

CFA Space

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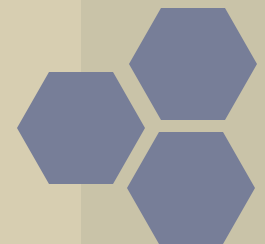


CFA Level II

Currency Exchange Rates

Part I

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Content

Bid-ask spread

Exchange Rates

Factors that affect the spread

Triangular arbitrage profit

(T.A.P)

How to identify the triangular arbitrage profit

How to calculate the triangular arbitrage profit



Bid-ask spread

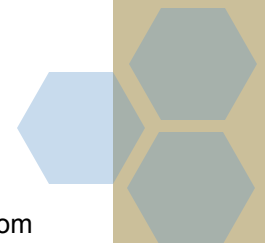
Exchange Rates

price currency / Base currency

- 1.4468 AUD/USD
- 0.6912 USD/AUD ($0.6912 = 1/1.4468$)
- Forward/spot rate
 - Spot rate: 1.4468 AUD/USD
 - 30-day : +2.1 (forward rate: 1.44701)

Foreign exchange spread

- Dealer's quotation
- Bid-ask spread = ask price – bid price
 - e.g. $1.4462 - 1.4471$ AUD/USD
 - Bid-ask spread = $1.4471 - 1.4462 = 0.0009$ (9bps)
 - You have AUD10,000, how much USD can you exchange? $10,000/1.4471 = 6,910$ USD





Bid-ask spread(Cont)

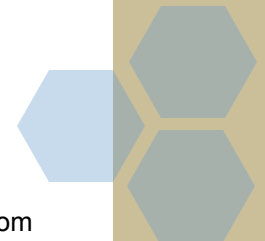
Factors affect bid-ask spread

Interbank spread
The transaction size
Dealer-client relationship

Interbank spread depends on:

- Currency Involved (higher volume, narrower spread)
- Time of day (higher liquidity, narrower spread)
- Market volatility (higher volatility, higher spread)
- Maturity (longer maturity, higher spread)

How to remember? From a risk perspective





Triangular Arbitrage Profit

How to identify T.A.P

Cross Rate

- 1. **USD/AUD** 0.6000 – 0.6015
- 2. **USD/MXN** 0.0933 – 0.0935
- What is the cross rate of **MXN/AUD**?

$$\frac{MXN}{AUD} = \frac{MXN}{USD} \times \frac{USD}{AUD}$$

Because **USD/MXN** 0.0933 – 0.0935,

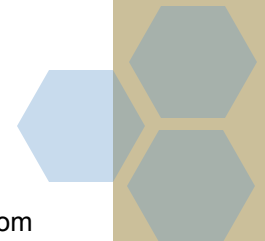
we know that **MXN/USD** $1/0.0935$ – $1/0.0933$, so

Bid price of **MXN/AUD** = $1/0.0935 \times 0.6000 = 6.4171$

Ask price of **MXN/AUD** = $1/0.0933 \times 0.6015 = 6.4469$

The cross rate of **MXN/AUD** is 6.4171 – 6.4469

If the dealer quote of **MXN/AUD** is 6.3000 – 6.3025
Will We Get T.A.P?





Triangular Arbitrage Profit(Cont)

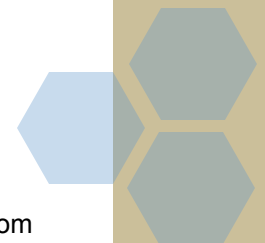
How to calculate T.A.P

Before calculation, we have:

- 1. \$1,000,000
- 2. USD/AUD 0.6000 – 0.6015
- 3. USD/MXN 0.0933 – 0.0935
- 4. Cross Rate MXN/AUD 6.4171 – 6.4469
- 5. Dealer quote MXN/AUD 6.3000 – 6.3025

Because AUD is undervalued, we sell MXN for AUD.

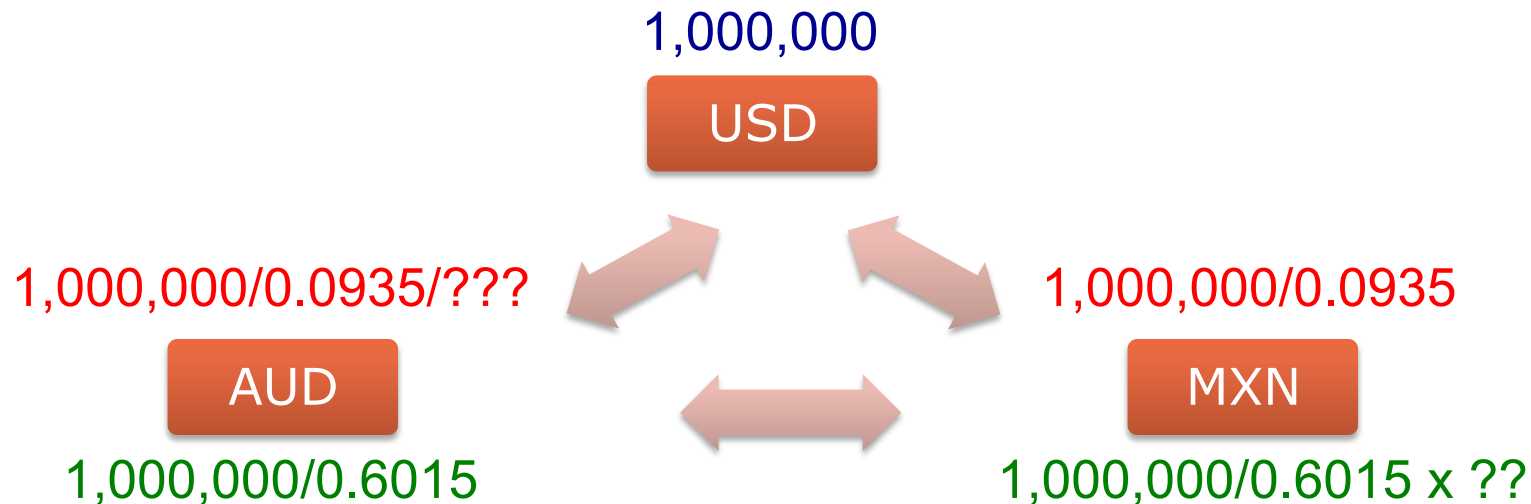
- To get MXN, we exchange USD for MXN first, we get $1,000,000 / 0.0935 = 10,695,187$ MXN.
- Then, we change MXN for AUD with the dealer, we get $10,695,187 / 6.3025 = 1,696,975$ AUD.
- Last, we change AUD for USD to get a T.A.P, we get $1,696,975 \times 0.6000 = 1,018,185$ USD.
- The T.A.P is \$18,185. **Make sure you know exactly which price to use in calculation.**





Triangular Arbitrage Profit(Cont)

- 1. USD/AUD 0.6000 – 0.6015
- 2. USD/MXN 0.0933 – 0.0935
- 3. MXN/AUD ?? – ??? (Dealer quote)
- **Under what condition will we get T.A.P?**



To get a T.A.P, it must be

$$1,000,000 / 0.0935 / ??? \times 0.6000 > 1,000,000,$$

$$1,000,000 / 0.6015 \times ?? \times 0.0933 > 1,000,000$$

So, $??? < 0.6000/0.0935$, **this is the bid price of the cross rate.**

$?? > 0.6015/0.0933$, **this is the ask price of the cross rate.**

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Thank You!

