ISDA® Safe, Efficient Markets

Discussion Papers Series
Number Two - November 2011

Costs and Benefits of Mandatory Electronic Execution Requirements for Interest Rate Products

ISDA Research Staff
with the support of
NERA Economic Consulting

The ISDA Discussion Papers are a new series of publications covering key topics in derivatives, public policy and financial regulation. Each is aimed at informing debate, encouraging discussion and illuminating public policy options as the derivatives markets evolve. Since its inception, ISDA has led the debate on derivatives matters, and the discussion paper series continues that tradition of thought leadership.

About ISDA

Since 1985, ISDA has worked to make the global over-the-counter (OTC) derivatives markets safer and more efficient. Today, ISDA is one of the world's largest global financial trade associations, with over 825 member institutions from 57 countries on six continents. These members include a broad range of OTC derivatives market participants: global, international and regional banks, asset managers, energy and commodities firms, government and supranational entities, insurers and diversified financial institutions, corporations, law firms, exchanges, clearinghouses and other service providers. Information about ISDA and its activities is available on the Association's web site: www.isda.org.

About the ISDA Discussion Papers

The ISDA Discussion Papers are a new series of publications covering key topics in derivatives, public policy and financial regulation. Each is aimed at informing debate, encouraging discussion and illuminating public policy options as the derivatives markets evolve. Since its inception, ISDA has led the debate on derivatives matters, and the discussion paper series continues that tradition of thought leadership.

About NERA

NERA Economic Consulting (www.nera.com) is a global firm of experts dedicated to applying economic, finance, and quantitative principles to complex business and legal challenges. For half a century, NERA's economists have been creating strategies, studies, reports, expert testimony, and policy recommendations for government authorities and the world's leading law firms and corporations. We bring academic rigor, objectivity, and real world industry experience to bear on issues arising from competition, regulation, public policy, strategy, finance, and litigation.

NERA's clients value our ability to apply and communicate state-of-the-art approaches clearly and convincingly, our commitment to deliver unbiased findings, and our reputation for quality and independence. Our clients rely on the integrity and skills of our unparalleled team of economists and other experts backed by the resources and reliability of one of the world's largest economic consultancies. With its main office in New York City, NERA serves clients from more than 20 offices across North America, Europe, and Asia Pacific.

CONTENTS

I. SUMMARY

This paper examines in considerable detail the likely costs and benefits of mandating the execution of interest rate swaps on designated contract markets ("DCMs") or on swap execution facilities, ("SEFs"). The "Electronic Execution Mandate" or the "EE Mandate" is not related to issues of safety or soundness of the derivatives marketplace. These issues are properly covered in rules regarding clearing and reporting of transaction data to regulators. Regulation affecting market structure rather than risk should be justified by rigorous cost-benefit analysis as required by law. Since there has been no such justification, the International Swaps and Derivatives Association ("ISDA") decided to conduct a comprehensive cost benefit study and retained NERA Economic Consulting to assist in the research and analysis. The study indicates that the EE Mandate, in all likelihood, will bring little benefit to the market while adding significantly to the costs of using derivatives.

BENEFITS

With the EE Mandate, the Commodity Futures Trading Commission ("CFTC") aims to increase the efficiency of the market by reducing transaction costs, improving access to markets and increasing transparency. These objectives are discussed in Section III. The first part of that Section focuses on transaction costs. It does so through a three-part analysis starting with an examination of liquidity and transaction costs in the interest rate futures and options market. This is followed by a review of liquidity and transaction costs in the over-the-counter ("OTC") derivatives market and by a survey of investment company "Buy-Side" users' expectations regarding the impact of the EE Mandate on interest rate swap ("IRS") pricing.

A. Futures: Few Liquid Contracts

Recent futures market data reveals that there are a number of contracts that trade in high volume at very narrow spreads. This liquidity, however, is very concentrated. Of the more than 100 US Dollar interest rate futures contracts available on the CME, only the Eurodollar and Fed Funds strips and the prompt (front) month Note and Bond contracts are liquid. There is virtually no liquidity in the succeeding months of the Note and Bond contracts. In fact, most interest rate and IRS futures do not trade at all. Options on interest rate futures contracts show even less liquidity. Finally, even in the most liquid contracts, users are forced to execute large trades piece-meal as the average ticket size is no more than $2 or 3 million.

B. Futures: Bid/Ask Spreads

Bid/ask spreads are very narrow in the most liquid contracts, such as the 2-year Note, which almost always trades at a 1/128th of a point spread (about 1 basis point in price). However, spreads widen considerably as liquidity declines and risk in the underlying instrument increases. For example, the bid/ask spread is 4/128th of a point (three basis points in price) for the Bond contract and 24/128th (nearly 20 basis points in price) for a 30-year IRS contract. As these spreads and the general lack in most contracts

show, having contracts trade on exchange-like platforms is by no means a guarantee of abundant liquidity.

C. OTC: Dealer Platforms: Spreads and Liquidity

Users of OTC derivatives now have a choice of venues for execution. They have access to single- and multi-dealer electronic platforms, as well as voice execution. In this paper, we show there is excellent liquidity and competitive pricing in existing electronic platforms. We tracked bids and offers in three single-dealer platforms for standard US Dollar and Euro swaps in a range of maturities over a four-week period. This survey showed that bid/ask spreads of half a basis point or less (in yield) are available over 90% of the time in most plain vanilla US Dollar IRS maturities through dealer platforms. Dealers post firm prices for large sizes on these platforms. The standard size for five year IRS is $200 million.

D. OTC: Voice Execution: Bid/ask Spreads

Despite the ease of execution and acceptable pricing users freely admit they do not trade electronically very often. They regularly obtain even better pricing and much larger size by calling one or more dealers requesting an improvement in the quote or a price for larger size. This confirms the results of a blind test conducted in 2010 by an independent financial firm. In that test, three Buy-Side users were able to obtain pricing on 15 different swaps within one tenth of a basis point from mid-market. The test involved USD and euro swaps ranging from two to 30 years. This level would translate in a bid/ask spread of less than one basis point in price for a 5 year swap.

E. Execution: Futures of OTC Derivatives

The analysis of transaction costs in the OTC and futures markets in Sections III A, B and C shows that the futures markets provide no better execution while providing much less liquidity than the OTC derivatives markets. In fact, the analysis on page 19 shows the costs of executing relatively short-dated swaps, even in modest size, in the futures market through Eurodollar strips will be higher than the average cost of the same swap in the IRS market. This is not surprising as it is the underlying risks in contracts that drive costs not the execution venue per se.

F. Buy-Side Concerns: SEF Rules: Loss of Liquidity

Derivatives users understand these price dynamics well and are deeply concerned about the proposed changes in market structure. Users believe restrictive provisions in the proposed rules such as the 15 second rule, the requirement for at least five participants to quote through a request for quote ("RFQ") platform, very high block trade thresholds and very short block trading reporting delays will negatively impact liquidity and push transaction costs up further.

G. Buy-Side Concerns: Increased Costs

Buy-Side users expect that the price of executing swaps will be generally higher once the mandate is effective and that bid/ask spreads will widen by two tenths to four tenths of a basis point in yield. Buy-

Side users are able to obtain very competitive pricing for very large transactions in the OTC market. There is concern that the EE Mandate will force Buy-Side users to execute large orders in piece-meal fashion as is necessary in the futures markets.

H. Buy-Side Concerns: Too Much Standardization

The EE Mandate may also affect users' ability to obtain competitive pricing for swaps with slight modification of standard terms. Recent data shows that only 9% of interdealer trades residing on the LCH.Clearnet's $300 trillion clearinghouse meet the qualifications of being homogeneous or standardized. The EE Mandate eliminates choice and is not justified by any estimate of benefits.

Access and Transparency

I. Small User Access and Pricing

Issues of access and transparency are discussed in Sections III D and E. There have been claims that small users will have better access to the market and benefit from better pricing as a result of the EE Mandate. The paper shows the effect on pricing for small users is uncertain. With mandatory clearing, the credit risk of small users will be eliminated. Therefore, small end users will be approved for execution of swaps on dealer platforms. As noted above, these platforms quote spreads of one half basis point or lower in excess of 90% of the time. Elimination of the bid/ask spread would improve price by one quarter basis point flat on a five year IRS. This amounts to $1,000 on a $10 million trade. It is the best possible outcome and it does not include the extra costs of execution caused by the EE Mandate (See Section IV F).

J. Marginal Effects on Transparency

There may be marginally better transparency of pricing once the EE Mandate comes into effect as pre-trade prices will be shown on DCMs and SEF platforms rather than dealer, broker and data provider screens. We say the benefit is marginal as several single- and multi-dealer platforms already display real-time quotes. Market participants also believe current transparency levels are very good.

K. Post Trade Transparency Concerns: Large Trades

With respect to post-trade transparency, the EE Mandate is seriously flawed. Real time reporting of trade information requirements, as now envisioned by the CFTC, will reduce liquidity, increase costs and only provide questionable benefits to small derivatives users.

A recent study showed the average size 10-year USD IRS was $75 million. This ticket size is unique in the world of finance and users are attracted to the IRS market because they can, in fact, execute large trades there. The proposed rules strike at one of the great strengths of the market. Reporting requirements need to balance transparency with liquidity to ensure IRS markets remain deep and liquid.

COSTS

The increased costs for market participants resulting from the EE Mandate are examined in Section IV. Cost estimates were obtained through surveys, interviews and analysis of publicly available data. Large Buy-Side users, very large dealers, the CFTC, the National Futures Association ("NFA"), and the SEFs themselves will all bear substantial new costs. The analysis considers both initial set up costs as well as on-going costs to comply with the Core Principles and other rules. It does not account for the costs of smaller Buy-Side users, non-dealer banks and insurance companies and dozens of dealers or the profit margins for the DCMs and SEFs. In all, the set up costs are estimated to exceed $750 million and annual costs may run to $250 million. The identified costs may translate into an incremental cost-per-transaction of approximately $1,300.. The vast majority of these costs will inevitably be passed on to end users and are sure to cause participants to withdraw from the market.

CONCLUSION

ISDA believes the EE Mandate will not meet its objectives. It will result in higher bid/ask spreads and significant operational, technological and compliance costs. Most of these will be borne by end users and may force some participants to withdraw from the market. It will have virtually no effect on small end users. The EE Mandate is both unnecessary and counterproductive as electronic trading is already developing rapidly as users take advantage of the existing choice in execution venues. The EE Mandate will take away users' choice, create inefficiencies and discourage innovation.

II. THE IMPACT OF DODD-FRANK ON THE DERIVATIVES MARKETS

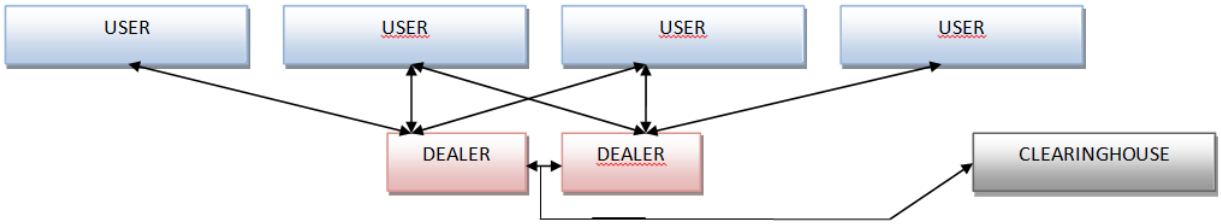
A. MARKET STRUCTURES

The Dodd-Frank Act ("DFA") was passed in 2010 as a relatively comprehensive overhaul of the US financial system. Title VII of DFA deals with OTC derivatives. Title VII gave jurisdiction over swaps to the CFTC and jurisdiction over security-based swaps to the Securities and Exchange Commission ("SEC"). Broadly speaking, swaps are derivatives tied to commodities or interest rates while security-based swaps are derivatives tied to the performance of securities or loans.

IRS and other OTC derivatives are generally traded on a bilateral basis, i.e., between two counterparties. A very large majority of OTC derivatives are executed between a bank dealer and its clients or between two dealers. In all, there are dozens of large banks operating around the world as dealers in interest rate swap markets. A good indication about the scale of the dealer community is membership in the LCH.Clearnet, the largest interest rate swap clearinghouse. There are now some 37 different banking groups that are members. Each of these banks meets the clearinghouse's requirements that it has a portfolio of IRS in excess of $1 trillion in notional. There are a smaller number of very large dealers that are actively involved in a long-standing series of commitments to global regulators designed to improve the safety and efficiency of the market. These are now termed the G-16 and the paper utilizes these 16 dealers in its analysis.

Dealers in the OTC derivatives markets act as principals and assume the market and credit risks associated with the trade until its maturity. Client trades have just begun to be cleared while a large majority of clearing eligible OTC derivatives between dealers is centrally cleared. Clearing eligible products include CDS Indices and approximately 200 single name CDS as well as over $300 trillion of IRS. In these transactions, the parties usually present a transaction to a clearinghouse for clearing approval. If the clearinghouse accepts the transaction, the bilateral contract is novated and the clearinghouse becomes the counterparty to each side of the transaction. The clearinghouse requires both initial margin and variation margin to protect itself. The basic structure of the market is shown in Figure 1 below. It is quite simple and this simplicity is likely an important factor in the success of the OTC derivative markets

Fig 1. The Pre-Dodd-Frank market structure for derivatives



- Majority of trades still negotiated through non-electronic (voice) systems
- Volumes of trades executed electronically are growing rapidly
- A dealer is a party to almost all trades
- Majority of dealer-to-dealer trades are executed through wholesale interdealer brokers
- Most of dealer-to-dealer trades are centrally cleared

The IRS market is an institutional market. Users are typically corporations, banks, the Buy-Side and other large and sophisticated entities. The average size of IRS is quite large. A study of market data from 2010 showed the average 10 year IRS was $75 million. A relatively small number of IRS are executed every day. The market study found only about 5,000 interest rate swaps were executed daily globally. Of those, approximately 1,500 trades are denominated in US dollars.[1] Only a fraction of these will be executed in the US subject to DFA and it means the cost of EE Mandate must be spread over a small universe of transactions.

In the aftermath of the financial crisis of 2007-2008, over-the-counter derivatives, although not a central cause of the crisis, have been blamed for increasing systemic risk. "The complexity and limited transparency of the market reinforced the potential for excessive risk-taking, as regulators did not have a clear view into how OTC derivatives were being used."[2]

To address this and other perceived issues in the structure of the OTC derivatives market, lawmakers included Title VII in DFA. According to the CFTC, DFA's Title VII had the objective of establishing "a comprehensive, new regulatory framework for swaps and security-based swaps. The legislation was enacted to reduce risk, increase transparency, and promote market integrity within the financial system by, among other things: (1) Providing for the registration and comprehensive regulation of swap dealers and major swap participants; (2) imposing clearing and trade execution requirements on standardized derivative products; (3) creating robust recordkeeping and real-time reporting regimes; and (4) enhancing the Commission's rulemaking and enforcement authorities with respect to, among others, all registered entities and intermediaries subject to the Commission's oversight."[3]

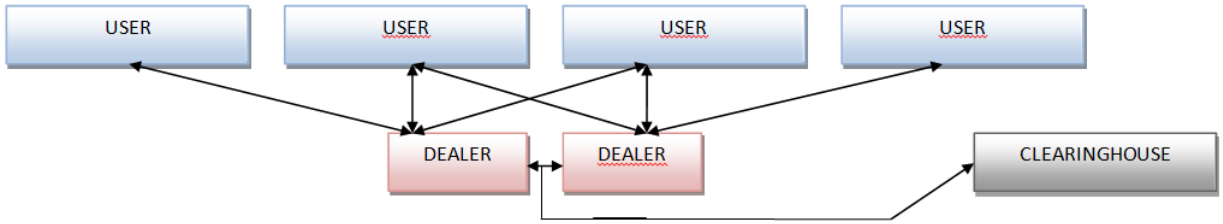
To achieve its objectives, DFA seeks to regulate the execution of derivatives transactions. These provisions essentially divided the OTC derivatives market into two. "Non-standard" trades or trades involving a corporate end user will continue to be executed as before, while clearing eligible products involving financial entities will now be traded on SEFs – a new type of regulated marketplace for the trading of swaps or in a DCM.[4] DFA added new Section 2(h)(8) to the Commodity Exchange Act ("CEA") to require that swaps subject to the clearing requirements of the CEA be executed either on a DCM or on a SEF, unless no DCM or SEF made the swap "available for trading". Section 733 of DFA also added Section 5h (a) (1), requiring that no person may operate a facility for the trading or processing of swaps unless the facility is registered as a SEF or as a DCM. Section 733 of DFA added new section 5h

[1] TriOptima trade-level interest rate swap repository data over a 45-trading day period from August 1 to September 31, 2010.
[2] Duffie, Darrell, Ada Li, and Theo Lubke, "Policy Perspectives on OTC Derivatives Market Infrastructure", *Federal Reserve Bank of New York Staff Reports*, no. 424 January 2010; revised March 2010.
[3] Core Principles and Other Requirements for Designated Contract Markets; Proposed Rule, 75 FR 80572 (December 22, 2010).
[4] It should be noted that Dodd-Frank regulations went much further than the recommendations of the G-20 whose leaders agreed in Pittsburgh in September 2009, that "All standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end- 2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse." FSB refers to the Financial Stability Board.

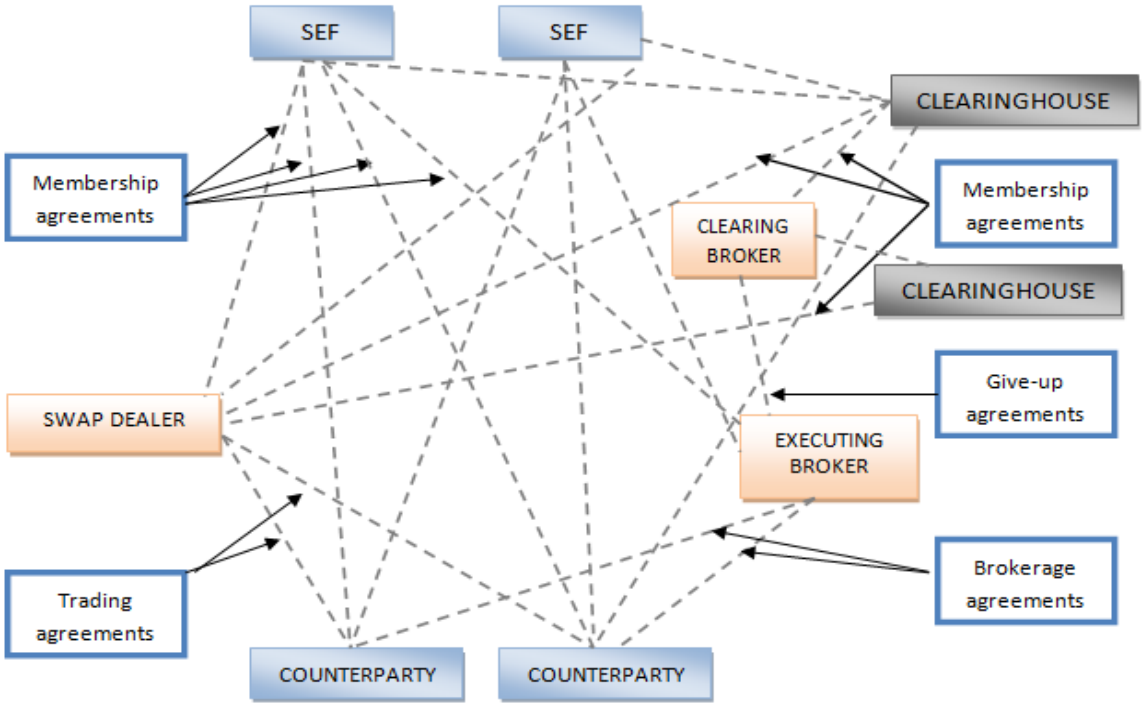
to the CEA to provide a regulatory framework of CFTC oversight. As result of these changes the market now will have the structure shown in Fig. 2. The top part of Figure 2 corresponds to Figure 1. It is clean and simple. The bottom portion is anything but simple. It is hard to fathom that this structure is one of design rather than happenstance. The many participants, vendors, agreements and technological links can only be more expensive to operate than the structure outlined in Figure 1.

Fig 2 - The Post-Dodd-Frank market structure for derivatives

Non Standard Products - Traded bi-laterally.



Standard Products - Traded on SEFs



B. Requirements of the Commodity Exchange Act Regarding Cost Benefit Analysis

It is clear that the changes to the structure of the derivatives market resulting from the implementation of DFA are significant and far reaching. The CFTC alone has issued more than 50 proposals for new rules to implement the new law. The CFTC issued its proposed SEF Core Principles Rule in January 2011[5] which will require SEFs to comply with 15 core principles and a number of operational requirements. The principles address compliance with rules, monitoring and processing of trades, financial integrity of transactions, publication of trading information and recordkeeping. The proposed SEF related rules define permissible execution systems (Central Limit Order Book and Request for Quote), block trade exemptions and the timing of trade reporting and limitation on matching orders (the 15 second rule).

Under the provisions of Section 15(a) of the CEA[6] the CFTC is required to evaluate the costs and benefits of the new regulations in light of:

- Protection of market participants and the public;
- Efficiency, competitiveness and financial integrity of markets;
- Price discovery;
- Sound risk management; and
- Other public interest considerations.

With respect to the required cost-benefit analysis that was performed, the CFTC's Inspector General commented: "The cost-benefit analysis consists of a very bare-bone, minimalist analysis, with little detail given. Moreover, no detail is given regarding costs to the Commission to oversee compliance with the core principles and regulatory requirements for SEFs".[7]

The actual wording in the section labeled "Costs" in CFTC's analysis drafted to comply with the CEA cost benefit requirements reads: "As highlighted by recent events in the global credit markets, transacting of swaps in unregulated, over-the-counter markets does not contribute to the goal of stability in the broader financial markets. The public would continue to be at risk to such financial instability if certain derivatives were allowed to trade over the counter rather than on regulated exchanges. SEFs that determine to register with the Commission in order to provide for the transacting of swaps will be subject to core principles for transacting of swaps. If swaps were allowed to continue to be transacted bilaterally, rather than on the regulated market of a SEF, price discovery and transparency in the swaps markets would continue to be inhibited. These procedures are mandatory pursuant to the Dodd-Frank Act and any additional costs associated with these procedures are required by the implementation of the Dodd-Frank

[5] Core Principles and Other Requirements for Swap Execution Facilities, 76 FR 1214 (January 7, 2011)
[6] Introduced in 2000
[7] *A Review Of Cost-Benefit Analyses Performed by the Commodity Futures Trading Commission in Connection with Rulemakings Undertaken Pursuant to the Dodd-Frank Act*, Prepared by the Office of the Inspector General Commodity Futures Trading Commission, June 13, 2011

Act."[8]

With due respect to the CFTC, ISDA takes issue with the assertion that if OTC derivatives are placed under the protection of a clearing house they would still create financial instability if executed on a platform other than a DCM or a SEF. There is no basis for this assertion. IRS that must be executed on DCMs or SEFs must also be cleared. It is the clearing process that contributes to stability, not the EE Mandate.

Regarding benefits, "The Commission believes that the benefits of the rulemaking are significant. The proposed regulations provide for the transacting of swaps on SEFs. SEFs will compete with DCMs that make certain swaps available for trading, while certain swaps will continue to transact bilaterally. This competition will benefit the marketplace. Providing market participants with the ability to trade certain swaps openly and competitively on a SEF complying with all of the SEF core principles as well as on DCMs complying with DCM core principles will provide market participants with additional choices and will enhance price transparency resulting in protection of market participants and the public. The proposed regulations will necessitate that SEFs that determine to make certain swaps available for trading will have to coordinate with DCOs in order to affect clearing and thus be subject to the DCO's risk management and margining procedures."[9]

We also respectfully disagree with the CFTC's assertion that the DCM and SEF rules will provide market participants with "additional choices" when it has taken away the very means that market participants have largely chosen. Choice in trade execution is particularly important at times of volatility. Many users of electronic markets for trading Euro interest rate swaps shifted "back to voice broking in July and August, due to very significant volatility in European financial markets in this period."[10] Participants already have the choice to execute electronically now either through dealer platforms or multi-lateral platforms. It is hard to see that participants will be better off with their choices restricted.

It is abundantly clear from the two paragraphs quoted above that CFTC failed to provide any meaningful cost benefit analysis regarding the proposed rules. This was recognized by Commissioner Sommers regarding SEF and other proposed rules:[11]

"I would like to talk about an issue that has become an increasing concern of mine – that is, our failure to conduct a thorough and meaningful cost-benefit analysis when we issue a proposed rule. The proposals we are voting on today, and the proposals we have voted on over the last several months, contain very short, boilerplate —Cost-Benefit Analysis sections. The —Cost-Benefit Analysis section of each proposal states that we have not attempted to quantify the cost of the proposal because Section 15(a) of the Commodity Exchange Act does not require the Commission to quantify the cost. Moreover, the

[8] 76 FR 1237 (January 7, 2011)
[9] 76 FR 1237 (January 7, 2011) DCO refers to Derivatives Clearing Organizations.
[10] ICAP plc. Trading Statement, London, 29 September 2011
[11] In her opening statement before the CFTC Open Meeting on the Twelfth Series of Proposed Rulemakings under the Dodd-Frank Act February 24, 2011 (available at: http://www.cftc.gov/PressRoom/SpeechesTestimony/sommerstatement022411.html).

—Cost Benefit Analysis section of each proposal points out that all the Commission must do is — consider the costs and benefits, and that we need not determine whether the benefits outweigh the costs.

"At the outset I ask, how can we appropriately consider costs and benefits if we make no attempt to quantify what the costs are? But more importantly from a good government perspective, while it is true that Section 15(a) of the Commodity Exchange Act does not require the Commission to quantify the cost of a proposal, or to determine whether the benefits outweigh the costs, Section 15(a) certainly does not prohibit the Commission from doing so. We simply have chosen not to.

"Clearly, when it comes to cost-benefit analysis, the Commission is merely complying with the absolute minimum requirements of the Commodity Exchange Act. That is not in keeping with the spirit of the President's recent Executive Order on "Improving Regulation and Regulatory Review." We owe the American public more than the absolute minimum. As we add layer upon layer of rules, regulations, restrictions and new duties, we should be attempting to quantify the costs of what we are proposing. And we should most certainly attempt to determine whether the costs outweigh the benefits. The public deserves this information and deserves the opportunity to comment on our analysis. That is good government. Our failure to conduct a critical analysis of costs and benefits simply because we are not required to is not good government."

ISDA believes a good government exercise in cost-benefit analysis regarding the EE Mandate will produce results very similar to those we present in this paper.

III. BENEFITS

While DFA seeks to reduce risk, increase transparency and promote market integrity[12], the CFTC states its plan for OTC derivatives will improve market efficiency by reducing transaction costs, increasing liquidity and facilitating access to markets.[13] Indeed, the CFTC trumpets its firm belief that transaction costs will be reduced without any analytical or empirical evidence. In this section, we examine the likelihood of these objectives being achieved through the EE Mandate rules proposed by the CFTC for interest rate swaps. We start by looking at the liquidity in both the futures markets and the current structure of OTC derivatives and the prospects for lowered transactions costs in DCMs and SEFs. We then examine the issues of access and transparency.

A. LIQUIDITY AND TRANSACTION COSTS IN THE FUTURES MARKETS

The futures and options markets have long offered standardized, centrally cleared contracts designed to transfer risk in a number of asset classes including commodities, equities, bonds and other interest rate products and currencies. Futures exchanges are transparent and highly regulated markets. Contracts mature at regular intervals, most frequently on a monthly or quarterly basis. Contract notional amounts are set at relatively low amounts to both provide flexibility to users and to attract the broadest possible participation.

The largest futures exchange in the US, the CME, offers more than 20 contracts linked to US Treasuries, US Dollar denominated swaps and to short term interest rates, each in a series of different maturities. In all, there are over 100 contracts. In addition, there are literally thousands of options contracts on futures. These are puts and calls for a range of strike prices for each maturity of the underlying futures contracts.

Liquidity in the futures markets is usually evaluated through three variables: the volume traded, the size of bid/ask spread and the (average) size of the top-of-the book, i.e., the number of contracts in the orders at the best bid and offer levels.

Liquidity is very concentrated in a handful of contracts that attract broad interest and generate substantial volumes. There are five futures contracts (Bond, 2-, 5-, 10-year Note, and Eurodollar) but no options contract with daily average trading volumes in excess of 100,000 contracts.[14] Liquidity is also concentrated in the front end of the maturity range. Trading activity, in most contracts, is concentrated in the front (prompt) month only.[15] A large majority of contracts do not trade at all.

---

[12] The CFTC release notes generally that the legislation seeks to "reduce risk, increase transparency, and promote market integrity." (CFTC Federal Register, page 1214).
[13] Referring to SEFs Chairman Gensler stated: "This brings competition to the marketplace that improves pricing and lowers risk." Remarks before the Swap Execution Facility Conference, October 3, 2011.
[14] CME Group Exchange ADV Report, September 2011.
[15] The exceptions are the Fed Funds and Eurodollar contracts. Much of the volume in these contracts is related to hedging of OTC contracts.

Table 1: Liquidity in the US Interest Rate Futures Markets
(Based on notional value traded on September 16th, 2011)

	Liquidity					
	Prompt	2nd Contract	3rd Contract	4th Contract	5th Contract	6th Contract
BOND	●	○	○	○	○	○
10-YR NOTE	●	○	○	○	○	○
5-YR NOTE	●	○	○	○	○	○
3-YR NOTE	○	○	○	○	○	○
2-YR NOTE	●	○	○	○	○	○
FED FUND	●	●	●	●	●	●
10-YR INTEREST RATE SWAP	o	○	○	○	○	○
7-YR INTEREST RATE SWAP	○	○	○	○	○	○
EURODOLLAR	●	●	●	○	●	●
EMINI EURODOLLAR	○	○	○	○	○	○
1 MONTH EURODOLLAR	○	○	○	○	○	○
5-YEAR ON-THE-RUN TREASURY	○	○	○	○	○	○
30-YR INTEREST RATE SWAP	○	○	○	○	○	○
5-YR INTEREST RATE SWAP	o	○	○	○	○	○
10-YEAR ON-THE-RUN TREASURY	○	○	○	○	○	○
2-YEAR ON-THE-RUN TREASURY	○	○	○	○	○	○
ULTRA T-BOND	●	○	○	○	○	○

- ● Highly Liquid (Volumes in excess of $ 1 billion a day)
- o Moderately Liquid (Volumes between $ 50 million and $ 1 billion a day)
- ○ Illiquid (Volumes under $50 million a day)

Table 2 summarizes liquidity in Options contracts on the 10-year Treasury Note Futures. Liquidity is concentrated on two call and one put contract, all in the front month. All the other contracts are illiquid.

Table 2: Liquidity in Options on 10-Year Note Futures
(Based on notional value traded on September 23rd, 2011)

Contract Expiration	Strike:	$ 130.5	$ 131.0	$ 131.5	$ 132.0	$ 132.5	Total
Oct-11	Call	○	●	●	○	○	●
	Put	○	●	○	○	○	●
Nov-11	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○
Dec-11	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○
Mar-12	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○
Jun-12	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○
Sep-12	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○
Dec-12	Call	○	○	○	○	○	○
	Put	○	○	○	○	○	○

- ● Highly Liquid (Volumes in excess of $ 1 billion a day)
- ○ Moderately Liquid (Volumes between $ 50 million and $ 1 billion a day)
- ○ Illiquid (Volumes under $50 million a day)

Table 3 on the next page shows that a large proportion of interest rate futures do not trade at all. There is also a large concentration (over 70%) of activity in literally a handful of contracts. The large numbers of futures contracts that eventually fail (i.e. cease to trade) provide further evidence that exchange or mandatory central trading structure does not guarantee liquidity. This is evident in an analysis of the historical experience of the exchange-trading requirement that has existed in the Commodity Exchange Act since 1974[16]. In his comprehensive review of the success and failure of futures contracts[17], CFTC economist Michael Penick found that only 27 % of those contracts introduced on interest rate futures products actually succeeded in attracting volume. Because the cost of introducing and marketing a contract was (and is) significant, exchanges often provide incentives to market makers and other liquidity providers in order to encourage customers to use the markets. This typically results in an initial show of volume.[18] However, the old adage that "you can lead a horse to water, but you can't make him drink", is also true in

[16] The requirement was established by the Commodity Futures Trading Commission Act of 1974.

[17] Penick, Michael, "The Life Cycle of Futures Contracts: The Success and Failure Rates of Futures Contracts in the United States," Working paper, CFTC, Washington, DC, 2004.

[18] New entrants seeking to attract volume to their markets have cross-subsidized the fees and provided volume discounts, particularly in the Treasury complex, in hopes of attracting volume and open interest, from which they hoped to build a liquidity pool. United States Futures Exchange, or the USFE, offered Treasury futures and options with zero fees for a prolonged period, which was accompanied by a significant reduction in fees at the CBOT on their products. While USFE was eventually shuttered because they failed to attract volume, new entrants including the Electronic Liquidity Exchange and NYSE LIFFE have introduced competing interest rate products, and this has contributed to lower fees and incentives at all three exchanges.

the trading of contracts. Penick found that 73% of interest contracts failed within three years of introduction, while over 83% failed within 10 years.

Table 3: Trading Volume Concentration in Listed Interest Rate Contracts [1,2,3]
Percentage Share of Total Volume

Category [4]	Number of Contracts	Top 5 Contracts	Top 10 Contracts	Percentage of Contract Series with "Zero" Volume
Interest Rate	170	76%	87%	50%
Swaps	64	73%	97%	69%
Bonds	221	70%	90%	43%

Notes:
1) Data downloaded from Bloomberg L.P. (CTM screen).
2) Volume statistics as of September 8, 2011.
3) The volume statistics are based on aggregate volume for all monthly contracts in a given series
4) Includes futures, options, spread and strategy type contracts.

The concentration of liquidity in a few contracts is also reflected in the bid/ask spreads. Table 4 shows quoted bid/ask spreads for selected interest rate futures contracts offered in the CME exchanges during a one-hour period in the morning in a twelve-day period in July-August, 2011. The most liquid contracts trade almost always (more than 90% of the time) with a one "tick" bid/ask spread, equal to the smallest price movement allowed in the contract. The 2-, 5- and 10-year Treasury Note contracts usually trade at 1/128th, 1/128th and 1/64th of a point bid/ask spread respectively.[19] The less liquid contracts however tend to trade with much wider spreads: the 30-year Interest Rate Swap contract traded at bid/ask spreads more than 10 times wider (24/128th) more than 87% of the time during the data collecting period[20].

[19] The spread for the front Eurodollar contact, not included in the table, is usually at 1/800th of point; this is however ½ of a basis point in yield. The top-of-the-book in these contracts is also very deep on average. Depth however varies substantially with time. For the 10-year Treasury Note futures contract it was at 360, 790 and 965 contracts on average during the fourth quarter, 2010 and the first and second quarters in 2011 respectively. The contract has a principal amount of $ 100,000.
[20] It should be noted that market participants pay both exchange and broker fees to execute their trades. Exchange fees are $0.64 a side per contract for interest rate products. Broker fees vary widely; currently the lowest are close to $0.12 a side per contract.

Table 4: Quoted Bid/ask Spreads in Prompt Month CME Interest Rate Futures

Contract	Quoted Bid/Ask Spreads																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		>24
2-yr Treasury Note	98.8	1.2	•	•	•	•	•	•	•	•	•	•	•	•	•	➡	•
3-Yr Treasury Note	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	➡	•
5-yr Treasury Note	94.5	5.4	•	•	•	•	•	•	•	•	•	•	•	•	•	➡	•
10-yr Treasury Note	•	98.7	•	1.3	•	•	•	•	•	•	•	•	•	•	•	➡	•
30-Yr Treasury Bond	•	•	•	98.2	•	•	•	1.8	•	•	•	•	•	•	•	➡	•
LT "Ultra" Treasury Bond	•	•	•	82.7	•	•	•	17.3	•	•	•	•	•	•	•	➡	•
OTR 2-YR treasury Note	4.2	33.5	46.1	15.4	•	•	•	•	•	•	•	•	•	•	•	➡	•
OTR 5-YR treasury Note	3.8	24.8	37.1	24.5	9.2	9.2	•	•	•	•	•	•	•	•	•	➡	•
OTR 10-YR treasury Note	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	➡	•
5-YR Interest Rate Swap	•	7.6	•	39.3	•	48.9	•	3.8	•	•	•	•	•	•	•	➡	•
7-YR Interest Rate Swap	•	•	•	•	•	•	•	15.4	•	47.8	•	32.9	•	3.7	•	➡	•
10-YR Interest Rate Swap	•	•	•	6.4	•	55.9	•	31.7	•	2.5	•	1.3	•	•	•	➡	•
30-YR Interest Rate Swap	•	•	•	•	•	•	•	•	•	•	•	•	•	1.3	2.4	➡	87.5

Relative Frequency Expressed in Percentages
July 25 –August 5, 2011 9:00AM through 10:00AM
Bid/ask spreads are quoted in 128th of a point
Source: Bloomberg
• Denotes less than 1% or no activity

Concentration in liquidity is also reflected by the depth at the top-of-the-book. This is substantial in liquid contracts: in the first quarter of 2011 average depth at the top of the book in the Eurodollar contract was 2,635 contracts; it was 790 contracts in the 10-year Note.[21] It is only a small fraction of these values in most contracts. It should be noted, however, that the depths mentioned overestimate actual liquidity as most of the orders outstanding at any given point in time are cancelled before execution.[22]

[21] CME Group, 1st Quarter 2011 Liquidity Monitor.
[22] See for example Field, Jonathan and Jeremy Large, "Pro-Rata Matching and One-Tick Futures Markets" (2008) available at . http://www.economics.ox.ac.uk/members/jeremy.large/ProRataApril08.pdf

B. LIQUIDITY AND TRANSACTION COSTS IN THE OTC MARKETS

Liquidity, the most important characteristic of efficient markets, is usually defined as "the ability to trade large size quickly at low cost when you want to trade"[23] and most commonly measured by the bid/ask spread[24] combined with the depth of the market. Since OTC derivatives are, by definition, traded over the counter, there is no central market. Furthermore, market participants have differing access to dealers, and bid/ask spreads are specific to each user, depending on its credit quality, dealer relationships, etc.[25] Buy-Side users in the US and Europe however, have client relationships with a number of derivatives dealers. An upper bound for the bid/ask levels in interest rate swaps can be obtained by analyzing the executable quotes provided by a number of dealers in their electronic trading platforms. It is an upper bound both because dealers, when called by good clients directly, will generally improve pricing relative to screen pricing and because end-users may have access to a larger number of dealers. The availability of these platforms will be extended to small users as well (once the clearing mandate is in place) and set upper bounds on their costs without the EE Mandate.

To calculate this conservative upper bound of the bid/ask spreads Buy-Side users encounter in the Euro and US Dollar interest rate swap markets, we monitored offerings posted in single dealer platforms. We recorded the executable quotes and notional sizes offered by three major banks in their single dealer platforms in 2, 3, 5, 7, 10 and 30 year maturities both in US Dollars and Euros, at one-minute intervals, from 9:30 AM to 4:00 PM in New York and London respectively, during the period from July 19th to August 12th, 2011. For every maturity in each currency a total of 7,429 observations were made. In each of these, the difference between the lowest bid (to pay fixed rate) and highest offer (to receive fixed rate) is a conservative estimate of the bid/ask spread a Buy-Side user which is a customer of all three banks[26] would face. Market volatility was very high at several times in the observation period as result of the financial crisis in the Eurozone.

---

[23] Trading and Exchanges: Market Microstructure for Practitioners, Larry Harris, Oxford University Press, 2002.

[24] Liquidity can be measured in a number of ways Because market participants have different priorities and use different trading strategies, liquidity is measured along a number of dimensions:

- Market Width - The cost of executing a transaction within a short period of time, measured by the bid/ask spread;
- Market Depth – Estimated by transaction size required to move the market price by a certain amount;
- Resiliency - The speed with which price recovers from changes caused by a transaction that moves market price; and
- Immediacy - The speed with which a trade of a given size can be agreed at a given cost.

[25] Liquidity is the outcome of a search in which buyers look for sellers and sellers look for buyers. Since interest rate swaps are traded bilaterally, to arrive at precise estimates of the effective bid/ask spreads a user faces, one would have to consolidate all executable quotes from dealers and trading platforms that are available to such user. Arriving at such estimates would require considerable effort.

[26] Liquidity is the outcome of a search in which buyers look for sellers and sellers look for buyers. Since interest rate swaps are traded bilaterally, to arrive at precise estimates of the effective bid/ask spreads a user faces, one would have to consolidate all executable quotes from dealers and trading platforms that are available to such user. Arriving at such estimates would require considerable effort.

Table 5: Observed composite bid/ask spreads in US Dollar interest rate swaps in three single major dealer electronic platforms– July 19-August 12, 2011

	Maturity					
Spread	2 YR	3YR	5YR	7YR	10YR	30YR
>0.8bp	2.10%	3.90%	4.40%	3.60%	4.20%	2.30%
0.8bp	0.80%	2.70%	1.70%	2.00%	2.00%	1.50%
0.7bp	3.00%	2.00%	2.80%	2.30%	1.60%	1.40%
0.6bp	2.30%	1.10%	0.60%	0.90%	0.90%	1.60%
0.5bp	56.70%	42.90%	32.60%	28.90%	36.90%	23.10%
0.4bp	23.70%	24.10%	21.30%	23.60%	22.70%	23.80%
0.3bp	7.30%	14.80%	21.00%	13.80%	10.60%	15.20%
0.2bp	2.40%	4.90%	4.50%	8.60%	7.50%	10.70%
0.1bp	0.60%	0.80%	3.70%	6.10%	4.70%	7.40%
0	1.00%	2.60%	7.40%	10.30%	8.70%	12.90%

Observed composite bid/ask spreads for US dollars are summarized in Tables 5. Individual entries in the tables represent the proportion of time (expressed in percentages) in which the effective spread was at the specified levels. For example, in the five-year maturity, interest rate swaps bid/ask spreads were at 0.5 basis point 32.60% of the time. Cumulative frequencies can be easily calculated by summing entry values in a given column. Bid/ask spreads in 10-year US Dollar swaps, were 0.4 basis point or less 53.20% of the time; bid/ask spreads were 0.2 basis point or less 20.90% of the time. A bid/ask spread of 0.4 basis point, in yield, for a 10-year swap translate into approximately 1/32nd of a point upfront; for a two year swap such a spread would translate into approximately 1/128th of a point. From Table 5, we can also see that all maturities of US dollar swaps had a cumulative probability in excess of 90% that the bid/ask spread was 0.5 basis points or less. These spreads appear quite competitive by themselves and it must be remembered that screen quotes are regularly improved upon when clients call dealers.

Table 6: Observed composite bid/ask spreads in Euro Denominated interest rate swaps in three single major dealer electronic platforms– July 19-August 12, 2011[27]

	Maturity					
Spread	2YR	3YR	5YR	7YR	10YR	30YR
>1.0bp	5.98%	4.90%	3.38%	3.73%	4.43%	27.69%
1.0bp	8.48%	6.49%	4.27%	4.20%	4.70%	6.60%
0.9bp	5.48%	5.05%	3.73%	3.47%	4.01%	6.30%
0.8bp	4.95%	5.02%	3.80%	3.85%	4.28%	7.17%
0.7bp	6.07%	7.17%	5.71%	6.33%	6.38%	6.64%
0.6bp	5.18%	6.12%	5.77%	6.30%	5.07%	16.41%
0.5bp	7.81%	8.20%	8.52%	8.90%	9.09%	8.49%
0.4bp	13.92%	16.25%	17.16%	18.45%	19.49%	6.60%
0.3bp	15.55%	17.18%	16.27%	17.77%	16.81%	4.35%
0.2bp	13.31%	11.63%	12.36%	12.17%	10.97%	3.70%
0.1bp	7.55%	5.86%	6.92%	6.33%	6.41%	2.27%
0	5.72%	6.14%	12.11%	8.51%	8.36%	3.77%

Table 6 shows the same results for euro bid/ask spreads as Table 5 did for US dollars. The results are somewhat different, due in part, we believe to the very high level of volatility observed during some of the trading days. Nonetheless, euro bid/ask spreads for three, five, seven and ten year maturities still had cumulative probabilities in excess of 65% for bid/ask spreads of 0.5 basis points or less.

To the simple observer of these outcomes, especially for US dollars, it can be safely assumed that there is very little spread in the interest rate swap market. In fact, if we assume the average bid/ask spread goes to zero, the improvement for the Buy-Side user is only half the movement in bid/ask as entities are able to execute at mid-market, not at the other side of the market. We will return to prices after a short review of the liquidity the dealers showed on their screens for electronic execution.

Tables 7 and 8 below give an indication of the liquidity available in the single dealer platforms for various maturities in US Dollars and euros. Entries in each table are the size available to customers on either side of the market at the narrowest bid/ask spread during the period from July 19th to August 12th, 2011.[28] The top row gives the median size available in the period for the various maturities and is a good estimate of what is available to Buy-Side users when normal conditions prevail. The bottom row shows the

[27] The data in the Table covers periods of extreme volatility in the market in early August, 2011 related to the unfolding crisis in the Eurozone. Ten year euro interest rates traded in a 15-basis points range on both August 10th and 11th after trading on a 34 basis points range on August 9th,, several times wider than the average. This resulted in relatively wide spreads and, at some points in time, in the absence of executable quotes from one or two dealers: in 25 (out of 7429 or 0.3%) of the observations only one dealer was quoting executable prices. In 320 observations (or 4.3%) only two of the three dealers were quoting executable prices.

[28] This would correspond to the "top of the book" in the futures markets.

first percentile for market sizes in the same period and is a conservative lower bound for the size available to customers: in 99% of the periods, the firm size available was equal to or exceeded the amount shown. It is a reasonable estimate of the liquidity available at times of significant disruption in the markets. On an average day, one can execute electronically in size of $100 million or more and in €100 million or more for maturities out to 10 years. This needs to be recalled when the liquidity of the futures and OTC markets are compared.

Table 7: Size of the market at the narrowest bid/ask spread for US Dollar interest rate swaps from three major dealers – July 19th, August 12th, 2011
(Notional amounts in millions of dollars)

	Maturity					
	2YR	3YR	5YR	7YR	10YR	30YR
Median	250	240	200	150	100	30
1st Percentile	100	75	50	23	15	5

Table 8: Size of the market at the narrowest bid/ask spread for Euro interest rate swaps from three major dealers – July 19th, August 12th, 2011
(Notional amounts in millions of Euros)

	Maturity					
	2YR	3YR	5YR	7YR	10YR	30YR
Median	170	125	100	100	100	25
1st Percentile	100	70	60	60	60	13

As noted above, Buy-Side users are frequently able to obtain better execution terms than those available on dealer screens either by directly negotiating with a dealer or by putting a number of dealers in competition for a specific trade. In 2010 to obtain estimates of bid/ask spreads Buy-Side users actually face in the markets, ISDA commissioned Atrevida Partners[29] to conduct a test where three large Buy-Side users each solicited executable price quotes from dealers on five separate interest rate swap transactions. None of the 15 trades was exactly alike. Transaction sizes varied from $50 to $250 million; maturities from 2 to 30 years. For each transaction, three quotes were requested. The dealer quotes were compared to Bloomberg (IRSB) screen pricing as well as to one another. The best quotes averaged 0.001% (one-tenth of a basis point) from the mid-market yield on Bloomberg. (Equivalent to a bid/ask spread of 0.002 %.). The average spread between the best and worst quote (of the three total quotes) was 0.0038% (0.38 basis points) and as a percentage of the average quote this spread was 0.30%. The test results are further indication that pricing in the interest rate swap market is very competitive despite the low volume of trades done each day by dealers. In addition, the close relationship between Bloomberg and dealer quotes indicates that pricing is highly transparent for customers.

[29] "Interest Rate Swap Liquidity Test" - a report sponsored by ISDA and conducted by Atrevida Partners in conjunction with market participants in November 2010.

C. Impact on Transaction Costs, Liquidity, and Market Practices

The CFTC believes[30] the EE Mandate will produce substantial reduction in transaction costs. This view is not shared by many Buy-Side users who expect exactly the opposite will happen, that liquidity will suffer and that transaction costs will increase.

To gauge the expectations of Buy-Side users regarding the impact of the EE Mandate on pricing, we surveyed a number of large Buy-Side users. We specifically asked these institutions if they expected pricing and liquidity in general to get better or worse after the mandate is effective. We also asked respondents to estimate the actual impact on execution levels for a series of eight standard US Dollar interest rate swaps. In addition, we asked if these firms were considering moving some trading operations off-shore. Most respondents surveyed expect that liquidity will deteriorate and that pricing will get worse, especially for large trades. Several firms indicated they would consider moving some operations overseas. The average expected change in execution levels is summarized in the table below.

Table 9: Expected changes in bid/ask spreads for selected interest rate contracts

Maturity	Notional Amount	Average Expected Impact
5 Years	100	Widen by 0.2 b.p.
5 Years	250	Widen by 0.2 b.p.
5 Years	1000	Widen by 0.4 b.p.
10 Years	100	Widen by 0.2 b.p.
10 Years	250	Widen by 0.4 b.p.
10 Years	1000	Widen by 0.4 b.p.
30 Years	100	Widen by 0.4 b.p.
30 Years	250	Widen by 0.4 b.p.

These expectations are supported by a number of factors. Transaction costs for standard trades in the OTC markets are already very low and, in several instances, comparable to the costs in the futures markets. For instance, trading a strip of Eurodollar futures is equivalent, in terms of risk transfer, to executing a US Dollar interest rate swap. Not surprisingly, transaction costs are similar. The median cost in the OTC market for executing a $100 million 5-year year interest rate swap, estimated as half of the net present value of the bid/ask spread, would be approximately $10,000 while in the futures markets the costs of the equivalent transaction would average $14,000, inclusive of 1,500 in exchange and broker fees.[31]It should also be stressed that a $100 million strip of Eurodollar contracts might move the prices of

[30] Remarks, Bringing Transparency to the Swaps Markets, National Association of Corporate Treasurers Conference, CFTC Chairman Gary Gensler, June 2, 2011

[31] The median bid/ask spread in five year US Dollars interest rate swaps is estimated to be 0.4 basis point per annum. The equivalent transaction in futures would involve the buying or selling of strip, over 20 quarters, of 100 Eurodollar contract. Bid/ask spreads in a single Eurodollar future are almost always equal to1/800th of a point or 1/40th of point for the strip ($12,500). Exchange and brokerage fees would add another $1,500.

the strip, thereby costing yet additional sums.

Trading in a regulated market or in an exchange, *per se*, does not guarantee a more efficient market. Frequently, traders get better execution off-the exchange even in relatively liquid contracts where substantial activity takes place ex-pit, i.e., are traded over-the-counter (and later registered at the exchange).[32]

Pricing will also suffer as some of the proposed regulations, including block trade exemptions and the 15 second rule are likely to negatively impact liquidity in the market.

On the other hand, SEFs, as we discuss below, may facilitate access to markets for a number of new participants and reduce the costs for smaller participants. The evidence indicates that there is little value to this benefit.

D. Access to Markets

Electronic trading of swaps has been facilitated in recent years by dealers, the interdealer brokers ("IDB"s) and multiple participant platforms. With an increased level of electronic functionality and a growing level of market participation volumes are increasing rapidly. IDBs have developed sophisticated systems for electronic communication and messaging between dealers. Several dealers have introduced and made available to an increasing number of clients, screens that provide real-time executable quotations for standard trades. These screens are frequently available through Bloomberg terminals. The system of one major dealer offers over 40 products, and boasts over 7000 users. As more dealers have offered these systems to their clients through a common interface, access for a wide range of investors has increased. Tradeweb, an automated trading system ("ATS") for bonds and rates products, introduced an electronic request for quote model in 2005. It boasts an institutional client base of over 2000 buy-side customers, with more than 40 dealers participating. The system has executed more than 75,000 trades for its clients, with a notional value of more than $7 trillion.[33] The platform has experienced rapid growth recently with volumes in the third quarter 90% higher than in 2010. Daily volumes now exceed $10 billion.[34]

Volumes of electronic trading in swaps will continue to grow very rapidly mainly because of the ease of execution and reduced processing costs. The coming requirement of mandatory clearing of interest rate swaps for financial entities should provide an additional incentive for electronic execution. DCMs and SEFs will facilitate access further by disseminating offers from multiple dealers and other market participants through a single screen. This should result in improved access for high frequency and algorithmic traders but we are not sure this will create any benefit to market participants.

---

[32] Craig Donohue, Comment Letter to the CFTC, February 22, 2011

[33] "Dodd-Frank Sets Stage of Move to Electronic Markets, Tradeweb e-markets, Spring 2011.

[34] Trading of swap contracts on pure exchanges have had very little success to date with daily volumes in the CME well under $500 million in notional amounts.

E. Market Transparency and Small Users

The objective of increased transparency of OTC derivatives markets is often wound up in two different goals. The first, transparency to regulators, is needed to ensure regulators know of concentrations of risk in the market and the risk profiles of the firms they regulate. Market participants might complain at the costs of providing the information to designated trade repositories but they recognize it to be a very useful endeavor. It is, indeed, a safety and soundness reform.

The second, transparency to market participants, is what worries Buy-Side users as well as numerous other market participants. In IRS markets, Buy-Side users have access to pricing from multiple dealers. Generally, these Buy-Side users are content with the level of transparency and fear that greater transparency will produce a reduction of liquidity and worse pricing. Proponents of the EE Mandate claim that dealers that are unable to compete in the bilateral world will provide extra liquidity which may benefit the small end user. The only small end user that will be subject to the EE mandate will be small financial entities that are also subject to mandatory clearing. Mandatory clearing will be expensive for some and may drive some of these participants from the market, but it is time to examine the potential benefits for the small users.

These small users will have to have a clearing member clear their trades. Presumably, these clearing members will have access to dealer servers or interdealer screens. What is the cost if these platforms? This paper has already shown that bid/ask spreads of one half basis point *per annum* (or less) are available on these platforms 90% of the time. If the bid/ask spread were to disappear entirely, the small user would obtain better pricing by one quarter basis point *per annum* or about one basis point flat for a five year IRS.

What is one basis point on a $10 million IRS? It is $1,000, less than the $1,280 average cost per trade derived in IV F summary below.

What may be the costs of giving this "benefit" to small end users? Assume the Buy-Side users are right and spreads widen by 0.2 to 0.4 b.p. per annum. This spread widening occurs on $75 billion of IRS (1,000 trades times $75 million). Assume conservatively the average maturity is five years. The cost per day is $7 to $14 million. In most markets, the benefits do not match these costs.

Having said this, we believe pre-and post-trade price transparency is not harmful if it is limited to smaller trades. Such transparency would not impede dealers from making-markets nor impede the ability of the Buy-Side to receive satisfactory pricing and execution. To address their concerns, a useful strategy might be for multi-lateral platforms to adopt real time reporting for small to average size trades and to gradually increase the size of trades that are subject to real-time reporting as markets adapt to a greater share of electronic trading.

DCMs, as limit order books which display the best bids and offers and the size of these quotes, provide the highest degree of pre-trade transparency. The quotes are executable, and can be seen by

all in the market. But it is important to note that this transparency is not the result of a government mandate, but rather a natural outcome of markets seeking to maximize the volume and liquidity of their products. For years, exchanges have been aggregating and disseminating the trade information among their users. The ready availability of executable quotation information on interest rate products can be traced to the last decade, when electronic trading expanded rapidly. With the mandate of clearing and an increase in electronic execution, the interest rate swaps market will naturally develop a higher level of post-trade transparency and a more straightforward means of pre-trade transparency. This will come without a mandate for a particular execution method.

We should note a new piece of information that has been uncovered by the LCH SwapClear, the largest derivatives clearing house. SwapClear examined their entire portfolio of nearly 1 million contracts to determine how standard their transactions were. Since this accounts for a vast majority of SwapClear's business, one might imagine that there was a relatively large amount of trades in common maturities and common terms. The results are quite surprising. Of the million swaps only 9% were both standardized and were executed more than five times. While surprising, remember the OTC market lets users specify three or six month LIBOR, different day count fractions, business day conventions, etc. Will the EE Mandate mandate eliminate or accommodate these choices for users? Or will the broad range of choices mean these IRS are too illiquid to be available for trading on a SEF or on a DCM?

IV. COSTS

The EE Mandate will impose new costs on all market participants. SEFs themselves need to be established, licensed and operated. Buy-Side users will face significant technology and operational challenges as well as increased regulatory reporting requirements. Dealers will have to upgrade infrastructure to deal with automated trading and comply with increased regulatory reporting and record-keeping. All participants will face increased reconciliations, oversight and reporting requirements as well. Finally, regulators will need additional staff to properly oversee the new markets.

In this section of the paper, the costs likely to be incurred by the largest Buy-Side firms, the new SEFs, the regulators, SROs and the largest dealers will be estimated. Hundreds of other institutions including DCMs, banks, thrifts, finance companies, hedge funds, investment funds and insurance companies will also incur additional costs. Although likely to be significant, we did not attempt to estimate them.

A. BUY-SIDE USERS COSTS

Buy-Side users will face significant technology and operational challenges and will need sizable reengineering of their infrastructure to prepare for electronic trading. The new market structure is likely to lead to changes in trading practices.[35] The increased number of connectivity points (DCMs, SEFs, multiple clearing brokers, clearinghouses, Swap Data Repositories and other market participants) will increase both the volume and the complexity of daily transactions and reconciliations. Asset managers will also have to re-draft all relevant documentation with clients governing derivatives transactions. Finally, market participants will see an overall increase in regulatory reporting and infrastructure reporting as SEFs themselves may be required to monitor positions of clients. Asset managers designated as MSPs will face additional requirements. Compliance systems for buy-side firms will need to be capable of providing extensive information on aggregate positions and individual transactions. They will need to able to pull up this information on demand and show full audit trails.

We asked a number of large Buy-Side users for their estimates of incremental costs resulting from the introduction of the mandatory execution requirement. The firms surveyed expect to spend an average of $2.1 million in technology,[36] $1.3 million amending client/counterparty documentation and $200 thousand (annually) in additional regulatory reporting.[37] We estimate that the largest 50 investment managers and hedge funds alone will spend well in excess of $100 million in technology and $65 million

[35] For example, if Block Trade thresholds are set at very high levels investment managers wanting to execute large trades but still below the threshold might be reluctant to display its entire size on a screen and may need to use some form of algorithmic trading procedure.
[36] One investment manager expects to invest $20 million in technology. This was not included in the calculation of the average.
[37] Cost estimates appear to be strongly correlated with the size of their business (as measured by assets under management, number of clients and counterparties, etc.).

in legal costs as results of the EE Mandate. Reporting costs will increase by more than $10 million annually.[38] These estimates do not include the very large number of somewhat smaller Buy-Side firms that will have to make similar investments and incur similar reporting costs albeit on a smaller scale.

B. Dealer Costs

After the implementation of the EE Mandate, dealers will trade both in the newly established SEFs and DCMs and in the traditional, bilateral market. Trading on SEFs and DCMs and complying with regulatory requirements will force dealers to comprehensively reengineer trading operations at great cost. Dealers expect their largest expenditures will come in four primary areas: a. trading technology, including analytics; b. new hardware; c. legal; and, d. operations, finance and audit. Maintaining and upgrading the infrastructure required to trade in two different frameworks will result in incremental ongoing costs as well.

Building the required trading technology infrastructure is expected to be the largest cost item. Swap dealers may stream live prices continuously on a number of platforms. This process will be automated, relying on algorithms driven by a number of market variables and by the dealer's own risk positions. Such processes will involve complex data capture functions. Since prices quoted will be executable, perhaps on multiple platforms, the system will have to be robust and incorporate a number of safety features. All aspects of the system will have to be thoroughly tested before being used in actual trading. Costs of establishing reliable connectivity with a number of SEFs alone are expected to be approximately $5 million for each dealer.

In contrast with the current environment where swap dealers are principals on every trade, when trading is transferred to SEFs and DCMs, they will play, at different times, the role of agent, principal or agent and principal. This will require the trading desks to perform an expanded set of functions. To accommodate the clients' need to execute trades directly, Client Execution Management Platforms will have to be developed and customized. Trading desks will also be required to have a number of pre-trade controls in place including automatic credit checking and trading surveillance processes to detect abnormal or inappropriate trading activities. Automated trade data capture methods will have to be developed both to comply with reporting requirements and provide information required by the operations, accounting and other control functions. The trading system will need to adjust the firm's risk position records and disseminate the relevant data, in real time, to traders. Finally, transaction data will have to be fed to the dealer's management information systems.

Developing and testing such a complex set of systems will require the commitment of significant resources. Actual expenditures will vary from firm to firm depending on which markets they are active in, their market shares and the final form of the market rules. Major dealers which do not currently have

[38] There are 55 investment management firms in the US with more than $100 billion in assets under management and 39 hedge funds with assets in excess of $10 billion. http://www.institutionalinvestor.com/Research/3310/Americas-Top-300-Money-Managers.html and http://www.institutionalinvestor.com/Research/3196/Hedge-Fund-100-Ranking.html The majority of these firms are frequent users of OTC derivatives. We assume there are at least 50 large buy-side firms which will incur these costs.

extensive electronic trading capability will require a large number of new technical personnel, perhaps in excess of 100 incremental staff, including software developers and other systems personnel. Based on interviews we conducted with several dealers, we estimate that they will each require a total investment of $50 million or more. Dealer firms which already stream prices to their own electronic platform and/or to a number of ECNs - such as Bloomberg, Tradeweb and post to MarketAxess - will have already developed some of the necessary technology and will focus on making that scalable to handle the expected larger volumes reliably. To develop the necessary infrastructure for these firms, the development costs are estimated to be as low as $25 million. We estimate that the 16 largest derivative dealers will spend in aggregate, approximately $600 million in technology (excluding hardware) in order to prepare for electronic trading. This is in broad agreement with estimates prepared in other studies. [39]

Once the required infrastructure is in place, additional work will be required each year on new products and to improve trading algorithms. Functionality will need to be developed and tested each year as well. Dealers expect that ongoing, incremental costs will range between $3 and $15 million a year with a net incremental headcount of between 10 and 50. For the 16 largest dealers, incremental operating costs associated with electronic trading of derivatives will be approximately US$ 100 million.

The trading technology will require a range of new equipment. Dealers will have dedicated servers to host trading software; some plan to locate these close to the SEFs and DCMs to reduce latency times[40]. In addition to servers, dealers will have to acquire equipment to connect to SEFs, DCMs and clients. Estimates of the total costs of acquiring and installing the required hardware vary widely, from $750,000 to $3 million per dealer.

Dealers will incur significant legal costs as well. Swap dealers will have to register as such with the CFTC and SEC and, in the process, demonstrate compliance with all regulations regarding capital and margin requirements, reporting and recordkeeping, maintenance of daily trading records, business conduct standards, documentation standards, risk management and conflict of interest standards. In addition, dealers will need to name a Chief Compliance Officer and become a member of the National Futures Association ("NFA"). All principals, including directors, president, heads of swap business units or functions and other officers of a registered swap dealer, will also be required to submit fingerprint cards and submit to background checks.

Swap dealers will also have to put in place a large number of new legal agreements with SEFs, Clearinghouses and clients. Considerable legal work will also go into the drafting of a range of new business agreements such equity participations in SEFs and joint ventures. In addition, swap dealers will be subject to much expanded (and burdensome) compliance requirements especially regarding data retention

[39] See for example Larry Tabb, *Technology Implications and Costs of Dodd-Frank on Financial Markets,* Presentation to the CFTC TAC, Washington DC, March 1, 2011. Tabb estimates that the largest 15 dealers will spend approximately $1.8B to implement the Dodd-Frank rules for derivatives. Of that $281million would be spent in ecommerce and $288 million in "low touch distribution".

[40] In order to reduce quote latency times traders in fast moving markets (equities for example) traders have in recent years resorted increasingly to co-location of servers, i.e., placing dedicated servers which generate quotes and process trades physically close to the market place. Through this latency times can be reduced by a small fraction of a second.

for regulatory reporting.

The resources dedicated to the needs described above will be vary from dealer to dealer but will always involve a number of lawyers (5-15) and support staff with estimated annual costs in the range of $ 3-8 million during the initial, establishment phase. Costs are expected to fall significantly afterwards, perhaps by as much as half. Dealers expect to incur material outside legal fees as well, although those are difficult to estimate.

Dealers will have to restructure their operations, finance and audit groups to comply with new regulatory requirements covering trades executed on SEFs and DCMs, regarding risk management, business continuity and disaster recovery[41] and data retention. Dealers are divided regarding the ultimate impact of these requirements: some believe this will lead to an increase in operating costs while others believe this might actually result in modest savings in the long term.

In all, the 16 major dealers are expected to invest approximately $ 725 million to get ready for the EE Mandate and to see an increase of $150 million in their annual operating costs. Not all of these costs are related to the trading of interest rate products as the new operational infrastructure will support trading in all derivative products including credit and commodity products. We allocated 2/3 of the costs calculated above to interest rate products.

Table 10 - EE Mandate Related Costs – Interest Rate Products
For the 16 largest dealers
(In $ millions)

	Initial Investment	Incremental Operational Cost
Technology	400	67
Hardware	17	
Legal	66	33
Total	483	100

C. Regulatory Costs

With regard to monitoring the fulfillment of Core Principles and other regulatory responsibilities, many SEFs have expressed an intention (and may be required) to contract separately with a Registered Service Provider such as the NFA or other Self-regulatory Organization ("SRO"), such as an exchange like the Chicago Mercantile Exchange or the Intercontinental Exchange. These expenditures would include trade practice and surveillance systems, coding, and testing, as well as producing and review of detailed "exception reports" to monitor compliance. The numbers provided by the SEFs in our survey are to a large measure reflective of incremental regulatory costs, and presumably include those expenditures that they would incur in hiring a third party to conduct such surveillance. In addition,

[41] These need to be designed to permit the resumption of activities by the next business day.

they would also be required to pay a fee to a Registered Futures Association to support their audit and examination authorities that the CFTC have proposed. Utilizing an estimate of the regulatory fees assessed on U.S. futures markets, we estimate an additional assessment on SEFs of approximately $45,000 per year, which is not included in the SEF costs estimates.

In addition to these fees per market that would be charged to a SEF, self-regulatory fees also include membership dues for registrants (such as would be assessed on swaps dealers as they are required to register and maintain reporting and compliance systems as part of DFA), as well as fees that are assessed on a per-transaction basis. With regard to member dues, given an estimated membership fee of $5,000, and based on the number of NFA-registered Futures Commission Merchants as of 127 members, the total cost will be $635,000 per year. While it may be difficult to determine how many swaps dealers will seek registration (as they too are assessing the cost of whether it makes sense to continue to make markets in swaps), we expect that there will be substantially less than there are Futures Clearing Merchants ("FCMs") and the costs per dealer member will be significantly greater since many of the systems required for monitoring and compliance have yet to be built.

As for transactions fees that may be assessed by the SRO, the futures markets are a useful guide. The current standard fee per side (buy or sell) is $0.02. This relatively low fee is due to the extremely high turnover. Using data compiled by the FIA for 2010, recording a volume of 7,121,184,424 contracts traded, and adjusting for discounts provided to members, we estimate that this generates approximately $35 million for the NFA. Of this, we estimate that approximately $13-15 million are assessed to trades of interest rate futures. The NFA estimates that cost of overseeing SEFs will be at least US$25 million.[42] We expect fees charged to IRS transactions to be at least 80% of that or $20 million a year.

The largest regulatory cost associated with the EE Mandate is that expended by the CFTC itself. In its FY2012 budget, the CFTC requested $308,000,000, or an increase of $139,200,000 and 316 full-time equivalents ("FTE") over its previous appropriation, which the CFTC has pointed out, included no funds for DF related authorities.[43] Throughout its proposed budget, and in other comments to support its request, the CFTC makes frequent reference to the fact that these are expenditures to meet their additional responsibilities to regulate the swaps markets. As the FY2012 Budget notes: "Oversight of Swap Execution Facilities and Swaps Trading on Designated Contract Markets - The Commission will need additional staff to implement many new provisions related to the oversight of swaps trading activity. These include procedures for the review and oversight of an entirely

[42] "As a starting point for our discussions, however, we are assuming that over time we will need to nearly double the size of our compliance department, bring on over 100 additional employees and incur costs of over $25 million each year". Testimony of Daniel J. Roth, President and Chief Executive Officer, National Futures Association, Before the Committee on Agriculture, Nutrition and Forestry, United States Senate, June 15, 2011.

[43] CFTC, The FY 2012 Budget Request http://www.cftc.gov/reports/presbudget/2012/2012presidentsbudget0202.htmlThe CFTC is requesting another 160 full time staff in 2013 bringing total personnel to 1143, and increase of 486 over 2011 staff levels.

new regulated market category, SEFs. Staff in the Market and Product Review and Market Compliance units must establish and implement procedures for the review of new SEF applications and for the annual examination of the operations of SEFs. The Commission is requesting a total of 62 FTE to fulfill its pre- DFA responsibilities. A total of 56 FTE are requested to implement new DFA authorities. This includes an additional 38 FTE for FY 2012 and an additional 18 FTE for FY 2013.

- The Commission currently oversees 16 DCMs. Based on industry comments, there could be at least 30-40 entities which will apply to become SEFs. This estimate is based on the number of exempt commercial markets (ECMs), exempt boards of trade (EBOTs), interdealer brokers, information service providers and swap dealers who have formally or informally expressed an interest in registering as SEFs. Furthermore, some DCMs that in the past only listed futures will start listing swaps.
- Each SEF must be thoroughly evaluated by staff before making determinations whether they should be approved. Those that are approved also must be regularly examined for ongoing compliance.
- The CFTC currently dedicates on average approximately 4.7 FTE from the Market and Product Review and Market Compliance Units to each DCM. By comparison, the Commission total requested 56 FTE increase for DFA implementation would represent approximately 1.6 FTE per SEF."[44]

Using the CFTC's estimate for the number of SEFs that will be seeking registration, we estimate a total of 48 FTE will be need. Based on the equivalent funding requirement formula used in the FY2012 Budget, we estimate a lower bound regulatory cost of just over $28.1 million per year to regulate and monitor the SEFs as envisioned in the CFTC proposal. Ongoing annual regulatory costs are likely to be similar or higher, since the market is likely to grow over time and it is unlikely the CFTC will find any substantial savings as result of improvements in operational efficiencies.

In total, we estimate, therefore, total regulatory costs of the EE Mandate not heretofore considered to be in the neighborhood of $49 million per year.

D. Costs of establishing and operating a SEF as proposed by CFTC and SEC

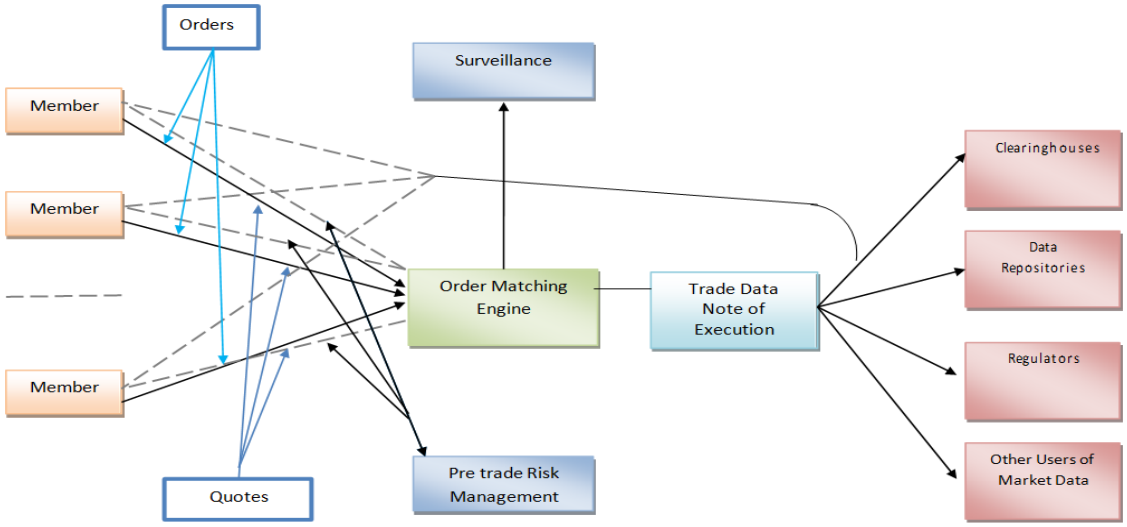
Although the role of SEFs in the derivatives market is conceptually simple, we believe they will be relatively expensive to build and operate. The backbone of SEF trading architecture is an order matching engine which may be a Central Limit Order Book, a Request for Quote system or other "mean of interstate commerce" that will allow members to show (and see) offers and bids. Attached to the order matching engine will be mechanisms to handle the communications to and from members, a system to perform pre-trade risk management and a system to generate trade data. The basic structure of a SEF is shown in Fig. 3. It shows another complex series of electronic relations that need to be created with a large number and

[44] FY 2012 Budget, page 8.

variety of entities.

SEFs must also operate at high levels of reliability which will require a number of safeguards and redundancies. In addition, systems must capture and retain (for at least 5 years) all data necessary to create an audit trail, including original source documents and a transaction history database. They will be required to have an electronic analysis capability and be able to collect and evaluate market data on a daily basis. A real-time electronic monitoring system will be required to detect and deter manipulation, distortion and market disruption. SEFs will also be required to report transaction information to the CFTC and data repositories using unique product identifiers. Finally, SEFs will need to name a Chief Compliance Officer and provide for Disaster Recovery.

Fig 3. The basic structure of a SEF



Major tasks required to establish SEFs include:

- Registration – Registration with the CFTC requires the completion of a short form and the production of 22 technical and disclosure exhibits.
- Hardware – SEFs will be required to provide market participants with the ability to make bids and offers to multiple participants in an electronic system; the system will need to be able to maintain a safe storage capacity to retain all relevant trading data.
- Software – As noted above, SEFs will have trade and market data capture and retention requirements as well as the need for electronic analysis and monitoring. SEFs will also have significant trade reporting requirements.
- Product Development – SEFs will have to develop new product execution capabilities to stay competitive. This will involve identifying market opportunities, drafting contract specification, estimating product liquidity and conducting research and testing.

- Client Documentation – Contractual arrangements with SEF users and vendors will need to be drafted and executed.
- Operating Policies – Market rules, policies, procedures, risk manuals, and operating protocols will all have to be drafted and kept current. Market rules must include rules governing terms and conditions of the swaps, limits on access to the facilities, trading, conflicts of interest, processing, participation, and the operation of the facilities.
- Disaster Recovery – SEFs will need to develop emergency back-up procedures and systems including business continuity and disaster recovery plans and facilities.

Major items in the operating costs of a SEF will include:

- Compensation and Benefits - Dedicated personnel are likely to include staff in Management, Compliance, Marketing, Client Services, Risk Management, Operations, Finance and Technology functions.
- Occupancy – Leasing and maintaining offices.
- Technology – Maintaining and upgrading operational infrastructure, upgrading existing systems and developing or acquiring new ones.
- Financial Resources – SEFs will need to maintain sufficient financial resources to cover operating costs for at least one year, as well as the cost of maintaining a committed line of credit equal to six months' operating costs
- Corporate Governance – SEFs will need to maintain an independent board of directors
- Disaster Recovery – SEFs will need to maintain emergency backup facilities

To assess the cost of establishing and operating a SEF consistent with the rules and requirements currently proposed by the CFTC, we surveyed a number of groups which are planning to establish a SEF.

The costs of establishing a SEF are estimated to be $7.4 million as summarized in Table 11. The biggest expense in setting up a SEF relates to hardware and software needed to perform the functions outlined above. In addition to technology, SEFs will have to spend significantly in Product Development, in Client Documentation and in the drafting of comprehensive Operating Policies. SEFs will need to register with CFTC.

Table 12 summarizes the expected operating costs of established SEFS. In all, we estimate that the operation of each SEF will cost nearly $12 million per year.

Table 11 - Setting up a SEF: Average Cost Estimates ($'000s)

	Average Estimated Cost
Registration	333
Hardware	2,833
Software	1,000
Product Development	1,250
Client Documentation	350
Operating Policies	483
Disaster Recovery	1,116
Total	**7,365**

Table 12 - SEF's Operating Costs Estimates ($'000s)

	Average Estimated Annual Cost
Compensation & Benefits - Management	1,666
Compensation & Benefits - Operations	583
Compensation & Benefits - Finance	333
Compensation & Benefits - Marketing	1,000
Compensation & Benefits - Technology	1,916
Compensation & Benefits – Risk Management	266
Compensation & Benefits – Compliance	1,216
Compensation & Benefits – Total	**6,980**
Occupancy	800
Technology	1,500
Financial Resources	1,400
Disaster Recovery	866
Corporate Governance	416
Total	**11,962**

It is difficult to anticipate precisely how many firms will register as a SEF or to determine how many will succeed. The number of SEFs will be a function of perceived market opportunities, the costs imposed by the CFTC's and SEC's final rules and the effects of those rules on the markets themselves. Estimates of the number of SEFs to be established range from 20 to more than 100.[45] Taking the lowest estimate and assuming that only half of them will deal mainly in interest rate products, we arrive at an overall setup cost of approximately $75 million. Annual operating costs will be approximately $120 million.

The SEFs, of course, are ready, willing and able to spend these sums. Their business model entails passing these costs as well as a profit margin to their users. That will mean higher costs.

[45] See http://www.marketaxess.com/pdfs/MarketAxessCDS_QA.pdf

E. SEC Costs Estimates

In its proposed rules for security-based SEFs (SB SEFs), the SEC dedicated considerable effort to the Consideration of the Costs and Benefits[46] of the new regulations. Although the Commission expects that significant benefits including improved transparency, improved oversight, and improved automation will accrue from the new rules, no attempt was made to estimate the magnitude of these benefits.

The Commission recognized that the new regulation would have significant impact on market participants and "that the proposed registration form and rules would also entail significant costs … and [the Commission] is mindful that any rules it may adopt …may impact the incentives of market participants with respect to where and how they trade SB swaps. In addition, if the proposed rules for trading on a SB SEF are perceived as too burdensome by market participants, some trading of SB swaps may move to foreign markets whose regulations are perceived to be less restrictive."[47]

The Commission provides some general estimates for the costs of setting up an SB-SEF and for the annual costs of technology, surveillance, oversight and compliance. The Commission, after consulting industry sources, estimated the monetary cost of forming a SB SEF would range from approximately $15 million to $20 million per SB SEF for the first year of operation, if an entity were to establish a SB SEF without the benefit of modifying an already existing trading system. The cost of software and product development would range from approximately $6.5 million to $10.5 million per SB SEF. Technology costs would be expected to decline considerably during the second and subsequent years of operation, and are estimated to be in the range of $3 million to $4 million per year per SB SEF. For entities that currently own and/or operate platforms for the trading of OTC derivatives, the cost of forming a SB SEF would range from as low as $50,000 to as much as $3 million per SB SEF with annual ongoing costs estimated to be in the range of $2 million to $4 million. The cost of surveillance and oversight would be in the range of $1 million to $3 million annually. The ongoing annual compliance costs are estimated to be approximately $1 million. The SEC estimates for the set-up costs of a new SEF and the annual cost of maintaining and updating the technological infrastructure and meeting surveillance, oversight and compliance requirements is summarized in Table 13 on the next page.

[46] http://www.sec.gov/rules/proposed/2011/34-63825.pdf pages 325-374.
[47] Pages 342-343.

Table 13: SEC estimates for setup and operating costs of new SEFs
($000's)

Costs Per New SEF	Year 1	Annual from Year 2
Set-up	$15,000-20,000	
Technology (including Product Development)	$6,500-10,500	$3,000-4,000
Surveillance, Oversight and Compliance	$2,000- 4,000	$2,000-4,000
Total Cash Costs	$15,000-20,000	$5,000-8,000

In addition to these general estimates, the SEC provided detailed estimates for the costs of compliance with rules it proposed. Most of these estimates were compiled to comply with the requirements regarding information collection provided by the Paperwork Reduction Act of 1995 ("PRA") and relate to specific provisions regarding registration, rule writing requirements, surveillance, rule and product filings, publication of trading information, record keeping, reporting, conflicts of interest and certain duties of the Chief Compliance Officer. The costs, listed in Appendix 1, are estimated to add to $4,607,200 in the first year of operations and $2,734,000 in subsequent years.

The SEC estimates do not attempt to account for all operating costs of a SEF as they do not include most of the personnel costs (compensation and benefits for management, marketing, operations and finance), costs which we estimated to be $7.0 million annually, or infrastructure (office space for example). If these items were included we would expect the SEC's estimates and those of the previous section to be in broad agreement.

F. Summary

The costs discussed in the previous sections are summarized in the table below. Our estimates only include a small number of (large) Buy-Side firms and the 16 largest dealers. Many other market participants we have not considered will also incur significant costs. These include institutions which will be classified either as Swap Dealers or Major Swap Participants ("MSP") under the Dodd-Frank Act. The DFA defines Swap Dealer as any person who: (i) holds itself out as a dealer in swaps, (ii) makes a market in swaps, (iii) regularly enters into swaps with counterparties as an ordinary course of business for its own account, or (iv) engages in activity causing itself to be commonly known in the trade as a dealer or market maker in swaps. At least 21 Non G-16 members of LCH.Clearnet and many other institutions will fall in this category.

Many others will be classified as MSPs by falling into one or more of the three categories listed in the Dodd-Frank Act definition of a MSP:

- A person that maintains a "substantial position" in any of the major swap categories, excluding positions held for hedging or mitigating commercial risk and positions maintained by certain employee benefit plans for hedging or mitigating risks in the operation of the plan.

- A person whose outstanding swaps create "substantial counterparty exposure that could have serious adverse effects on the financial stability of the United States banking system or financial markets."
- Any "financial entity" that is "highly leveraged relative to the amount of capital such entity holds and that is not subject to capital requirements established by an appropriate Federal banking agency" and that maintains a "substantial position" in any of the major swap categories.

Under the CFTC proposed definitions[48] of "Substantial Position", "Financial Entity" and "Highly Leveraged" and "Substantial Counterparty Exposure", hundreds of institutions including banks, thrifts, finance companies, hedge funds, investment funds and insurance companies will be classified as MSPs and required to trade in SEFs. As result, they will be subject to increased regulatory reporting requirements and will need to make material investments in infrastructure. We make no estimate of these expenses but can only conclude they will amount to tens of millions of costs per year in the US.

Table 14 – EE Mandate Related Costs
(In $millions)

	Initial Investment	Operating Costs
SEFs	74	120
Largest Buy-Side Firms	150	10
Largest Swap Dealers	483	100
Regulators and SROs	49	49
Other Major Swap Participants	+	+
Other Swap Dealers	+	+
Total	756+	279+

The costs of developing and operating of the infrastructure needed to trade in SEFs and DCMs will have a material impact on transaction costs. Assuming that development costs are amortized over a 5 year period, the market will need to absorb at least an additional $400 million in annual expenses. Assuming that SEFs will execute 1,000 trades a day, the number of all plain vanilla trades denominated in US Dollars currently executed, this will amount to execution costs of $1,280 per trade. Obviously, dealer costs may be priced into their quotes for end users.

[48] Commodity Futures Trading Commission, "Proposed Rules Further Defining "Swap Dealer," "Major Swap Participant" and "Eligible Contract Participant"", available at http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/defs_factsheet.pdf

V. CONCLUSION

The EE Mandate will bring little, if any benefit to market participants in the IRS market while adding considerably to bid/ask spreads and other costs of execution. Users will have difficulty executing large trades without undue risk and will lose their preferred choice of execution. Bid/ask spreads are expected to increase 0.2 to 0.4 basis points in yield. Costs to develop the infrastructure for the EE Mandate may exceed $750 million while on-going operational costs should exceed $250 million per year. These costs will be passed on to end users in one form or another. Transparency and market access may improve marginally for small financial entities that use IRS but any benefit they receive will be very modest relative to the added costs of execution. Indeed, the imposition of clearing and the higher fees that will result from the EE Mandate and other provisions of DFA may cause these and other participants to reduce their activity or even withdraw from the IRS market.

The EE Mandate as written in the proposed rules contains onerous rules regarding delays in order execution, the number of participants that must see a request for quote transaction and unreasonable block trading exemptions and reporting requirements. The IRS market is deep and liquid because of the market-making function. Participants are sophisticated institutions that use IRS, in part, because of the ability to execute large transaction quietly and competitively. The EE Mandate strikes at a core strength of the market and should be reworked or, at a minimum, justified with a thoughtful cost-benefit analysis for all to see.

The EE Mandate is a market structure rule. It does not affect systemic risk. Rules relating to systemic and other risks are those requiring clearing and trade reporting to regulators.

VI. APPENDIX

SEC COST ESTIMATES OF COMPLYING WITH ITS PROPOSED RULES GOVERNING SB-SEFS
(IN $THOUSANDS)

SEC Task[1]	One-time or Ongoing	Description	Cost	Page[3]
Record Keeping	Ongoing	Comply with recordkeeping requirements of proposed rule 818(a)-(b)	$16.0	p.358
Record Keeping	Ongoing	Rule 818(c) - keep certain records regarding trading activity	$41.6	p.359
Record Keeping	One-Time	Modify risk management system	$68.4	p.360
Record Keeping	Ongoing	Maintain risk management system	$52.4	p.361
Record Keeping	One-Time	Set up Record keeping system	$106.7	p.359
Surveillance	One-Time	Establish automated surveillance system (rules 811 and 813) - capital expenditure in information technology	$1,500.0	p.373
Surveillance	Ongoing	Establish automated surveillance system (rules 811 and 813) - investment in information technology	$500.0	p.373
Registration	One-Time	Complete form SB SEF	$675.3	p.348
Registration	Ongoing	Annual update form SB SEF	$50.6	p.353
Rules Generally	One-Time	Comply with rule-writing requirements of Reg SB SEF	$73.6	p.354
Rules Generally	Ongoing	Comply with rule-writing requirements of Reg SB SEF	$38.4	p.355
Reporting	Ongoing	Reporting requirements of Reg SB SEF	$481.2	p.357
Record Keeping	One-Time	Rule 809(d) legal & compliance cost - maintain compliance policies and supervisory procedures	$16.5	p.361
Record Keeping	Ongoing	Rule 809(d) legal & compliance cost - maintain compliance policies and supervisory procedures	$24.1	p.361
Rule and Product Filings	Ongoing	Prepare, review and submit filings to the commission re Rules 805-808	$75.2	p.366
Chief Compliance Officer	One-Time	Comply with CCO requirements for Rule 823(b)(6) and (7) - handling of non-compliance issues	$91.2	p.367
Chief Compliance Officer	Ongoing	Rule 823(c) and (d) prepare and submit compliance report	$29.4	p.368
Chief Compliance Officer	Ongoing	Complete annual financial report Rule 823(e)(1)	$99.5	p.368
Chief Compliance Officer	Ongoing	Independent public account service	$500.0	p.368
Chief Compliance Officer	Ongoing	Compile, review, and submit financial reports for certain affiliated entities	$7.9	p.368
Conflicts of Interest	One-Time	Adjust governance documents	$4.8	p.370
Conflicts of Interest	One-Time	Pay recruitment specialist to find new director	$68.0	p.371
Record Keeping	One-Time	Update existing systems to ensure audit trail	$97.3	p.360

Publication of Trading Information	One-Time	Electronically capture, transmit, and disseminate trading info	$92.4	p.363
Composite Indicative Quote and Executable Bids and Offers	One-Time	Create and disseminate quotes	$21.1	p.364
Composite Indicative Quote and Executable Bids and Offers	Ongoing	Create and disseminate quotes	$11.2	p.365
Chief Compliance Officer	One-Time	Data tagging initiatives	$35.1	p.369
Surveillance	One-Time	Establish automated surveillance system (rules 811 and 813) - initial programming costs	$1,756.8	p.372
Surveillance	Ongoing	Establish automated surveillance system (rules 811 and 813) - programming costs	$806.4	p.373
		Total	**$7,341.2**	

[1]As defined by SEC in Release No. 34-63825; File No. S7-06-11

[3]Page in SEC Release No. 34-63825; File No. S7-06-11

One-time	$2,075.5
Ongoing	$1,425.0