# Introduction to FX Markets

## Market Microstructure

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# Outline

- FX Price
  - Bid and Ask Price
  - Order Book
  - Multiplicity of Exchange
- Type of Orders
  - Market Order
  - Limit Order

# Bid and Ask Price

- Consider a fruit seller in a market shop which buys from farmers and sells to customers.

Shopkeeper (Market Maker)

Fruit Seller

Fruit Buyer

$ 1

$ 1.5

$ 0.5 (Profit)

What he *sells* at is always *higher* than what he *buys* at.
That's how he earns his profit.

# Bid and Ask Price

☐ He starts quoting the prices at which he would buy and the Price at which he would sell.

Shopkeeper (Market Maker)

**Buy Price:** $ 1

**Sell Price:** $1.5

**Buy** ⟺ **Bid**

**Sell** ⟺ **Ask** ⟺ **Offer**

# Bid and Ask Price

☐ Bid and Ask are quoted from the perspective of the Market maker rather than the client.

Bid = $1    Market Maker    Ask = $1.5

Client Sells Low                                Client Buys High

$ 1 →                    $ 1.5 →

☐ **Market maker**: Buys at Bid (which is low), Sells at Ask (which is High)
☐ **Client**: Buys at Ask (which is High), Sells at Bid (which is Low)
☐ Bid and Ask are quoted from the perspective of the Market maker.
☐ Hence Bid Price < Ask Price

# Bid and Ask Price

- Price is not a single quantity but a combination of two. (bid, ask)
- More liquid the market, nearer the two would be.

What is the price of 1 kg of apple?

Depends on whether you want to buy or sell?

If you want to **buy**, it is $1.5. If you want to **sell**, it is $1.

# Bid and Ask Price

□ Suppose in the fruit exchange (market), there are many market-makers each with its own (Bid , Ask) Prices.

□ Each has a fixed inventory of apples.

Bid: $1 Ask:$1.5

Bid: $1.1 Ask:$1.3

BidSize:9kg AskSize:3kg

BidSize:5kg AskSize:4kg

Bid: $1.2 Ask:$1.4

BidSize:8kg AskSize 3kg

A

B

C

Seller

Buyer

I want to sell. So I should go to the highest bid which is C

I want to buy. So I should go to the lowest ask which is A

# Order Book

☐ The Exchange summarizes this information for the benefit of the clients.

**Bid Side**

| Level 3 | Level2 | Level1 |
|---------|--------|--------|
| 1 (9) | 1.1 (8) | 1.2 (5) |

Best Bid

Seller

**Ask Side**

| Level 1 | Level2 | Level3 |
|---------|--------|--------|
| 1.3 (4) | 1.4 (3) | 1.5 (3) |

Best Ask

Buyer

# Spread

- Spread is the difference between Best Bid and Best Ask.

**Bid Side**

| Level 3 | Level2 | Level1 |
|---------|--------|--------|
| 1 | 1.1 | 1.2 |

**Ask Side**

| Level 1 | Level2 | Level3 |
|---------|--------|--------|
| 1.3 | 1.4 | 1.5 |

Spread
$0.1

Best Bid

Best Ask

Seller

Buyer
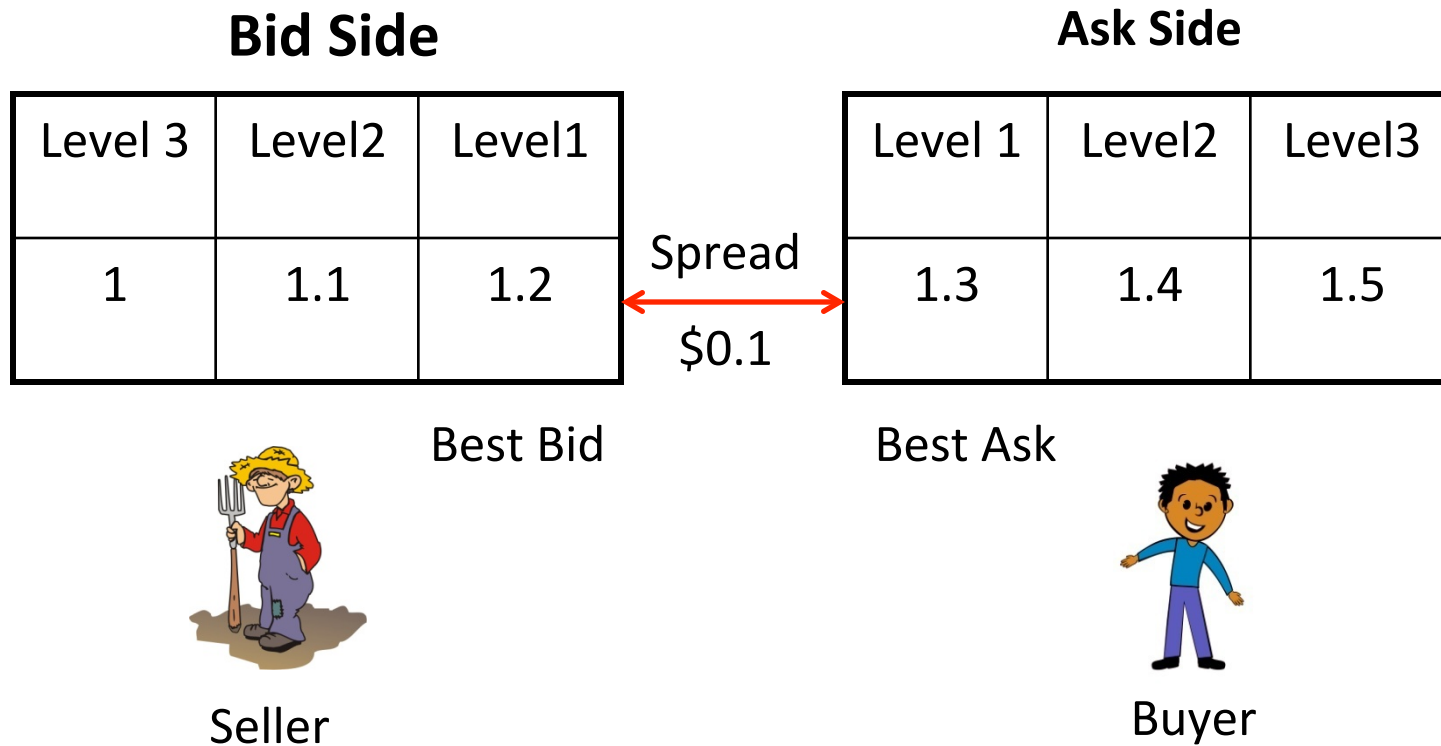
# Multiplicity of Exchanges

- In Currency Markets, there is not a single exchange but there are multiple ECNs.
- Market-makers quote their Bid and Ask on different exchanges.
- There is no single (Bid, Ask) Price which is observed in the market.
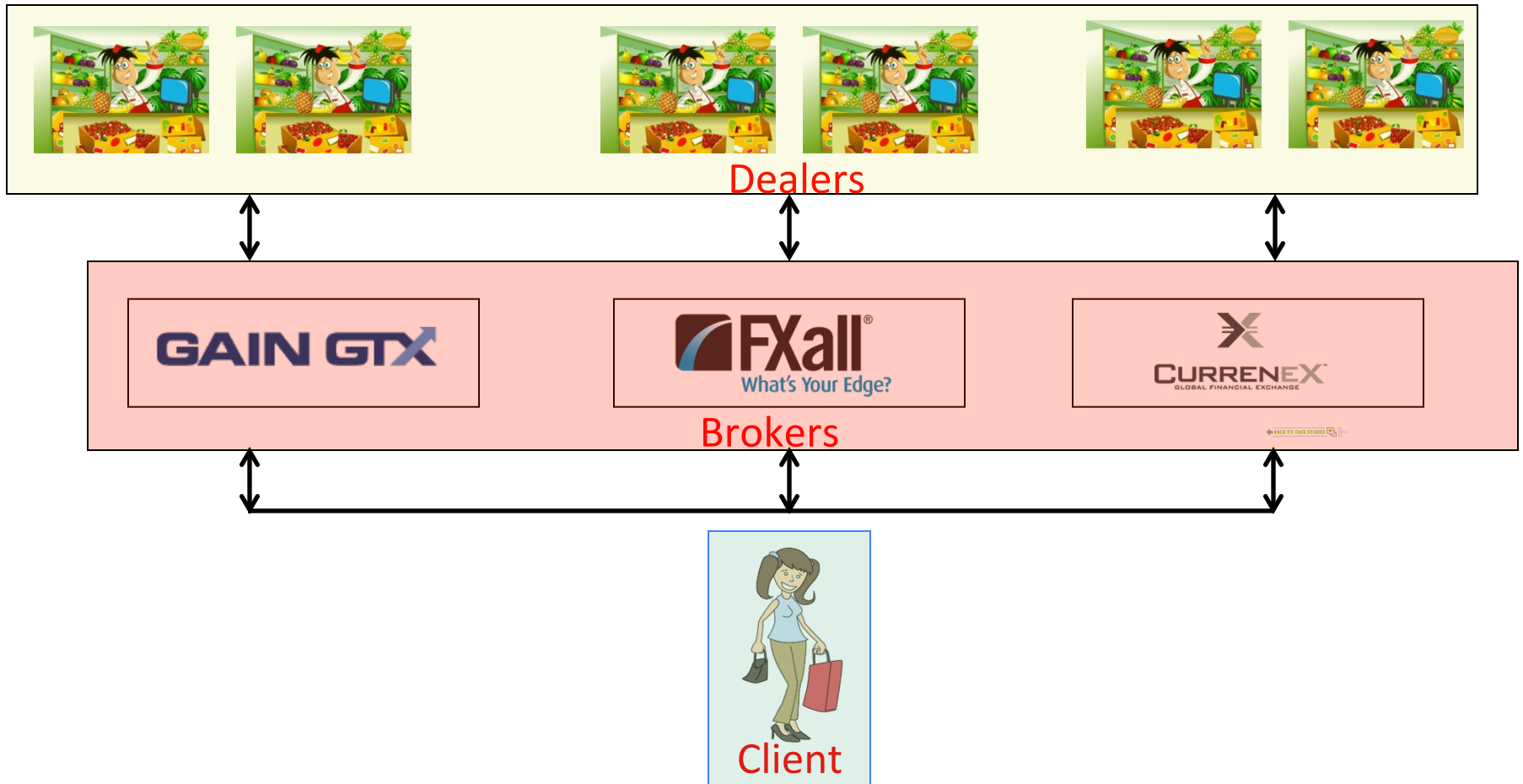- Each specializes in certain currency-pairs.

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BACK TO CASE STUDIES

# Multiplicity of Exchanges


Dealers


Brokers


Client

# Outline

- ☐ FX Price
  - ■ Bid and Ask Price
  - ■ Order Book
  - ■ Multiplicity of Exchange
- ➡ ☐ Type of Orders
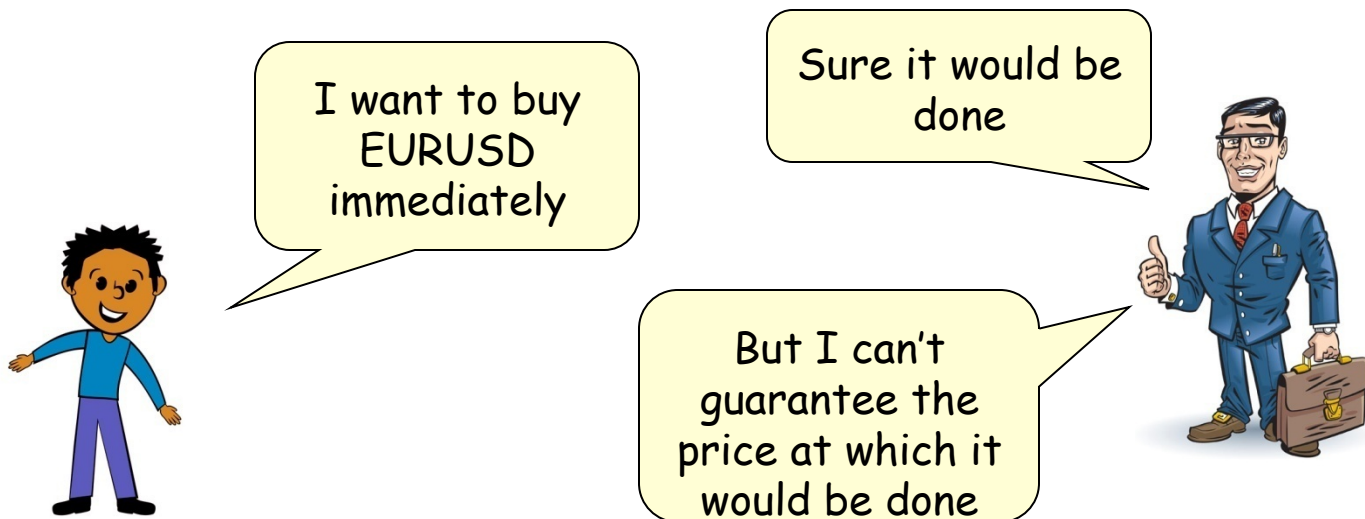  - ■ Market Order
  - ■ Limit Order

# What are orders?

- Orders are instructions that traders give to the brokers who put the request on the exchanges.
  - Instrument to trade.
  - How much to trade.
  - Whether to buy or sell.
  - Conditions
- Primarily two types of Orders
  - Limit Order
  - Market Order

# Market Orders

☐ A market order is an instruction to immediately trade at the best price currently available in the market.

- Immediacy

- Buy at ask/sell at bid => pay the bid/ask spread

- Price uncertainty (Price might change before the order is executed)

I want to buy EURUSD immediately

Sure it would be done

But I can't guarantee the price at which it would be done

# Limit Orders

- A limit order is an instruction to trade at the best price available better than the price specified by the trader.

  - Favorable Price

  - Time uncertainty

  - Execution Uncertainty

I want to buy EURUSD but for not more than 1.3

Sure I would send the request

But I can't guarantee when/ if it would be done!

# Limit Order Book

- A limit order is an instruction to trade at the best price available, only if it is better (or equal) than the limit price specified by the trader.

- Limit Order can
  - Get executed
  - Wait for incoming order to obtain a fill.
  - Get cancelled.

- Standing orders are placed in a file called a limit order book.

# Limit Order Book

| Bid Price (Bid Size) | | |
|---|---|---|
| 1.05 (8) | 1.1 (7) | 1.2 (2) |
| 1.02 (3) | 1.05 (8) | 1.1 (7) |
| 1 (8) | 1.1 (7) | 1.2 (2) |
| 1.2 (3) | 1.3 (2) | 1.4 (3) |
| 1.1 (3) | 1.12 (2) | 1.14 (3) |

| Ask Side (Ask Size) | | |
|---|---|---|
| 1.25 (8) | 1.3 (7) | 1.35 (2) |
| 1.3 (7) | 1.35 (2) | 1.4 (3) |
| 1.25 (8) | 1.23 (7) | 1.25 (2) |
| 1.41 (3) | 1.42 (2) | 1.43 (3) |
| 1.2 (3) | 1.21 (2) | 1.24 (3) |