



Presentation to CDIAC Pre-Conference: Fixed Income Market Structure

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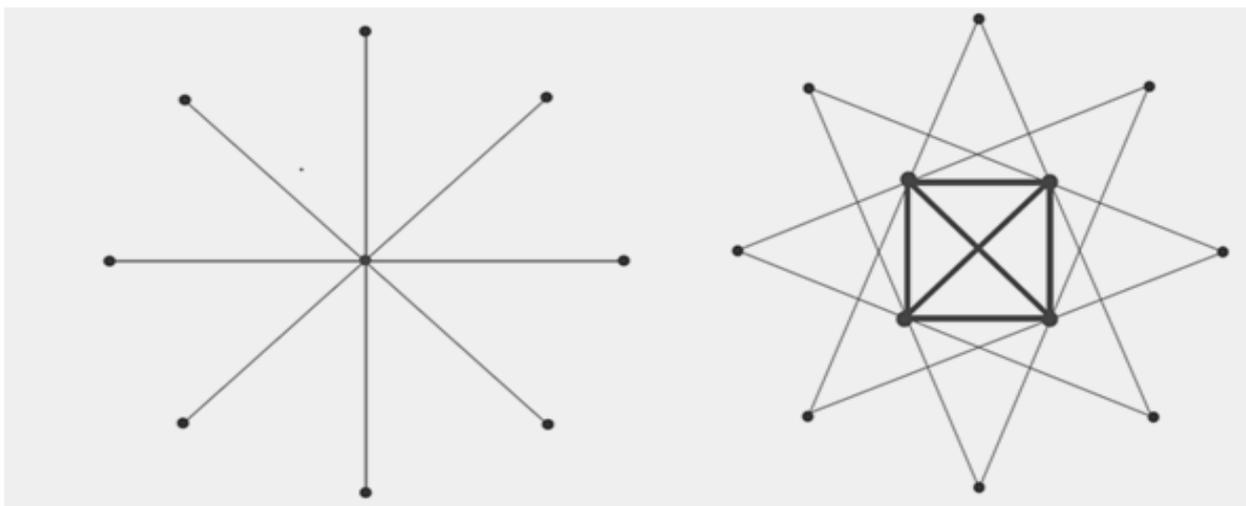
Market Structure and Bond Valuation

How does the underlying market structure affect issuers?

- ▶ More liquid, transparent secondary markets creates value for buyers → Higher prices for issuers

Centralized vs. Over-the-Counter Trading Paradigms

- ▶ Equity markets are generally centralized, transparent and liquid
- ▶ Most bond markets are OTC; opaque, dealerized, with relatively low liquidity and high spreads
- ▶ Asset proliferation is the critical element: Unlike equities, where there may be only one share class of a particular stock there may be multiple bonds by the same issuer with different coupons, maturities and call features. For example, General Electric has 905 different bond issues as of September 30, 2014 but only one US-listed common stock (GE), based on data from Bloomberg



For illustrative purposes only

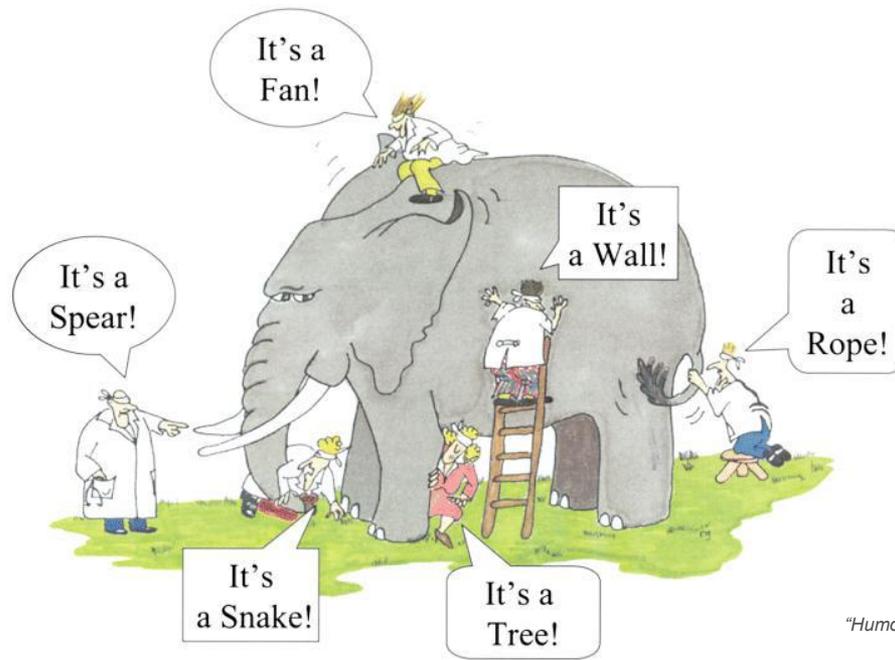
Defining Liquidity

Definitions of Liquidity vary considerably

- ▶ Liquidity as amount of turnover
- ▶ Liquidity means that trading volume (or order flow) doesn't move prices very much
- ▶ Liquidity measures the extent to which trade prices do not revert the following day

All of these approaches to analyzing and thinking about liquidity typically lead to similar conclusions

- ▶ Broadly defined, liquidity is a function of investor confidence in the market and conviction to trade at the quoted price



"Humor" sourced from Ron Kahn

Post-Crisis Regulatory Regime Pressuring Fixed Income Liquidity

Regulations pressure Dealer Balance Sheet Capacity

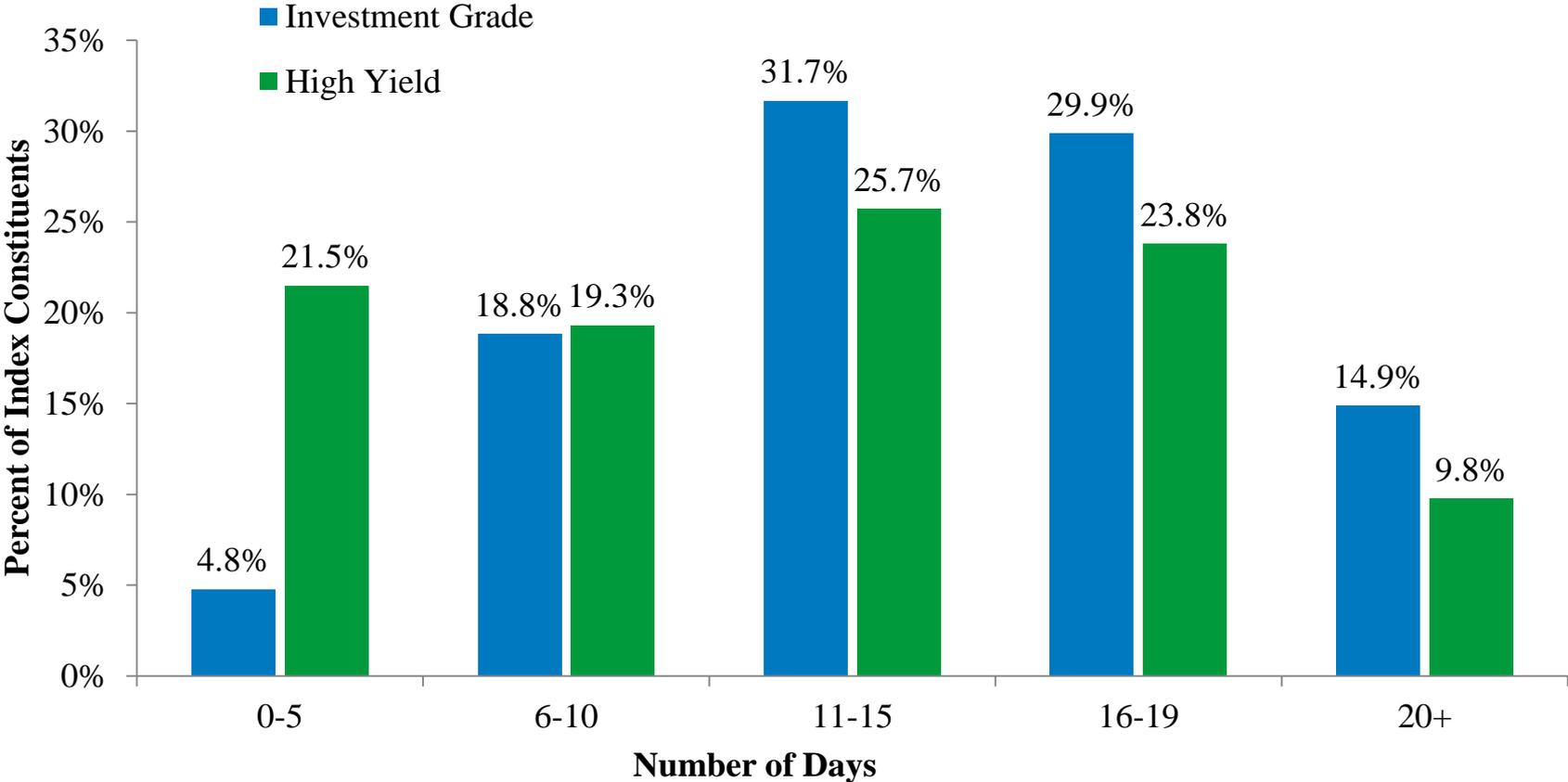
Value of Fixed Income Dealer Inventory (US Billions)



Source: Federal Reserve, 2014

Most Bonds Trade Infrequently, a Reflection of Low Liquidity

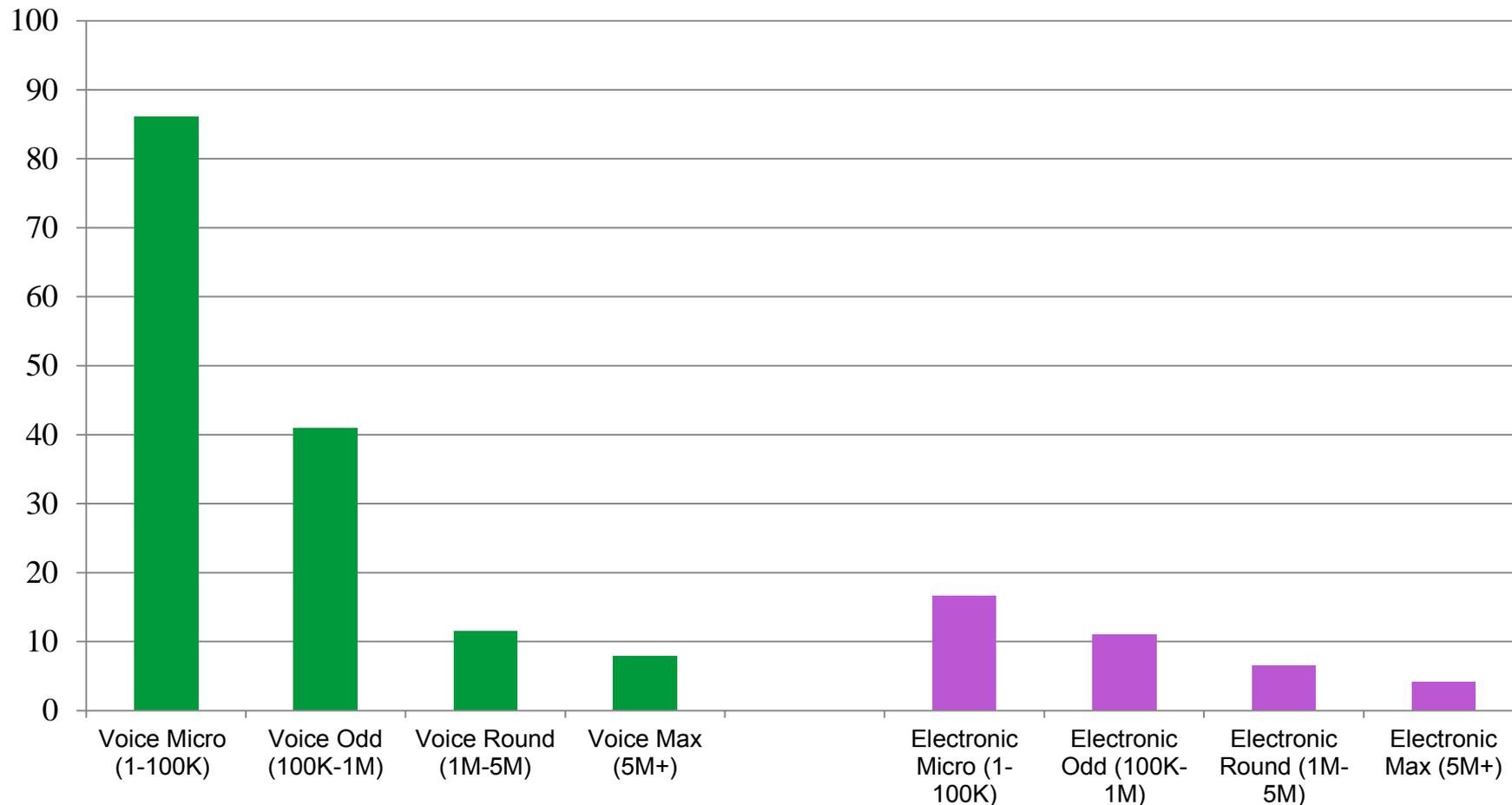
Frequency of Bond Trades: 2014 Monthly Average



Source: BlackRock, based on TRACE and Bloomberg data, 2014.
The respective indexes are the Markit iBoxx USD Liquid Investment Grade Index and the Markit iBoxx USD Liquid High Yield Index

Bond Trading Costs have been Higher in OTC Markets Than Electronic Markets

Investment Grade Bond Trading Costs in Basis Points



Source: Hendershott and Madhavan, *Click or Call?*, *Journal of Finance* Vol. 70, Issue 1, January 19, 2015.

Using data for all 4.6 million corporate bond transactions in U.S. corporate bonds from January 2010 through April 2011.

Fixed Income Markets Undergoing a Structural, Not Cyclical, Change

Spreads have declined since the crisis but remain elevated relative to pre-crisis levels

- ▶ However, market shallowness with absence of B-D liquidity backstop could pressure spreads in a dislocation

Electronic trading platforms have emerged to aggregate liquidity

- ▶ Though majority of corporate bond trading still occurs via phone, institutional clients now have access to additional liquidity sources
- ▶ Electronic venues provide a means for increased client-to-client matching of flow

Nonetheless, corporate bond e-trading is still dealer-centric and in its nascent stages

Corporate bond trading in the secondary market may be enhanced via standardized issuance

Spreads Down Since Crisis but Higher than Pre-Crisis



Source: Morgan Stanley

E-Trading Volume as a % of Total HG Corp Bond Volume



Source: MarketAxess

Evolution of Market Structure

Fixed Income execution risk shifting from the sell-side to the buy-side

- ▶ Agency-style trading volumes grow as principal dealers face balance sheet pressures

Equification of other asset classes

- ▶ Execution is rapidly moving towards electronic trading with multiple liquidity venues
- ▶ Decline in transaction costs and central clearing
- ▶ Encouragement of further standardization of products

Security types by percentage of e-Trading

	 voice	< 1/3 electronic	1/3 2/3 electronic	> 2/3 electronic	 electronic
Fixed Income		<ul style="list-style-type: none"> • Derivatives • Corporates • Commodities • RMBS / CMBS 	<ul style="list-style-type: none"> • US Treasuries (Off the Run) • Treasury Bills 		
FX			<ul style="list-style-type: none"> • FX Forwards 	<ul style="list-style-type: none"> • FX Spot 	
Equities				<ul style="list-style-type: none"> • Equities 	

Source: ICAP

Future Perspectives and Discussion

Market structure matters

- ▶ Distinguish centralized and OTC structures
- ▶ Affects transparency, liquidity and trading costs, and hence pricing

Continuing evolution of electronic trading

- ▶ Most equities are traded electronically
- ▶ Provides transparent pricing (actionable quotes) and lower cost

Bond ETFs offer a vision of the future

- ▶ ETFs are already there...bond ETFs trade **intraday** like equities in **centralized** markets
- ▶ **Transparency:** Quotes are generally readily available even on Columbus Day and other bond market holidays
- ▶ **Liquidity:** Large bond ETFs typically have provided deep liquidity with tight bid-ask spreads
- ▶ **Price Discovery:** Considerable evidence that bond ETFs can assist in price discovery*

There can be no assurance that an active trading market for shares of an ETF will develop or be maintained.

* Source: Ananth Madhavan and Aleksander Sobczyk, 2015. "Price Dynamics and Liquidity of ETFs. Forthcoming, *Journal of Investment Management*

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Investing involves risk, including possible loss of principal. Fixed income risks include interest-rate and credit risk. Typically, when interest rates rise, there is a corresponding decline in bond values. Credit risk refers to the possibility that the bond issuer will not be able to make principal and interest payments.

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