance nor enforcement capabilities.

The relative opacity of the Treasury market and its comparatively light regulation are often mutually reinforcing. An important consequence of the light regulatory environment has been that market participants are much freer to craft market structure solutions and to be selective about whom they grant access than they are in more tightly regulated markets. As a result, there are many more trading methodologies in Treasuries than in other securities markets but none of them are universally accessible to all market participants.

II. The Participants in the Treasury Market and their Incentives

Department of Treasury. Reg NMS, the most comprehensive piece of market structure regulation in the United States, lists among its core principles the interests of longer-term investors and listed companies. Specifically, the objective was to minimize transaction costs and, through this, to reduce the costs of capital to the U.S. corporate sector. In precisely this same way, the Department of the Treasury is an indirect participant in the secondary market for Treasuries and is the ultimate beneficiary of improvements in market structure and the ultimate payer of the costs of a sub-optimal structure.

² FINRA Rule 0150 outlines the rules that apply to Treasury securities. Out of nearly a thousand rules, Treasury transactions are subject to only 39.

³ This is FINRA Rule 5310 regarding “Best Execution and Interpositioning.” Interestingly most of the D2C market is exempt from this rule because quotes are not generally accessible and, given that there is no transaction reporting requirement, interpositioning is undetectable and so that part of the rule is unenforceable.

⁴ For example, FINRA Rule 5270, the prohibition on front running block orders. The SEC asked the NASD to consider applying this to Treasuries in 1996. In the submission Joint Study of the Regulatory System for Government Securities in 1998, Congress was assured that the NASD was analyzing whether to apply the rule. In 2012, when 5270 was applied to the entire fixed income market, FINRA again exempted Treasuries.

Investors. Treasury securities are generally considered a riskless asset and are used as a diversification tool by the entire universe of investors. Investors interact with the Treasury market through primary dealers in the D2C market. As mentioned above, the vast majority of dealer to customer trading is done through RFQs over the telephone or electronically. The general opacity of the Treasury market makes it difficult for market participants to ascertain execution quality. As a result, customers seek to build relationships with the dealers that would be costly for the dealers to lose in the event that a breach of best-execution was detected. This incentivizes customers to concentrate their order flow and to trade with dealers with whom their firms have relationships in other asset classes. The opacity, the light touch regulatory environment, and the investor strategy of intensifying their relationships with the dealers to compensate for this, have the effect of reducing their influence over the market structure.

Dealers. The dealers owe their primacy in the secondary market to the central role they play in the primary market as the intermediary between the issuer and investors. This arrangement has suited the Treasury for many years and it is likely to remain in place regardless of the evolution of the secondary market. The dealers trade with their clients on a fully disclosed bi-lateral basis and so are able to judge the likely information content of the order flow and price accordingly. In the mirror image of the dilemma facing the clients, opacity also makes it difficult for them to distinguish themselves from their competitors on price and so they too seek to compete on a relationship basis. Dealers compete through offering better customer service, better allocations on the issuance of other securities, access to research and other market knowledge, and favorable financing terms. In aggregate, the shift from price to non-price competition obscures, and thus increases, transaction costs, which costs are ultimately borne by long-term investors and the issuer.

In addition to trading with investors, dealers also trade extensively among themselves in order to manage the risks of their customer-facing business. Inter-dealer trading is done on an anonymous basis via IDB platforms that feature a CLOB with continuous two-sided quotes. When trading amongst themselves, dealers centrally clear at the Fixed Income Clearing Corporation (“FICC”) a subsidiary of DTCC. This reduces settlement risk and facilitates anonymous trading. The D2D market allows dealers to preserve their bi-lateral relationships without necessarily committing risk capital by sourcing liquidity from another dealer or liquidity provider. It is difficult for a client to discern whether their dealer is in fact committing risk capital to them. The trade will clear bi-laterally with the dealer, but the risk may have been instantaneously hedged in the D2D market.

Proprietary Trading Firms. PTFs have become a major force in the Treasury market by developing technologically-advanced methods of price quoting and risk management that make extremely efficient use of relatively small balance sheets. Their business model deploys their balance sheets over and over again during the course of a day and at the end retains no net position. In this way they use the technological capacity to trade and risk manage large transaction volumes intra-day as a form of leverage, because the amount of capital deployed capturing bid-offer spreads is much

greater than the capital of the firm⁵. This leverage is unique in that it has a minimal cost, as there is no overnight borrowing. The costs are the greater technology investment necessary but, as mentioned, this scales extremely well. Additionally, since the positions are small and turned over frequently, they do not pose a systemic risk in the way that a traditionally levered firm would.

PTF strategies rely on continuous price data to automatically generate quotes and to manage the risk of the resulting trades. Moreover, though they typically provide liquidity, PTFs occasionally need to be price-takers in order to hedge. As a result, they require products with a critical mass of existing order flow trading on platforms that allow equal access to all market participants. PTF strategies have very thin margins on extremely large volumes and are thus very sensitive to transaction costs and the level of information content in the order flow. Given the nature of the PTF business model, they have come to dominate two nexuses of the US Treasury market: the IDB platforms and the futures markets.

The futures markets also lend themselves to the PTF model. The futures market structure is an anonymous CLOB with central clearing through the CME which guarantees both settlement and the performance of the futures contract. In the futures market, the same general economics of liquidity provision apply, but unlike cash Treasuries, the market has both pre-trade and post-trade transparency. The futures market is also regulated by the CFTC with the same rules that apply throughout the futures industry. The scale of the futures market is much larger relative to the cash market in Treasuries than it is in either equities or foreign exchange. Indeed, many cash market participants prefer using futures as a substitute for cash and this may be an indication of the health of the cash market.⁶

III. The Treasury Market Structure

a. The Treasury Market Structure to Date

As noted above, investors face dealers on a fully-disclosed, bi-lateral basis. Indicative prices are published, but pricing for actual transactions is on an RFQ basis. Opacity and a large minimum price increment diminish price competition and shift competition for client flow from price to relationships. Sophisticated clients have access to the Treasury futures markets where liquidity provision is largely done by PTFs. Dealers themselves also used the futures markets to hedge. More commonly, they trade amongst themselves anonymously through IDBs in order to hedge flow they do not want or to rebalance their books.

Beginning in 1999, the IDB market shifted from voice broking to electronic platforms. Along with this change came a shift from an RFQ to fixed-quote system,

⁵ For example, suppose a dealer buys \$50 million worth of Treasuries and holds them for three days. That represents \$50 million of capital deployed capturing bid-offer and the cost to the dealer is \$50 million over those three days. A PTF that trades \$50 million 10 times a day has deployed the equivalent of \$500 million in the service of tightening bid offer spread but paid nothing overnight for the cost of that capital.

⁶ Alexandra Scaggs, "Treasury Market's Fastest Traders Don't Like Trading Treasuries" *Bloomberg Markets*, April 17, 2016

which better enabled dealers to facilitate their customer facing activities. In 2003, these electronic platforms granted access to PTFs, who began to provide liquidity to the D2D market and reduced arbitrage opportunities between the cash and futures markets. Overall, however, this structure remained similar to how the market operated prior to electronic IDB platforms. Investors held the bulk of the securities, and dealers held relatively large inventories and occasionally managed their risks among themselves by trading in the IDB market or in the futures market.

In the past few years, however, the market structure has shifted dramatically. The primary cause for this has been the regulatory reform of the financial system in the wake of the financial crisis. The objective of those reforms was to reduce leverage in the banking system for the purpose of reducing systemic risk. The reforms have been highly successful, but have had second order consequences. By reducing the debt to equity ratio system-wide, they increased pressure on returns on equity throughout the financial services industry. Banks, in order to preserve returns on equity, direct their balance sheets to the most profitable activities and, as a result, the amount of capital allocated to Treasury market making has declined substantially.⁷

The reduction of dealer balance sheets allocated to Treasury market making has decreased dealers' ability to facilitate customer order flow, as well as their ability to provide liquidity amongst themselves in the IDB market. This led to an excess of demand for, and a dearth of supply of, liquidity in the IDB market, which drew in new capital in the form of PTFs. The scope of this change cannot be overstated: in 2008, PTFs were 25% of the IDB market. By 2015, their market share has leapt to 60%.⁸ Today dealers source liquidity "wholesale" from PTFs on quote-driven, anonymous IDB platforms and then pass it on "at retail" to their customers on a bi-lateral RFQ basis. This is a profound change in the way in which capital is allocated and liquidity is provided in the secondary market for Treasury securities. Had the increased bid-offer spreads drawn in non-bank capital that was nonetheless sourced in a traditional overnight way, the spreads would have substantially widened. It is the capital efficiency of the PTF firms that has been decisive in offsetting the reduction of dealer balance sheets.

To better conceptualize how the market functions today, it is useful to think of the end investors as a monolith that owns all the Treasury securities in sub-accounts and is perpetually re-allocating them among those sub-accounts, but can never move securities directly between them. In the old regime, when dealers held large inventories, investors would rent space on dealer balance sheets to temporarily warehouse securities as they re-ordered them among these accounts. In the current regime, with much smaller dealer balance sheets, PTFs perform a daily resorting of securities in these accounts, mediated by the bi-lateral relationships of dealers with their clients. That is, at the beginning and end of the day, most of the assets remain on the balance sheets of the end investors; some residual (which is much smaller today than a few years ago) is retained temporarily on the balance sheets of dealers; and the sorting process largely takes place using the intra-day liquidity provided by PTFs on the IDB platforms.

⁷ TABB Group Report analysis of the balance sheet capacity for the top 10 dealers. down 48% since 2007 for U.S. Treasury securities 1/19/16

⁸ TABB Group Report cited by Alexandra Scaggs "Treasuries Wilder Than Ever as Ultra Fast Bond Traders Rise Up" *Bloomberg* 10/12/15

This transition from a market structure in which dealers sourced liquidity from other dealers with similar economics and capital constraints to one where they source it from PTFs, whose economics and capital constraints are radically different, has been largely opaque to end investors. They continue to trade with their dealers as they always have. However, now that so much of the liquidity being provided to the end customers is now being provided indirectly by PTFs, changes to the economics of the PTF business model will be transmitted through the dealer relationships to the end investors. As a result, market structure and regulatory changes that have the effect of reducing the viability of the PTF business model will result in increased transaction costs for end customers and ultimately in higher funding costs for the issuer.

b. Market Structure Trajectory

The market structure has continued to shift even as the pace of regulatory changes has slowed. Dealers who have technological capacity similar to PTFs have created internalization engines to facilitate their client facing businesses. Dealers direct low information content flow to their internalization engines, and hedge the rest via the IDB platforms. As a consequence, the information content of the order flow on IDB platforms has increased, raising the associated hedging costs. This has driven the PTFs to respond. Just as dealers have sought to copy the PTFs balance-sheet-light trading strategies, so the PTFs are now seeking to copy dealers' relationship-based trading strategies and have begun streaming quotes bilaterally to select dealers and investors. For example, according to a recent press release by KCG, Treasury volumes on their bilateral venue, Acknowledge FI, have more than doubled year over year.⁹ There is even a vendor that constructs bi-lateral links for Treasury trading between any two counterparties.

Today, dealer internalization engines and PTF bi-lateral streaming businesses are each seeking to link directly to low information content order flow. As the trend proceeds, the information content of the order flow that makes it to the centralized platforms will continue to increase, reducing the profitability of liquidity providers who will increasingly rely on establishing bi-lateral links. This will degrade the quality of the liquidity provision to the IDB platforms and reduce their ability to perform a price discovery function. The cash Treasury market, already opaque and with little interaction between orders, is in danger of losing the one market segment where price discovery occurs through competitive quoting.¹⁰

IV. The Central Problem of Treasury Market Structure: Fragmentation

The market structure for Treasury securities today is highly fragmented, and is accelerating toward ever-greater fragmentation. The RFI draws a distinction between the D2C and D2D markets, but this is only a single division among the many that

⁹ KCG Q1 2016 earnings press release 4/21/16

¹⁰ This should be of particular concern for the official sector with regard to data access. Virtually all the official and academic research on Treasury market liquidity draws on price and trade data from the IDB platforms. Reduction of their role in price discovery would greatly weaken the official sectors ability to monitor the market in the absence of a wider monitoring regime.

characterize the Treasury market. The market is fragmented first by methodology and venue and further by participant type since most participants have access to only a subset of the available venues and methodologies. In effect, the market has multiple fault lines: D2C vs. D2D, bi-lateral vs. multi-lateral, relationship competition vs. price competition, quote driven vs. RFQ, disclosed vs. anonymous, and centrally cleared vs. bi-laterally cleared. Many of these overlap, and in parallel to them all is the futures market. The result is that for any Treasury security, there is no single market clearing price, and execution quality is driven by which fragments of the market structure a participant can access rather than by robust price competition. Moreover, market forces are pushing what historically have been the more centralized parts of the Treasury market into a network of interlocking bi-lateral relationships.

This fragmentation has important consequences. First, the level of friction in the market as a whole is much larger than in other securities markets. Suppose supply or demand shifted substantially in Treasuries, such that the market-clearing price had to move across the entire complex. This shift would have to work through many sub-markets, and at each crossing some friction costs are collected by firms who link the two segments. Just as arbitrageurs extract profits between cash and futures, they also extract them between the quote-driven and RFQ segments, between the bi-lateral and the multi-lateral channels, and between the relationship-driven and price-driven segments. Today there are substantial costs built into the system because of the wide variety of segments into which the market is divided. These costs are borne by the investors and ultimately by the issuer.

The second consequence is that the root causes of market disruptions such as those that occurred on October 15, 2014 are extremely difficult to discern. To this day, there is a dispute over whether the issue originated in cash or futures.¹¹ If in cash, was the source a bi-lateral link to a dealer who then broke it up and transmitted it to the IDB platforms where the PTFs then transmitted it incrementally to the futures market? As market fragmentation proceeds, potential points of origin for similar disruptions multiply. The questions the RFI seeks to answer about the evolution of market structure, the methods of risk management, and access to data for the official sector and the public all have their origins in the extensive and accelerating fragmentation of the Treasury market structure.

V. Recommendations for Addressing Market Fragmentation

a. Building a Conceptual Framework

The most effective way to respond to the RFI is to address the underlying problem of fragmentation. In our view, the official sector should focus on promoting the convergence of the various market segments by making it easier for investors to compare and access the disparate market segments. It should aim to create a structure in which trading methodologies and venues compete with one another intensely but on a level playing field and do so without reducing the competition among orders. At Direct Match, we have been considering these problems long before the RFI was published,

¹¹ Joshua Younger and Jay Barry, "Anatomy of a Flash Rally," *JP Morgan NA Fixed Income Strategy*, February 22nd, 2016

and our firm was founded to provide a solution. We would like to offer some initial general considerations and then a set of more concrete proposals.

First, the imposition of rules on the Treasury market does pose risks. The efficiency of the primary market for U.S. government securities hinges on the efficiency of the secondary market. Adverse consequences that raise transaction costs or reduce liquidity will ultimately be felt in a greater liquidity premium charged to the issuer and raise the funding costs of government. At the same time, there is a risk to not acting. Friction costs driven by the level of fragmentation in the Treasury market are already very likely raising those costs in a way that is not measurable given the opacity in the market. Moreover, the fragmentation and opacity increase the probability of market shocks while reducing the capacity of the official sector to observe or prevent them. Therefore, inaction is likely to be riskier than action.

Second, in a market as fragmented and as lightly-regulated as the one for Treasuries, the potential for adverse second order effects is substantial: in the event that regulations disadvantage a particular market segment, it is very easy for trading to move to another, or to create a new one. For example, if Reg ATS¹² were applied only to the IDB platforms but not the bank internalization engines, then the relatively lower compliance costs of the latter would enable them to draw flow away from the multi-lateral platforms. The official sector will have inadvertently encouraged competition via regulatory arbitrage rather than providing best value to the customer. This is an argument for thinking through the likely reactions of market participants and for making rules apply as broadly as possible.

The official sector should neither seek to favor any particular venues or methods nor to preclude or encourage the creation of new ones. The problem is not necessarily that there are too many ways in which Treasuries are transacted, but rather that the friction costs between them are so high and that for many participants their access to this diversity is limited. Therefore, the official sector should enable market participants to better judge which methods produce the best results and enable access to as many methods as possible. While market forces, properly incented, can do much of the work of this, there will be issues on which the official sector will have no option but direct regulation.

The official sector has two advantages with regard to implementing new rules for Treasuries. The first is that the regulatory environment is a clean slate, so there is no need to amend existing rules or fit new rules into a complex structure. The second is that it has a history of market-structure rulemaking in other asset classes, notably Reg ATS and Reg NMS¹³ in equities, to offer guidance. This is not to suggest the simple imposition of Reg NMS or Reg ATS. Treasury market venues are much more diverse than those in equities were in 1998 when Reg ATS was enacted, and the market is much more fragmented than equities were in 2005 when Reg NMS was enacted.

¹² Reg ATS is the SEC rule set that governs Alternative Trading Systems, non-exchange trading venues typically registered as broker dealers. The Treasury market was explicitly exempted from Reg ATS when promulgated but a number of SEC Commissioners have suggested its application to Treasuries in the wake of the Joint Staff Report.

¹³ Reg NMS is the SEC Rule Set that Governs the National Market System, specifically how the nations registered exchanges interact.

Rather, the principles which informed Reg ATS and Reg NMS, the relative success with which they met, and the unexpected second order effects that followed, provide a useful guide for the official sector as it contemplates any changes to the regulation of the Treasury market structure.

b. Specific Recommendations

The primary issue that needs to be addressed is the issue of market opacity. In an ideal market, market-wide pre-trade price transparency would enable buyers and sellers to find one another easily across the various market segments. To that end, the official sector should seek to make tradable prices much more widely available. For the quote driven segments of the market, it should be relatively easy to follow market practice in other asset classes for inter-market price discovery and mandate disclosure. However, as discussed above, the vast majority of D2C trading is done on an RFQ basis. Transmitting the nature of an RFQ is difficult and may disadvantage certain market participants as quotes are firm on a temporary and conditional basis. Nonetheless, as RFQs constitute an extremely important market segment and are an indication of what prices are available for the majority of the participants, the official sector should work towards making these quotes accessible to the public.

Pre-trade price transparency for RFQs is a complicated task, but the official sector has both a clean slate to start with and precedent from other asset classes on which to rely.¹⁴ Rules could be implemented in phases, with specific volume thresholds and/or time delays. There is precedent for this in block orders in swaps.¹⁵ The main objective should be to enable market participants to assess how the liquidity they are being provided through their chosen trading method compares with the liquidity that is available in the broader market. This is an indirect method for supporting pre-trade price transparency as it would enable investors to judge whether their execution was in line with the general market at the time and thereby encourage liquidity providers to provide execution in line with the general market. Indeed, establishing post-trade price transparency may be the best way to work towards pre-trade price transparency.

Post-trade price transparency is the least technically difficult aspect of Treasury market opacity to address, and it carries enormous potential benefits. Post-trade transaction data is uniform no matter the methodology used to match buyer and seller. Accordingly, the official sector should establish mandatory trade reporting requirements across the cash Treasury market. There are many market precedents that the official sector might rely on for this including, in particular, TRACE.¹⁶ In order for the reporting requirements to be of the greatest benefit, they should be universal and they should require timestamps, even in the event that some delay is permitted in reporting for block transactions. They should also require some information about the transaction venue or methodology involved, so that, in the event that a market participant found that its

¹⁴ For example MiFID II and the SEF rules in Title VII of Dodd-Frank both address dissemination of RFQs and the CME has rules for disseminating RFQs on Globex.

¹⁵ Procedures to Establish Appropriate Minimum Block Sizes for Large Notional Off-Facility Swaps and Block Trades 17 CFR Part 43 (2013)

¹⁶ The 6000 Series in the FINRA Manual may also be helpful

execution had been inferior, it would know how the superior transaction had been effected.

A trade tape that enabled all market participants to scrutinize the quality of their executions would have a number of beneficial effects. First, it would enable the imposition and enforcement of market practice standards such as FINRA Rules 5270¹⁷ and 5310¹⁸ in the Treasury market. Second, it would empower investors to press for pre-trade price transparency as well as for greater access to execution venues and methods which are denied them today. Just as demand has driven supply of capital, it can also drive supply of better structure. There is very good empirical evidence for the beneficial effects of post-trade price transparency. After the imposition of TRACE reporting in corporate bonds, transaction costs declined dramatically and the market shares of top dealers declined relative to smaller dealers, reducing concentration risk.^{19,20} Price reporting has therefore been shown not only to reduce costs but also to promote competition, and through it, longer term stability among the market making community. For this reason, and for the benefit of the wider market, the official sector should promote post-trade price transparency as a bridge to pre-trade price transparency.

Pre-trade and post-trade price transparency would go a long way toward improving the market structure and mitigating fragmentation. However, transparency is only one half of the solution. While the ability to see that better prices are available might give some market participants better leverage when negotiating price, there is no substitute for actual choice. Supporting open access to quotes should be an objective of the official sector, but like pre-trade price transparency, practical implementation will prove a challenge. A reasonable place to start would be to enable broader access to different execution methodologies through the promotion of central clearing.

Because dealers clear FICC but PTFs clear bi-laterally, the decline in dealer trading volumes has greatly reduced the degree to which the market is centrally cleared. The RFI points out that there is no statutory requirement for clearing in the Treasury market. It proceeds to ask whether one should be applied to market participants with large positions or volumes, framing this issue from the perspective of risk. The market would certainly benefit from greater central clearing of Treasury securities, but the main benefit would not be risk reduction. Settlement risk is simply not a very large risk in the Treasury market. The RFI specifically mentions concerns about firms who trade frequently; presumably they mean the PTFs, and given the volume of their trading relative to their capital, this is, superficially at least, a reasonable concern. However, there is evidence that this risk is not as great as one might imagine. The largest ever collapse of a PTF was Knight Capital, a loss of \$461 million.²¹ Compare that with the Lehman bankruptcy where FICC's Government Securities Division successfully resolved \$190 billion of Lehman's pending government securities trades through liquidation

¹⁷ Front Running of Block Transactions

¹⁸ Best Execution and Interpositioning

¹⁹ William Maxwell & Kumar Venkataram "Market Transparency, Liquidity Externalities and Institutional Trading Costs in Corporate Bonds," *Journal of Financial Economics* (October 2005)

²⁰ Edwards, A., L. Harris, & M. Piwowar, 2005, Corporate Bond Market Transparency and Transaction Costs, working paper, University of Southern California

²¹ Arash Massoudi, "Knight Capital glitch loss hits \$461m," *Financial Times*, October 17, 2012

without impact on customers.²² Clearly the scale of the risks carried by PTFs is much smaller than those of primary dealers. Risk management procedures at PTFs were robust enough to maintain continuous two sided prices throughout the events of October 15, 2014, while the much better capitalized, and centrally cleared, dealers withdrew from the market.²³

The primary benefit to the Treasury market of central clearing would be improved access for market participants to all sub-fragments of the market. Today, clearing arrangements effectively support fragmentation. The dealers clear centrally among themselves, but they face both the investors and the PTFs bi-laterally. PTFs clear bi-laterally because the fees necessary to centrally clear at FICC are out of all proportion to the profitability and settlement risks that PTFs face. Bi-lateral clearing for investors is a means by which they maintain relationships with their dealers, and the economics of bi-lateral clearing are also more compelling for them than are those of central clearing. On the other hand, bi-lateral arrangements can limit the counterparties with whom investors can transact and limit the degree to which they can preserve their anonymity. Thus, if the official sector were to mandate central clearing for the entire market, the benefits would be that market participants would be able to interact with one another more easily and on an anonymous basis.

There are, however, substantial risks to mandating such a profound change. The economics of central clearing, as it is currently conducted, are cost prohibitive for PTFs. This is because the fee structure of FICC presumes a business model that the PTFs do not employ, and a level of settlement risk they do not undertake. While their transaction volumes are large, their risk positions at any moment in time are small. In other markets where central clearing is priced more effectively, such as in the Treasury futures market, PTFs do centrally clear. The economic cost of risk mutualization in futures is higher, as both settlement and performance of the futures contract itself are guaranteed by the clearing house. A clearing mandate under the current regime would massively increase the costs to PTFs relative to the benefits conferred. This would force them to reduce their liquidity, which would in turn be felt immediately by investors in wider bid-offer spreads. Nonetheless, the official sector should explore ways in which the costs of central clearing can be distributed more evenly and reduced by more effectively pricing the settlement risk inherent in the marketplace, and promote greater access across the market structure. One way to achieve this would be to mandate central clearing by all market participants, including both PTFs and end investors, either of whom may be sponsored by dealers. By including all market participants, greater scale economies can be deployed against the costs of clearing. Establishing a uniform clearing regime across the market structure would make it easier for market participants to elect different market segments, including some to which they may not have access today.

VI. Conclusions

Today the secondary market in US Treasury securities is highly fragmented and it continues to fragment. This increases the costs and the risks to the market as a whole

²² "DTCC Successfully Closes out Lehman Brothers Bankruptcy" DTCC Press Release, October 30th, 2008

²³ "Joint Staff Report: The U.S. Treasury Market on October 15, 2014" released July 13, 2105

and has driven most of the concerns that the official sector seeks to address in the RFI. Fragmentation is driven by opacity and the limited ability of investors to access various market segments; it has been accelerated by regulatory changes. All of these will be persistent absent official action. We believe the official sector should take action to reduce fragmentation and promote convergence. Specifically, it should focus on pre-trade and post-trade price transparency and recognize that the two are linked. It also should focus on promoting central clearing without imposing it in a manner that would disadvantage PTFs and thus limit a major source of liquidity to the market. The official sector should seek to influence market forces where possible and use direct regulation where it is not. All of this is within the power of the official sector and the markets would be better off for it.

The official sector should take comfort in the fact that the private sector is already taking steps to address market structure issues. Our response has been to build Direct Match, an all-to-all trading venue that seeks to match buyers and sellers, regardless of whether they are dealers, PTFs, investors or others. We also offer full pre-trade and post-trade transparency through an anonymous CLOB. We have secured market-makers to ensure a robust level of liquidity, and we have been excited by the level of interest and support that we have received throughout the industry. Whatever courses of action the official sector decides to take, we will be working to bring to market a structure that works effectively for all participants, dealers, PTFs and investors.

We view the formation of Direct Match as the most direct answer to the market structure questions posed by the RFI: the Treasury market needs open, transparent, non-discriminatory trading for all participants.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jim Greco', written in a cursive style.

Jim Greco
CEO, Direct Match