

More on Market Mechanics

- *Future Market Logistics*
- *Spot, Forwards and the Carry Trade*

What's the Plan

- Explore the Breadth of Instruments
 - Introduce Terminology
- Understand the Venues and Mechanisms and Mechanics
- Use the Assignments to Understand the Participants

Review: Futures Contracts

- Exchange Traded
- Wide and Nuanced Range of Assets
- Contract Sizes
 - must fit hedging needs
 - minnies to entice smaller investors
- Physical Delivery vs Cash Settled
 - Defined product
 - Defined mode and location of delivery
 - Defined time

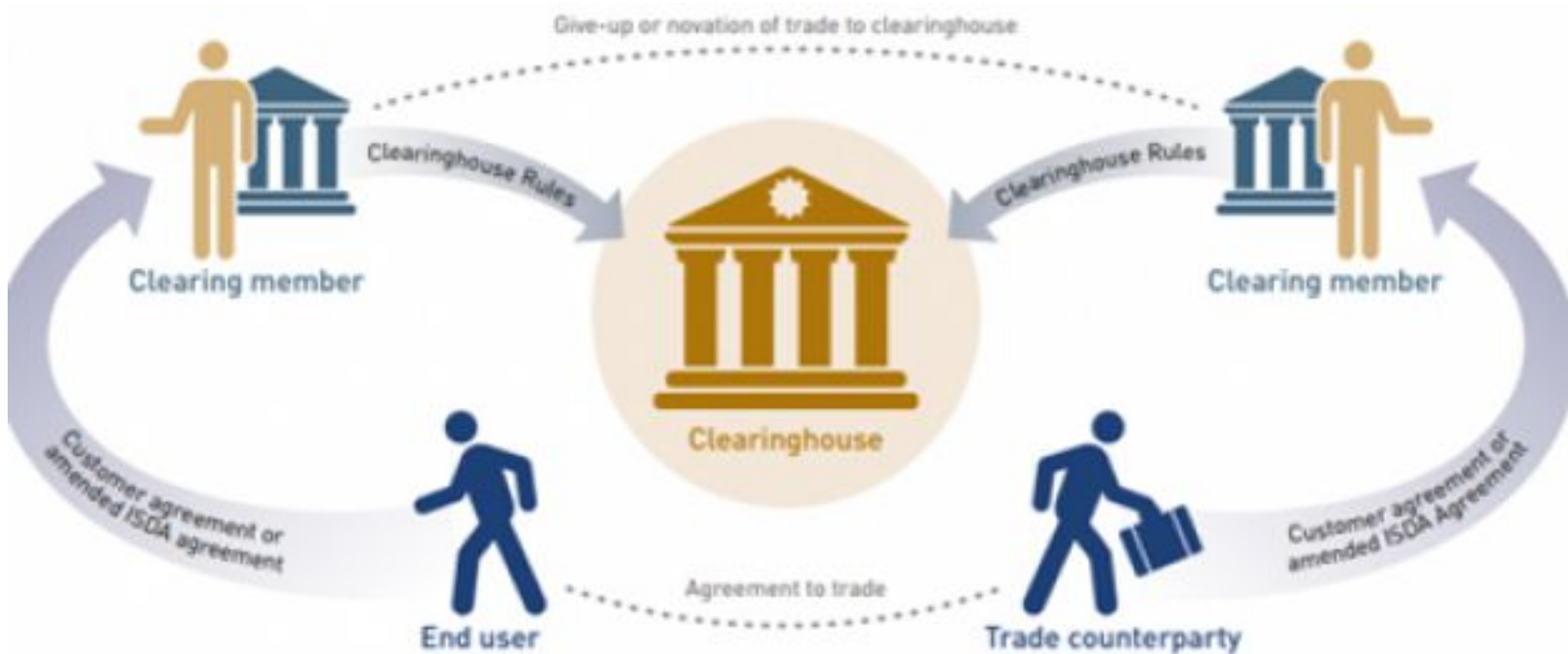
Review: Futures Contracts

- Cash Settled or Close out
 - some contracts are **cash settled**. Eurdollar, Indexes
- Quotes are exchange defined
- Price Limits
- Daily Settlement
 - cash settle for some forwards



***Futures are settled daily,
when are forwards settled?***

Mitigating Counterparty Credit Risk



Futures Contracts have **Margins**

- A margin is cash or marketable securities deposited by an investor with a broker
- The balance in the margin account is adjusted to reflect daily settlement
- Margins minimize the possibility of a loss through a default on a contract



How do margins minimize the possibility of losses?

Example of a Futures Trade

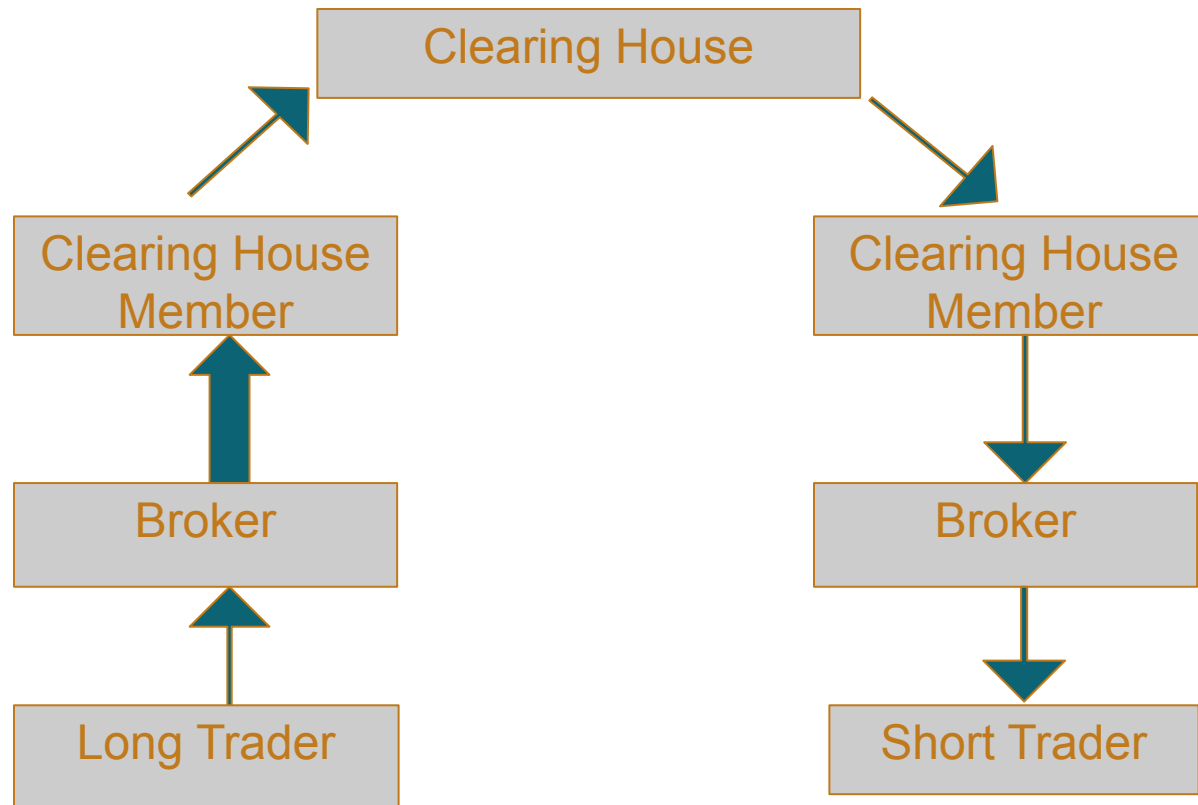
- An investor goes long in 2 December gold futures contracts on June 5
 - contract size is 100 oz.
 - futures price is US\$1250
 - initial margin requirement is US\$6,000/contract (US\$12,000 in total)
 - maintenance margin is US\$4,500/contract (US\$9,000 in total)



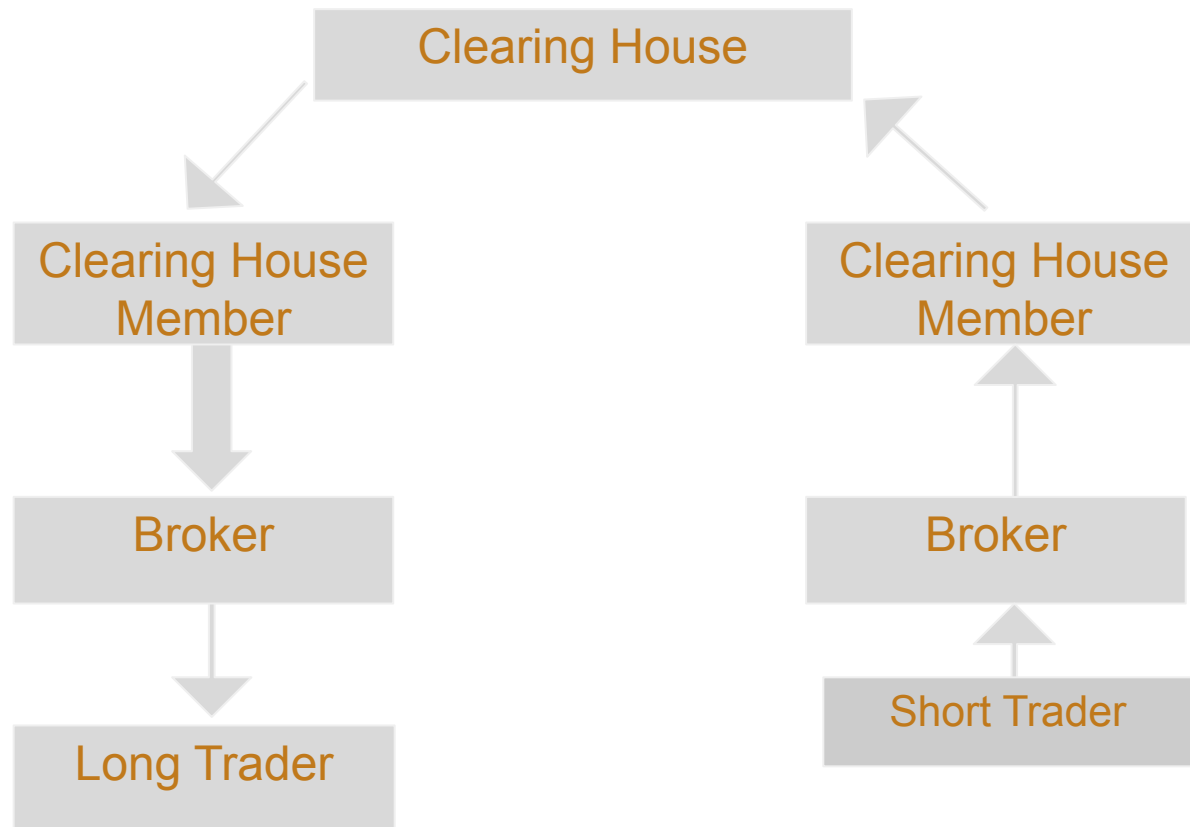
A Possible Outcome

Day	Trade Price (\$)	Settle Price (\$)	Daily Gain (\$)	Cumul. Gain (\$)	Margin Balance (\$)	Margin Call (\$)
1	1,250.00				12,000	
1		1,241.00	−1,800	− 1,800	10,200	
2		1,238.30	−540	−2,340	9,660	
.....						
6		1,236.20	−780	−2,760	9,240	
7		1,229.90	−1,260	−4,020	7,980	4,020
8		1,230.80	180	−3,840	12,180	
.....						
16	1,226.90		780	−4,620	15,180	

Margin Cash Flows When Futures Price Decreases



Margin Cash Flows When Futures Price Increases



BTW Going Short: a Futures Advantage

- Same margin requirement for shorts and longs
- Shorting a physical asset is complicated



***Shorts? Why do we need shorts? I
didn't bring any shorts.
BTW I think Bitcoin is going down..***

Mitigating Credit Risk in the OTC Markets

- Central Clearing Counterparties
- Bilateral Clearing

OTC Markets and Collateral

- After the 2008 Great Recession most transactions are collateralized and cleared centrally through clearing houses.
- All derivative transactions may be governed by Master ISDA agreements to prevent *cherry picking*, with a credit support annex (CSA)
- CSAs require the posting of collateral and the periodic (often daily) settlement



ISDA WHAT?
Who's brought cherries, give me some?



Who Regulates:



- **FUTURES** - Commodity Futures and Trading Commission (CFTC)
 - Their job is to protect the public interest and prevent questionable trading practices
- OTC Markets - It's Complicated...
 - The U.S. Securities and Exchange Commission (SEC)
 - Financial Industry Regulatory Authority (FINRA)
 - Treasury Department's Bureau of the Public Debt, with additional oversight from the SEC.
 - Commodity Futures Trading Commission (CFTC)
 - National Futures Association (NFA)
 - The FED and State Banking Authorities

What are Regulators Trying to Achieve:

In 2012 the EU adopted the The European Markets Infrastructure Regulation (EMIR). The aims were to:

1. increase transparency in the OTC derivatives markets
2. mitigate credit risk
3. reduce operational risk

In the US certain derivative trades are reported to the DTCC and made available anonymously to the the market

More Terminology and Mechanics



Types of Orders

- **A market order** is an order to buy or sell a security immediately. This type of order guarantees that the order will be executed, but does not guarantee the execution price. A market order generally will execute at or near the current bid (for a sell order) or ask (for a buy order) price. However, it is important for investors to remember that the last-traded price is not necessarily the price at which a market order will be executed.

Types of Orders

- **A limit order** is an order to buy or sell a security at a specific price or better.

A buy limit order can only be executed at the limit price or lower, and a sell limit order can only be executed at the limit price or higher.

Example: An investor wants to purchase shares of ABC stock for no more than \$10. The investor could submit a limit order for this amount and this order will only execute if the price of ABC stock is \$10 or lower.

Types of Orders

- **A stop order**, also referred to as a stop-loss order is an order to buy or sell a stock once the price of the stock reaches the specified price, known as the stop price. When the stop price is reached, a stop order becomes a market order.
 - **A buy stop order** is entered at a stop price above the current market price. Investors generally use a buy stop order to limit a loss or protect a profit on a stock that they have sold short.
 - **A sell stop order** is entered at a stop price below the current market price. Investors generally use a sell stop order to limit a loss or protect a profit on a stock they own.

Other Orders Types

- Discretionary
- Time of day
- Fill or kill

Algorithmic Trading - ALGOS

- 70% of overall trading
- Minimize cost, Limit impact, reduce risk
- Transaction Cost Analysis (TCA)

Accounting

- In a perfect world, hedging profits (losses) should offset immediately by losses (gains) on the underlying
- Profits and losses from speculation should be recognized on a daily mark-to-market
- Very often accounting treatment drives economic decisions for hedgers. Hedge Accounting



Get excited a bit more on this when we talk about option hedging

FOCUS ON:

***Foreign Exchange
Parameters, Terminology
& Deep dive to calculating
forwards***

Foreign Exchange Quotes

- **Futures exchange rates** are quoted as the number of USD per unit of the foreign currency
- **OTC - Spot and Forward exchange rates** are quoted in Foreign Currency per USD
EXCEPT for: GBP, EUR, AUD, NZD, Botswana pula (BWPUSD), the Solomon Islands dollar (SBDUSD), the Tongan pa'anga (TOPUSD) and the Western Samoan tala (WSTUSD), are quoted as USD per unit of foreign currency. (like the CME)

Foreign Exchange Quotes

- G10 Countries

EURUSD 1.1765

USDJPY 104.95

GBPUSD 1.2836

USDCAD 1.3203

AUDUSD 0.7214

NZDUSD 0.6631

USDCHF 1.0024

USDNOK 8.8600

USDSEK 9.2993

Foreign Exchange Quote Questions:

In which case below is the Japanese Yen (JPY) higher?

1. on the CME \$.009070/¥

2. Citibank's quote ¥ 110.5705/\$



Exercises in FX

Exercise 4-1: If GBPUSD rises then the pound:

1) strengthens 2) weakens

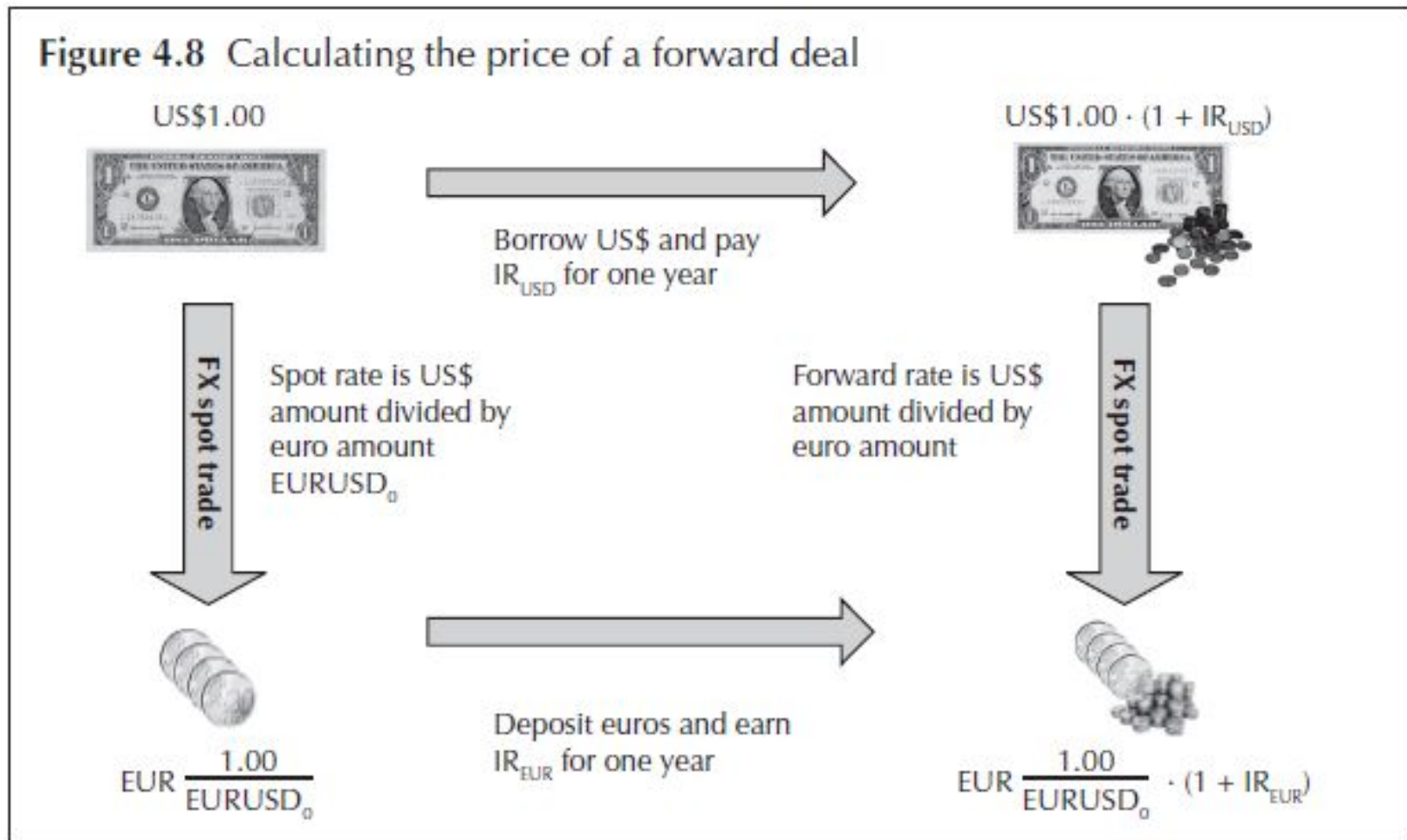
Exercise 4-2: If the Australian dollar weakens then the AUDUSD exchange rate goes:

1) higher 2) lower

Exercise 4-3: If the Japanese yen (JPY) weakens then the exchange rate USDJPY goes:

1) higher 2) lower

Calculating a Forward Price



Calculating a Forward Price

FX OPTIONS AND RISK MANAGEMENT

Exercise 4-4:

What's the formula for the calculation of the forward rate in EURUSD:

S = spot rate in EURUSD

r_d = US\$ one-year interest rate

r_f = € one-year interest rate

Fwd = Rate at which you can buy euros vs. US\$ for value in one year's time

Answer: $FWD = S \times (1 + r_d) / (1 + r_f)$

In other words, the higher the interest rate in euros, the lower the price to buy euros in the future.

Exercise 4-5:

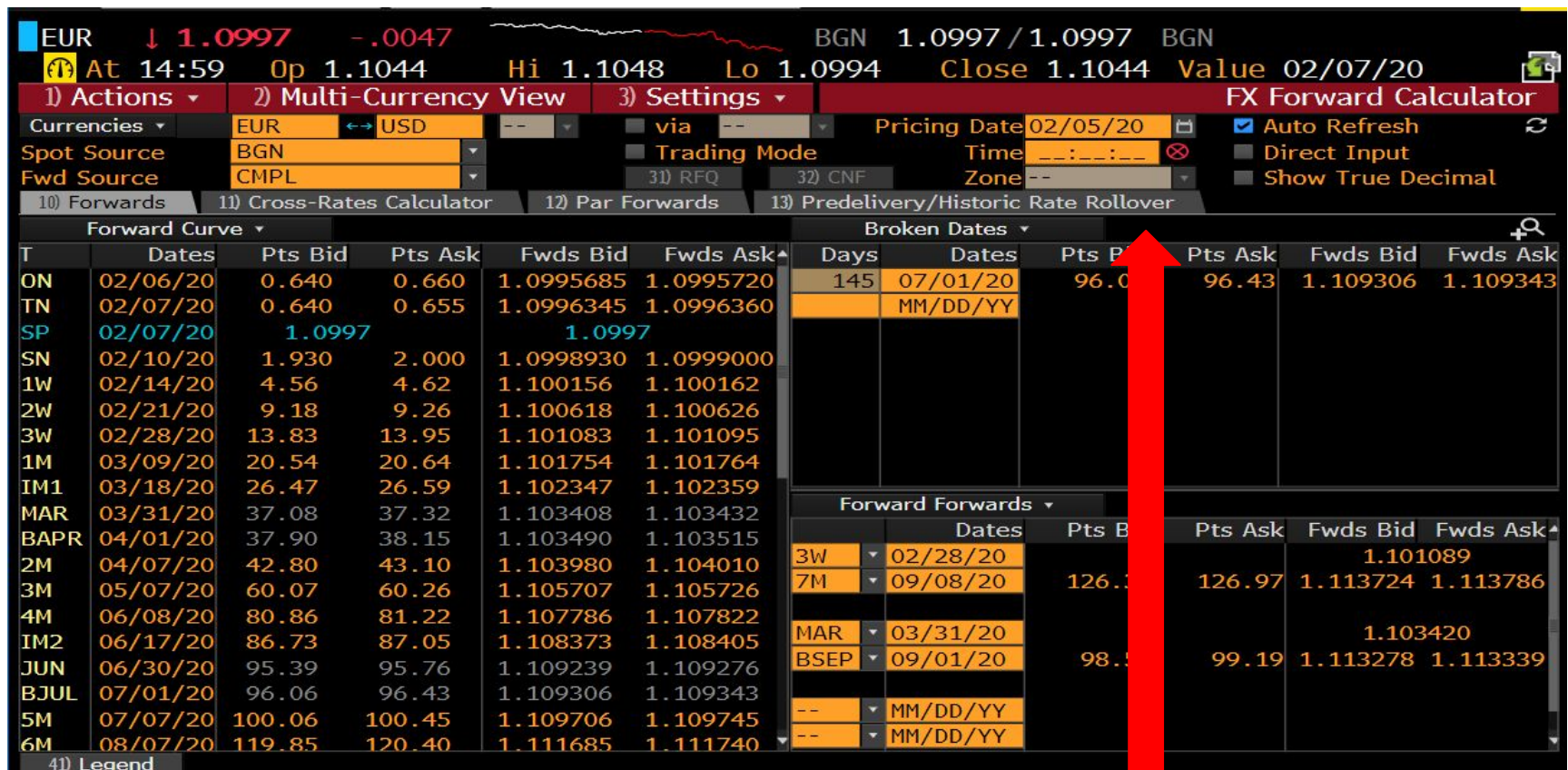
Repeat the previous exercise in the case where the corporation needs to buy Japanese yen (¥) in the future, not euros.

Hint: The formula will be different because the yen quotation (USDJPY) is different than the euro quotation (EURUSD)

Answer: $FWD = S \times (1 + r_f) / (1 + r_d)$

Behavior of Futures/Forwards

- Spot and the Forward Must Converge



Global Short Term Policy Interest rates

Central Bank Rate Analysis									
Country	Next Meeting	Policy Rate ↑	WIRP %Hike/Cut	Economist (Mdn)	Std Dev	Whisper	Taylor Rule	Spread	
	MM/DD/YY					♦ Avg ● Now			ECOS
10) Argentina	--	38.00		--			31.89		
11) Nigeria	09/22/2020	12.50		12.50				0.00	
12) Kazakhstan	10/26/2020	9.00		--					
13) Turkey	09/24/2020	8.25		8.25		8.25	15.85	0.00	
14) Ukraine	10/22/2020	6.00		--					
15) Mexico	09/24/2020	4.50		4.25		4.50	7.04	-0.25	
16) Russia	10/23/2020	4.25		--			4.79		
17) Indonesia	10/13/2020	4.00		--					
18) India	10/01/2020	4.00	+15.8% ▲	4.00		5.15		0.00	
19) Trinidad & Tobago	09/25/2020	3.50		--					
20) South Africa	11/19/2020	3.50		--			-2.85		
21) Dominican Republic	09/30/2020	3.00		--					
22) Brazil	10/28/2020	2.00		--			0.64		
23) Colombia	09/25/2020	2.00		1.75			-10.37	-0.25	
24) Malaysia	11/03/2020	1.75		--					
25) Taiwan	12/17/2020	1.13		--					
26) Chile	10/15/2020	0.50		--			-0.18		
27) South Korea	10/14/2020	0.50		--			2.22		
28) Thailand	09/23/2020	0.50		0.50				0.00	
29) Australia	10/05/2020	0.25	-64.5% ▼	--		0.25	0.91		
30) Canada	10/28/2020	0.25	-1.0% ▼	0.25		0.25	-0.40	0.00	
31) New Zealand	09/22/2020	0.25	-1.9% ▼	0.25		0.25	4.58	0.00	
32) Peru	10/07/2020	0.25		--			-4.67		

Carry Trade in the end is an FX position

	<u>USD</u>	<u>Deposit Rate</u>	<u>Exchange Rate SPOT</u>	<u>\$MXN</u>	<u>Mexican Deposit Rate</u>
Invest in Mexico	\$1,000,000	2.00%	18.00	\$18,000,000	8.50%
In 1 Year	\$1,085,000		18.00	\$19,530,000	
MXN Return	\$85,000				
Funding Cost	-\$20,000				
Net Return	\$65,000				
	6.50%				

*Yea, I'll take that 8.5% please
and Thank You very much!*



Carry Trade in the end is an FX position

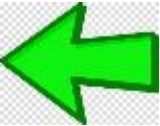
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Funding Cost	<u>-\$20,000</u>		
Net Return	\$65,000		
	6.50%		

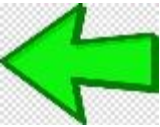
In 1 Year	\$1,302,000	15.00	\$19,530,000
MXN Return	\$302,000		
Funding Cost	<u>-\$20,000</u>		
Net Return	\$282,000		
	28.20%		

Carry Trade in the end is an FX position

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MXN Return	\$85,000			
Funding Cost	-\$20,000			
Net Return	\$65,000			
	6.50%			

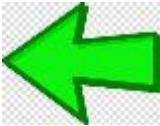
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MXN Return	\$302,000			
Funding Cost	-\$20,000			
Net Return	\$282,000			
	28.20%			

In 1 Year	\$781,200		25.00	\$19,530,000
MXN Return	-\$218,800			
Funding Cost	-\$20,000			
Net Return	-\$238,800			
	-23.88%			

Carry Trade - OOPS



What Forward Rate will the Market Calculate?

In 1 Year	\$1,020,000	19.14705	\$19,530,000
MXN Return	\$20,000		
Funding			
Cost	<u>-\$20,000</u>		
Net Return	\$0		
	0.00%		

Supply & Demand with Goodwill beat Theory

		FX Swap		EUR Yield		USD Yield		EUR Implied Yield		Spread	
Term	Date	Bid	Ask	Bid	Ask	Bid	Ask	Bid	Ask	Bid	Ask
SP	12/24/18	1.1463	1.1464								
1Y	12/24/19	1.183917	1.184158	-0.2318	-0.2218	2.5055	2.5205	-0.7193	-0.6934	-0.4875	-0.4716

Spot 1.1463

USD Rate 2.51%

EUR Rate -0.22%

Forward in the Market	Implied EUR Rate	Calculated Forward
1.1839	-0.70%	1.1776

Non - Deliverable Forwards (NDF)

An NDF

- is dealt outside a country's jurisdiction
- is similar to a forward foreign exchange contract
- at maturity the NDF cash settles usually U.S. \$

Example of NDF currencies

CNY Chinese renminbi

ARS Argentine peso

KRW South Korean won

BRL Brazilian real

TWD Taiwan dollar

COP Colombian peso

Remember...

If your interest rates are lower your currency has to strengthen in the future to compensate you.

- Foreign Exchange forward rate in:

Directly quoted EURUSD is \$/€

$$\text{Forward Euro} = S \times (1 + r_d) / (1 + r_f)$$

Where: S = spot rate r = domestic risk free interest rate r_d = Domestic - US\$ one-year interest rate
r_f = Foreign - € one-year interest rate

Indirectly quoted USDJPY is ¥/\$

$$\text{Yen Forward} = S \times (1 + r_f) / (1 + r_d)$$

Where: S = spot rate r = domestic risk free interest rate r_d = Domestic - US\$ one-year interest rate
r_f = Foreign - ¥ one-year interest rate