



# BUSINESS

## *Finance For Non-Finance*

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# Module 4

## Introduction to Money Market and Foreign Exchange

- What/Why Money Market?
- What/Why Foreign Exchange Markets?
- The Linkage between the two markets
- Related MM&FX derivatives

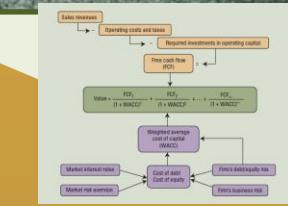
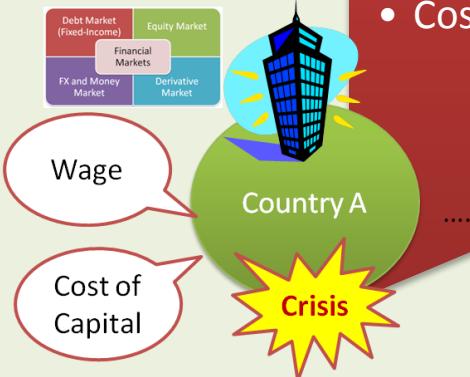




## ..The Road So Far..

### Module 1: Introduction to financial markets

- Money market vs. Capital market
- Cost of capital



### Module 2: Introduction to equity market

- Asset = Debt + Equity
- Dividend, Dividend yld
- Risk and Return



$$PV = \sum_{t=1}^n \frac{FV}{(1+i)^t}$$

### Module 3: Introduction to fixed income market

- TVM
- Bond Price vs. Bond Yield
- Subprime Crisis





## Recaps: Financial Instruments

### Equity Market

- Common Stock
- Proffered Stock
- Warrant
- Unit Trust

### Bond Market

- Domestic Bond
- Foreign Bond
- Eurobond

### Derivative Market

- Forward/Future
- Option
- Swap

### Money Market

- Deposit
- CD
- Repo
- T-Bills
- B/E, BA and CP
- FRA,IRF,IRS

### FX Market

- Spot Rate
- Forward Rate
- FX SWAP



..On Today's Menu..

## Module 4: Introduction to Money Markets and Foreign Exchange

- What/Why Money Market?
- What/Why Foreign Exchange Markets?
- The Linkage between the two markets
- Related **MM&FX derivatives**

**In Sum:** This module will explain the concept of MM&FX trading and most important MM&FX derivative securities i.e. interest rate swap



We have Banks,  
Why do we need Money Market at all?

## What Banks usually Does..

- **Bank business:** accept deposits + lend money
- Banks are **heavily regulated**; e.g. Bank must maintain certain % of deposit money at the federal reserve.
  - No interest is earned at FR,
  - As such the amount of fund is limited
  - Deposits rates are quite low and lending rates are quite high



# We have Banks, Why do we need Money Market at all?

## Money Market, on the other hand..

- Money Market are less regulated

### Money Market

-Deposit	-CD
-Repo	-T-Bills
-B/E, BA and CP	-FRA,IRF,IRS

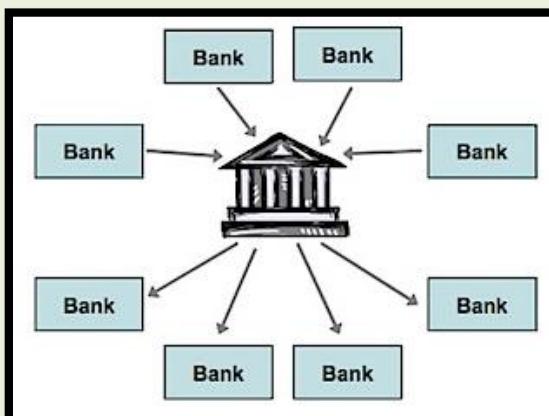
- The **money market instruments** let a firm or financial institution “warehouse” surplus funds + **earn interest**
- Similarly, the money markets provide a **low-cost** source of funds to firms, the government, and intermediaries.



## The Money Market

### Money Market

- A **highly liquid** market for **short-term** borrowing and lending
- A channel that **Central Bank** controls **interest rate** via demand and supply of money
- Also called **cash market / wholesale market**

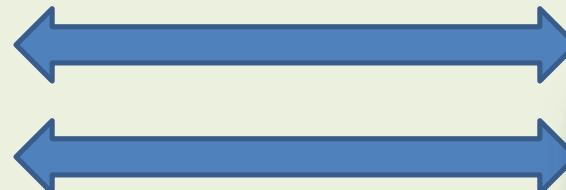




## The Money Market

### How does a CB control **interest rate**?

- When an economy is doing **well** there tends to be a **demand for money** which leads to **higher interest rates**.
  - In times of recession, money **demand falls** and **interest rates decline**
- The CB control money demand and supply by **buying(selling)** T-Bills from(to) the markets; **more(less)** supply of money **lower(raise)** interest rates





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## The Money Market

### Money Market Participants

- Government authorities
- Central bank
- Commercial banks & Financial institutions
- Large domestic and multinational corporations

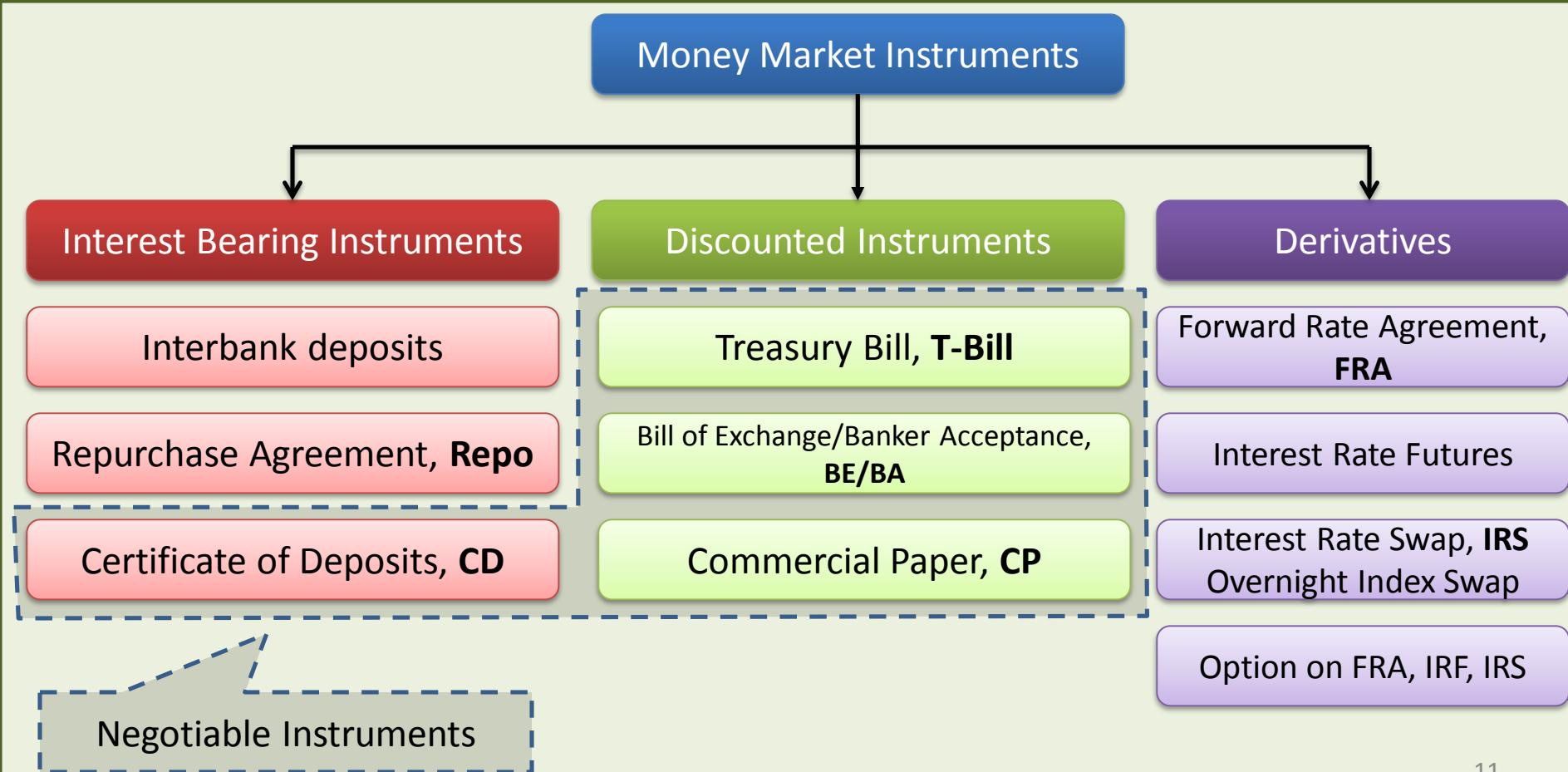
### Trading Mechanism

- Over-The-Counter(OTC) via Dealer/Broker



# The Universe of Money Market Instruments

Mishkin, Ch11





## Money Market Instruments

### T-Bill(1M,3M,6M)

- Issued by **Treasury Department**
- The most widely held and most liquid security
- **Risk:** virtually zero → **riskfree rate**

**Note that T-bill is not an investment to be used for anything but temporary storage of excess funds,**

- Because it barely keeps up with inflation!!  
(Nominal Interest Rate = Real Interest Rate + Inflation Rate)



## Money Market Instruments

### Repos(3 to 14 days)

- An agreement to **sell** security and then **buy it back** in a future date at an agreed price

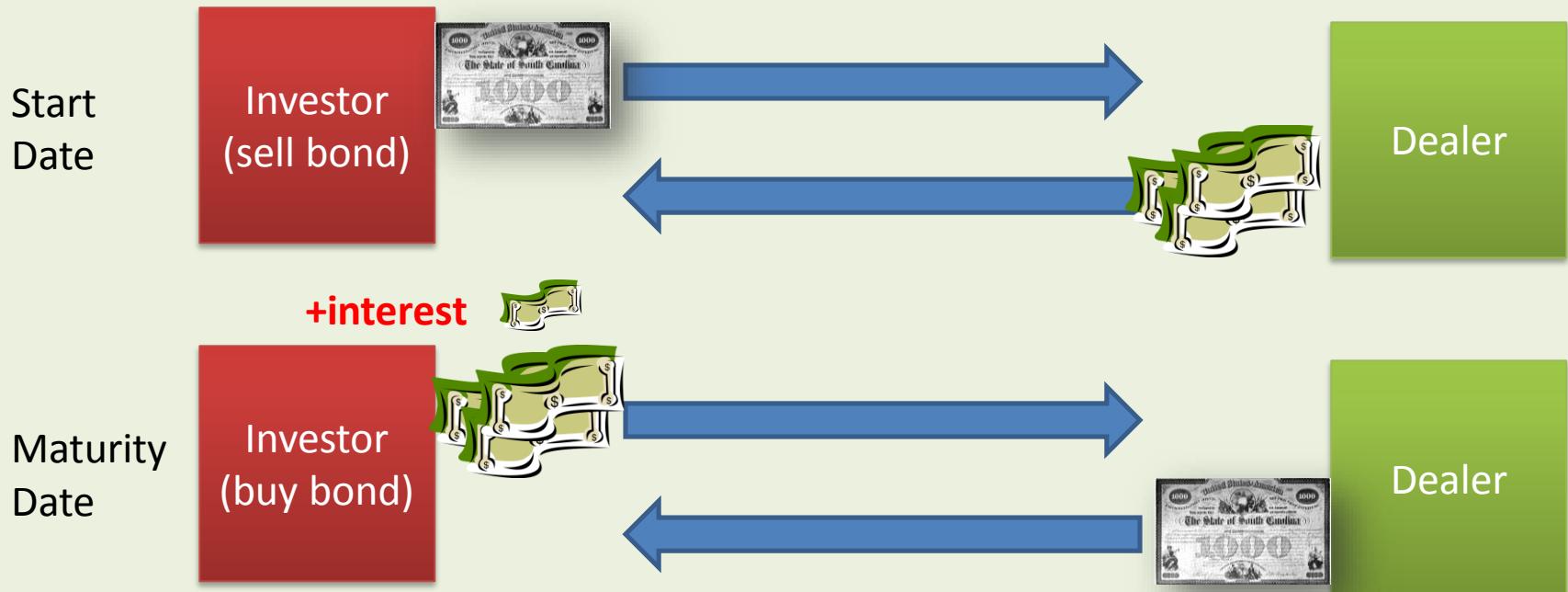
### Reverse Repos(3 to 14 days)

- An agreement to **buy** security and then **sell it back** in a future date at an agreed price



## Money Market Instruments

### Repo Cashflow





## Money Market Instruments

### Certificate of Deposit(1M to 4M)

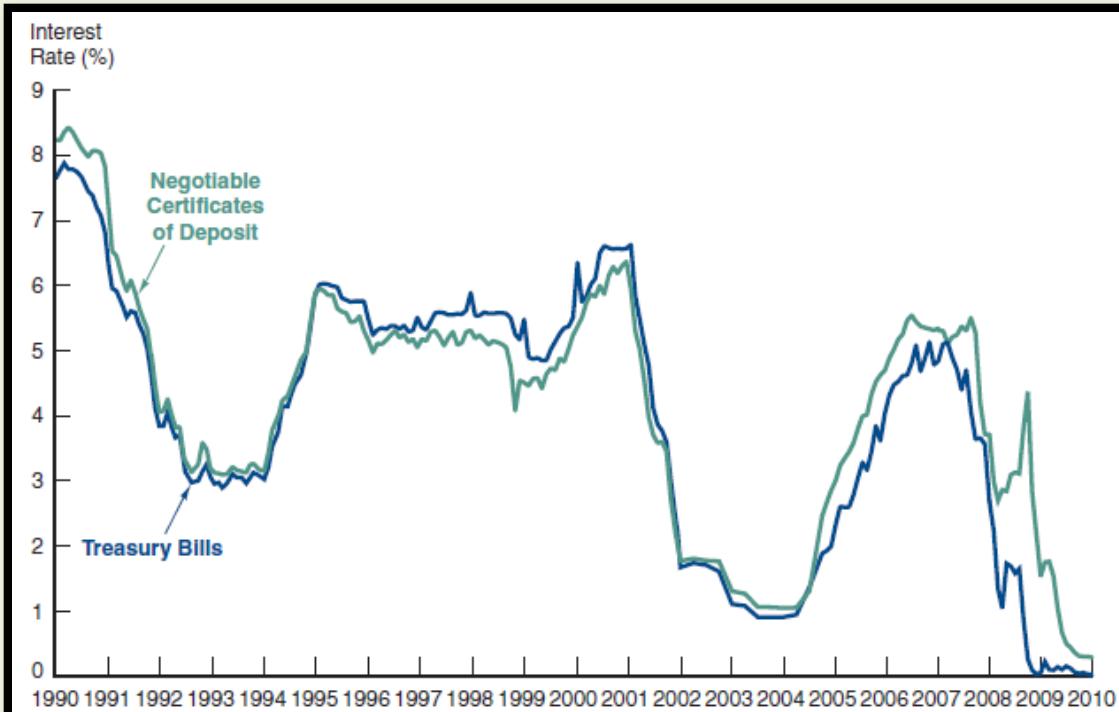
- A **bank-issued** security that documents a **deposit** and specifies the **interest rate** and the **maturity date**.
- Whoever holds the instrument at maturity receives the principal and interest.
- The CD can be bought and sold until maturity
- Deposit range from \$100,000 to \$10 million
- **Risk:** very low



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## Money Market Instruments

### T-Bill vs CD



**FIGURE 11.4** Interest Rates on Negotiable Certificates of Deposit and on Treasury Bills, January 1990–January 2010

Source: <http://www.federalreserve.gov/releases>.



## Money Market Instruments

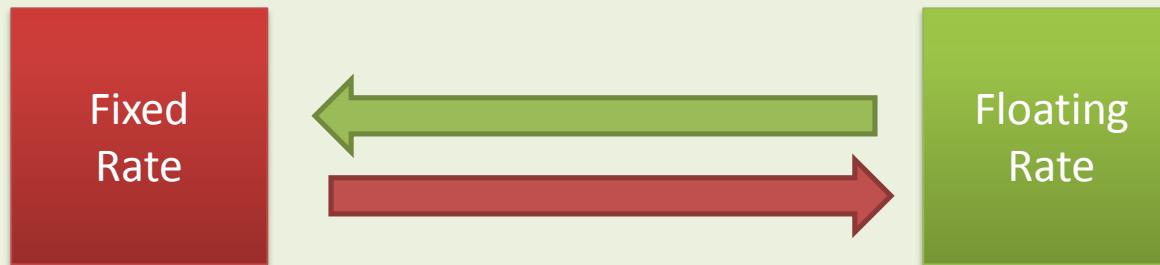
### Commercial Papers(20 to 45 Days)

- Unsecured promissory notes, issued by **corporations**
- Only the **largest and most creditworthy** corporations issue commercial paper
- The interest rate the corporation is charged reflects the **firm's level of risk.**
- Major source of working capital and payroll



## Money Market Instruments - Derivatives

### Forward Rate Agreement, FRA



- An agreement between 2 counterparties where **principle, interest rate** and **term** are agreed upon
  - No principle is exchanged, only the difference between fixed and floating rate is settled in cash
- **Underlying Asset:** floating rate LIBOR



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## Money Market Instruments - Derivatives

### Long FRA

- Long borrowing rate(lock-in rate)
- Receiving floating rate, paying fixed rate

$$\text{Gain} = \text{Principle} \times (\text{floating} - \text{fixed}) \times \text{term}$$

### Example

Long forward contract at 5%

Term	= 30 day
Notional	= \$1,000,000
Underlying rate	= 90-day LIBOR
<b>Forward rate</b>	<b>= 5%</b>

at t=30, floating rate is 6%

$$\begin{aligned}\text{Gain} &= 1,000,000 \times (6\% - 5\%) \times (90/360) \\ &= 2,500\end{aligned}$$

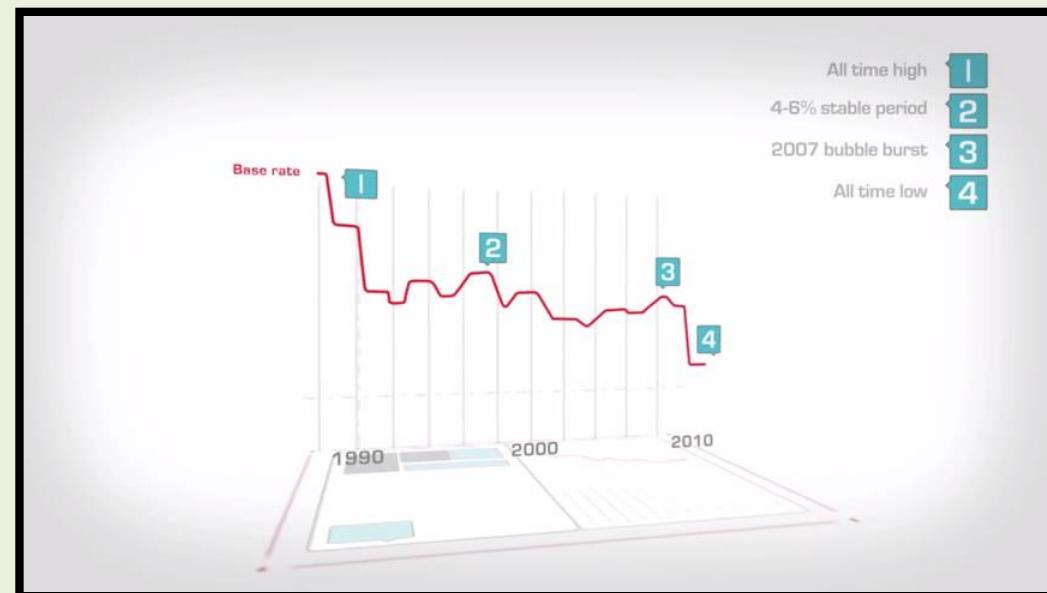
convention



## Money Market Instruments - Derivatives

### Interest Rate Swap

- Interest rate usually fluctuates over the time
- For business which carry loans linked to floating rate, they carry a risk that the rate will increase in the future





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## Money Market Instruments - Derivatives

### Interest Rate Swap

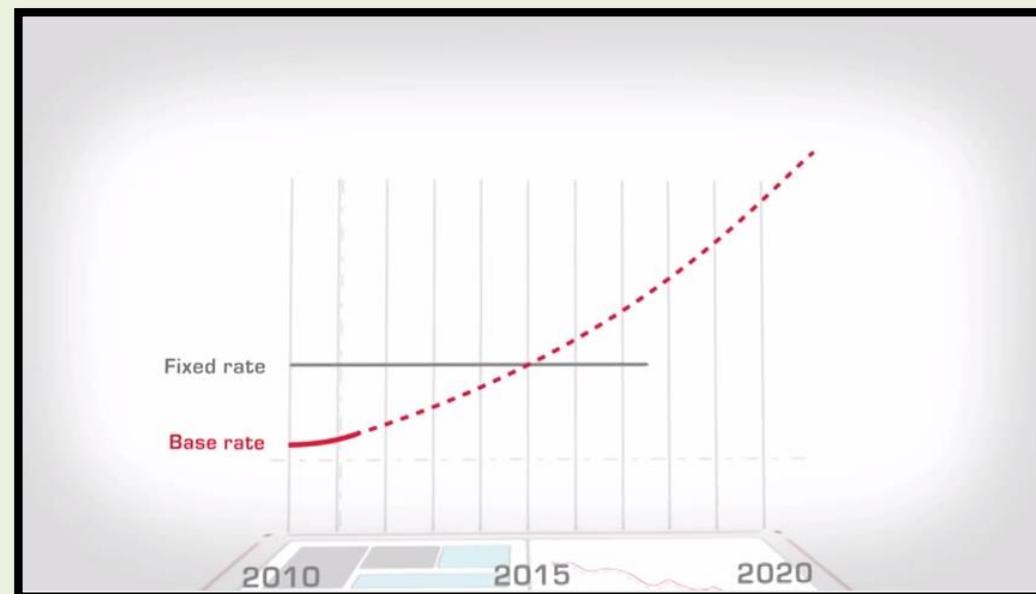
- By entering into a swap agreement with a bank, no matter how the interest rate moves, you will always pay at a fixed rate

Advantage:

- protect against rising rate

Disadvantage:

- pay fixed rate even when the base rate is low  
- there maybe a breakage cost





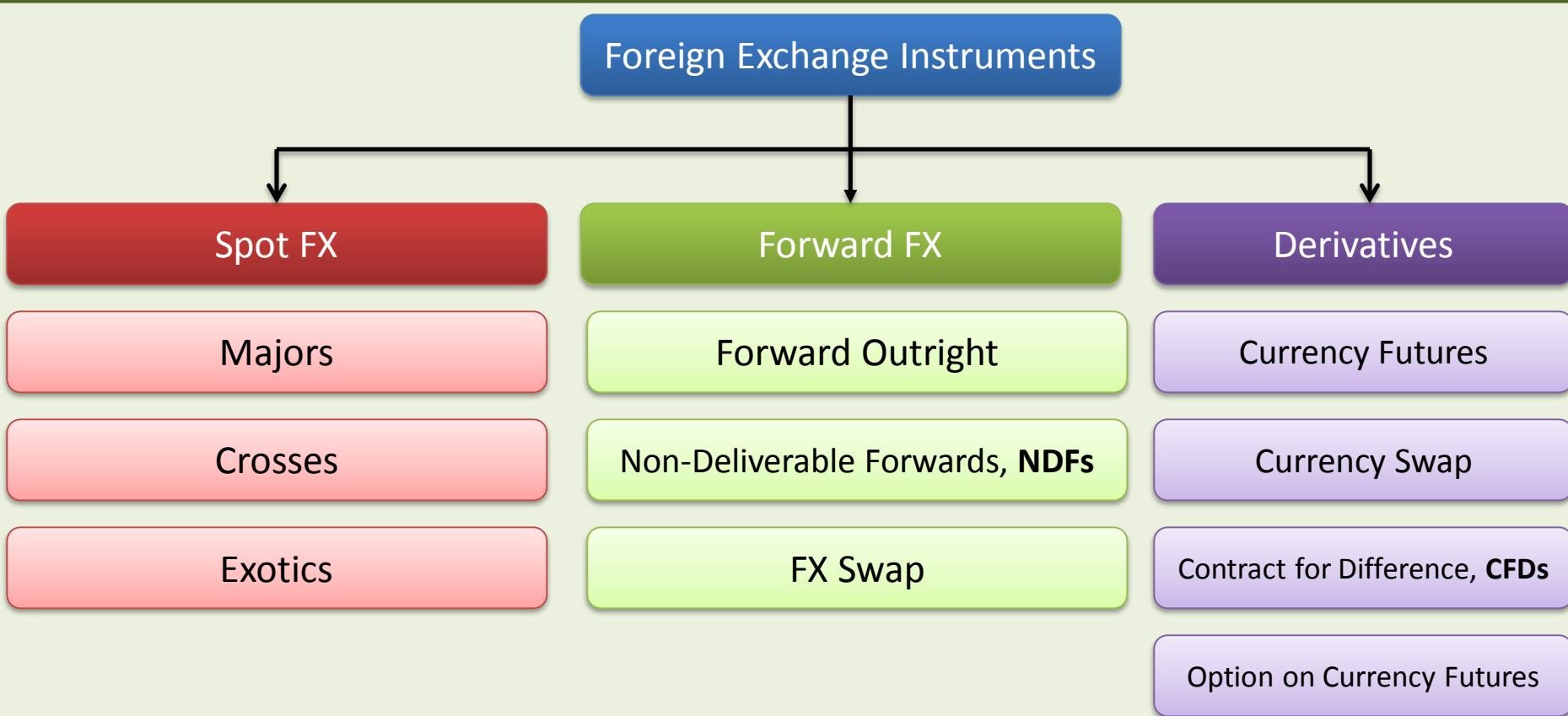
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## Foreign Exchange Market





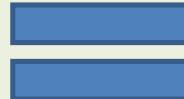
# The Universe of Foreign Exchange Instruments





## Foreign Money

**Foreign Money = Commodity to be bought and sold**



**Just like any commodities, you can buy/sell it**

**Just like any commodities, its price is driven by demand/supply**



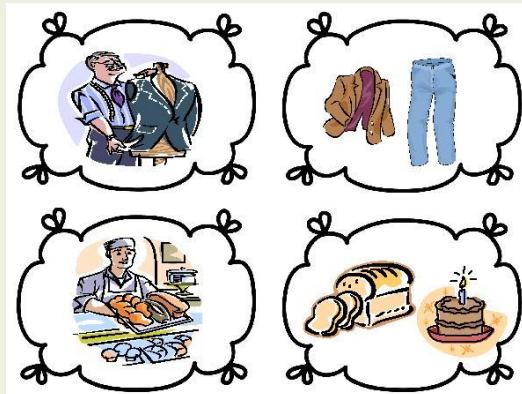
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## Foreign Money

Why would anyone want a foreign money?



Travel



Goods & Services



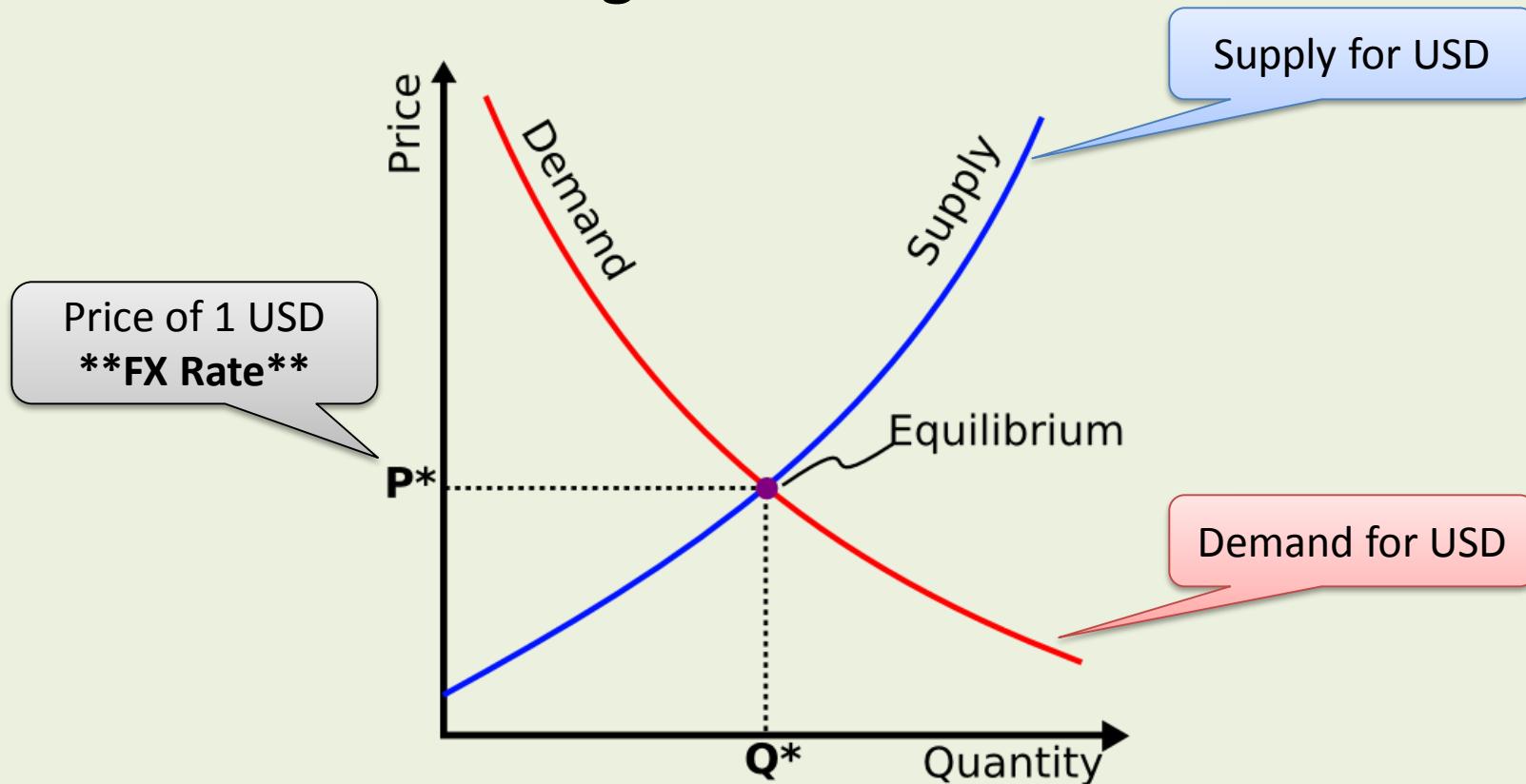
Investment

All these things drive demand/supply of foreign money



## Foreign Exchange Rate

How does an FX rate get determined?





**Thailand  
(Home)**

## Foreign Exchange Rate Quotation

### Direct Quotation (price quotation)

- **the price of Home CCY**  
for 1 unit of Foreign currency



/



**35 THB/USD**

Counter  
(aka Quote)

Base

### Indirect Quotation (quantity quotation)

- **the quantity of Foreign CCY**  
for 1 unit of Home currency



/



**0.03 USD/THB**

Counter  
(aka Quote)

Base



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## Currency Pairs and FOREX Quotes

On most of trading screen, you would usually see..

Majors

Symbol	Bid	Ask
EUR/USD	1.33 <u>89</u>	1.33 <u>91</u>
USD/JPY	83.57	83.59
GBP/USD	1.57 <u>85</u>	1.57 <u>83</u>

Symbol

EUR/CHF

Crosses

Symbol

EUR/SGD

Exotic

### ○ EUR/USD

- The **BASE** CCY is....., The **Counter** CCY is.....
- To buy(sell) 1 unit of **BASE** CCY, the price is.....(.....)



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## Major Currencies

Major Currencies as **BASE** currency



Euro



British Pound Sterling



Australian Dollar



New Zealand Dollar



US Dollar



Canadian Dollar



Swiss Franc



Japanese Yen



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## Top Trading Currencies and The Four Major Pairs

**“Report on global foreign exchange market activity in 2013” Triennial Central Bank Survey**

Rank	Currency	ISO 4217 code (Symbol)	% daily share (April 2013)
1	United States dollar	USD (\$)	87.0%
2	Euro	EUR (€)	33.4%
3	Japanese yen	JPY (¥)	23.0%
4	Pound sterling	GBP (£)	11.8%
5	Australian dollar	AUD (\$)	8.6%
6	Swiss franc	CHF (Fr)	5.2%
7	Canadian dollar	CAD (\$)	4.6%
8	Mexican peso	MXN (\$)	2.5%
9	Chinese yuan	CNY (¥)	2.2%
10	New Zealand dollar	NZD (\$)	2.0%
11	Swedish krona	SEK (kr)	1.8%
12	Russian ruble	RUB (₽)	1.6%
13	Hong Kong dollar	HKD (\$)	1.4%
14	Norwegian krone	NOK (kr)	1.4%
15	Singapore dollar	SGD (\$)	1.4%
16	Turkish lira	TRY (₺)	1.3%
17	South Korean won	KRW (#)	1.2%
18	South African rand	ZAR (R)	1.1%
19	Brazilian real	BRL (R\$)	1.1%
20	Indian rupee	INR (₹)	1.0%
Other			6.3%
Total <sup>[3]</sup>			200%

# EUR/USD

# USD/JPY

# GBP/USD

# USD/CHF

Pairs	Nickname
EUR/USD	Fiber
USD/JPY	Yen
GBP/USD	Cable
AUD/USD	Aussie
USD/CHF	Swissy
USD/CAD	Loonie
NZD/USD	Kiwi



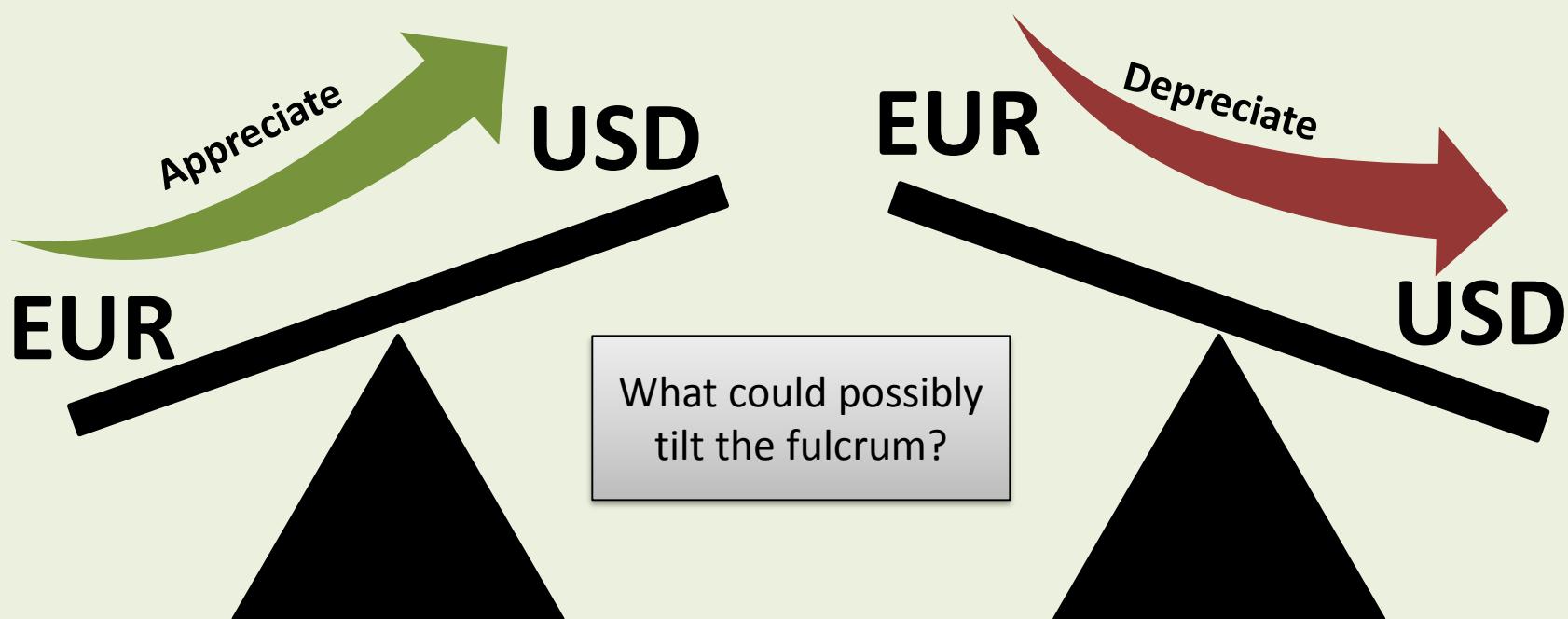
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## EUR/USD

### Appreciation and Depreciation

Appreciation = Increase in value of Base CCY relative to Counter CCY

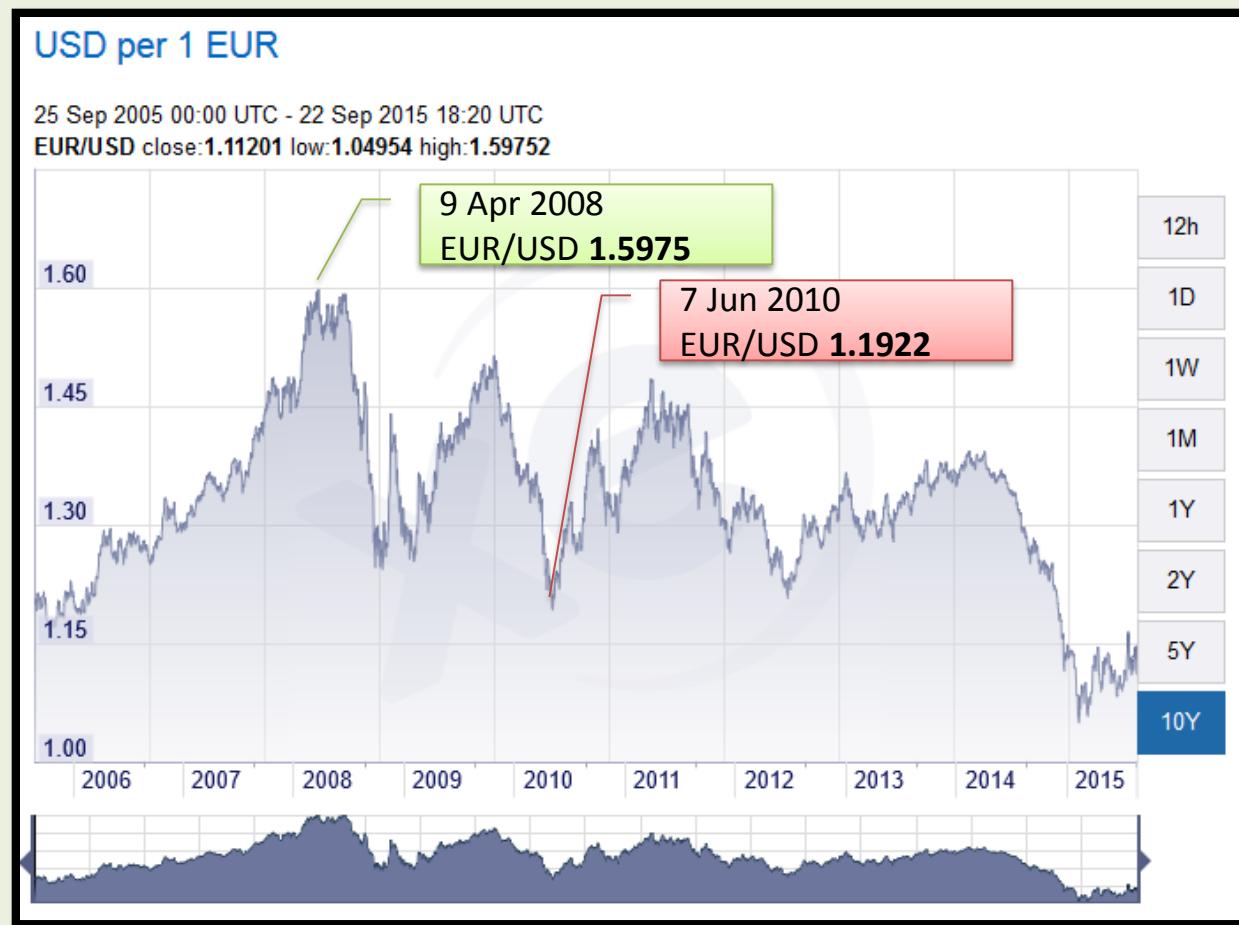
Depreciation = Decrease in value Base CCY relative to Counter CCY





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## Currency Charts (EUR/USD)





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## Currency Charts (USD/CNY) and (USD/THB)

CNY per 1 USD

25 Sep 2005 00:00 UTC - 22 Sep 2015 20:09 UTC  
USD/CNY close: 6.37698 low: 6.04370 high: 8.09220



THB per 1 USD

25 Sep 2005 00:00 UTC - 22 Sep 2015 20:21 UTC  
USD/THB close: 35.99832 low: 28.61500 high: 41.39004





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## USD/THB

### Currency Value vs. Prices

A US trader **EXPORT** goods to Thailand, the price of the goods is **\$100**

- To Thai customer; if the USD is **appreciated**, the price will be **expensive**
- If the USD is **depreciated**, the price will be **cheap**



USD/THB	30	31	32	33	34
Price in THB	3000	3100	3200	3300	3400

USD/THB	30	29	28	27	26
Price in THB	3000	2900	2800	2700	2600



# USD/THB

## Currency Value vs. Prices

A US trader **IMPORT** goods from Thailand, the price of the goods is **THB3000**

- To US customer; if the USD is **appreciated**, the price will be **cheap**
- If the USD is **depreciated**, the price will be **expensive**



Appreciate

USD/THB	30	31	32	33	34
Price in USD	100	96.77	93.75	90.91	88.24

Depreciate

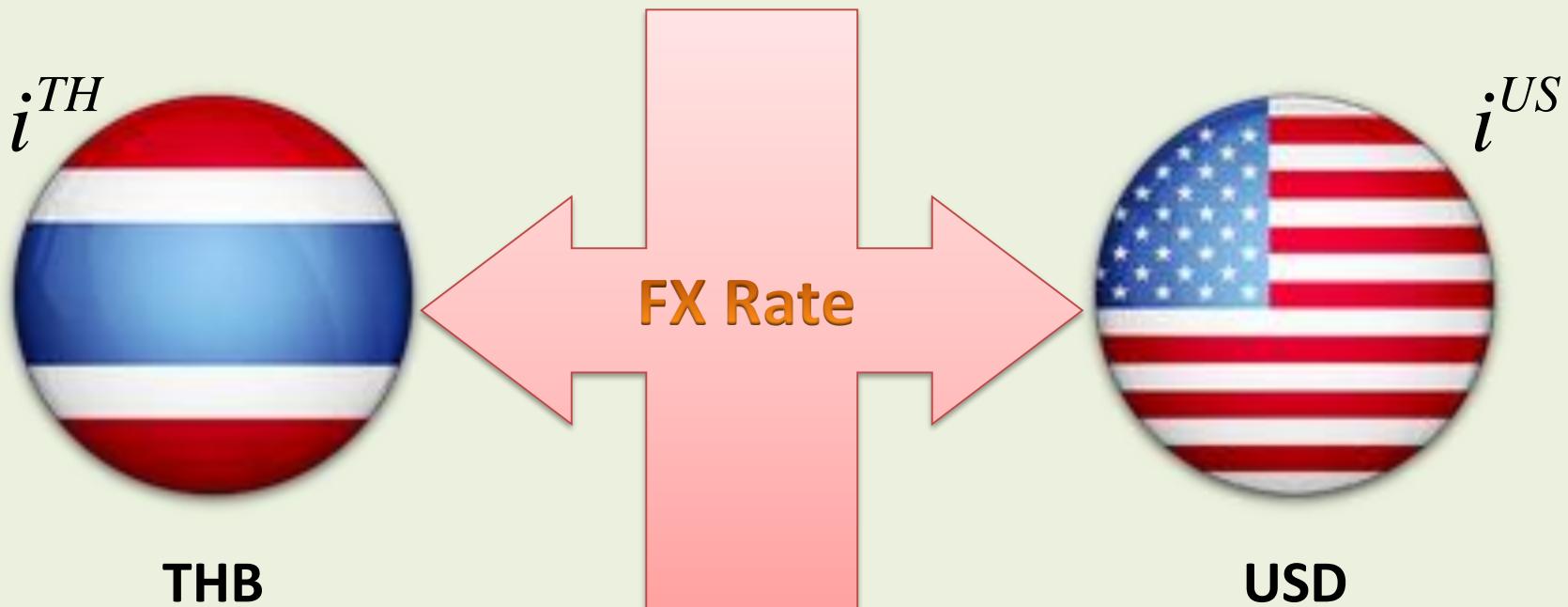
USD/THB	30	29	28	27	26
Price in USD	100	103.45	107.14	111.11	115.38



## The Linkage between the two market

While money market provide a channel to borrow and lending;  
foreign exchange market provide a channel to convert one currency to another

- \*\*\*Clearly, the interest rates is closely linked to FX rates\*\*\*





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## The Effect of Interest Rate on FX Rate

### Purchasing Power Parity

- Inflation rate raises the price
- When **price of product<sup>TH</sup>** is high,  
**demand of product<sup>TH</sup>** is low
- When **demand of product<sup>TH</sup>** is low,  
**the demand of money<sup>TH</sup>** is low

*Inflation rate<sup>TH</sup>*



THB

High Inflation Rate → Low value of money → Depreciation



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## The Effect of Interest Rate on FX Rate

### Interest Rate Parity

- When real interest rate is high, there will be more fund inflow to a country
- The **demand of money<sup>TH</sup>** is High

*Real interest rate TH*



THB

High real interest rate → High value of money → Appreciation



## Summary & QA

**Monet Market Instruments serve as a huge pool of funds for short term borrowing and lending**

- Interest rate tends to follow one another closely
- T-bill is the lowest because it is **riskfree**

**Foreign Exchange market provide a mean to convert one ccy to another**

- It is driven by demand and supply of money
- Appreciation is good for import, whilst Depreciation is good for export



# *Finance for Non-Finance*

*Siraprapa Watakit*

*Thank You & Good Bye*