



Fundamental messages: Catalyzing the adoption of FIX for fixed income

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The FIX Protocol now features broad support for fixed-income trading and is suitable for global market adoption. A catalyst is needed to engender this adoption, however. The author proposes a simple, FIX-based messaging service as this catalyst, using Internet-based mail servers for transport.

FIX messages containing fundamental data about debt securities, originated by their issuers and disseminated in electronic-mail form through open-source list servers, would be accessible on demand by all market participants. The content of these messages would be parsed by small, locally installed scripts, making it easily accessible to a variety of client applications. Virtually all of the client-side infrastructure required for use of this service is already in place. Most of the service-specific software infrastructure that would be required is available under open-source licence. The requirements for permanent storage and communications facilities would be modest. Only a small amount of additional software engineering – possibly as little as a few man-months for skilled engineers – would be required for a complete implementation, and a pilot or demonstration project could be composed in a matter of days. Any number of commercial providers might agree to

provide this service, or it could be provided on a not-for-profit basis by FIX Protocol Limited or an affiliate.

The Financial Information Exchange (FIX) Protocol provides an extensive vocabulary for trading and financing debt securities electronically in any market and by virtually any method of price discovery, trade execution and settlement. The specification as a whole is a lexicon of market knowledge and experience, voluntarily contributed over a period of ten years by market practitioners dedicated to the creation and propagation of an open, global messaging standard for securities and other financial transactions.

From its origin as a proprietary, bilateral framework for automated stock trading, FIX has become the de facto standard for electronic trade communications in equity

markets around the world. All stock traders now benefit from network economies that only a widely adopted protocol can provide. FIX has contributed to the ease with which investors can buy or sell stocks, the viability of new and established trading venues, and the interconnection of stock markets via intelligent order-routing and -matching systems.

The publication of FIX Version 4.4 in April 2003 was a turning point for the bond market. This newest version of FIX made all phases of fixed-income trading electronically accessible through a common communications standard, from the simple dissemination of bid lists to the execution of complex swaps to the financing of dealer inventory in the term market for repurchase agreements.

Automation of bond trading is more difficult than stock-market automation. The intensity of bond-price changes is extreme, with millions of daily updates required for the US Treasury market alone. In the aftermath of economic releases, multiple price changes per second must be facilitated. For the most part, bonds are traded over the counter via direct negotiation. Traders must be able to optimise their execution objectives in two dimensions – price and time – until the final moment before they utter ‘done’ on the telephone or click the analogue of that word on a computer screen. The stream of trading opportunities is filled with millions of different issues, some virtually indistinguishable from others on superficial characteristics alone. The issues themselves may be of dizzying complexity, beyond the characterisation capabilities of many market data platforms, position-keeping systems and portfolio-accounting software to completely capture and expose their salient features.

Despite these challenges, the contributors to FIX Version 4.4 have managed to encapsulate an enormous swath of the language and dialogue of global bond trading. Though its message structure may still be somewhat ponderous for the most active debt markets, FIX is now more than capable of serving as a universal framework for trading all but a handful of high-volume debt issues, and even those are amenable to FIX-style trading with suitable rules of engagement in place between and among counterparties.

Publishing a communications protocol is merely the first step towards having that protocol embraced by a quantity

of market participants sufficient to the fostering of network economies beneficial to all. For the Global Fixed Income Committee (GFIC) of FIX Protocol Limited (FPL), engendering market-wide adoption of FIX for Fixed Income (FIXFI) is the challenge at hand. Even with the vigorous support of The Bond Market Association (TBMA), FPL's partner in FIXFI development, the challenge is difficult.

Communications technologies that require a critical mass of users for their commercial viability often benefit from the discovery or exposition of a single application that meets a widely felt need, or some triggering event or stimulus, or the adoption of a precursor technology that gives rise to demand for the subsequent invention. While interest in FIXFI is genuine, well founded and broad, only a handful of firms have adopted it.

While the market as a whole is growing, the share of volume captured by electronic platforms has stalled, and voice broking is regaining lost ground in the inter-dealer market

Prospective users in the bond market survey their existing and prospective trading partners and find few with whom they can communicate via FIX. The telephone remains the medium of choice for large trades and accounts for the greatest share of trading volume in the dealer-to-customer market. While the market as a whole is growing, the share of volume captured by electronic platforms has stalled, and voice broking is regaining lost ground in the inter-dealer market. Absent demonstrable probabilities of near-term results, management's willingness to approve new technology investment is limited. Under such conditions, many view an investment in FIXFI as premature.

This article posits a practical catalyst for the widespread adoption of FIX by the bond market and by extension, greater levels of automation throughout the market. Purely for descriptive reasons, this adoption catalyst is called a Fundamental Data Messaging Service (FDMS). The subject matter of FDMS are ‘Fundamental Messages.’ Fundamental

Messages are defined as small bundles of data that characterise the salient terms of any financial instrument. With respect to debt securities, this data would include items such as issuer, issue date, coupon rate, call features and maturity date. A few thousand bytes would likely be sufficient for characterising any of even the most complex debt instruments.

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In designing a technological solution capable of catalyzing the global adoption of FIXFI, it is reasonable to assume this solution must be: 1) universally applicable, accessible and useful, 2) modest and highly-distributed with respect to its initial and recurring capital requirements, 3) consistent with the mission of FPL and why firms collaborate on FIX, 4) relatively benign as a threat to any particular enterprise and 5) economically viable and capable of spawning commercial ventures around its creation. Several services potentially meet these criteria. In addition to FDMS, for example, services related to standing settlement instructions or dissemination of benchmark-security prices may also have merit as catalysts.

FDMS is conceived as a FIX-based messaging service for defining, describing, enriching the data, and communicating all objects of financial trade, i.e., securities and other financial instruments, on a global basis. Were FDMS a database, it would be a ‘securities master’ in common parlance. While users may employ one or more databases for storage and retrieval of the information communicated via FDMS, the architecture of FDMS is that of a messaging service, not a database.

FDMS would meet market-wide demand for descriptive information that is fundamental to the operation of the financial markets, stands to foment and benefit from network economies, and may have commercial viability as a result. It is also conceived to satisfy the interests of all contributors to the FIX Protocol for a universally-applicable, relatively simple and inexpensive, widely accessible, readily comprehensible

service that catalyzes the global adoption of the protocol for fixed income, derivatives and other trading.

Substantially, all market participants require accurate, timely, ‘fundamental’ information regarding their objects of trade. In this sense, ‘fundamental’ refers principally to those aspects of the contract between issuer and holder, which are material to pricing, valuation, settlement, taxation and redemption of the trading object. The notion of ‘fundamental’ may also include certain third-party information, such as credit ratings or mortgage factors provided by servicers. Within the FIX Protocol, much of this fundamental data can be expressed through the Instrument Component Block.

Most broker-dealers, bank custodians, money managers, market data and analytics providers, and third-party data processors require securities masters and acquire them in one fashion or another. Yet obtaining and maintaining these securities masters is an ongoing source of frustration and substantial expense within the markets. Market-data platforms meet this need to a large extent, but will not accept responsibility for the fidelity of the data; none offers a universal solution, and in any event, the cost of these platforms can be thousands of dollars per desktop-month, without offering much in the way of data transportability among client applications.

Nothing approaching a universal method of defining and describing instruments exists

While common equity securities are relatively easy to define and describe, other equity classes and a vast array of fixed income and derivative securities pose substantial descriptive challenges. Problems of taxonomy are also severe. Nothing approaching a universal method of defining and describing instruments exists. Inconsistencies between and among databases, as well as outright errors or incomplete specifications, are rife. Presently, resolving these problems requires manual intervention. Errors can be costly. For example, the failure to accurately and adequately define options embedded within fixed income instruments can easily result in substantial losses to their holders or trade intermediaries.

The promise of FIX as a global messaging standard is, to a large extent, a product of its vocabulary. FIX seeks a common method of defining and describing trading objects and trade phases and conditions. While much work remains to be done, particularly as FIX is still in the early stages of extension to fixed income and derivatives, FIX has the realistic potential of resolving many of the errors, omissions, ambiguities and inconsistencies that plague master securities databases, making it much easier and less expensive for all market participants to engage in trade and manage their market operations.

FDMS is conceived as a FIX-based messaging service

FDMS would use the FIX Protocol to communicate standardised, globally applicable, fundamental data about securities and other trading objects on a market-wide basis. Potentially, it could also be used for indexes. This communication would cover not just issuance, but the complete life cycle of an instrument. Thus, not only would a FIX message convey the creation of a security, but also 'corporate events' such as dividend declarations, interest payments or sinking-fund redemptions. By addressing both primary and secondary markets, FDMS would ensure that the broadest possible audience and most acute needs are served.

FDMS would shift data specification, collection, and dissemination 'upstream' to the actual source of this information. Thus, issuers or their agents (e.g., underwriters, fiscal agents, corporate trustees, or auction agents) would originate the vast majority of messages for the FDMS. This is perhaps the most radical aspect and market-acceptance challenge of FDMS, as it asks issuers and their agents to assume an additional time burden and modest, incremental expense in order to promote the success of the initiative. Yet, these are the logical, best sources of this information, and they stand to benefit directly as FDMS reduces the friction, uncertainty, and overhead implicit in secondary-market trading and thereby promotes better prices in the primary market. The vast majority of issues that would today be expected to trade only infrequently in the secondary market would benefit the most from FDMS.

Ideally, FDMS would offer both FIX and FIXML message formats, and would also serve as a foundation for future

extensions of the FIX protocol. While the Instrument Component Block captures much of the requirement for comprehensive description of debt securities, it is still incomplete and would benefit from discoveries of deficiencies by issuers as they undertake to describe their securities through FIX. FDMS would have the flexibility, whether through user-defined tags, more frequent updates of descriptive aspects of the protocol, or otherwise, to accommodate ongoing innovation in finance, as expressed in new types of trading objects altogether and new features for established types.

FDMS would rely on a 'low tech' but universal transport medium: Internet-based electronic mail. An FDMS message would contain only pertinent data, covering one or more trading objects. It would be parsable easily by PERL or other scripting languages. A sequencing scheme for ensuring that users have received all of the messages to which they have subscribed would be provided, as would a method for authenticating content origination. Each message would contain a whole record for each trading object it covers, and be subjected to validation in that regard. Ordinary list servers would manage subscriptions and message dissemination, as well as permissioned services. These could easily be acquired under open-source licence. A simple method for new 'subscribers' to obtain an initial message dump on objects of interest to them, or to request missing messages, would be required and provided. It should literally be possible for any subscriber to send a message with a properly formatted subject line, and to receive back a full record on any CUSIP (or other security identifier) covered by the FDMS. In all likelihood, a reference implementation of a PERL script that can parse FDMS messages into flat files or a relational database would be provided as part of the FDMS. To prove the utility of this concept, a pilot implementation could be built in a matter of days. In production, one or more companion web sites and services would facilitate access to and use of the FDMS. An index or digest of available messages would also be required.

FDMS would commence with a simple demonstration project, involving a single issuer. The US Treasury, in conjunction with the Federal Reserve as its fiscal agent, would probably be the ideal candidate for this demonstration project. Treasury already does a commendable job of making historical auction data available

through its website in a variety of formats. Including FIX and FIXML among these formats, and then transmitting the data to the FDMS list servers, would be a relatively simple undertaking. Over time, additional issuers would be added, probably commencing with the government-sponsored enterprises (GSEs). Eventually, the FDMS would cover substantially every object traded in the financial markets. Publishing FDMS messages would simply be an ordinary business requirement for issuers and their agents.

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While FDMS should be beneficial on a nearly universal basis, certain market sectors and practices might benefit disproportionately. For example, using FDMS for dissemination of rate resets for floating-rate securities, or auction results for Dutch-Auction Preferred Stock, or factors for mortgage-backed securities, might be particularly valuable. All users of portfolio-accounting and position-keeping systems should benefit from having a service such as FDMS. FDMS should also benefit the FIX Protocol itself, helping to keep its vocabulary fresh, timely, precise and as universally applicable as possible.

This is by no means an exhaustive explication of FDMS concept, nor is it the only idea or approach, whether commercially viable or just economically beneficial, for encouraging or lowering barriers to FIX adoption, particularly for fixed-income trading. Any number of vendors might be willing to offer FDMS. FPL could encourage such services through moral suasion or even offer some flavour of FDMS itself. Today, for as little as US\$100 per month, web-hosting companies will provide dedicated servers with 500 gigabytes of monthly transfer and 60 or more gigabytes of storage. While projecting bandwidth requirements is difficult in advance of a pilot project, surely 60 gigabytes of storage would be more than sufficient for FDMS for many years. Virtually all of the software needed for the service – whether list servers, web servers, operating systems or relational databases, even FIX engines – would be accessible under open-source licence. What little new software is required might be provided by volunteers or else developed for a modest investment. It is

easy to imagine software vendors creating new products around a service such as FDMS, as well as many possibilities for enriching the data transported by FDMS messages, on a premium-service basis. Vendors would also enjoy opportunities to help issuers publish their fundamental data in FIX format, and then to build on those relationships by providing other products and services.

The bond market is ripe for FIX-based trading, but a catalyst is needed to stimulate uptake, build familiarity with and trust in the protocol, and promote the establishment of a critical mass of users. This catalyst must utilise existing infrastructure to the greatest possible extent, pose little or no implementation risk, and meet a universal need. A service such as FDMS fits this bill of requirements, addresses a universal market need, would be inexpensive for its users and could serve as a foundation for numerous commercial products and services to be offered by existing and new vendors. **FIX**

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For ongoing information about FIX for fixed income go to: <http://fixprotocol.org/FixedIncome>