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Lesson I: An Overview

Monday 25th February, 2019

LIUC
Università Cattaneo

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International Financial Markets

All finance has become more and more international, as a consequence of the growing development of both **international trade** and **foreign investments**

International Trade

Amazing growth of international trade flows all over the last decades, mainly as a consequence of:

- **Liberalization** of trade (tariffs, quotas..)
- Improvements in communication and transportation **technologies** (thinner economic space)

Imports of Goods and Services on GDP

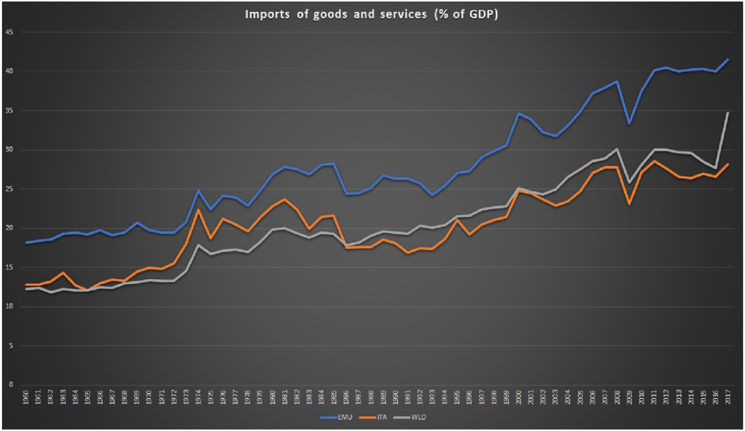

Figure: Imports on GDP - The World Bank

Exports on GDP

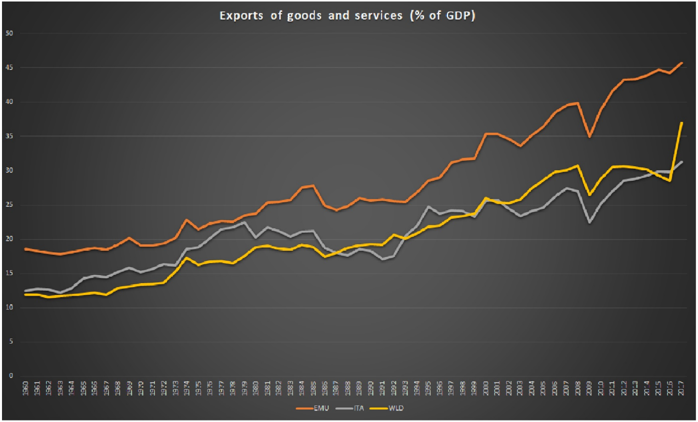

Figure: Exports on GDP - The World Bank

Risks and Rewards of International Trade

- Enhanced comparative and competitive advantages
- Development of related "industrial clusters".
- Uncertainty about the exchange rate (i.e. FX risk)
- Operating and Country risk

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Foreign Direct Investments

Foreign Direct Investments (FDI): "*Cross-border investment by a resident entity in one economy with the objective of obtaining a lasting interest in an enterprise resident in another economy. The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management of the enterprise. Ownership of at least 10% of the voting power, representing the influence by the investor, is the basic criterion used*" (Source: OECD)

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Portfolio Investments

Portfolio Investments: "*International investment that covers investment in equity and debt securities (e.g. government and corporate bonds...), excluding any such instruments that are classified as direct investment or reserve assets*" (Source: OECD)

US International Investment Position

Figure: US Net International Investment Position - BEA

Risks and Rewards of International Investments

- Improved efficiency in the global allocation of capitals
- Enhanced diversification
- Uncertainty about the exchange rate (i.e. FX risk)
- Operating and Country risk

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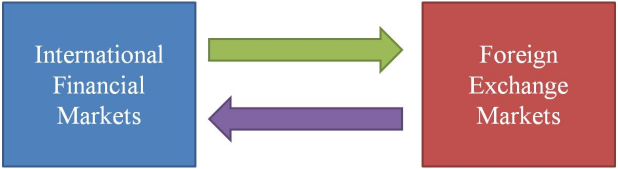
Looking for the *Fil Rouge*

The international flows of goods and capitals are the source of supply and demand for currencies



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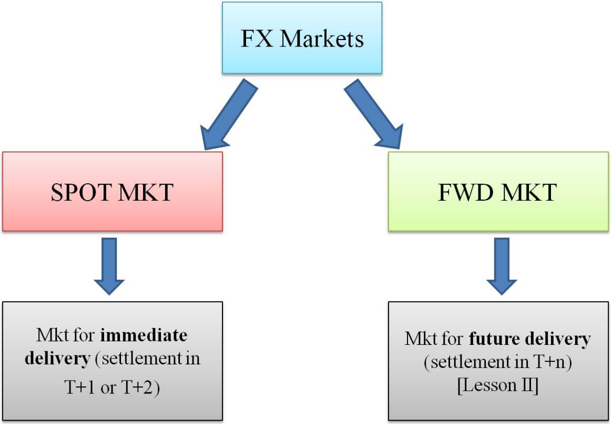
Foreign Exchange Markets



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FX Spot Markets: an Overview

- Mainly **decentralized** (i.e. no precise physical location)
- **24h** trading
- The market can operate both directly (**interbank**) and indirectly (**broker-based**)

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Interbank Market

All **participating banks** act as **Market Makers**.

Banks quote buying and selling prices to each other (bank A can call bank B for a quote on a certain currency and bank B, in turn, makes a market by providing bid and ask prices upon demand)

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Main Features of the Interbank Market

- **Decentralized** = no central physical location
- **Continuous** = quotations of prices are continuously available all over the trading day
- **Open** = market participants must quote both buying and selling prices (bid/ask quotations), so that the buy or sell intention and the corresponding amount need not to be specified when a bank calls another market maker
- **Double-auction** = market participants on both sides of a transaction can quote buying and selling prices (relatively more or less “aggressively”, depending on their trading interest)

Broker-based Market

FX Broker: agent who helps arrange the trading of currencies between market participants by **matching** buying and selling orders.

Main Features of the Broker-based Market

- **Quasi-centralized** = a broker puts all the orders on his book and tries to match buying and selling proposals: basically, brokers in different locations help facilitate transactions
- **Continuous** = all over the trading day
- **Limit-book** = orders placed with a broker are "limit orders"
- **Single-auction** = the agent being approached, but not the person making the approach, quotes buying and selling prices

To Sum Up I

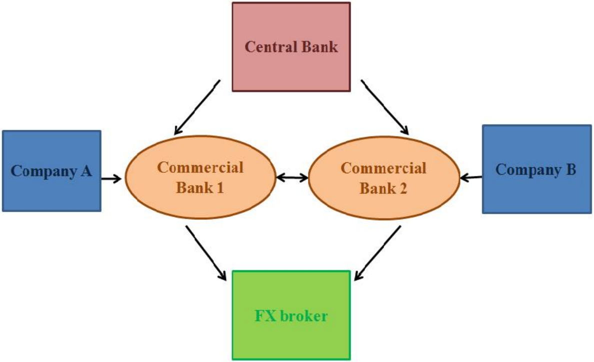

Figure: Organisation of FX Mkts: a Simplified Scheme

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To Sum Up II

FX Mkt	**Regulated Mkts**
Geographically dispersed	Centralized
Broker/Dealer	E-Trading/Open Outcry
24h	Well-defined trading hours
Customized	Standardized
Price dispersion	Price concentration

Table: FX vs Regulated Markets - R. Levich

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Top FX Traders 2018

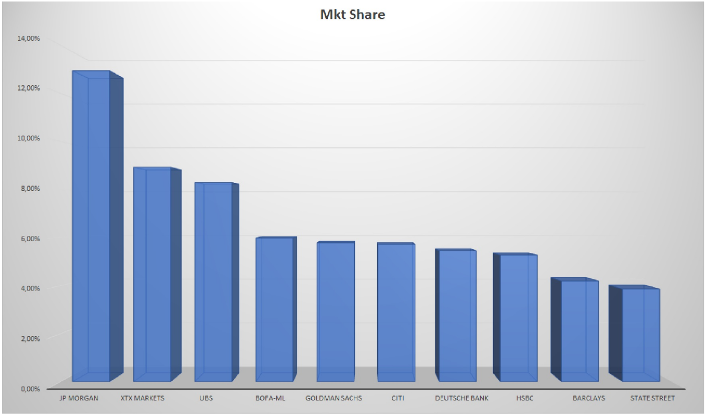


Figure: Top FX Traders by Market Share in 2018 - Euromoney

FX Trading by Currency

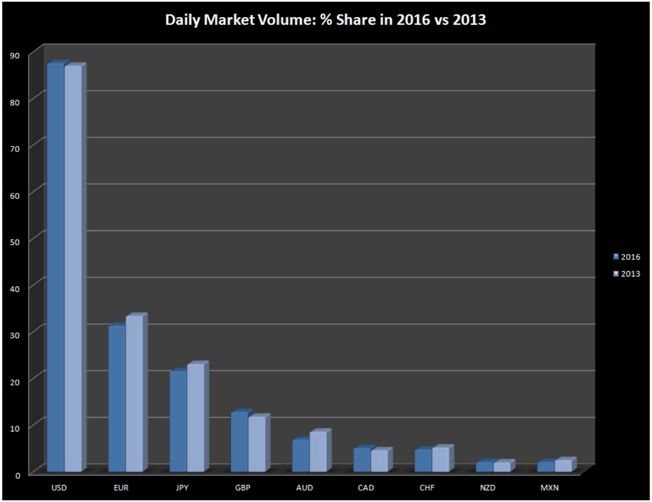


Figure: FX Trading by Currency in 2013 and 2016 - BIS

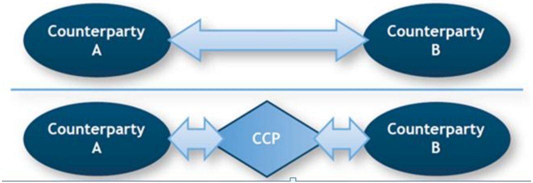
What is Settlement?

Spot transactions carried out today are to be **regulated** (**settled**) in 1 or 2 business days, when the buyer that has purchased foreign currency will have to pay the seller.

Settlement on Regulated Markets

The settlement generally takes place via a **Clearing House**

Clearing House: institution at which banks keep funds which can be moved from one bank account to another to settle interbank transactions.



Settlement on FX Markets

When FX transactions involve settlement in USD, the longer established clearing house is the so-called "CHIPS" (**Clearing House Interbank Payments System**). **CHIPS** is a computerized mechanism through which member banks hold USD accounts to pay each other when buying or selling FX.

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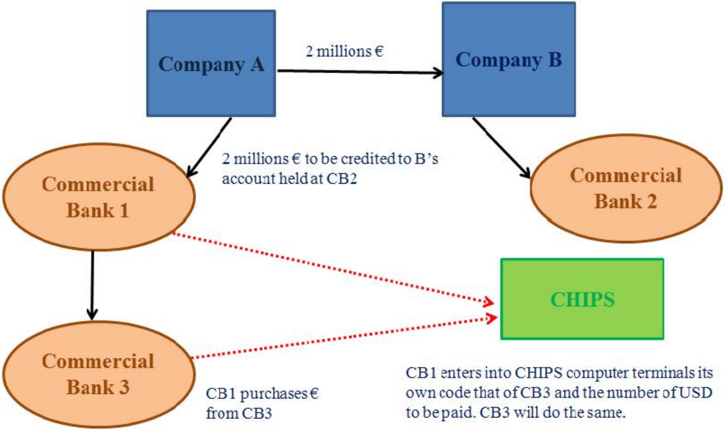
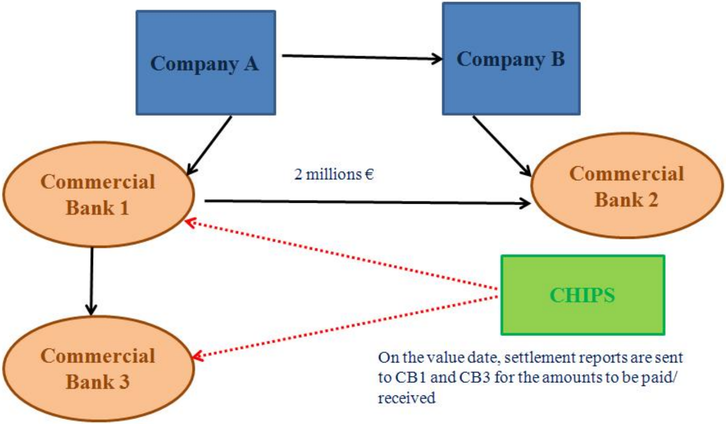
The Settlement Cycle I



The Settlement Cycle II



The CLS System

An alternative system has been available since 2002: the CLS (**Continuous Linked Settlement**).
CLS was created to reduce settlement risk through a continuous payment versus payment system, specifically conceived to prevent all situations where a bank pays for a currency before receiving it.

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How the CLS settlement works

- Following a FX trade, **Settlement Members submit payment instructions to CLS**. These payment instructions are then **authenticated and matched by CLS and stored** in the system until the settlement date
- The CLS daily settlement cycle operates with settlement occurring during a five-hour window (7:00am CET to 12:00am CET), when RTGS systems in the CLS settlement currency jurisdictions are open and able to make and receive payments. This enables **simultaneous settlement of the payments** on **both sides** of a FX transaction.
- On each settlement date, **CLS simultaneously settles each pair of matched payment instructions** by making the corresponding debit and credit entries across Settlement Members accounts.

A Closer Focus on FX Rates

The **Exchange Rate** (FX) is the price of one currency in terms of another. More generally, $\mathbf{S}_{\frac{i}{j}}$ **is the number of units of currency i per unit of currency j** (watch out: the international convention generally adopts the opposite notation, so that $S_{\frac{i}{j}}$ is the number of units of currency j per unit of currency i)

Quoting Conventions

Two major quoting conventions:

- **Direct quotation**= number of domestic currency per foreign currency unit (i.e. $\frac{D}{F}$ currency)
- **Indirect quotation**= number of units of foreign currency per domestic currency (i.e. $\frac{F}{D}$ currency)

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Bringing the USD within the Picture

Taking the USD as the home currency:

- **Direct quotation**= number of USD per foreign currency unit (i.e. $\frac{USD}{F}$ currency): **USD-equivalent** terms (commonly adopted for EUR and GBP)
- **Indirect quotation**= number of units of foreign currency per USD (i.e. $\frac{F}{USD}$ currency): **European** terms

To Make Matters Explicit...

To a close approximation,

$$FX_{USD-equivalent} = \frac{1}{FX_{European-terms}}$$

- 1.3797 $\frac{USD}{EUR}$ means that **1 EUR is quoted as 1.3797 USD**
- 0.7248 $\frac{EUR}{USD}$ means that **1 USD is quoted as 0.7248 EUR**
- Notice that, as expected, $1.3797 = \frac{1}{0.7248}$

A few more examples...

- $2.0275 \; \frac{USD}{GBP}$ means that you will receive **2.0275 USD per unit of GBP**, stated in other terms, GBP is quoted as 2.0275 USD
- $0.4932 \; \frac{GBP}{USD}$ means that you will receive **0.4932 GBP per USD**, or, equivalently, USD is quoted as 0.4932 GBP
- Notice that $2.0275 = \frac{1}{0.4932}$

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Reciprocal Rates

In more general terms,

$$S_{\frac{C1}{C2}} \simeq \frac{1}{S_{\frac{C2}{C1}}}$$

Watch out: the foregoing relationship would hold exactly, if there were no transaction costs

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Cross Rates

Cross Rates: exchange rate between two currencies, neither of which is the USD

Suppose you want to exchange EUR for GBP:

- **Direct transaction**: EUR $\Rightarrow$ GBP
- **Indirect transaction**: EUR $\Rightarrow$ USD $\Rightarrow$ GBP

Cross Rates II

In the absence of transaction costs, it **must** be that the direct exchange rate (between EUR and GBP) is equal to the exchange rate implicit in indirect exchange via the USD.

$$S_{\frac{GBP}{EUR}} = S_{\frac{USD}{EUR}} \cdot S_{\frac{GBP}{USD}}$$

Triangular Parity

$$S_{\frac{GBP}{EUR}} = S_{\frac{USD}{EUR}} \cdot S_{\frac{GBP}{USD}}$$

- $S_{\frac{GBP}{EUR}}$: number of GBP received per EUR
- $S_{\frac{USD}{EUR}}$: number of USD received per EUR
- $S_{\frac{GBP}{USD}}$: number of GBP received per USD

Triangular Parity: equilibrium relation among any 3 currencies

Just to make an example...

Assuming **no** transaction costs, if 1.3699 $\frac{USD}{EUR}$ and 1.6707 $\frac{USD}{GBP}$, what should be $S_{\frac{GBP}{EUR}}$ to avoid all arbitrage opportunities?

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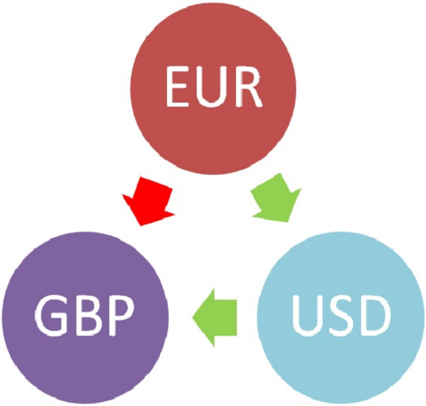
Just to make an example...II

Deviations from triangular parity may give rise to arbitrage opportunities: **Triangular Arbitrages**.
In an arbitrage, you buy low, you sell high and you earn a **risk-free** profit

Just to make an example...III

The red and the green arrows **must** yield the same (i.e. you must get the same amount of GBP), otherwise there would be **riskless profit opportunities**.



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A real world example

	USD	EUR	JPY	GBP	CHF	CAD	AUD	HKD
USD	-	1.1390	0.0091	1.2953	0.9991	0.7582	0.7132	0.1275
EUR	0.8780	-	0.0080	1.1372	0.8772	0.6657	0.6262	0.1119
JPY	109.6600	124.9027	-	142.0426	109.5614	83.1450	78.2095	13.9780
GBP	0.7720	0.8793	0.0070	-	0.7713	0.5854	0.5506	0.0984
CHF	1.0009	1.1400	0.0091	1.2965	-	0.7589	0.7138	0.1276
CAD	1.3189	1.5022	0.0120	1.7084	1.3177	-	0.9406	0.1681
AUD	1.4021	1.5970	0.0128	1.8162	1.4009	1.0631	-	0.1787
HKD	7.8452	8.9357	0.0715	10.1619	7.8381	5.9483	5.5952	

Figure: Cross Rates on February 06, 2019 - Bloomberg

Arbitrageurs and Speculators

- **Arbitrageur**: market player that buys or sells something in order to exploit a price differential so as to make a risk-less profit
- **Speculator**: market player that holds (sells) goods or securities in the hope of profiting from a future rise (fall) in their price (risky profit)

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Brokers and Dealers

- **Broker**: market participant that tries to facilitate transactions between third parties, by matching buying and selling orders. A broker does **not** deal for his own portfolio.
- **Dealer**: market participant that deals for his own portfolio.

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One-Way and Round-Trip Arbitrages

- **One-way arbitrage**: the process of choosing the best way to exchange one currency for another. To put it simple, you start with a certain currency and you end up with a different one (e.g. you exchange EUR to USD)
- **Round-trip arbitrage**: borrowing in one currency, lending in another, and then selling the second currency back into the first so as to end up back in the first currency. In simpler terms, you start with a certain currency and you end up with the very same one (e.g. from EUR to EUR).Watch out: Triangular arbitrages are round-trip transactions

Appreciation/ Depreciation and Revaluation/ Devaluation

- **Appreciation/ Depreciation**: increase/ decrease in the foreign exchange value of a currency when exchange rates are free to move (flexible, market driven)
- **Revaluation/ Devaluation** : increase/decline in the foreign exchange value of a currency on fixed exchange rates. It occurs when the parity rate is set at a higher/lower level (CB driven)

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Comparative and Competitive Advantages, Tariffs and Quotas

- **Comparative advantage**: relative efficiency (lower opportunity cost) in producing something (i.e. static production efficiency)
- **Competitive advantage**: the edge a country enjoys from dynamic factors affecting international competitiveness (including dynamic factors such as the existence of supportive industries, experienced management)
- **Tariffs (excise taxes)**: taxes on imports, generally based on value (ad valorem) or on weight
- **Quotas**: restrictions on the quantity of a good that can be imported

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Settlement Risk

- **Settlement Risk**: risk that one party of a FX transaction will deliver the currency it sold, but not receive the bought currency, [thus] resulting in the loss of principal (Source: *www.cls-group.com*)

Transaction Costs

Transaction Costs generally refer to all the expenses incurred when buying or selling securities in financial markets.
Three major building blocks:

- **Commissions and fees** (e.g. commissions charged by a broker, fees to get direct market access, fees for settlement services...). Significant **source of revenues** for financial intermediaries (what about retail investors, though?)
- **Taxes** (e.g. capital gain taxes...)
- **Bid-Ask** spread (Lesson II)

To put it into practice I

1.1: Find the appropriate cross-rates:

	A	B	C	D	E
A	- - -	1.53			0.08
B		- - -	27.47		
C			- - -		
D				- - -	
E				0.54	- - -

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To put it into practice II

1.2: Assume Polands currency (the zloty) is worth USD 0.17 and the Japanese yen is worth USD 0.008. What should be the cross rate of the zloty with respect to yen to prevent arbitrage opportunities?

1.3: True or false? Do not forget to justify your claim.

- A Change from USD 1.75/GBP to USD 1.50/GBP can be defined as a depreciation of the USD *vs* the GBP
- A Change from USD 1.75/GBP to USD 1.90/GBP can be defined as a appreciation of the GBP *vs* the USD

To put it into practice III

1.4: Find the appropriate cross-rates:

	A	B	C	D	E
A	- - -			4.5	
B		- - -			
C	3.2		- - -		
D		9		- - -	
E				7	- - -