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History of the FX market

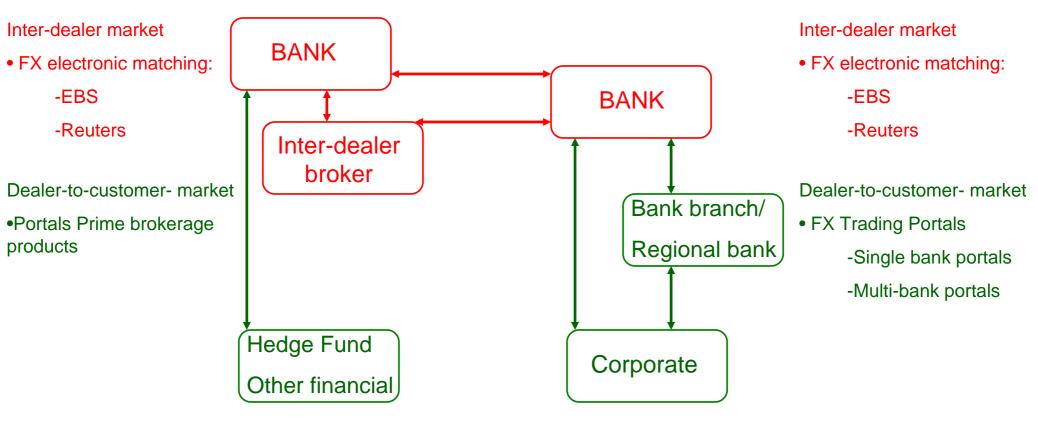


The FX market

- 1876 to World War I the gold exchange standard ruled over the international economic system
 - Under the gold exchange, currencies experienced a new era of stability because they were supported by the price of gold
- 1944 the Bretton Woods Agreement was founded in order to stabilize and regulate the international Forex market
 - preventing money from moving across nations and restricting speculation in the world currencies
- 1980's the onset of computers and technology accelerated the pace of extending the market continuum for cross-border capital movements through time zones. From Telex to telephone to computers.
- Transactions in foreign exchange increased intensively from nearly \$70billion a day in the 1980s to an average of \$1.86 trillion a day (Source: Bloomberg, July 2006)
 - In London trading rose 19% to an average of \$1.03 trillion a day
 - U.S. currency trading increased 21% to an average of \$577 billion a day
 - Currency trading in Singapore rose 17% to an average \$195.1 billion a day



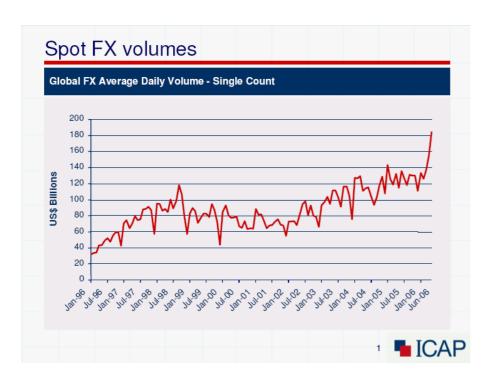
FX: an over-the counter market





The FX market (today)

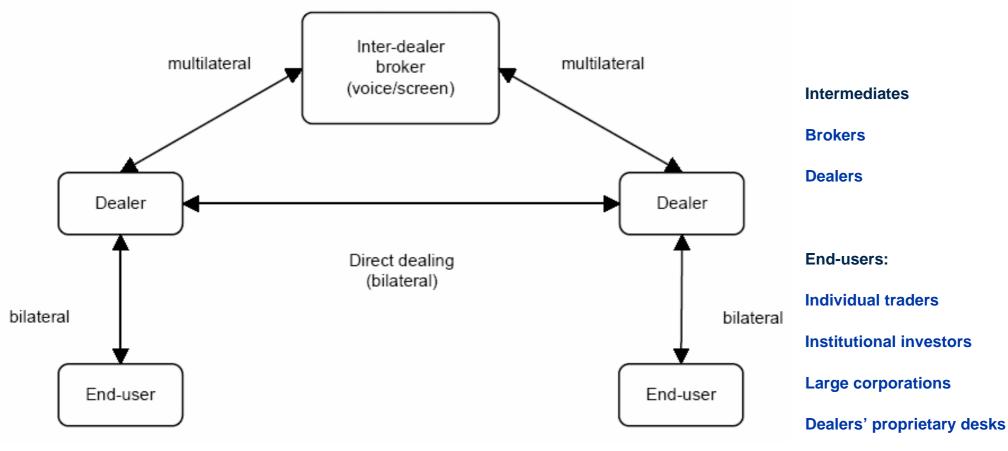
- World's biggest and most actively traded asset class
- Market growing at 19% a year and the fastest growing sector is the buy-side
- Trading moving rapidly from voice to electronic
 - Increase in high frequency trading





Cutting intermediaries:

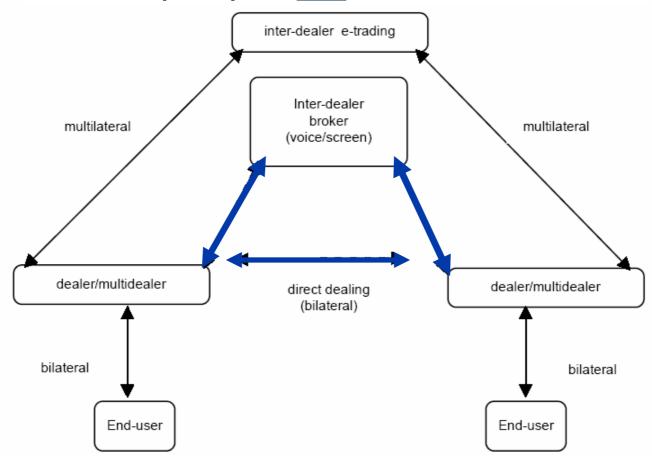
Interaction between participants prior to electronic trading



Source: BIS, January 2001



Interaction between participants after the introduction of electronic trading



Reduced importance of the direct trading channels and the traditional inter-dealer broker channels?

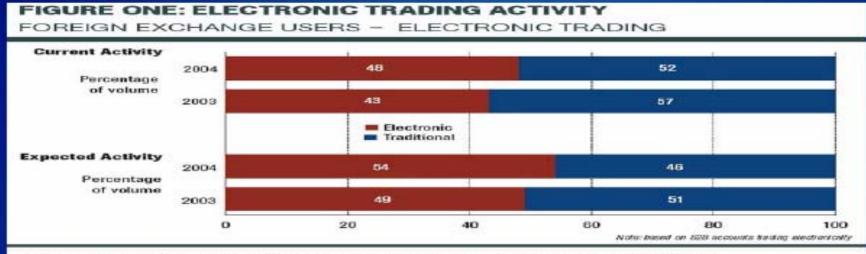


Current market structure

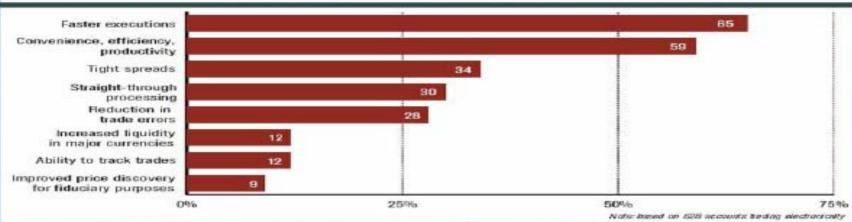


STATE STREET GLOBAL MARKETS

Client Adoption / Benefits









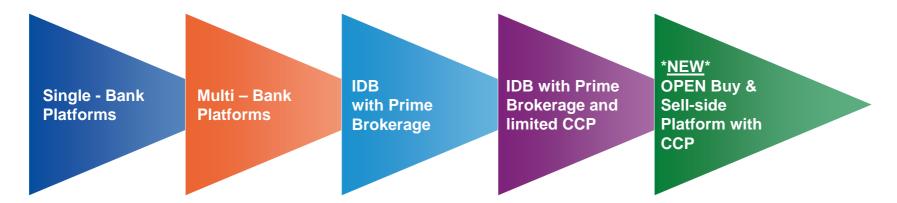
The Stock Exchange vs. an OTC market

- Stock Exchange is a centrally organized marketplace
- Stock markets across Europe are planning to group together:
 - Bourse to merge with Brussels and Amsterdam stock exchange => Euronex
 - Norway, Sweden and Denmark are pooling their exchanges
 - London Stock Exchange and Deutsche Boerse => iX
 - Plans to link up with New York's hi-tech exchange Nasdaq
 => could pave the way for a unified global stock exchange
- Equity markets are the best known and most widely studied examples of electronic trading
- Bond side can be traded on electronic platforms:
 - Trade Web, Market Access, Bloomberg BBT and AutoEX System, Reuters MTFI platform

The FX market (OTC) is living through continuous transitions but can a similar trend be seen as in the Stock Exchange?



Market Evolution: The market is driving towards a more open trading alternative



- Bilateral customer relationship
- Client relationship / cross-market capability
- Attract additional order flow

- Effective liquidity management
- Manages market growth
- Consolidated market efficiencies

- Service hedge fund flows
- Support for algorithmic models
- Attract additional order flow
- Provide credit intermediation for the creditchallenged inter-bank market
- CCP = Centrally cleared counterparty



Inter-dealer market

- Two strong platforms with complementary currency pair strength
- EBS and Reuters have become very impressive liquidity pools'
- Number of transactions on both systems: steadily rising in recent years with little evidence of significant price-gapping

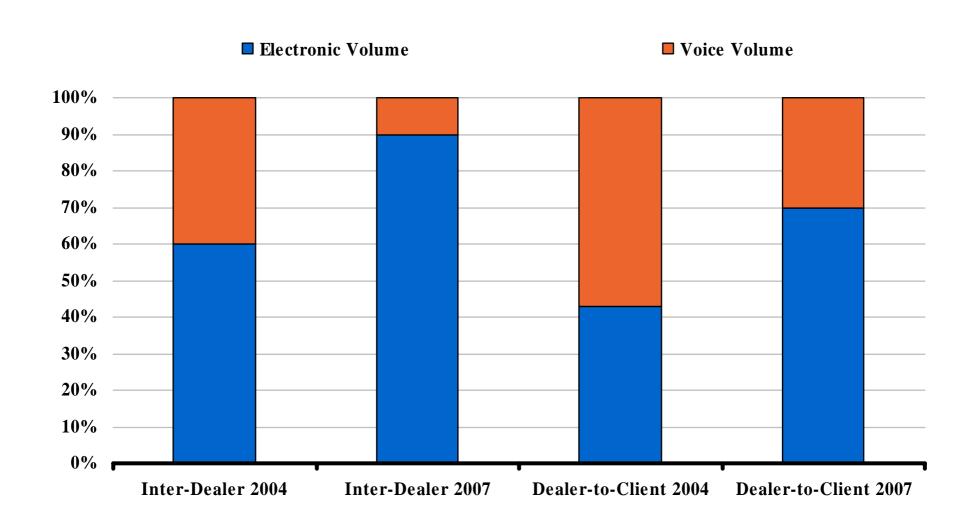
Dealer-to-client market

- A fractured market with specialized platforms
- Targeting a specific type of customer within the buy-side
- Hotspot serving hedge funds and CTA's
- <u>FX Connect</u> serving asset managers
- <u>360 Treasury System</u> dominated among European corporate treasurers
- <u>LavaFX and eSpeed</u> strength in equities trading

Is there room for all the existing and new platforms in this market?

How much does the market rely on the robustness of surrounding telecommunications infrastructure?







Buy-side

- More interested in trading on electronic FX platforms:
 - Speed of execution
 - Transparency
 - Buy-side customers also are attracted to the electronic platforms by the lower transaction costs
 - The audit trail is much easier to follow with electronic platforms

Sell-side

- Interbank market is becoming more bifurcated
 - Large banks contribute price discovery and liquidity to the electronic platforms
 - Small banks act like buy-side customers in the dealer-client platforms
 removing liquidity but only nominally providing it



Reuters

- 20 years' experience in the FX and money markets
- 1996 launched Dealing 3000
 - Spot Matching, Forward Matching, Reuters Matching for FX Options
- 43 key currency pairs in spot and 28 currencies in forwards
- 19,000 users located in more than 6,000 organisations in 110 countries worldwide
- 112,000 users in Reuters Treasury community
- 18,000 Conversational Dealing users
- 7,000 Dealing Matching users
- Revenues of c. £1 billion in 2005 from Reuters Dealing and Treasury information services



EBS

- World's leading FX Spot broker
- 1990 12 major international banks agreed to challenge Reuters' threatened monopoly in interbank spot foreign exchange and provide effective competition
- September 1993 EBS Dealing System launched
- EBS alone averages some \$90-\$100bn a day and up to 700 trades a minute
- 2,000 traders on more than 800 dealing floors in + 40 countries
- EBS Spot, EBS Prime, EBS Spot Ai, EBS market data
- Average of trade per day of
 - USD 130 billion in spot foreign exchange transactions
 - 700,000 oz in gold and 7 million oz in silver



Ai and PB



Current situation of the Ai and PB systems:

- Prime Brokerage systems:
 - Before the advent of hedge funds services include:
 - Cash lending through margin services and 'repos', stock lending and foreign exchange transactions
 - Now most prime brokers:
 - Added more sophisticated services
 - Individual profitability is a matter of speculation
 - EBS Prime
 - Reuters
- Application programme interface technology:
 - EBS Spot Ai
 - Reuters' Matching-over-internet-protocol



Reuters Prime Broker

- 17% of Reuters volumes from trading
- 10% of the figure from the sell-side
- 90% of the figure from the buy-side

MOIP (Matching-over-internet-protocol)

FX Market Space

- Joint Venture: Reuters and CME
 - Will be a direct competitor to Reuters' and EBS
 - Created its own independent pool of liquidity



FX MarketSpace

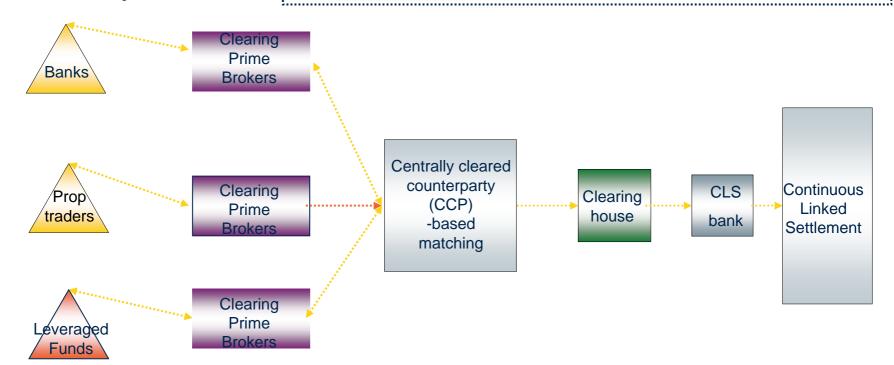
Reuters' value proposition

- Reduced cost of trading
- Reduced risk
- Centralised pool of deep liquidity
- Anonymous, multi-lateral matching
- STP and operational efficiency
- Strongly funded



The FX MarketSpace value

Access via Reuters GUI or CME GLOBEX API



Buyside / End User

- GUI Reuters integrated
- API trading support for algorithmic trading
- CCP no bi-lateral credit required
- · Aggregated liquidity
- Comprehensive STP

Prime Broker/Clearing Member

- Fiduciary responsibility
- Authorise access
- Enforce access rules
- Post collateral with CCP
- Limit & trade admin
- STP allocations, etc.

Liquidity Providers

- Access to best pricing & aggregated liquidity
- Anonymous trading
- Access to flow
- No credit risk
- Operational cost savings
- Reduce e.trading costs

Clearing House

- Multilateral netting
- Collateralised margining
- Net settlement
- Improvement of funds flow
- Facilitates increased trading
- Real-time deal confirmation

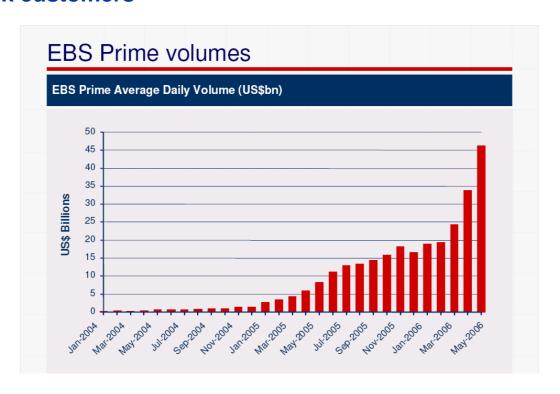
CLS

- Settlement risk elimination
- Operational efficiencies



EBS Prime

- 149 users now live
 - 37 non-bank customers including hedge funds
 - 112 bank customers





EBS Prime: Benefits for the Customer

- Same liquidity available to EBS' top tier bank
- See and trade on prices previously unavailable due to limited bilateral credit
- Access to tighter prices and greater depth of liquidity from the world's leading market making banks
- Continuous price stream of more competitive prices
- Increased probability of execution of orders (deal on your bid/offer)
- Maintain the relationship between banks and their clients



EBS Spot Ai

- API or 'black-box' FX trading
- Average daily volumes USD 30 billion
- 20% of EBS volumes from API-based trading





Revenue

- Services such as cash lending through margin services and 'repos', stock lending and foreign exchange transactions remain the core profitable services to the banks
- Customers contract directly with EBS Prime banks
 - => pay a fee to their EBS Prime bank
 - (typically in the form of a spread added to the dealt price on the EBS Prime Customer's deal ticket)
- Customers pay a standard EBS Spot transaction brokerage fee to EBS



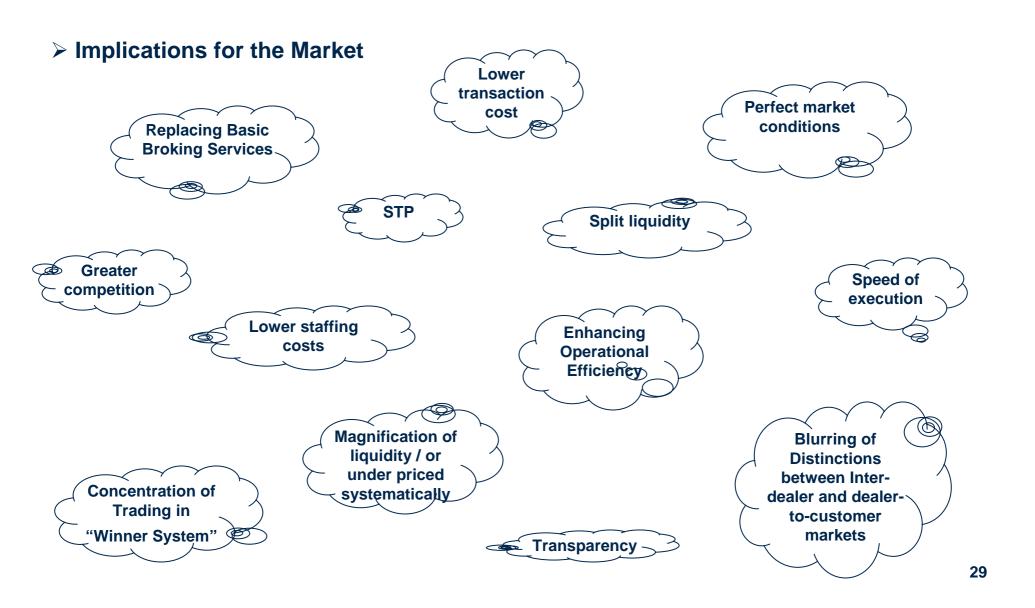
Prediction for the Prime Brokerage Units of Investment Banks in 2006

- Rise in revenue for the PB Units of the major European and US Investment Banks
- Reasons for rise:
 - Prime brokerage compete to offer additional services
 - Prime brokerage services to hedge funds can be seen as the catalyst to capturing their transaction flow



Market Risk







Evaluating the market development

- Liquidity
 - Will it be possible to trade in size on demand without moving the price against the price maker?
- Settlement risk
 - How high will be the Herstatt risk?
- Systems/operations
 - How to react to upcoming errors such as non-matching trade confirmation?
- Credit intermediation
 - Will the credit risk arise?
- CLS
 - Market-standard for FX settlement between major banks
 - 04/2006: 300,000 instructions a day in 15currencies (98% of global FX trading)
 - Average daily value exceeding US\$2.5 trillion
 - Will there be more exchange styles?



Profitability models



Source of revenue

- Proprietary trading
- Spread (for all products such as vanilla and exotic products, derivatives, etc.)
- Prime Broking fees
- Latency arbitrage

What might be the future for the eFX market?



Proprietary trading

- Banks making a profit for itself when trading its own money
- Majority of trading profits comes from bond and commodity
- Proprietary traders make big profits versus often equally high losses

Spread

- Structured in two different ways ('cash' versus 'volume')
 - ⇒ Which one is more profitable?
 - ⇒ Will the transparency 'destroy' the profitability?



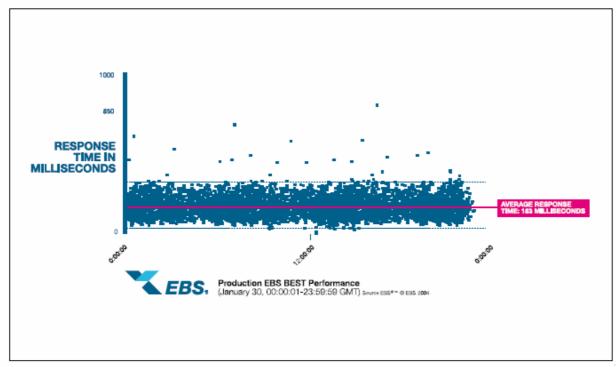
Prime Broking fees

- Commission or fees charged for a transaction
- Brokerage fees can be structured in lots of different ways:
 - A percentage of the contract value
 - A flat fee
 - A mixture of these two methods
 - ⇒ What would be the 'right' commission / fee?



Latency arbitrage

- Delay of 0.1 sec cost money => need to be real time
- Latency reduces the competitiveness of the product
- Latency encourage clients to arbitrage among various price feeds



Source: EBS, 2004



Future



Discussion

- Is there a risk of creating a duopoly if EBS and Reuters are <u>the</u> source for e-pricing?
- Does cutting out intermediates equal the end of human trading?
- Is it appropriate for EBS and Reuters to further open up to the buy side?
- Other?



STATE STREET GLOBAL MARKETS

Implications / Discussion

- As Volumes increase will market risk or operational (technological) risk be more of an issue ?
- What will be the future growth areas? Are Emerging Markets gaining traction?
- Sell-side race for market share and buy-side empowerment have fuelled unrestrained liquidity provision. Are we at a turning point?
- Is electronic, commission-based execution appropriate for active large buy-side clients?
- Will regulatory factors affect the development path of e-trading in FX?
- Will integrated multi-asset e-commerce grow in future?
- Is a centralized exchange-based model a foregone conclusion? What are the obstacles?
- Will an unbundling of services occur in the FX Markets?



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