

Foreign Exchange Market



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Agenda

- ◉ Introduction
- ◉ Spot Transaction
- ◉ Forward Transaction
- ◉ Swap Transaction





Part-I

Introduction



Financial Market

(Saunders & Cornett, 2007)

Money Market

Loan and borrow money within short period (less than 1 year)

Example:
Commercial paper, certificate of deposit, bank acceptance.

Capital Market

Loan and borrow money within longer period (above 1 year)

Capital market consists of:

- Equity market
- Bond market

Forex Market

Trade foreign currency

The largest market in the world.
In 2013, this market has an average daily volume to \$ 5 trillion.

Mortgage Market

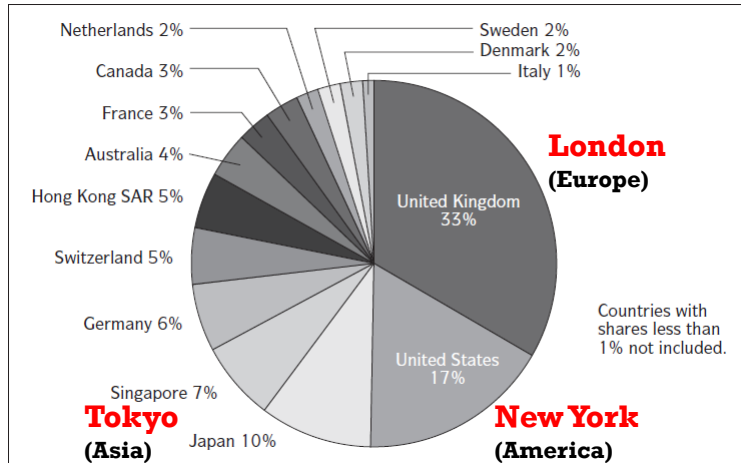
Trade property loan-backed asset, e.g. MBS (mortgage-backed securities)

Derivative Market

Trade non property loan-backed asset.

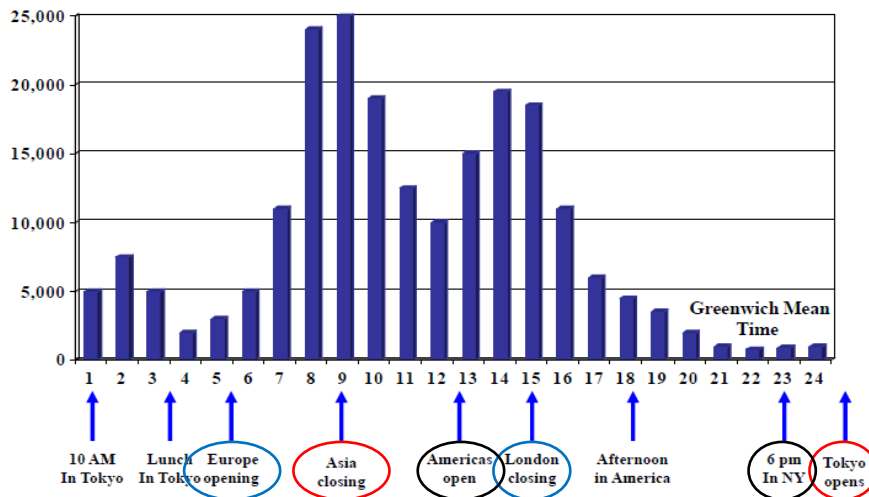
Example:
Future, option.

Global Forex Turnover in Some Countries (2001)



Source: www.ny.frb.org

They Never Sleep



Source: www.ny.frb.org

Market Structure



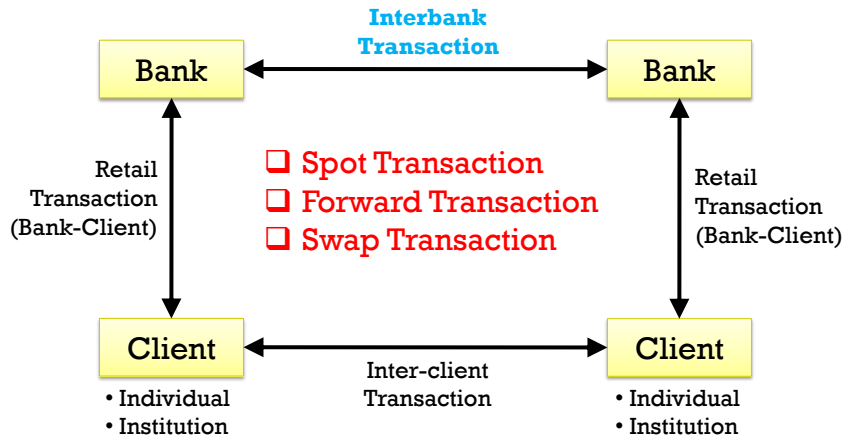
- ⦿ Two types of Market:
 - **Organized exchange market:** marketplace where buyers and sellers regularly gather to trade securities according to the formal rules.
Example: Indonesia Stock Exchange, Chicago Mercantile Exchange, Singapore International Monetary Exchange, etc.
 - **Over-the-counter (OTC) market:** transactions between sellers and buyers, not in specific legal place, where the terms and conditions of the transaction are negotiable.
- ⦿ Foreign exchange is traded in OTC market.
- ⦿ Forex transactions occur in every country and across countries worldwide.

Foreign Exchange Market



- ⦿ **Foreign exchange:** the money of a foreign country, e.g. foreign currency, bank note, check.
- ⦿ **Foreign exchange transaction:** an agreement between a buyer and seller that a fix amount of one currency be delivered at specific exchange rate for some other currency at specific time.
- ⦿ **Exchange rate:** the price of one currency which is valued by another currency (the value of one currency can be converted to other currency).

Forex Transaction Framework



Forex Transaction



◉ Spot Transaction

Purchase and delivery forex within two business days (in interbank). In 2007, they constitute about 30% of all forex transactions.

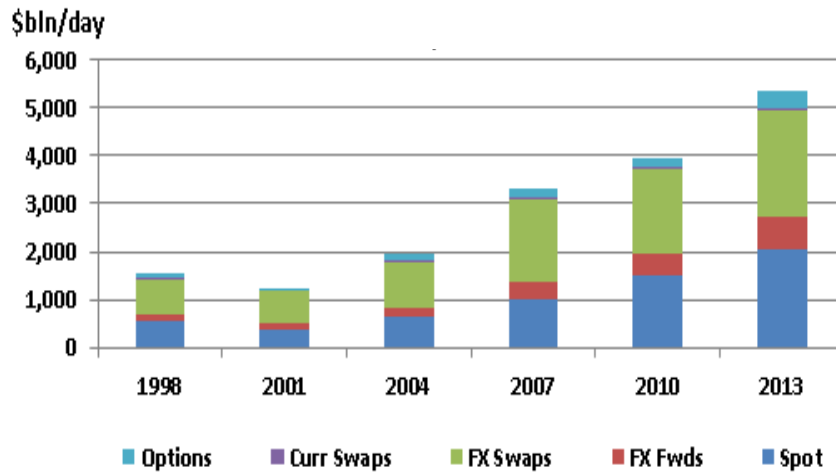
◉ Forward Transaction

Agreement at this time to purchase and deliver forex in the future date. Normally within 30, 60, 90, 180 days period of time (plus 2 days).

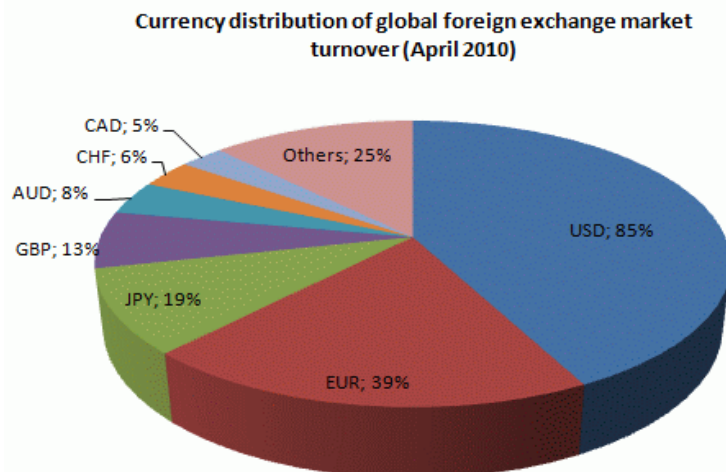
◉ Swap Transaction

Purchase and sale simultaneously of a given amount of forex for two different value date with the same counterparty. It is commonly used to reduce risk or speculation.

Global Forex Turnover



Daily Turnover by Currency





Part-II

Spot Transaction



Spot Rate Quotation

◎ Direct Quotation

Number of home currency unit needed to buy 1 unit of foreign currency (Important: which is the home currency).

Example: Home currency = IDR

1 USD = IDR 8,545

- USD/IDR = 8,545
- USD-IDR = 8,545
- USD = 8,545
- \$/Rp = 8,545
- Rp. 8,545/\$

1 SGD = IDR 7,015

- SGD/IDR = 7,015
- SGD-IDR = 7,015
- SGD = 7,015
- S\$/Rp = 7,015
- Rp. 5,900/S\$

Direct quotation is commonly used to serve domestic retail transaction in each country, e.g. in newspaper, board in bank, booth at airport.

Spot Rate Quotation



◉ Indirect Quotation

Number of foreign currency unit needed to buy 1 unit home currency.

Example: Home currency = IDR

<p>1 IDR = SGD 0.00014255167 →</p> <ul style="list-style-type: none"> • IDR/SGD = 0.00014255167 • IDR-SGD = 0.00014255167 • Rp/S\$ = 0.00014255167 • S\$ 0.00014255167/Rp. 	$= \frac{1}{7,015}$ $= \frac{1}{\text{Direct Quotation}}$
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Indirect quotation is not commonly used

Interbank Quotation



◉ Against USD

- **European Term:** how much foreign currency needed to buy 1 unit of USD.

SF1.6000/\$ (USD/CHF) → 1.600 Swiss Franc needed to buy 1 USD

¥101.73/\$ (USD/JPY) → 101.73 Yen needed to buy 1 USD

- **American Term:** how much USD needed to buy 1 unit of other currency (only for: GBP, EUR, AUD, NZD).

\$1.0442/A\$ (AUD/USD) → 1.0442 USD needed to buy 1 AUD

\$1.6516/£ (EUR/USD) → 1.6516 USD needed to buy 1 GBP

◉ Crossrate (Non USD-Based)

€1.1598/£ or GBP/EUR = 1.1598

Rp. 100.01/¥ or YEN/IDR = 100.01

Example: Interbank Quotation (worldwide standardization)



- JPY = 101.73 → **USD**/JPY (Dollar-yen) } European Term
- IDR = 8,545 → **USD**/IDR (Dollar-rupiah) }
- GBP = 1.6571 → **GBP/USD** (Sterling-dollar) } American Term
- EUR = 1.4446 → **EUR/USD** (Euro-dollar)* }
- AUD = 0.9523 → **AUD/USD** (Australian-dollar) }
- NZD = 0.4608 → **NZD/USD** (Kiwi-dollar) }

- GBP/EUR = 1.1598 (Sterling-euro) } Crossrate
- EUR/JPY = 110.79 (Euro-yen) }
- JPY/IDR = 100.01 (Yen-rupiah) }

Currency Table



Symbol	USD	EUR	GBP	JPY	CHF	CAD	AUD
USD	1	0.6930	0.6061	76.5455	0.7904	0.9898	0.9547
EUR	1.4428	1	0.8744	110.4440	1.1405	1.4280	1.3779
GBP	1.6500	1.1436	1	126.3070	1.3043	1.6331	1.5756
JPY	0.0131	0.0091	0.0079	1	0.0115	0.0129	0.0125
CHF	1.2650	0.8767	0.7664	96.8375	1	1.2516	1.2078
CAD	1.0106	0.7003	0.6123	77.3435	0.7986	1	0.9650
AUD	1.0473	0.7259	0.6348	80.1650	0.8278	1.0365	1

Counter Currency

Base Currency

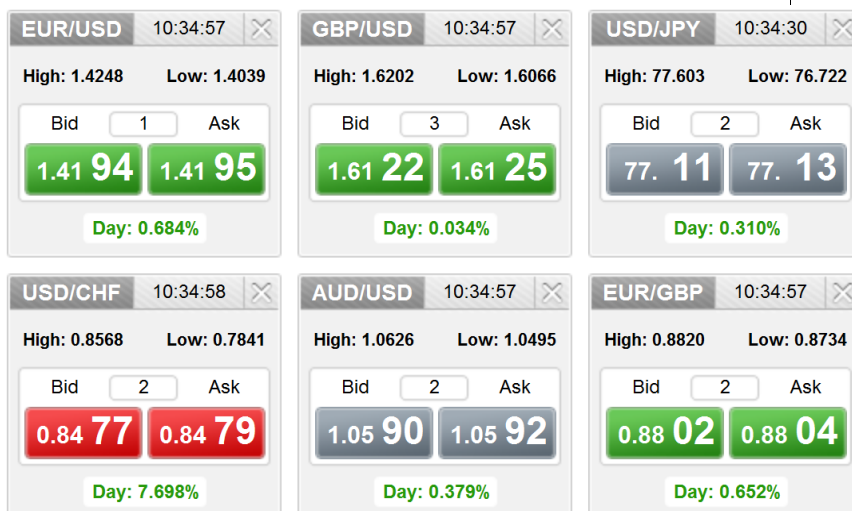
AUD/JPY = 80.1650

Bid and Ask Quotation



- Forex quotations are given as a bid and ask.
 - “**Bid**” is price in one currency at which bank/dealer will buy another currency. (Bid = Buy = Offer)
 - “**Ask**” is price in one currency at which bank/dealer will sell the other currency. (Ask = Sell)
- The bid-ask quotations are always seen from bank view (or party who publishes the quotations).
- Therefore, “ask price” (usually in the right side) is always higher than “bid price” (in the left side).
- If forex quotations are given in single number, it might be a mid rate (average of bid and ask price)

Pair Currency Real Time

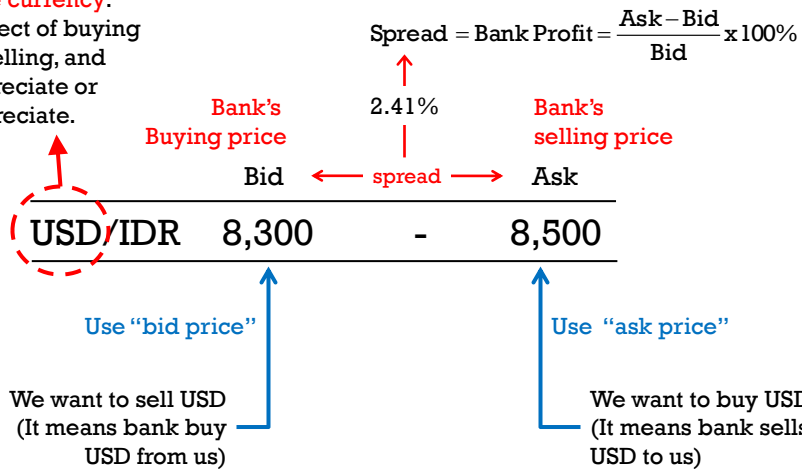


Bid and Ask Quotation



Base currency:

subject of buying or selling, and appreciate or depreciate.



Bid and Ask Quotation



Direct to Indirect conversion

	Bid		Ask
USD/IDR	8,300	-	8,500
	$\frac{1}{8,500}$		$\frac{1}{8,300}$
IDR/USD	0.0001176	-	0.0001205

Example of Spot Transaction



Now is 7th September 2011:

Customer: “Hi, this XXX, customer reference xxx.....
Could you show me a spot price in eurodollar, please?”

RTFX: “Eurodollar is 0.9950/54”.

Customer: “Ok, at 0.9954, I buy 1 Mio Euro”.

RTFX: “Ok, at 0.9954 you bought Euro 1 Mio against USD
value 9th of September 2011”.

Symbol	Bid	Ask	Open	High	Low	Chg. %	Time	Charts
▲ EUR/USD	1.4422	1.4424	1.4441	1.4442	1.4388	-0.125%	7:15:41	
▼ GBP/USD	1.6491	1.6494	1.6495	1.6514	1.6478	-0.015%	7:15:41	
▲ USD/JPY	76.54	76.56	76.65	76.87	76.54	-0.136%	7:15:41	
▼ USD/CHF	0.7906	0.7908	0.7923	0.7944	0.7901	-0.202%	7:15:41	
▲ AUD/USD	1.0466	1.0467	1.0527	1.0533	1.0466	-0.575%	7:15:41	
▼ USD/CAD	0.9898	0.9901	0.9873	0.9901	0.9870	0.268%	7:15:36	
▼ NZD/USD	0.8281	0.8283	0.8361	0.8361	0.8267	-0.945%	7:15:41	
▲ USD/ZAR	7.2287	7.2381	7.1733	7.2337	7.1721	0.838%	7:15:36	
▲ USD/TRY	1.7785	1.7800	1.7690	1.7796	1.7687	0.579%	7:15:39	
▼ USD/MXN	12.3748	12.3800	12.3131	12.3776	12.3053	0.522%	7:15:41	
▼ USD/PLN	2.8808	2.8834	2.8683	2.8822	2.8680	0.481%	7:15:36	
▲ USD/SEK	6.3328	6.3417	6.3161	6.3536	6.3152	0.335%	7:15:39	
▼ USD/SGD	1.2056	1.2061	1.2042	1.2064	1.2028	0.137%	7:15:27	
▼ USD/DKK	5.1645	5.1665	5.1589	5.1780	5.1584	0.128%	7:15:27	
▲ USD/NOK	5.4301	5.4348	5.4259	5.4457	5.4243	0.424%	7:15:39	

Non Convertible Currency



- ◉ NCC is any currency that is used primarily for domestic transactions, and is not openly traded on a forex market.
- ◉ This is usually a result of government restrictions (blocked currency), which prevent it (very limited) from being exchange in interbank or black market.
- ◉ Example: Brazilian real, Taiwanese dollar, Chilean peso, Chinese renminbi, Malaysian ringgit, Korean won, Argentina peso.

The Crossrate in Retail Market



<ul style="list-style-type: none"> • USD/IDR = 8,300 - 8,500 • SGD/IDR = 5,800 - 6,000 	⇒	USD/SGD = ???
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USD / IDR =	8,300	-	8,500
SGD / IDR =	5,800	-	6,000
USD / SGD =	$\frac{8,300}{6,000} = 1.3833$		$\frac{8,500}{5,800} = 1.4655$

Exercise-1



See Exchange Rate table on slide 27:

If we have USD 1 million, conduct the following transactions:

- ◉ USD → JPY → AUD → GBP → USD
- ◉ How much profit or loss we make?
- ◉ Why it happens?

Arbitrage in Spot Transaction



- ◉ Arbitrage occurs if the “ask price” in one country is lower than the “bid price” in another country
- ◉ At least across two different countries, involving at least three different currencies
- ◉ Transactions:
 - Transaction-1: C1 → C2 in country-1
 - Transaction-2: C2 → C3 in country-2
 - Transaction-3: C3 → C1 in country-1
- ◉ Actually, all transactions are conducted almost simultaneously.

Lock in profit
from arbitrage

Example: Triangular Arbitrage

We have AUD 1 billion, and plan to transact it to grasp profit from arbitrage.



In London

MYR/GBP = 0.1845	← 0.1850
EUR/GBP = 0.6000	- 0.6020

cross
rate

MYR/EUR = 0.3065 - 0.3083

In Frankfurt

AUD/EUR = 0.5930	- 0.5932
GBP/EUR = 1.6632	- 1.6634
MYR/EUR = 0.3062	- 0.3066

cross
rate

MYR/GBP = 0.1841 - 0.1843

Example: Triangular Arbitrage



London

Frankfurt

1 Buy MYR with EUR

MYR/EUR : 0.3062 - 0.3066

GBP/EUR : 1.6632 - 1.6634

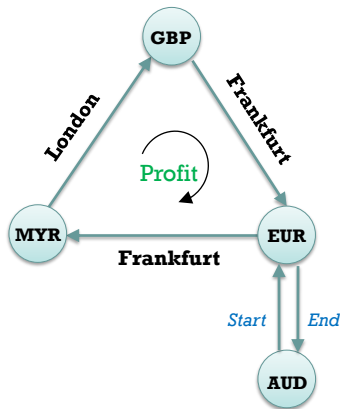
3 Sell GBP to get EUR

MYR/GBP : 0.1841 - 0.1843

2 Sell MYR to get GBP

MYR/GBP : 0.1845 - 0.1850

Arbitrage Triangle



Initial Capital → AUD 1,000,000,000

Fr	: Sell AUD	→ EUR	593,000,000
Fr	: Buy MYR	→ MYR	1,934,116,112
Lo	: Sell MYR	→ GBP	356,844,423
Fr	: Sell GBP	→ EUR	593,503,644
Fr	: Buy AUD	→ AUD	1,000,511,874

Profit	→ AUD	511,874
%Profit	→	0.0849%

Arbitrage Triangle (another approach)



London : MYR/GBP 0.8145 - 0.8150 → quotation

Frankfurt : MYR/GBP 0.8141 - 0.8143 → cross rate

$$\text{Profit} = \frac{0.8145 - 0.8143}{0.8143} = 0.0849\% \rightarrow \text{In EUR (be careful of this)}$$

- Initial capital → AUD 1,000,000,000
- Convert AUD to EUR → EUR 593,000,000
- Profit from arbitrage → EUR 503,644 → 0.0849%
- Initial capital + profit → EUR 593,503,644
- Convert EUR to AUD → AUD 1,000,511,874
- Profit in AUD → AUD 511,874

Exercise-2



- ⊙ Initial capital = AUD 12 million.
- ⊙ How can we get profit through cross currency arbitrage if the quotations:
 - Auckland : USD/NZD : 2.1700 – 2.1730
100JPY/NZD : 1.7500 – 1.7550
 - Tokyo : NZD/JPY : 57.15 – 57.35
USD/JPY : 124.40 – 124.60
AUD/JPY : 71.92 – 72.00
- ⊙ Express the profit in AUD and draw arbitrage triangle!
(assume: all transaction costs and tax = 0)

Exercise-3



- ⊙ Initial capital = AUD 1 million.
- ⊙ How can we get profit through cross currency arbitrage if the quotations:
 - Jakarta : USD/IDR : 9,160 – 9,260
AUD/IDR : 8,400 – 8,550
 - Singapore : USD/SGD : 1.3900 – 1.4500
EUR/SGD : 2.0013 – 2.1500
 - Sydney : AUD/EUR : 0.5300 – 0.5700
- ⊙ Express the profit in AUD!
(assume: all transaction costs and tax = 0)

Exercise-4



- ◉ Why cross currency arbitrages exist?
- ◉ Why cross currency arbitrage will be disappeared systematically?
- ◉ Could you imagine, what risks may be exposed if we exploit cross currency arbitrage?



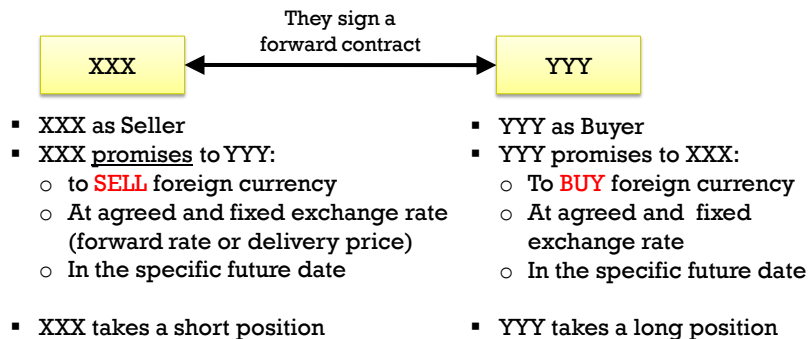
Part-III

Forward Transaction

Forward



Agreement between two parties to buy or sell a foreign currency amount (notional amount) at a fixed exchange rate (delivery price) at a fixed future date (value date).



Position in The Market



⦿ Open Position:

Market position in which we are going to receive or deliver foreign exchange, but it is exposed to foreign exchange fluctuation (and no hedging to cover it)

- **Long position (long):** market position to receive given currency, i.e. buying or receiving foreign currency without hedging.
- **Short position (short):** market position to deliver given currency, i.e. selling or delivering foreign currency without hedging

⦿ Close Position (square or flat)

Foreign exchange receiving or delivering do not exposed to foreign exchange fluctuation

Example of Market Position



- PT. XXX posses a long USD 100,000 exposure in the next 3 months.
- Many investors are short JPY and long USD.
- A company goes long on forward contract of USD 100,000
- We posses a short USD 100,000 exposure, so we need to get long forward to square up (to close position).

Forward: Hedge or Speculate



- Forward is commonly used: (1) to hedge receivable (AR) or payable (AP), or (2) for speculation.



Question: what Indonesia company's position should be in forward contract?

Forward: Premium vs. Discount



- ◉ Forward discount and premium
 - Forward rate > spot rate → forward premium
 - Forward rate < spot rate → forward discount
- ◉ **Forward premium** → foreign currency is traded at premium with respect to domestic currency in forward market. In operational term, domestic currency is likely to be depreciated against foreign currency.
- ◉ **Forward discount** → foreign currency is traded at discount with respect to domestic currency in forward market. In operational term, domestic currency is likely to be appreciated against foreign currency.

Forward Quotation



GBP/USD	Bid – Ask	Spread	Point	Percentage	
Spot	: 2.0015 – 2.0030	0.075%			D I S C O U N T
30-day	: 1.9996 – 2.0013	0.085%	19 – 17 (1.14%) – (1.02%)		
90-day	: 1.9989 – 2.0008	0.095%	26 – 22 (0.52%) – (0.44%)		
180-day	: 1.9973 – 1.9995	0.110%	42 – 35 (0.42%) – (0.35%)		
	Outright quotation		bid pts > ask pts	negative	
Spot	: 2.0015 – 2.0030	0.075%			P R E M I U M
30-day	: 2.0018 – 2.0035	0.085%	3 – 5	0.18% – 0.30%	
90-day	: 2.0025 – 2.0047	0.110%	10 – 17	0.20% – 0.34%	
180-day	: 2.0045 – 2.0072	0.135%	30 – 42	0.30% – 0.42%	
	Outright quotation		bid pts < ask pts	positive	

Point Quotation: Variation



Spot USD/CHF	0.3968 - 0.3978
Forward 1 month	15 - 17
Forward 1 month	-15 - -12

		bid	ask		
		↓	↓		
USD/CHF = 0.3968/78	15/17		33/38	93/103	
<u>Spot rate</u>	<u>Forward point quotation</u>				

Example of Fwd Transaction



Now is 7th September 2011:

Customer: “Hi, this XXX, customer reference xxx.....
Could you show me a forward outright price in
eurodollar 1 month, please?”

RTFX: “Forward outright Eurodollar 1 month is
0.9935/42”.

Customer: “Ok, at 0.9942, I buy 1 Mio Euro”.

RTFX: “Ok, at 0.9942 you bought Euro 1 Mio against USD
value 9th of October 2011”.

Exchange Rates

The New York foreign exchange mid-range rates below apply to trading among banks in amounts of \$1 million and more, as quoted at 4 p.m. Eastern time by Reuters and other sources. Retail transactions provide fewer units of foreign currency per dollar.

Country	U.S. \$ EQUIVALENT		CURRENCY PER U.S. \$	
	Mon.	Fri.	Mon.	Fri.
Argentina (Peso)-y	.2751	.2751	3.6350	3.6350
Australia (Dollar)	.5422	.5459	1.8445	1.8317
Bahrain (Dinar)	2.6525	2.6525	.3770	.3770
Brazil (Real)	.3221	.3203	3.1045	3.1225
Britain (Pound)	1.5272	1.5387	.6548	.6499
1-month forward	1.5242	1.5359	.6561	.6511
3-months forward	1.5188	1.5303	.6584	.6535
6-months forward	1.5104	1.5218	.6621	.6571
Canada (Dollar)	.6356	.6407	1.5734	1.5607
1-month forward	.6350	.6402	1.5748	1.5621
3-months forward	.6337	.6389	1.5780	1.5653
6-months forward	.6315	.6367	1.5836	1.5707
Chile (Peso)	.001431	.001429	698.75	699.75
China (Renminbi)	.1208	.1208	8.2767	8.2768
Colombia (Peso)	.0003782	.0003789	2643.95	2639.05
Czech. Rep. (Koruna)				
Commercial rate	.03155	.03151	31.697	31.731
Denmark (Krone)	.1315	.1325	7.6069	7.5450
Ecuador (US Dollar)	1.0000	1.0000	1.0000	1.0000
Hong Kong (Dollar)	.1282	.1282	7.8000	7.8000
Hungary (Forint)	.003962	.003996	252.41	250.28
India (Rupee)	.02059	.02060	48.560	48.550
Indonesia (Rupiah)	.0001130	.0001134	8848	8815

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Percentage Quotation

- ◉ Deviation of fwd rate from spot rate, expressed in % p.a.

	European Term	American Term
Spot Rate	¥105.65/\$	\$0.009465/¥
3-month Forward	¥105.04/\$	\$0.009520/¥

□ European Term

$$f = \frac{\text{Fwd-Spot}}{\text{Spot}} \times \frac{360}{n} \times 100 = \frac{105.04 - 105.65}{105.65} \times \frac{360}{90} = -2.31\% \text{ p.a.}$$

□ American Term:

$$f = \frac{\text{Fwd-Spot}}{\text{Spot}} \times \frac{360}{n} \times 100 = \frac{0.00952 - 0.009465}{0.009465} \times \frac{360}{90} = +2.32\% \text{ p.a.}$$

Interpretation



	European Term	American Term
Spot Rate	¥105.65/\$	\$0.009465/¥
3-month Forward	¥105.04/\$	\$0.009520/¥

Quotation	:	USD/JPY	JPY/USD
Base currency	:	USD	JPY
Fwd deviation	:	-2.31% p.a	+2.32% p.a



USD is traded at
2.31% discount
against JPY for
delivery 92 days



JPY is traded at
2.32% premium
against USD for
delivery 92 days

Exercise-5



See Exchange Rate table on slide 43:

- On Friday, what is the position of GBP against USD?
(**stronger or weaker**)
- In forward market, the USD is traded at _____
(**premium or discount**) with respect to GBP.
- Express the 3-month forward USD and GBP in percentage quotation (American and European Term).
- What is the meaning of the that percentage quotation?

Exercise-6



- ◉ If you have EUR 1 million, how could you get profit from this quotation? (ignore all transactions cost and taxes)

	Bid	Ask
Spot EUR/USD	1.5500	1.5520
180-day forward	1.5455	1.5478

- ◉ Getting profit → buy low, sell high
- ◉ In the next six months, EUR is estimated to depreciate against USD (or USD will appreciate against EUR)
- ◉ It is better to have USD now rather than EUR
- ◉ Sell EUR now to get USD
- ◉ Buy EUR later with USD

Exercise-6: Answer



- ◉ Initial capital = EUR 1 million

	Bid	Ask
Spot EUR/USD	1.5500	1.5520
180-day forward	1.5455	1.5478

- ◉ Now
 - Sell EUR to get USD = EUR 1 million x 1.5500 = **USD 1,550,000**
 - Sign 6-month forward contract to long EUR 1 million
- ◉ Six months later (realize forward contract)
 - Buy EUR 1 million with USD
 - Pay with USD = EUR 1 million x 1.5478 = **USD 1,547,800**
- ◉ Profit = 1,550,000 – 1,547,800 = **USD 2,200**

Exercise-7



We are an Indonesia company. We will make a payment of USD 100,000 in the next three months to our counterpart. To reduce the uncertainty of IDR fluctuation, we can choose one of two alternatives for hedging below:

A. Buy USD now

It can be conducted by: (1) borrowing IDR to buy USD, then (2) investing USD in time deposit for three months (loan rate in IDR = 15.0% p.a., and time deposit rate in USD = 4.0% p.a.)

B. Sign forward contract

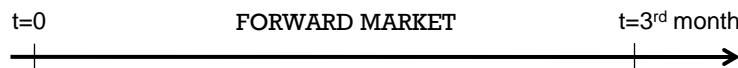
	Bid	Ask
Spot USD/IDR	8,500	8,700
90-day forward	5.0%	12.0%

Which alternative should we choose?

Exercise-7: Answer



Make a payment of USD 100,000 in the next 3 months



	Bid	Ask
Spot USD/IDR	8,500	8,700
90-day forward	5.0%	12.0%

$$\text{Forward (bid)} = 8,500 \cdot \left(1 + \frac{5\%}{4}\right) = 8,606$$

$$\text{Forward (ask)} = 8,700 \cdot \left(1 + \frac{12\%}{4}\right) = 8,961$$

	Bid	Ask
Spot USD/IDR	8,500	8,700
90-day forward	8,606	8,961

In the 3rd month, we have to buy USD 100,000 at agreed forward rate.

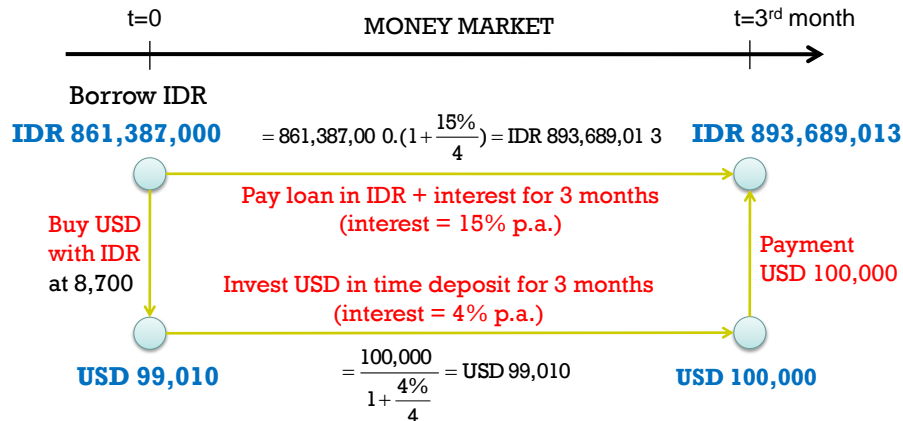
$$\begin{aligned} \text{IDR needed:} \\ &= 100,000 \times 8,961 \\ &= 896,100,000 \end{aligned}$$

Exercise-7: Answer

Make a payment of USD 100,000 in the next 3 months

- Borrow IDR now
- Buy USD with IDR now
- Time deposit in USD for 3 months

	Bid	Ask
Spot USD/IDR	8,500	8,700
90-day forward	8,606	8,961



Money Market for Receivable

- ◉ If we will receive USD 100,000 in next three months, how we hedge it in money market?
- ◉ Money market:
 - Borrow in USD now
 - Sell USD for IDR now
 - Invest IDR in time deposit
 - Loan in USD (+interest) is paid by receivable



Part-IV

Swap Transaction



Introduction

A German firm currently has EUR 500,000 sitting in a bank account in Europe. The firm has a funding requirement of USD 450,000 for three months in the United States, and wish to utilize the EUR funds to meet this funding requirement. The spot rate of EUR/USD is 0.9

What the firm has to do (without taking any foreign exchange risk on this transaction)?

- Sell EUR 500,000 for USD now
- At the same time, sign forward contract to buy back EUR 500,000 with USD in the next three months

Swap Transaction



- ◉ Swap transaction is the simultaneous purchase (or sale) and sale (or purchase) of a given amount of forex for two different value date and are conducted with the same counterparty.
- ◉ Swap = forward plus another transaction with different value date (same amount and same counterparty).
- ◉ In interbank market, swap transactions account for more than 50% of daily forex market.
- ◉ Some typical swap transaction in interbank market:
 - ❑ Spot against forward
 - ❑ Forward-forward swap
 - ❑ Non-deliverable forward (NDF)

#1 - Spot Against Forward



- ◉ Buy/sell a foreign currency in spot market and simultaneously sell/buy same amount back to same bank in forward market.

- ◉ Example:

Switzerland company needs USD 100,000 for (during) 6 months.

Spot USD/CHF = 1.6650 – 1.6667

180-days = 111 – 139

The company may sell its CHF to receive USD.

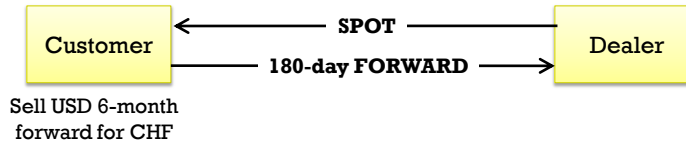
From forward quotation, USD is expected to be appreciated, thus the company needs swap transaction to hedge its cash flow.

Swap 100,000 Dollar-franc



Buy USD with CHF
(in spot market)

USD/CHF : 1.6650 – 1.6667
180-day : 111 – 139



Now	Deliver	= USD 100,000 x 1.6667 = CHF 166,670
	Receive	= USD 100,000
6 months later	Deliver	= USD 100,000
	Receive	= USD 100,000 x 1.6761 = CHF 167,610
		Profit = CHF 940

Borrowing USD that is collateralized by CHF

Example: Online Trading



- Spot USD/CHF = 1.6650/67
- Now is 7th September 2011:

Customer: "Hi, I'm XXX, customer reference xxx..... Could you show me price for dollarfranc six months, please?"

RTFX: "Swap dollarfranc six months is 111/139".

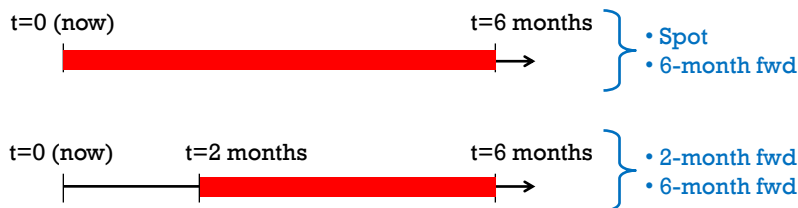
Customer: "Ok, at 111, I buy and sell 100,000 dollarfranc".

RTFX: "Ok, you bought 100,000 dollarfranc at 1.6667 value spot 9th of September 2011, and sold 100,000 dollarfranc at 1.6761 value 9th of March 2012"

#2 – Forward-Forward Swap



- ◉ Buy/sell forward and simultaneously sell/buy another different time forward at same notional amount.
- ◉ Like spot-against-forward swap, forward-forward swap can be used to hedge cash flow during certain period in the future.



Example

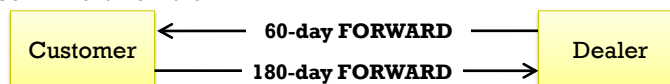


Switzerland company needs USD 100,000 at the next two months for along 6 months period.

Spot USD/CHF = 1.6650 /67

60-day and 180-day = 31/52 111/139

Buy USD 2-month forward



Sell USD 6-month forward

2 months later Deliver = USD 100,000 x 1.6719 = **CHF 167,190**
Receive = USD 100,000

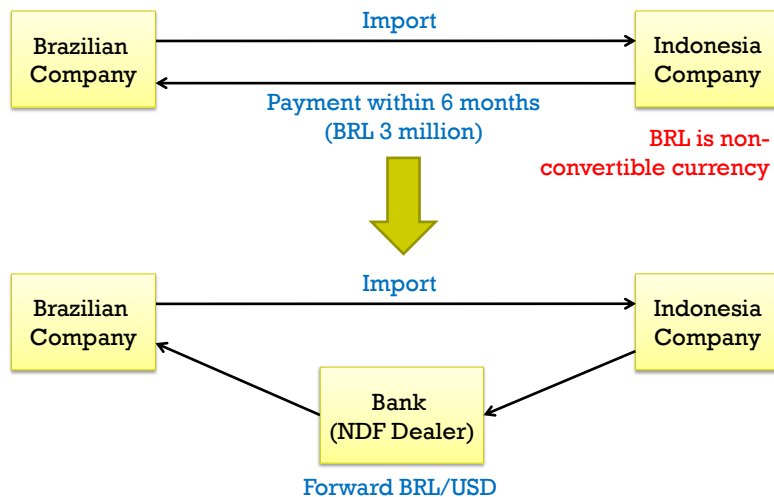
6 months later Deliver = USD 100,000
Receive = USD 100,000 x 1.6761 = **CHF 167,610**

#3 - Non-Deliverable Forward



- ◉ Agreement like forward in which counterparties settle the difference between the agreed forward rate and the prevailing spot rate in other currency (usually USD).
- ◉ Profit and loss:
 - N = notional amount
 - f = agreed forward rate
 - e_t = prevailing spot rate in the future
$$P/L = N \cdot (e_t - f)$$
- ◉ NDF began to trade actively in the 1990s for emerging country investors or business activities.
- ◉ NDF is contracted offshore, and is typically used to hedge or speculate non-convertible currency (settled in USD).

NDF Mechanism



NDF Mechanism



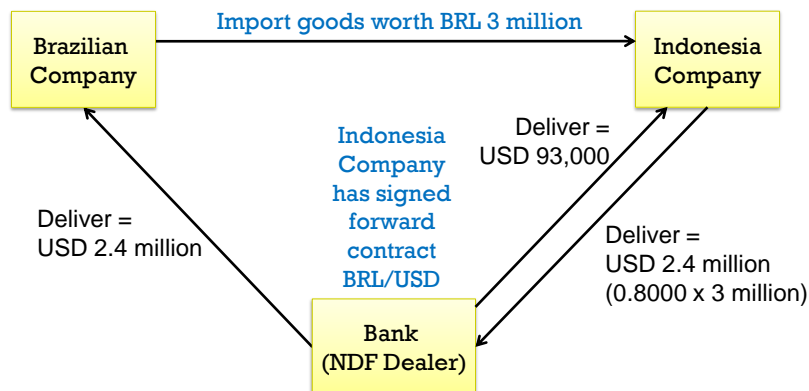
6-months Forward BRL/USD = 0.7690
 Notional Principle = BRL 3 million

	Prevailing Spot BRL/USD = 0.8000	Prevailing Spot BRL/USD = 0.7410
BRL movement	Appreciate = 0.0310	Depreciate = 0.0280
	= 0.031 x 3 mio	= (0.0280) x 3 mio
Indonesia company:		
* NDF's profit/loss	Profit = USD 93,000	Loss = USD 84,000
* Import payment	Pay = USD 2.4 mio	Pay = USD 2.223 mio
	= 0.8000 x 3 mio	= 0.7410 x 3 mio
Total Payment	= USD (2.4 mio – 93,000)	= USD (2.223 mio + 84,000)
	= USD 2.307 million	= USD 2.307 million

Payment Mechanism



Six month later when prevailing spot BRL/USD = 0.8000



Thank
You

