FX Markets & Commander

Have a glimpse at the trading floor
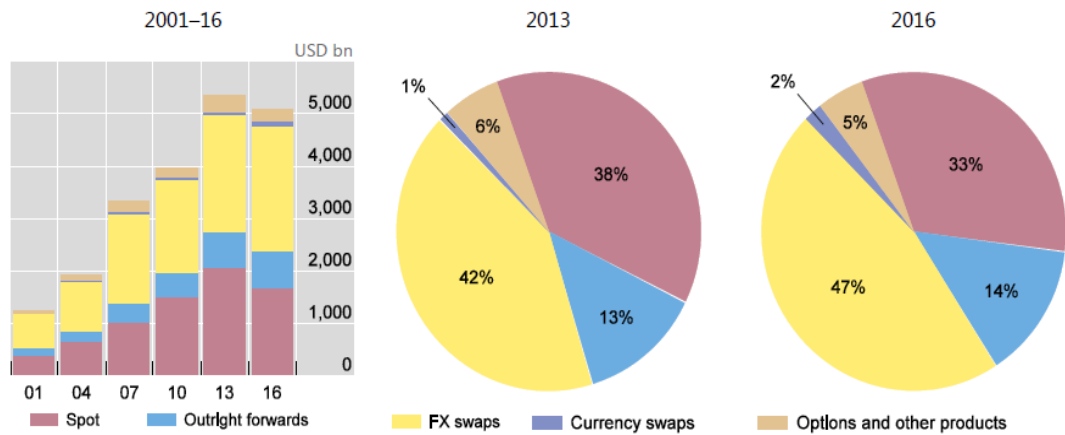
The global FX Market

The largest market – ever increasing global turnover?

Foreign exchange market turnover by instrument

Net-net basis,[1] daily averages in April   Graph 2

2001–16 | 2013 | 2016

Legend: Spot | Outright forwards | FX swaps | Currency swaps | Options and other products

[1] Adjusted for local and cross-border inter-dealer double-counting.

Source: BIS Triennial Central Bank Survey. For additional data by instrument, see Table 1 on page 9.

› Turnover rose quickly since 2000

› A large part are FX swaps which do not provide directional liquidity

Turnover development

› Daily market turnover was $5.1 tln in 2016 (latest date of BIS Triennial Survey), up from $0.8 tln in 1992, but down from 2013.

• Comparison: We estimate the daily turnover of all NYSE stocks at around $ 0.1 tln.

› Steadily rising market depth (apart from EUR-introduction effect).

› Turnover of FX swaps more than quintupled.

› Most part of it is likely due to increased hedging and funding needs.

› Globalization creates FX exposure for corporates. Most of it has to be hedged away.

› Decreasing home bias of portfolio investors..
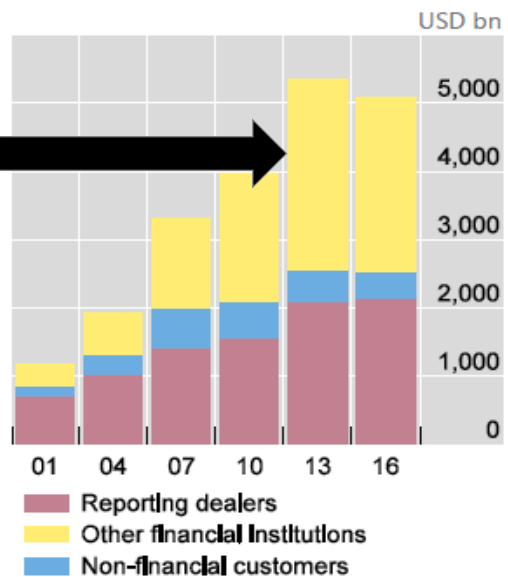
The largest market – and expanding rapidly

Foreign exchange market turnover by counterparty
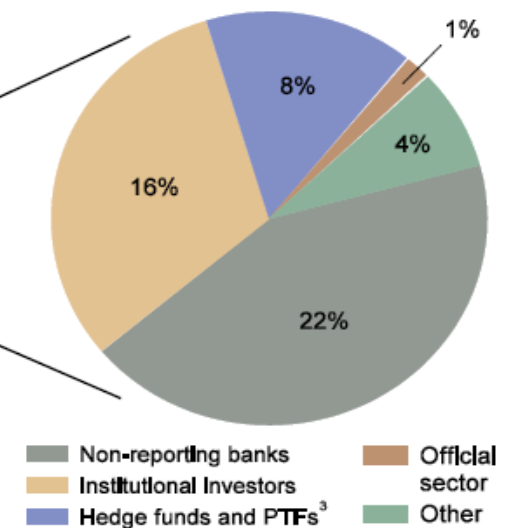
Net-net basis,[1] daily averages in April

Graph 3

2001–16

2016
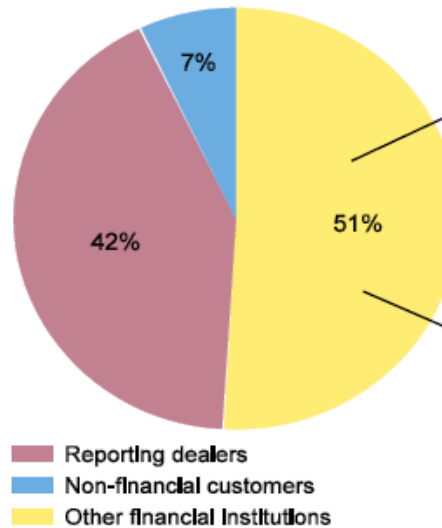
Breakdown of other financial institutions[2]

Left chart legend (2001–16):
- Reporting dealers
- Other financial institutions
- Non-financial customers

Center pie chart (2016):
- Reporting dealers — 42%
- Non-financial customers — 7%
- Other financial institutions — 51%

Right pie chart (Breakdown of other financial institutions):
- Non-reporting banks — 22%
- Institutional Investors — 16%
- Hedge funds and PTFs[3] — 8%
- Official sector — 1%
- Other — 4%

[1] Adjusted for local and cross-border inter-dealer double-counting. [2] For definitions of counterparties, see page 18. [3] Proprietary trading firms.

Source: BIS Triennial Central Bank Survey. For additional data by counterparty, see Tables 4 and 5 on pages 12 and 13.

Reporting Dealers: FI's; Non-financials: Corporates, Government Agencies etc.; Other financials: Institutionals, Hedge Funds

Contributors to growth in the FX market

OTC foreign exchange turnover by instrument, counterparty and maturity

Net-net basis,[1] daily averages in April, in billions of US dollars and percentages   Table 4

Instrument/counterparty/maturity	2001		2004		2007		2010		2013		2016	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Spot transactions	386	31.2	631	32.6	1,005	30.2	1,489	37.5	2,047	38.2	1,652	32.6
with reporting dealers	216	56.0	310	49.2	426	42.4	518	34.8	676	33.0	605	36.6
with other financial institutions	111	28.9	212	33.7	394	39.2	755	50.7	1,183	57.8	930	56.3
with non-financial customers	58	15.0	108	17.0	184	18.3	217	14.6	188	9.2	117	7.1

Evolution of FX Volumes

Is the heyday of FX Spot Trading over?
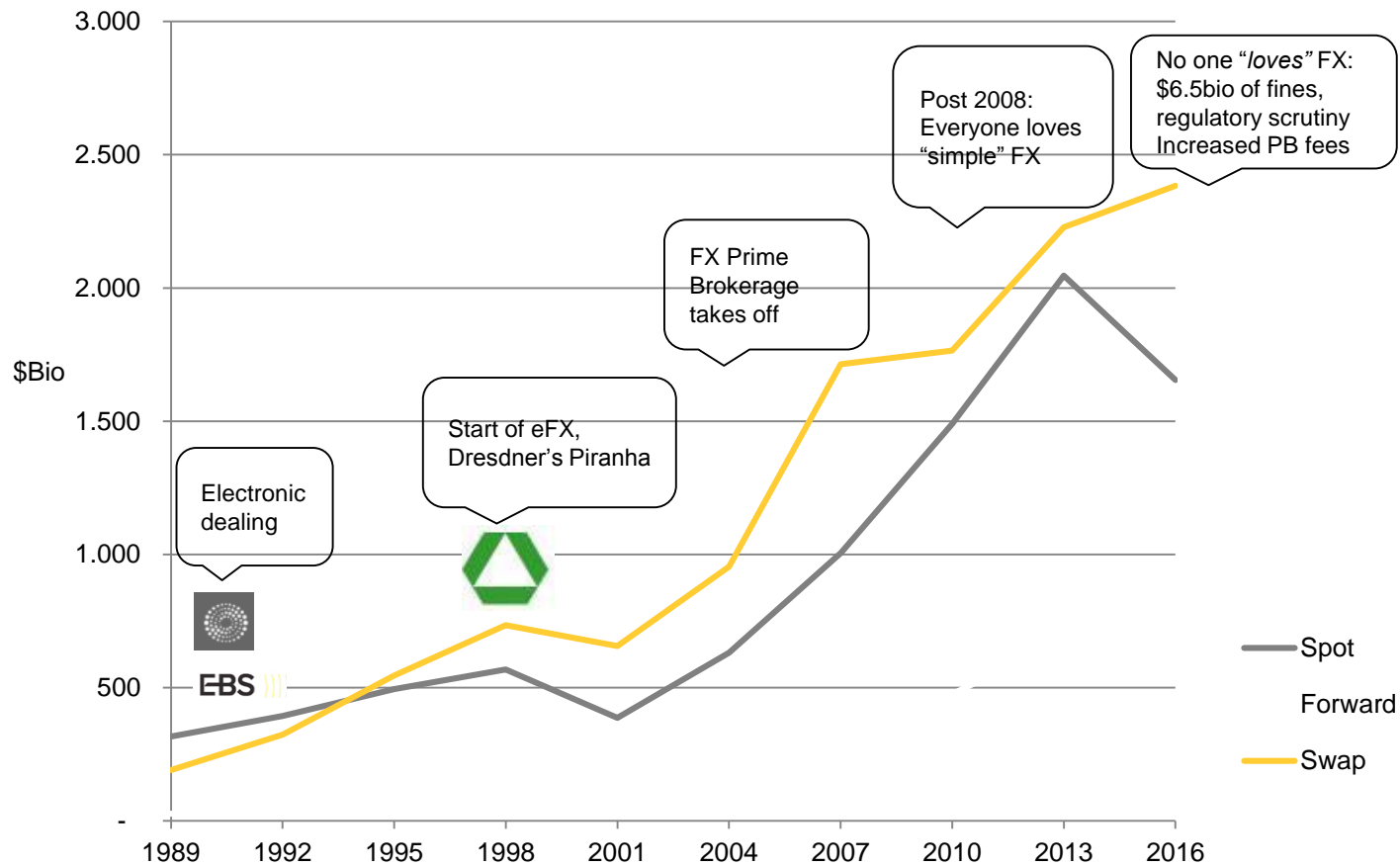
Source: BIS Triannual Surveys

FX Spot Trading Volumes

- Spread compression is back as volatility falls
- Move from anonymous trading to private relationship driven electronic trading
- Fewer market making banks. Core providers who warehouse and periphery who do not
- Fall in FXPB volume. Reduced volume from hedge fund and leveraged players
- Lower High-Frequency-Trading activity
- MIFID/MIFIR
- Swap volumes driven by funding needs
- Usage of FX Algorithm continues to grow

Where is Spot FX traded?

- ECN - 25%
- Multi-Dealer - 16%
- Single-Dealer - 59%
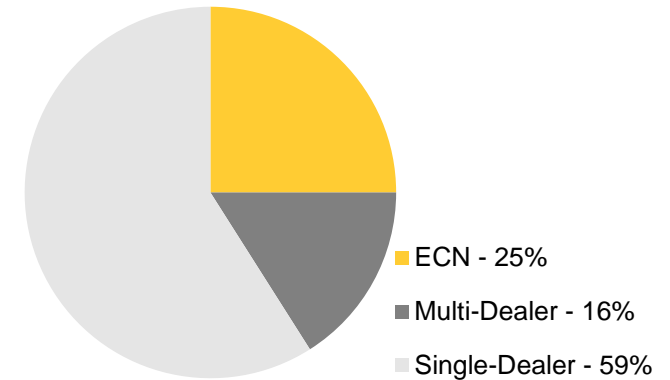
Most traded currencies (BIS Triennial Study 2016)

Foreign exchange market turnover by currency and currency pairs

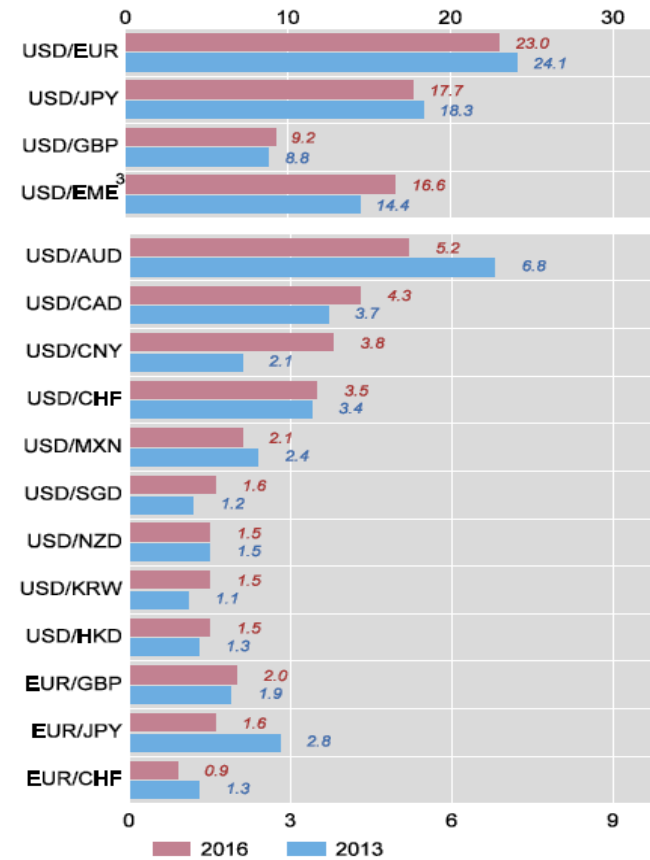Net-net basis,[1] daily averages in April, in per cent

Graph 1

eCommerce at Commerzbank

Pre eTrading

First eTrading Steps


```
FROM                                    * 1215GMT 081200 */4359
Our terminal : COBA     Our user    :▨▨▨▨▨▨▨
    EUR 1
#   WELCOME TO INTERBANK FLOW DESK ▨▨▨>
#   80+83

#   #INTERRUPT#
#   81+84
     84
#   TO CONFIRM 1   MIO AGREED AT .8884 I SELL EUR
#   VAL 12DEC2000
#   MY USD TO COMMERZBANK, NEW YORK
#   THANKS AND BYE
     TO CONFIRM AT .8884 I BUY 1   MIO EUR
     VAL 12DEC2000
     MY EUR TO BCI MILANO
     THANKS AND BYE
#
     #INTERRUPT#

     #END REMOTE#
^    ##ENDED AT 12:15 GMT##

( 315 CHARS)
```

What is electronic Trading all about?

→ Reduce human errors

→ More transactions possible: Around 100,000 trades per day

→ Main factor is Speed

→ Blink of an eye, as fast as you can: 100 milliseconds

→ Send order from Chicago to NY and back: 12 milliseconds

BloombergBusiness ☑   News   Markets   Insights   Video

Cable Across Atlantic Aims to Save Traders Milliseconds

Project Express will be the fastest cable across the Atlantic, reducing the time it takes data to travel round-trip between New York and London to **59.6 milliseconds** from the current top speed of **64.8 milliseconds** in summer 2015.

Speed is everything – faster than light?

Light Speed Trading

A Jump affiliate owns a network of microwave towers that can convey data between New Jersey and Illinois about 1.6 milliseconds faster than fiber.

CME Chicago data center

Fiber-optic cable: **6.6 milliseconds**

New Jersey

CME Aurora data center

Microwave towers: **5 milliseconds**

0 mi. 250 mi.

GRAPHIC BY BLOOMBERG BUSINESSWEEK. DATA: FCC, "INFORMATION TRANSMISSION BETWEEN FINANCIAL MARKETS IN CHICAGO AND NEW YORK" BY LAUGHLIN ET AL.

The competition between two "flash boy" financial trading firms over plans to build communications masts higher than the Shard, in rural Kent, has intensified.

New Line Networks (NLN) and Vigilant Global – high-frequency trading firms that use super-fast infrastructure to make trades in the blink of an eye – want to build masts within a few miles of each other in Richborough.

The masts would allow them to beam microwave signals across the Channel, transmitting signals to and from European markets a fraction of a second quicker than rivals.

› http://www.bloomberg.com/news/articles/2014-07-24/high-frequency-traders-find-microwaves-suit-their-need-for-speed

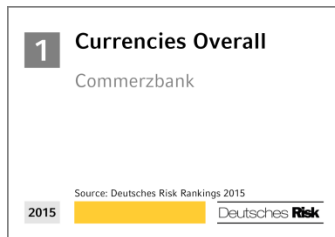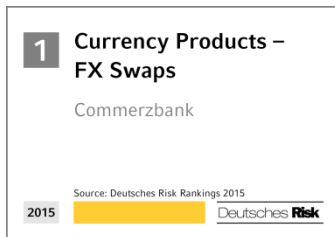› https://www.theguardian.com/business/2016/mar/01/high-frequency-traders-turn-rural-kent-into-telecoms-battleground

E-Commerce at Commerzbank – our model

› eFX is a flow based business

› Leading FX market maker

  › Spot, Forwards and Swaps, and Forward -Forwards

› Liquidity provider to the market

  › ECNs, API's and our GUI, on a follow the sun basis (24/5)

› Around 100,000 trades per day

  › Automatic pricing and risk management via our proprietary risk management system (QTS)

  › Internalization of in-house-flow adds to risk reduction and cost effectiveness
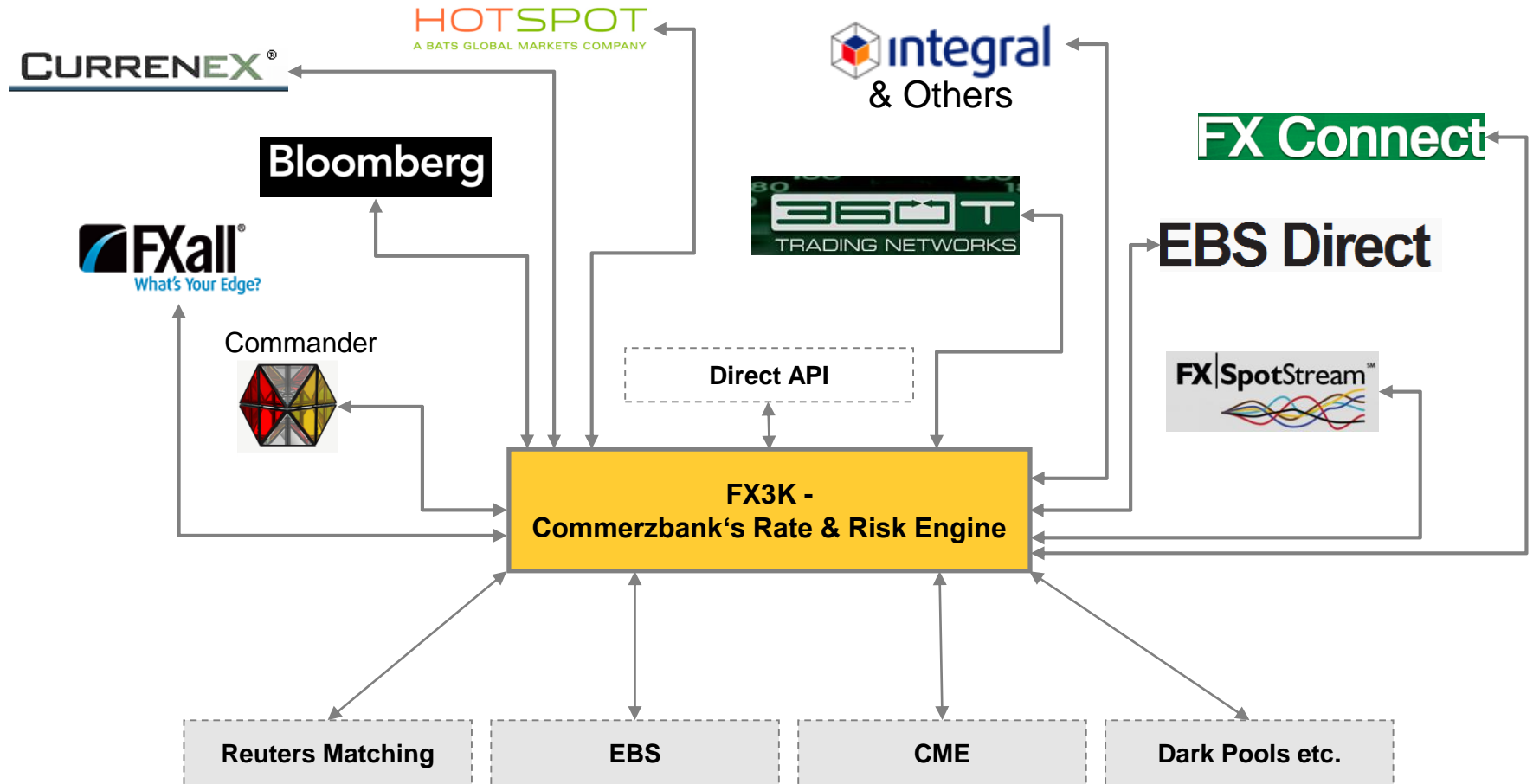
  › STP (=Straight Through Processing)

Definitions

API: Application Programming Interface

ECN: Electronic Communication Network

1 Currency Products –
FX Options
Commerzbank
Source: Deutsches Risk Derivatives Rankings 2014
2014 — Deutsches Risk

1 Currency Products –
FX Swaps
Commerzbank
Source: Deutsches Risk Rankings 2015
2015 — Deutsches Risk

1 Currencies Overall
Commerzbank
Source: Deutsches Risk Rankings 2015
2015 — Deutsches Risk

1 Currency Products –
FX Forwards
Commerzbank
Source: Deutsches Risk Rankings 2015
2015 — Deutsches Risk

1 Best Global
Liquidity Provider
Commerzbank
Source: World Finance Foreign Exchange Awards 2013
2013 — WORLD FINANCE

FX Week Best Bank Awards
2 Best Bank for FX in the
Eurozone for Bank
Clients
Commerzbank
Source: FX Week Best Bank Awards 2016
2016 — FX·Week

Our eFX system universe…

Proven reliability in difficult market situations

COMMERZBANK

› The below charts show the tickets per minute during various dramatic events.

› Throughout these events, Commerzbank systems carried on pricing and trading with clients giving them the needed liquidity.

› Commerzbank is one of the market makers that is proud to say always provided a service to our clients during these events
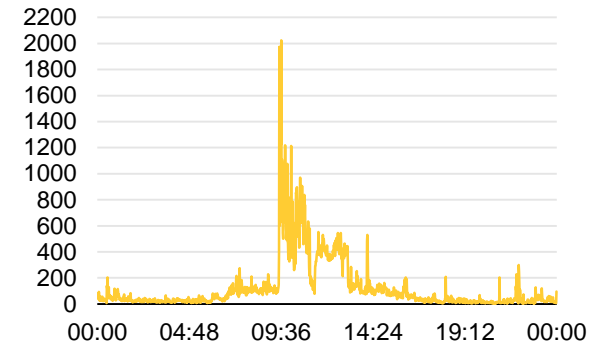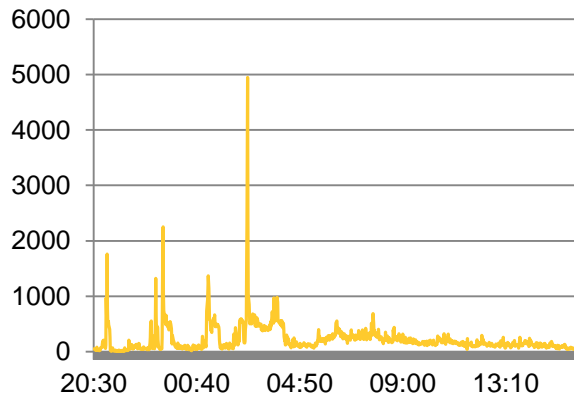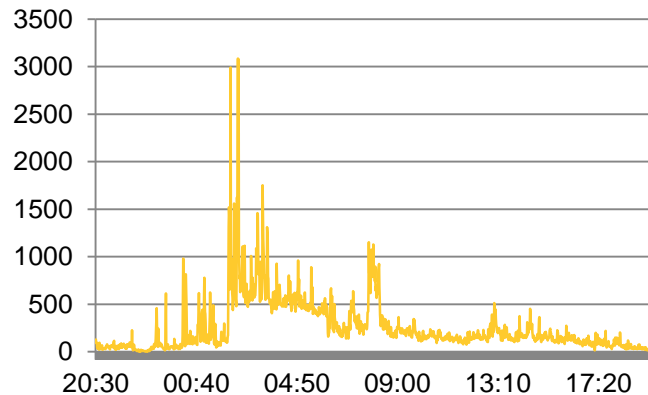

Flash Crash – May 2010
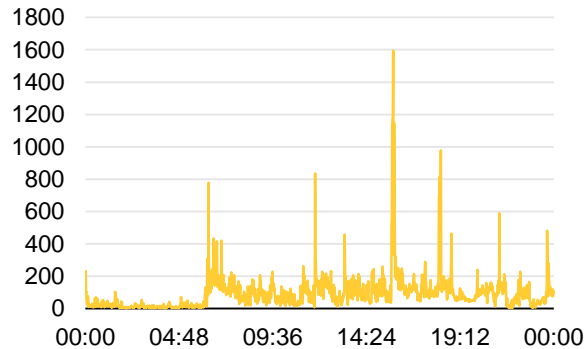
Tsunami – March 2011
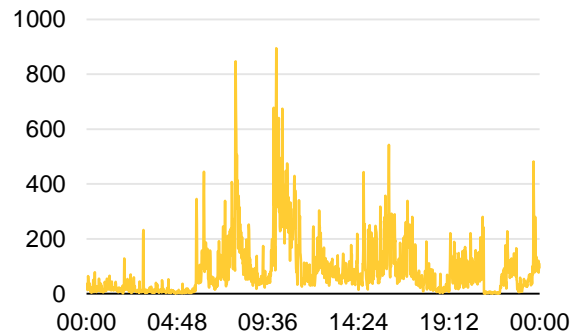
SNB – Jan 2015

Brexit – June 2016

Trump – Nov 2016

eFX and its pitfalls

|												
Thu Apr 16 08:33:49 CEST 2015	GBP/CHF	GBP	5,000,000,000.00	BKN / SP	BLP.RFQ.1013533...		Cancelled	1.43143	1.43103	17/04/2015	20/04/2015	BLOOM	SWP
Thu Apr 16 08:33:25 CEST 2015	GBP/USD	GBP	50,000,000.00	SP / BKN	231307394-Comm...		Cancelled	1.4821	1.48196	20/04/2015	20/07/2015	360TR	SWP
Thu Apr 16 08:33:11 CEST 2015	EUR/CHF	EUR	30,000,000.00	BKN / SP	231307369-Comm...		Cancelled	1.02984	1.02955	17/04/2015	20/04/2015	360TR	SWP
Thu Apr 16 08:33:05 CEST 2015	EUR/CHF	EUR	50,000,000.00	TOD / TOM	68646041		Cancelled	1.0299	1.02954	16/04/2015	17/04/2015	EP_F_FXALL	SWP
Thu Apr 16 08:31:53 CEST 201	EUR/JPY	JPY	-5,000,000,000.00	BKN / SP	BLP.RFQ.1013530...		Cancelled	127.315	127.296	17/04/2015	20/04/2015	BLOOM	SWP
Thu Jun 18 15:14:33 CEST 2015	EUR/JPY	EUR	5,400,000,000.00	SP / BKN	BLP.RFQ.1075145...		RFQ	139.913	139.898	22/06/2015	09/05/2016	BLOOM	SWP

Changing Market Structure - Internalisation

- Internalisation is where a market maker does not hedge flow explicitly even if the position is contrary to a view
- Instead acquired positions are held and aggregated within risk limits
- The aim is to use other client flow to clear positions for example by skewing or because of the size of your franchise and global reach
- According to a BIS report* spot internalisation is 60% and more for a small group of bank and non-bank liquidity providers
- Overall cost of trading should in theory be less when trading with someone who can internalise
    - An independent pool of liquidity
    - Low or no market impact meaning larger tickets can be drip fed at a small spread
    - Typically tighter prices than central limit order books are provided so as to attract flow
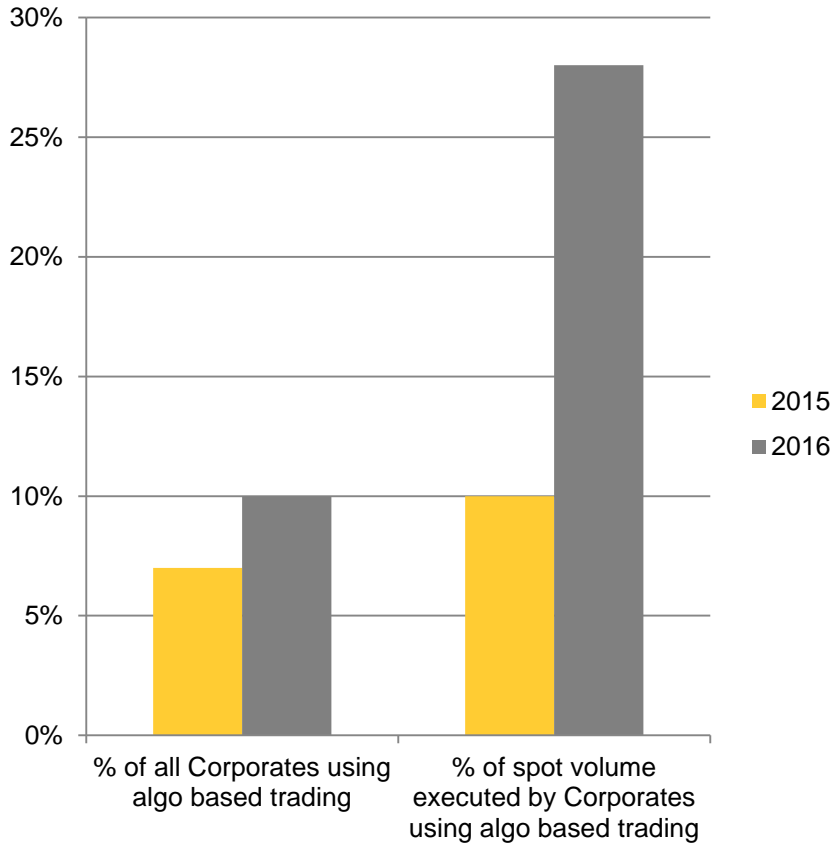
Commerzbank internalisation rate for FX Spot on two measures;
- Passive - flow cleared everywhere without crossing a bid/offer spread
- Client Flow - cleared by clients
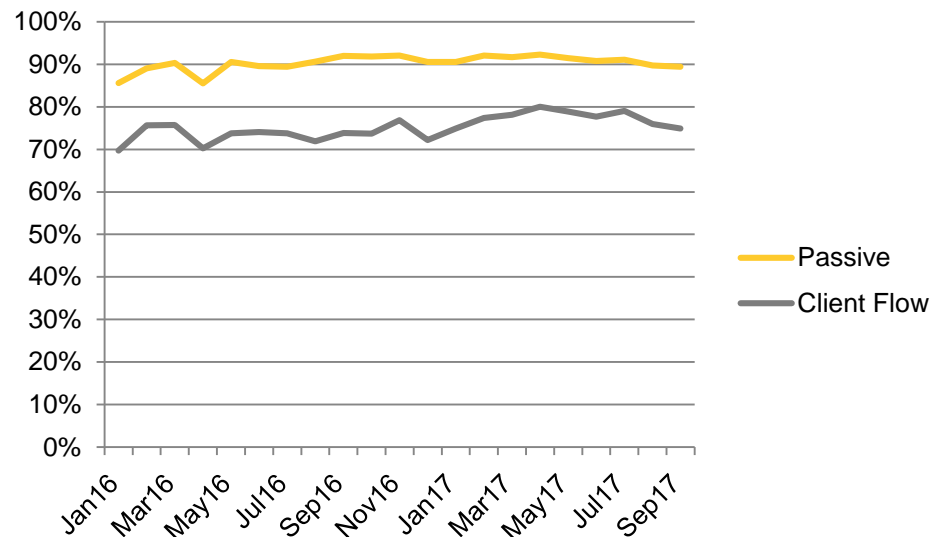
*Downsized FX markets: causes and implications (www.bisl.org)

Increased usage of FX Algorithms
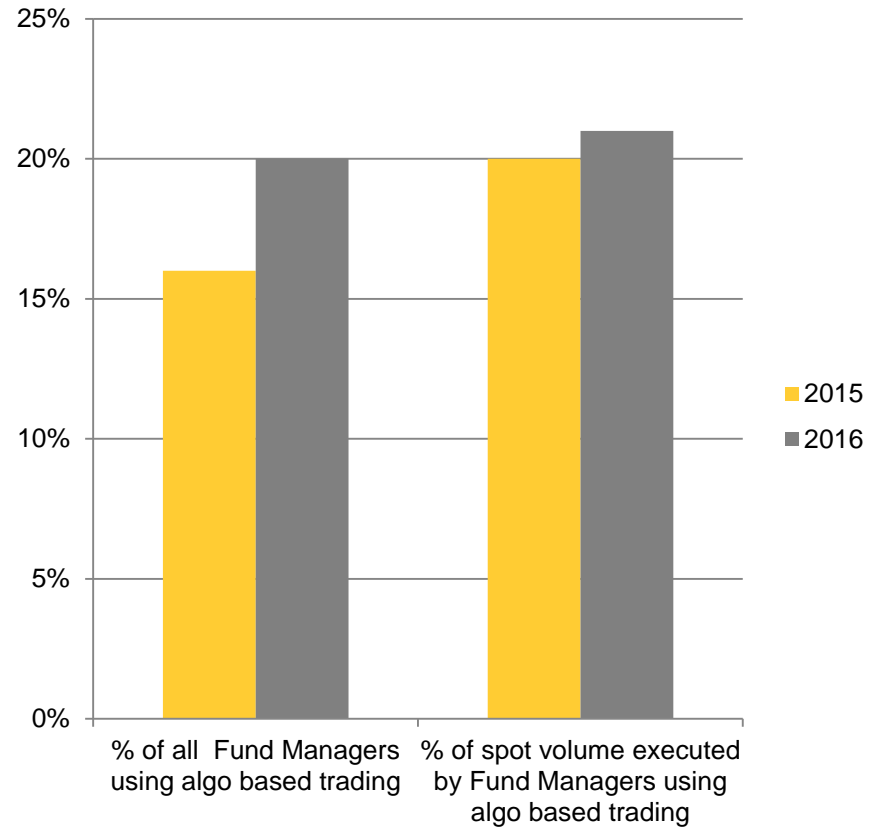
What is Driving the use of FX Algorithms

› Global regulatory initiatives such as MiFID II and FX Global Code of Conduct are driving execution to a more transparent and controlled environment

› Algorithms allow clients to automate their flow, intelligently access a deeper pool of liquidity, control market impact, increase spread capture and minimise information leakage

Key differences

› Execution risk transfer from dealer to client

› Clients pay an execution fee instead of executing on a principal risk price

› Strategies range from fast liquidity seeking, which are inclined to cross the spread in advantageous scenarios to passive/stealth algorithms that execute within the spread

Objectives of algorithmic execution:

– Avoid signalling risk

– Minimise market impact

– Increase transparency and benchmarking via Transaction Cost Analysis (TCA)

– Access multiple liquidity pools in a fragmented market place

– Reduce crossing (paying) the spread

Impact larger risk transfer orders have on a fragmented market increases overall transaction costs
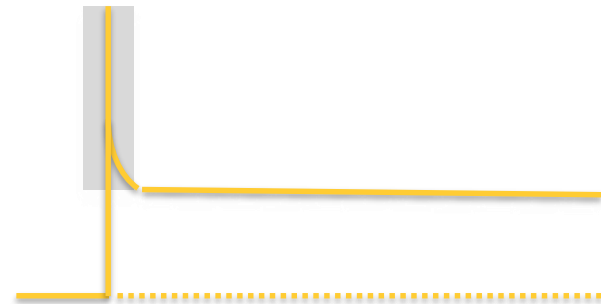
Executing the order over multiple venues in smaller clips will help reduce the footprint and potential adverse price movements

Commerzbank AG   Corporate Clients   FICC Product Management   60261 Frankfurt am Main / Tel.: +49 (069)136-42020 / www.commerzbank.de

![COMMERZBANK logo]

Peter Hahn

Head of eFX Sales Frankfurt

Tel.:   +49 69 136 84444
Fax: +49 69 136 85589
Email: Peter.Hahn@commerzbank.com

Zentrale
Kaiserplatz
Frankfurt am Main
www.commerzbank.de

———————————————————

60261 Frankfurt am Main
Tel.   +49 (0)69 / 136-20
Mail   info@commerzbank.com