International Financial Markets

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What are the Global Financial Markets?

- The Foreign Exchange Market

- Eurocurrency Markets and Lending

- International Bond Markets

- International Equity Markets

- Using the Global Capital Markets:
  Investors' and Issuers' Perspectives

Policies and Exchange Rate Regimes

- Exchange rate systems--fixed vs floating
- Managed floating
- EMS-type currency blocs
- De facto blocs--the dollar
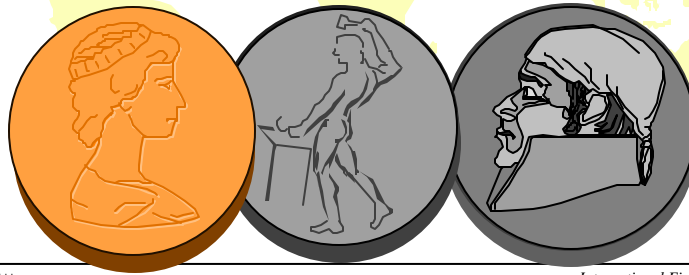
International Financial Markets 3

The Eurocurrency Market

"A Eurodollar is a dollar deposited in a bank within a jurisdication outside the United States"

- Separation of currency, institution and jurisdiction
- Why do people want Eurocurrency deposits and loans?
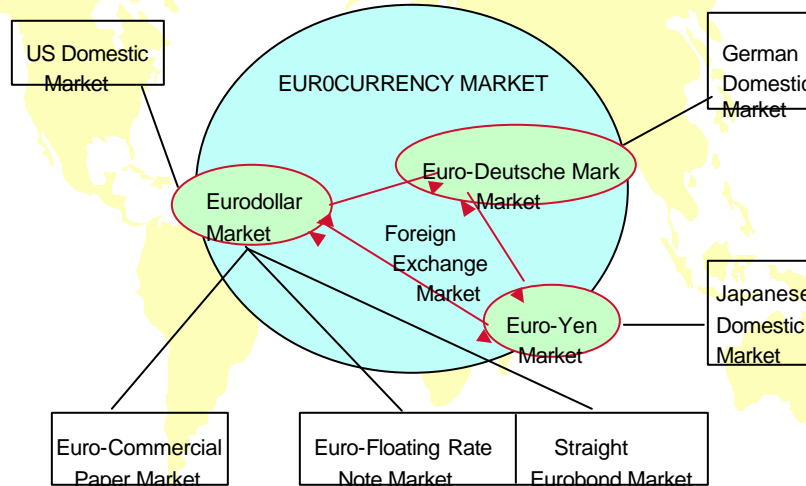- Why is LIBOR the world's key benchmark rate?

International Financial Markets 4

The Eurocurrency Market

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International Financial Markets 5

Where the Eurocurrency Market Fits In

US Domestic Market

EUR0CURRENCY MARKET

German Domestic Market

Euro-Deutsche Mark Market

Eurodollar Market

Foreign Exchange Market

Japanese Domestic Market

Euro-Yen Market

Euro-Commercial Paper Market

Euro-Floating Rate Note Market

Straight Eurobond Market

International Financial Markets 7
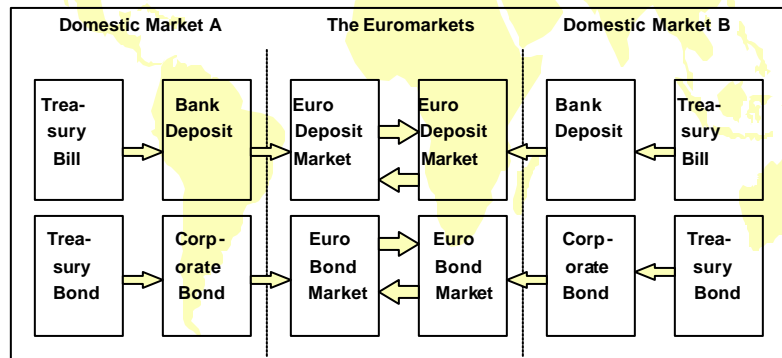
Interest Rate Linkages in the International Money Market

Two stories to tell:
- Domestic vs. Euro
- Eurocurrency A vs. Eurocurrency B

Domestic Market A		The Euromarkets		Domestic Market B	
Trea-sury Bill	Bank Deposit	Euro Deposit Market	Euro Deposit Market	Bank Deposit	Trea-sury Bill
Trea-sury Bond	Corp-orate Bond	Euro Bond Market	Euro Bond Market	Corp-orate Bond	Trea-sury Bond

International Financial Markets 8

Domestic versus Euro

The Eurodollar Premium

Market price of risk

versus

Cost of regulation

- *Eurodollar vs. U.S. Interest Rate*

Effective cost of domestic deposit

= $\dfrac{\text{(interest rate + FDIC fees)}}{\text{(1 - reserve requirement)}}$

- *Capital controls and divided credit markets*

International Financial Markets 9

Foreign Exchange

- Mechanics and calculations
- How banks make money
- How banks hedge
- Tasks of the corporate FX manager

International Financial Markets 10

Foreign Exchange Quotations

```
                                        Reuters : Quotes : CINY
Function   Edit   Screens   Format   View   Setup   Help

0000 CITIBANK NEW YORK - FOREIGN EXCHANGE - PAGE 1          CINY
              SPOT      1MO      3MO       6MO       12MO
1615  DEM   152  40/50  31.8/.5  94.5/94  193.5/2  397/394.0
1615  CHF   125  40/50  45.5/45  129/128  254/252  509/504.0
1618  FRF   516  00/30  91/89.5  269/265  531/526  1098/1083
1618  NLG   170  93/03  39.4/.1  118/7.5  239.5/8  475/472.0
1618  BEF   31   37/40  6.9/6.6  20/19.3  40.5/39  83.0/80.0
1619  ITL   1522 /1524  376/384  950/970  1640/70  2475/2525
1618  JPY   111  35/45  52/51.7  151/0.5  288/287  572/569.0
1626  CAD   136  17/22  17/16.5  56/54.5  107/104  192/187
1619  GBP   156  45/55  6.3/6.1  11/10.5  16.5/15  31.5/27.5
1651  XEU   124  99/09  RATES    AT       CLOSE    MONDAY
```

Spot   *Forward points*

REUTERS

International Financial Markets 12

Exchange Rates

Currency	How quoted	Spot (2 business days)	Forward (90 days)
British pounds (GBP)	US$ per GBP	1.632	1.617
Japanese yen (JPY)	Yen per US$	117.5	116.3

International Financial Markets 13

Foreign Exchange Quotations

	Bid	Offer
Spot		
Forward points		

Rule:

add if bid<offer,

subtract if bid>offer

Outright forward

International Financial Markets 14

Exchange Rates

Currency	How quoted	Spot (2 business days)	Forward (90 days)
British pounds (GBP)	US$ per GBP	1.632	1.617
Japanese yen (JPY)	Yen per US$	117.5	116.3

A Typical Forward Contract

● We agree today to pay a certain price for a currency in the future

Sony   JPY   B of A
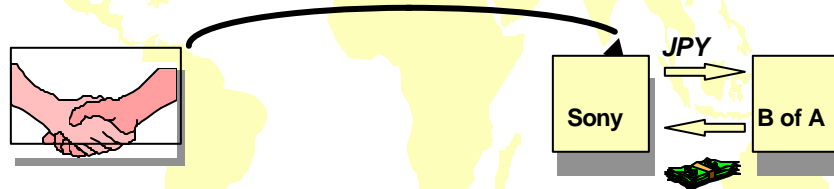
How Does the __Bank__ Hedge a Forward Contract?

Hedging approaches:
- ◆ Open
- ◆ Forward
- ◆ Spot plus swap
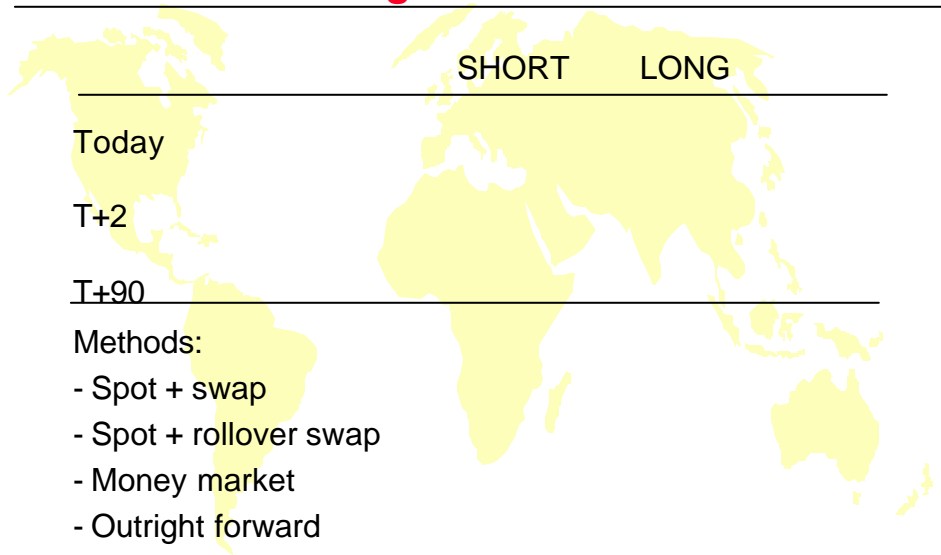- ◆ Rollover
- ◆ Money market
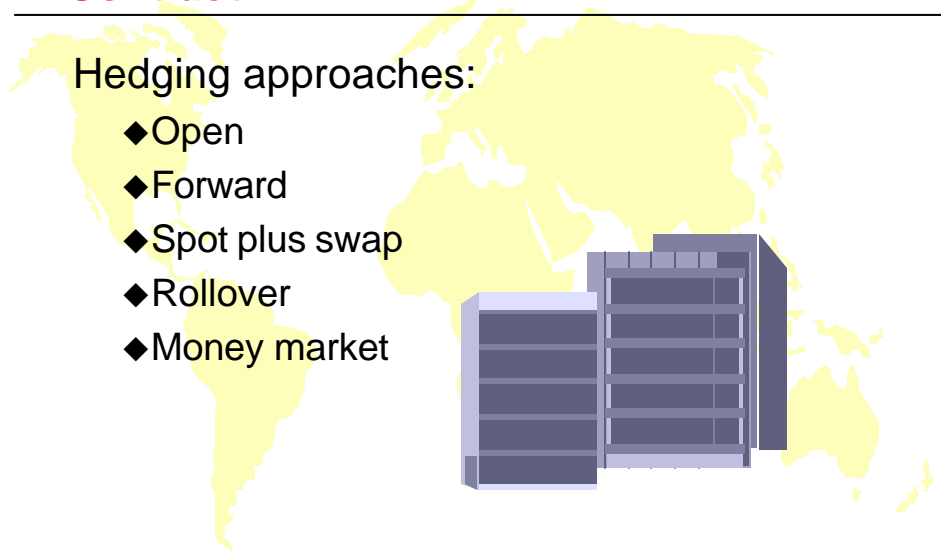
How Banks Hedge

	SHORT	LONG
Today		
T+2		
T+90		

Methods:
- Spot + swap
- Spot + rollover swap
- Money market
- Outright forward
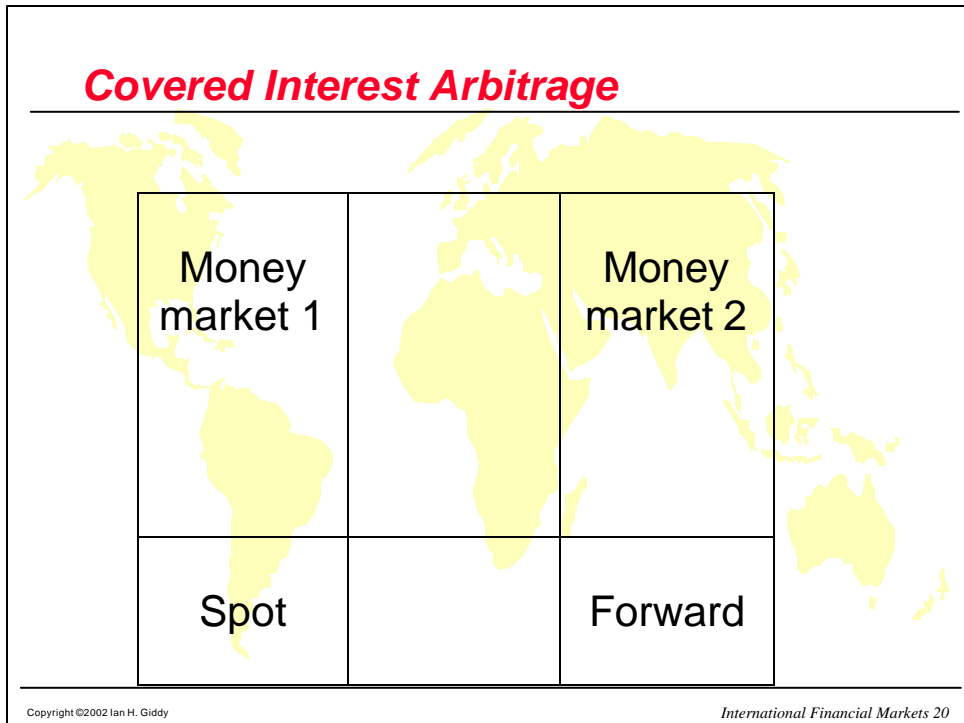
Currency Risk Exposure
(The Normal Distribution)

Probability

68%

95%

99%

Return on large company stocks

-3^{σ}	-2^{σ}	-1^{σ}	0	$+1^{\sigma}$	$+2^{\sigma}$	$+3^{\sigma}$
-48.2%	-27.9%	-7.6%	12.7%	33.0%	53.3%	73.6%

Covered Interest Arbitrage

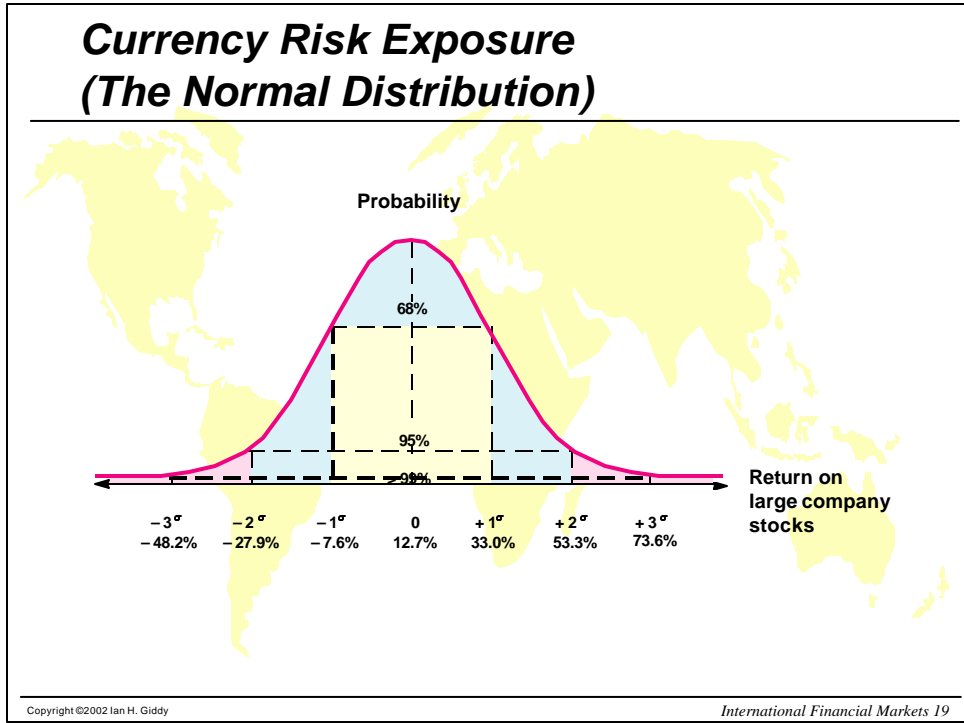| Money market 1		Money market 2
Spot		Forward

Diagram of a Dealing Room

Foreign exchange and Eurocurrency dealing are interrelated activities and so are done on the same trading floor.
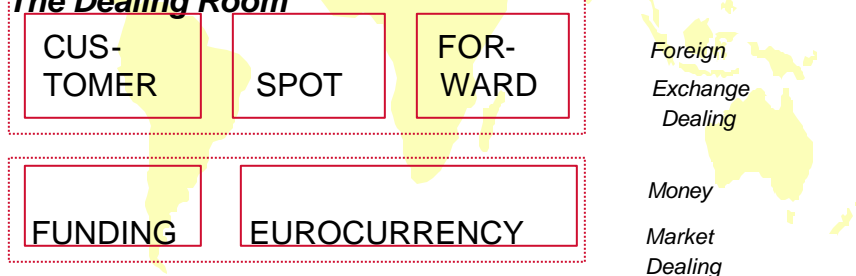
The Dealing Room

Diagram of a Dealing Room

Foreign exchange and Eurocurrency dealing are interrelated activities and so are done on the same trading floor.

The Dealing Room

CUS-TOMER	SPOT	FOR-WARD	Foreign Exchange Dealing
FUNDING	EUROCURRENCY		Money Market Dealing

Funding a Eurokrona Loan

Three ways to fund:

- Take domestic krona deposit
- Take EuroKrona deposit

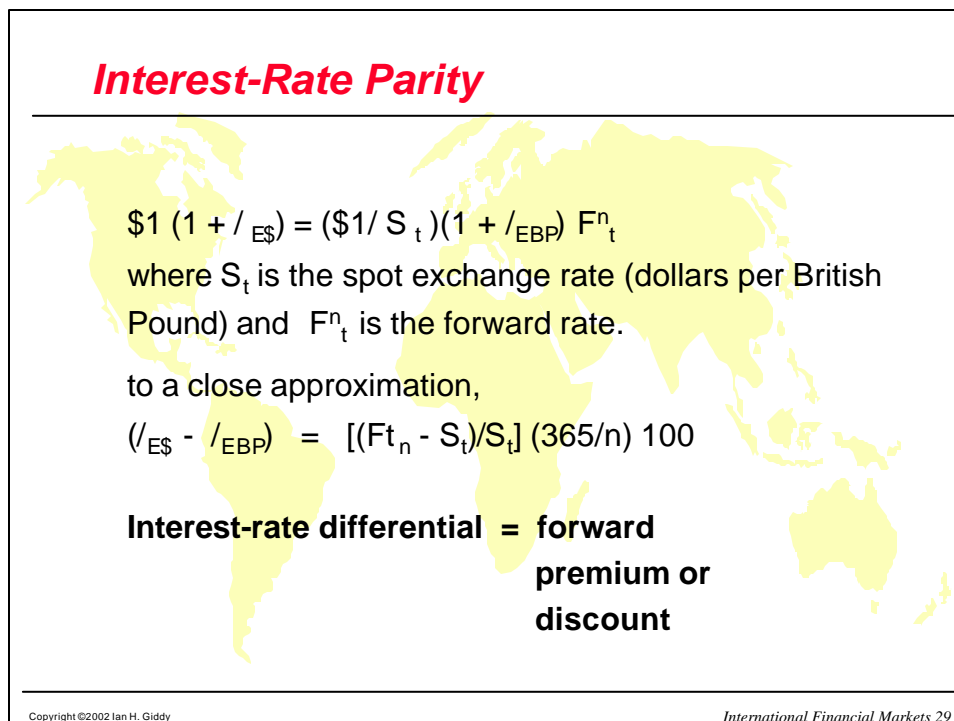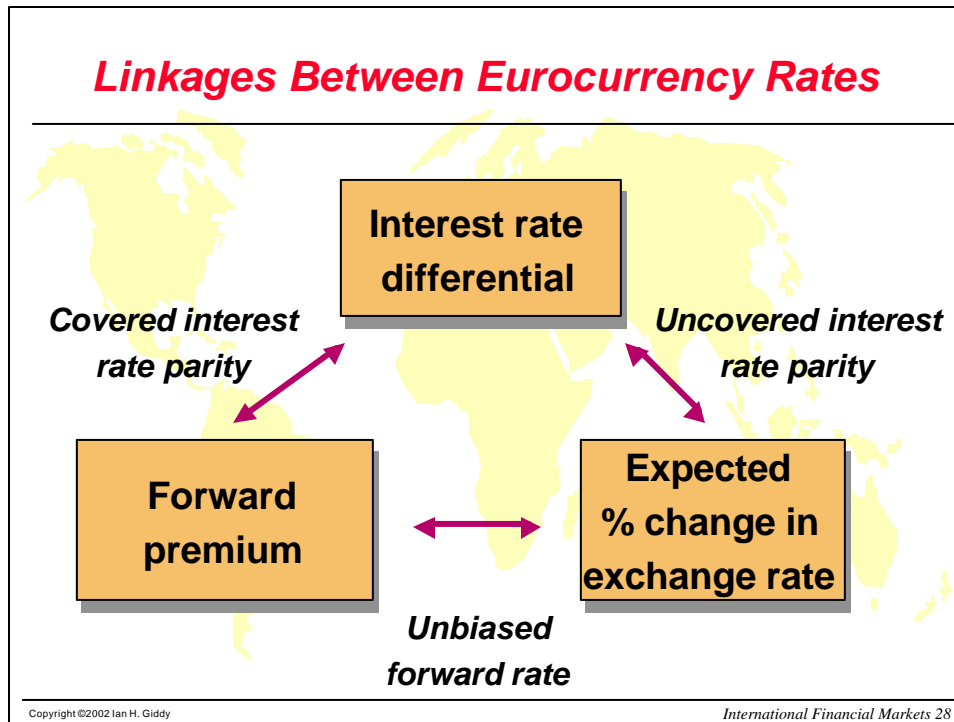| 3 MO | NKR DEP |
| 3 MO | NKR DEP |

International Financial Markets 23

Funding a Eurokrona Loan

Three ways to fund:

- Take domestic krona deposit
- Take EuroKrona deposit
- Fund with dollars, hedged into krona
  - Take E$ deposit
  - Do FX swap: sell USD spot, buy USD forward

| 3 MO | E$ DEP | FX SWAP |
| 3 MO | E$ DEP | FX SWAP |

International Financial Markets 24

Linkages Between Eurocurrency Rates

Interest rate differential

Covered interest rate parity

Uncovered interest rate parity

Forward premium

Expected % change in exchange rate

Unbiased forward rate

International Financial Markets 28

Interest-Rate Parity

$1 (1 + /_{E\$}) = (\$1/ S_t)(1 + /_{EBP}) F^n_t$

where S_t is the spot exchange rate (dollars per British Pound) and F^n_t is the forward rate.

to a close approximation,

$(/_{E\$} - /_{EBP}) = [(Ft_n - S_t)/S_t] (365/n) 100$

Interest-rate differential = forward premium or discount

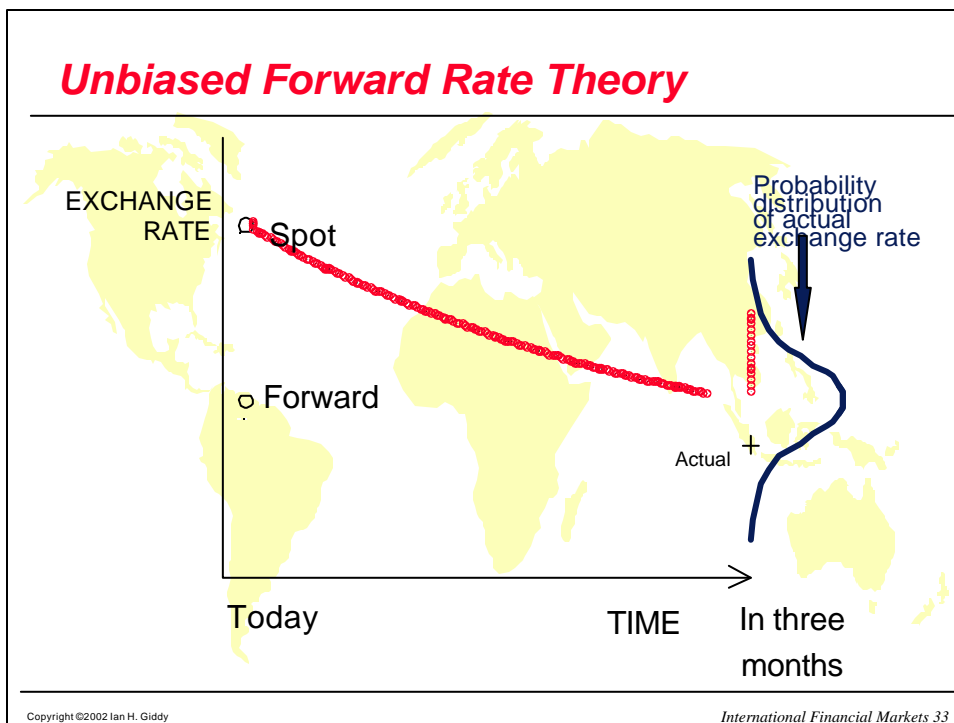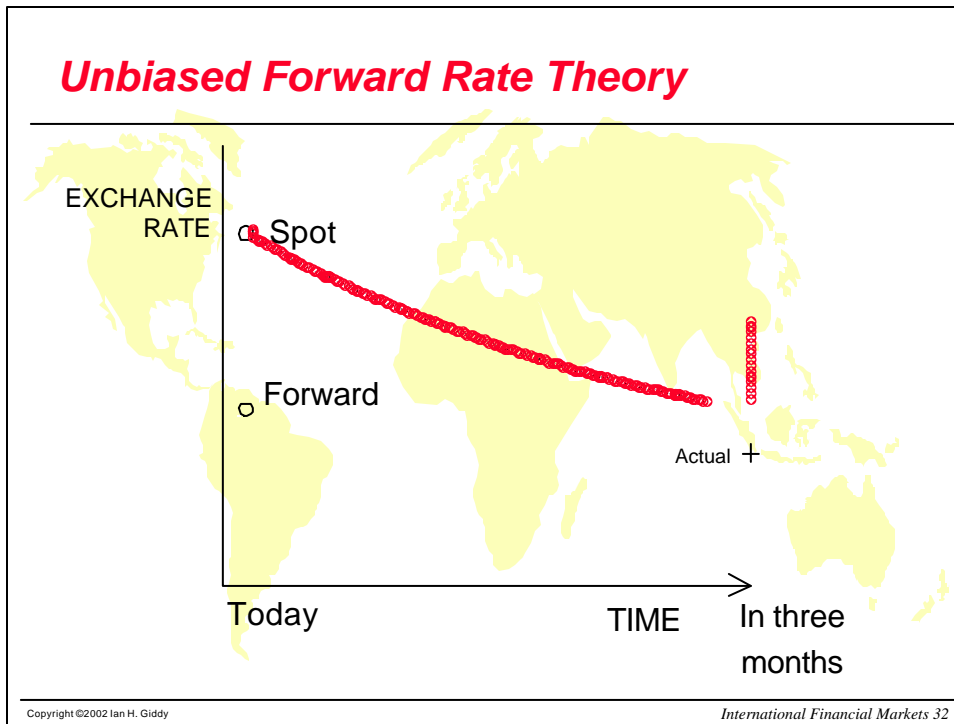*International Financial Markets 29*

Example: Anglo's Funding

- Anglo-American, the natural resources conglomerate, is seeking 3-month US$ funding.
  - ◆ Anglo can fund in the US CP market at 5.5%
  - ◆ Or in the Eurosterling market at 6.7%
  - ◆ The BP is:
    spot $1.5484, 3-mo forward $1.5454
  - ◆ *Which is cheaper?*

Anglo's Answer

It's cheaper for Anglo-American to borrow in the US CP market. Reason:
  - ◆ US: simply borrow for 3 months
    - ❑ Cost: $1(1+5.5%/4) = 1.01375
  - ◆ UK: borrow British pounds, change into dollars at spot rate, cover by buying sterling at 3-mo forward rate to repay the pounds
    - ❑ Cost: ($1/1.5484)(1+6.7%/4)1.5454 = 1.01478
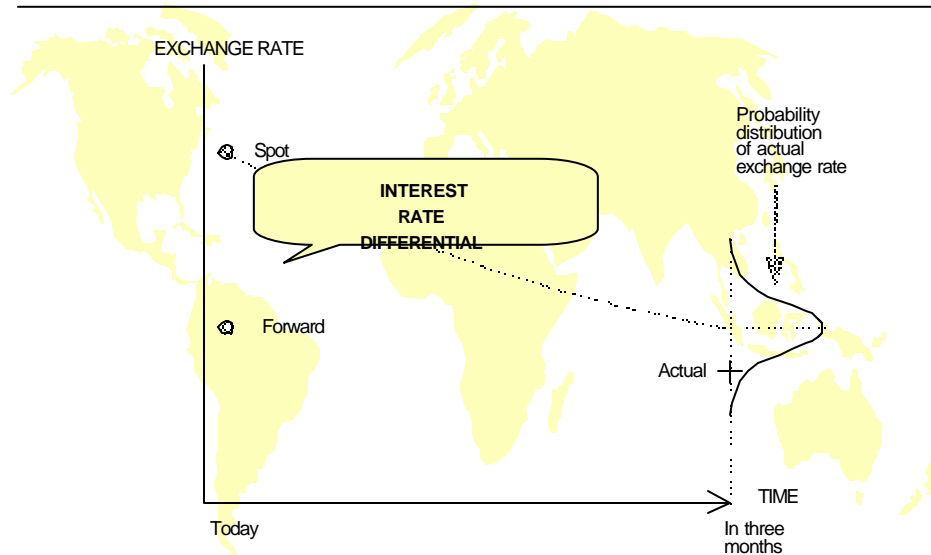
Unbiased Forward Rate Theory

EXCHANGE
RATE

Spot

Forward

Actual +

Today   TIME   In three
months

International Financial Markets 32

Unbiased Forward Rate Theory

EXCHANGE
RATE

Spot

Forward

Probability
distribution
of actual
exchange rate

Actual +

Today   TIME   In three
months

International Financial Markets 33

Unbiased Forward Rate

Forward premium or discount

= Expected annual rate of change
of the exchange rate

That is,

$$P_{\$/DM} = E(R_{\$/DM})$$

International Fisher Effect

EXCHANGE RATE

Spot

INTEREST
RATE
DIFFERENTIAL

Probability
distribution
of actual
exchange rate

Forward

Actual

TIME

Today

In three
months

International Fisher Effect

$$I_{E\$} = I_{EDM} + E(R_{\$/DM})$$

That is,

Interest-rate differential
equals
Expected annual rate of change of exchange rate

Cost of Hedging

| Type of Hedge	Cost of Hedging
Forward	Forward premium
Money Market Hedge (Borrow to match assets)	Interest rate differential
Do nothing	Expected rate of change of exchange rate

Law of One Price

p=Sp*

The Price of Tin

| In New York	On the Kuala Lumpur Market	On the London Metal Metal Exchange
273c per lb. = US$6.02 per kilogram[a]	15.37 ringgit per kilogram =US5.70 per kilogram[b]	US$5830 per tonne = US5.83 per kilogram[c]

[a]1 avoirdupois pound = 0.45359 kilograms

[b]US$1 = 2.6965 Malaysian ringgit on the date of calculation

[c] 1 tonne = 1000 kilogram.

All data taken from the Commodities section

of the London *Financial Times.*

Purchasing Power Parity: Theory and Evidence

$$\frac{S_{t=1}-S_t}{S_t} = \frac{I-I^*}{1+I^*}$$
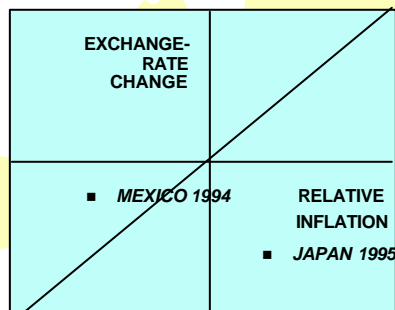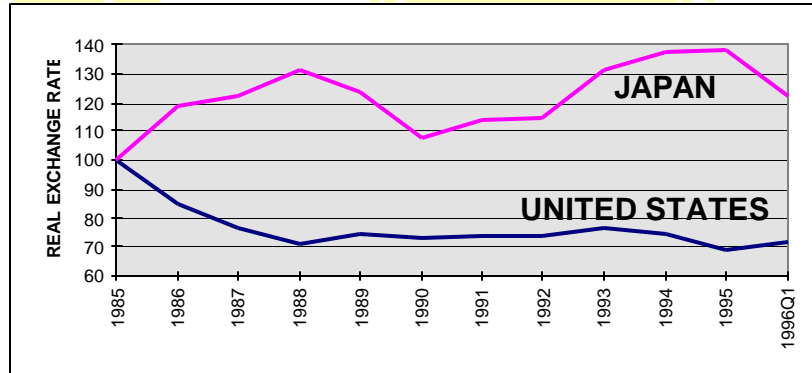
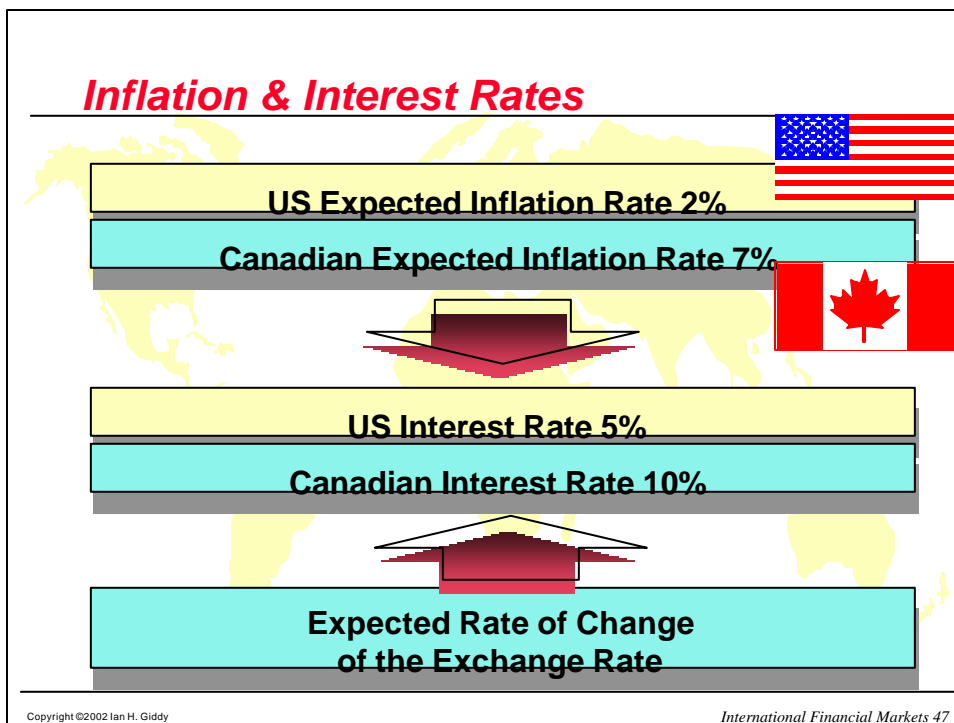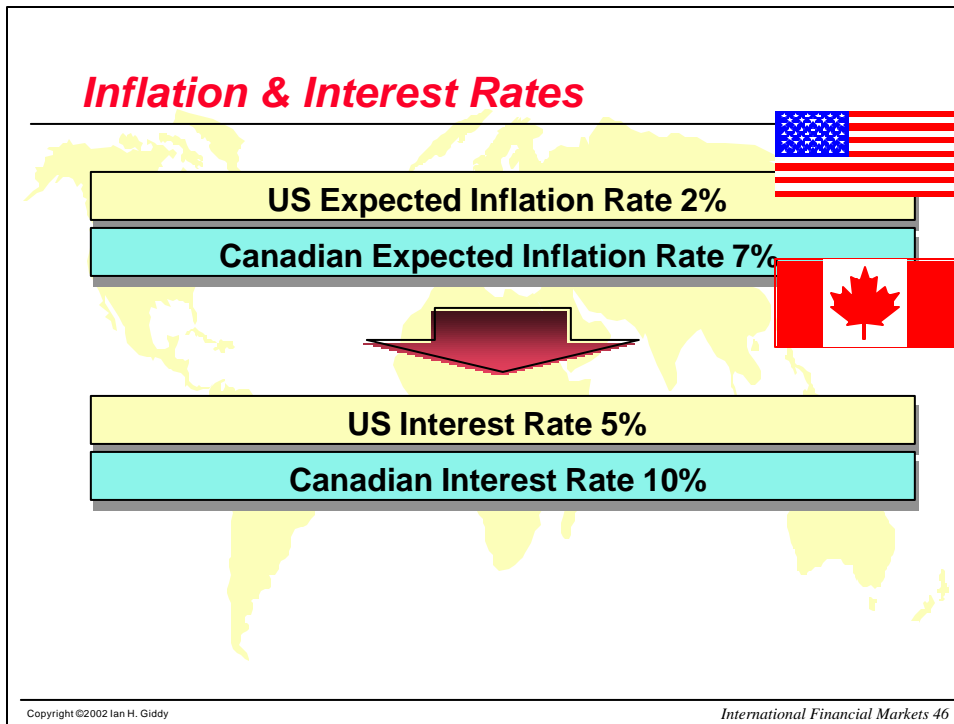|	
EXCHANGE-RATE CHANGE	
■ *MEXICO 1994*	**RELATIVE INFLATION** ■ *JAPAN 1995*

Deviations from Purchasing Power Parity

Source: JP Morgan. Index of real effective exchange rate versus 18 industrial country currencies, adjusted for change in relative wholesale price of domestic manufactures. A fall in the index indicates improved international competitiveness.

Deviations from Purchasing Power Parity
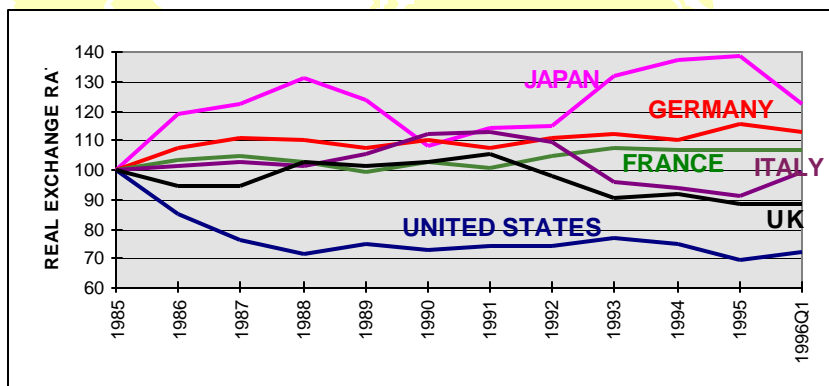
Source: JP Morgan. Index of real effective exchange rate versus 18 industrial country currencies, adjusted for change in relative wholesale price of domestic manufactures. A fall in the index indicates improved international competitiveness.
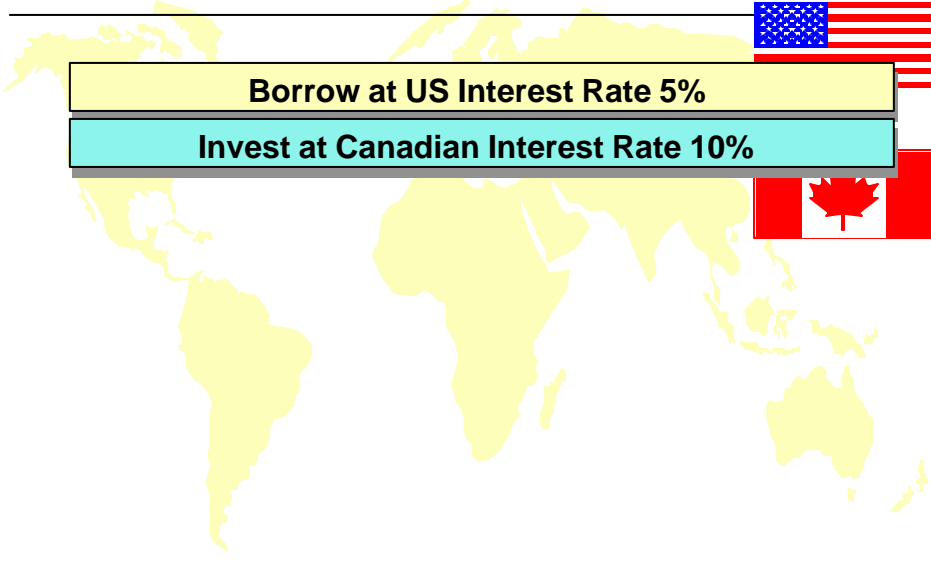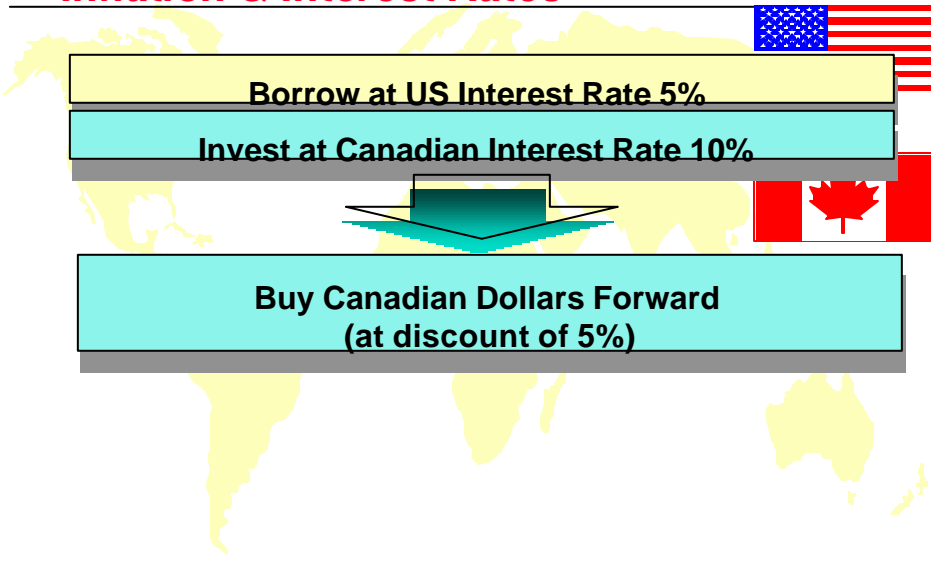
Inflation & Interest Rates

US Expected Inflation Rate 2%

Canadian Expected Inflation Rate 7%

US Interest Rate 5%

Canadian Interest Rate 10%

Inflation & Interest Rates

US Expected Inflation Rate 2%

Canadian Expected Inflation Rate 7%

US Interest Rate 5%

Canadian Interest Rate 10%

Expected Rate of Change
of the Exchange Rate

Inflation & Interest Rates

Borrow at US Interest Rate 5%

Invest at Canadian Interest Rate 10%

Inflation & Interest Rates

Borrow at US Interest Rate 5%

Invest at Canadian Interest Rate 10%

**Buy Canadian Dollars Forward
(at discount of 5%)**
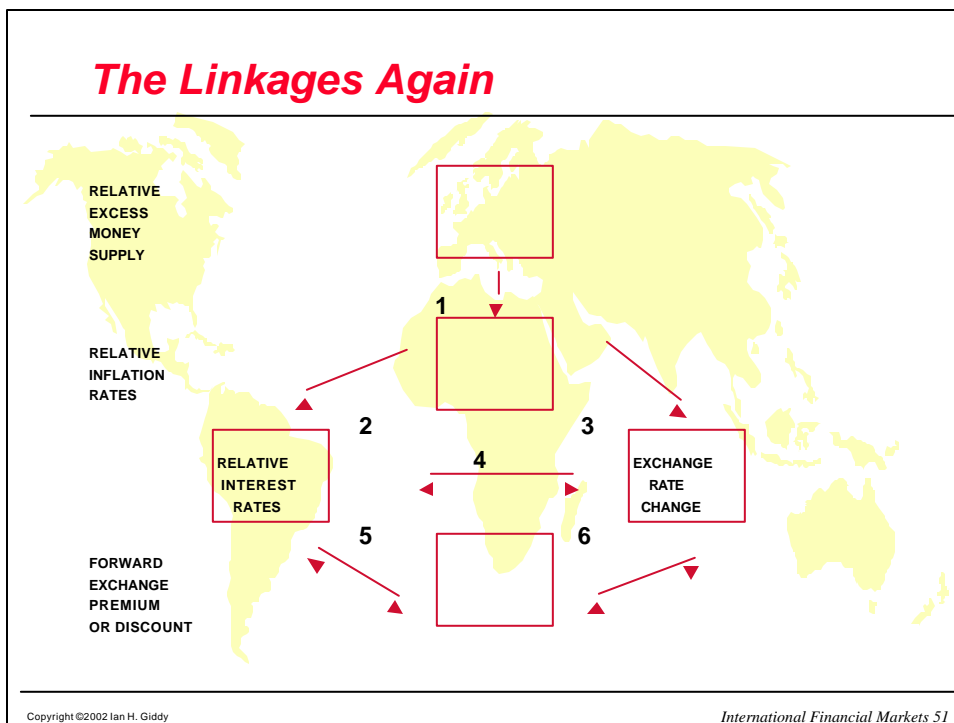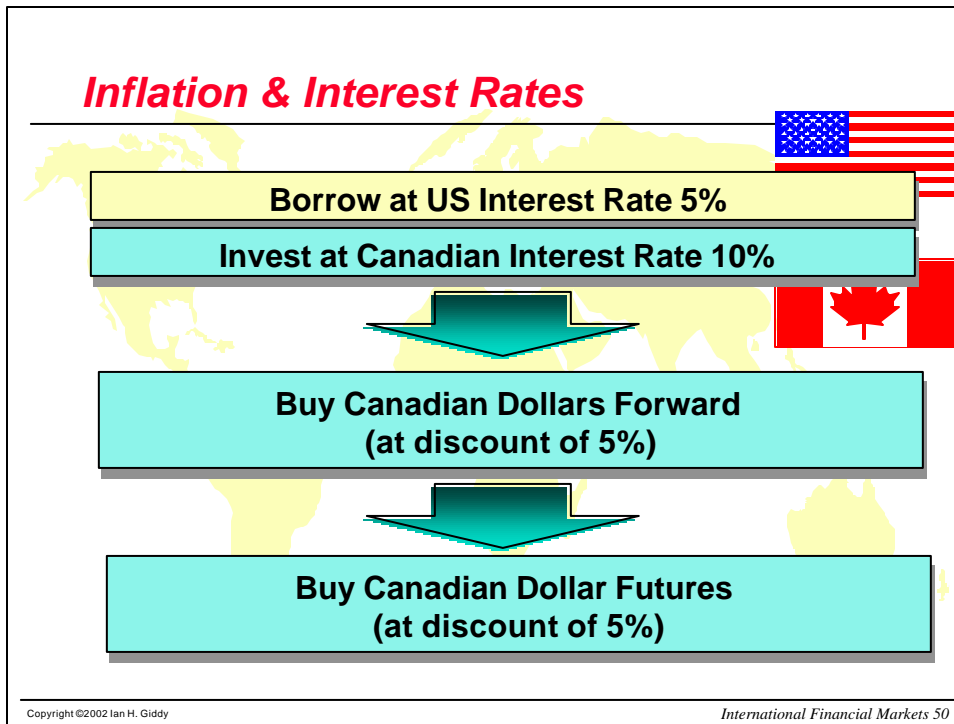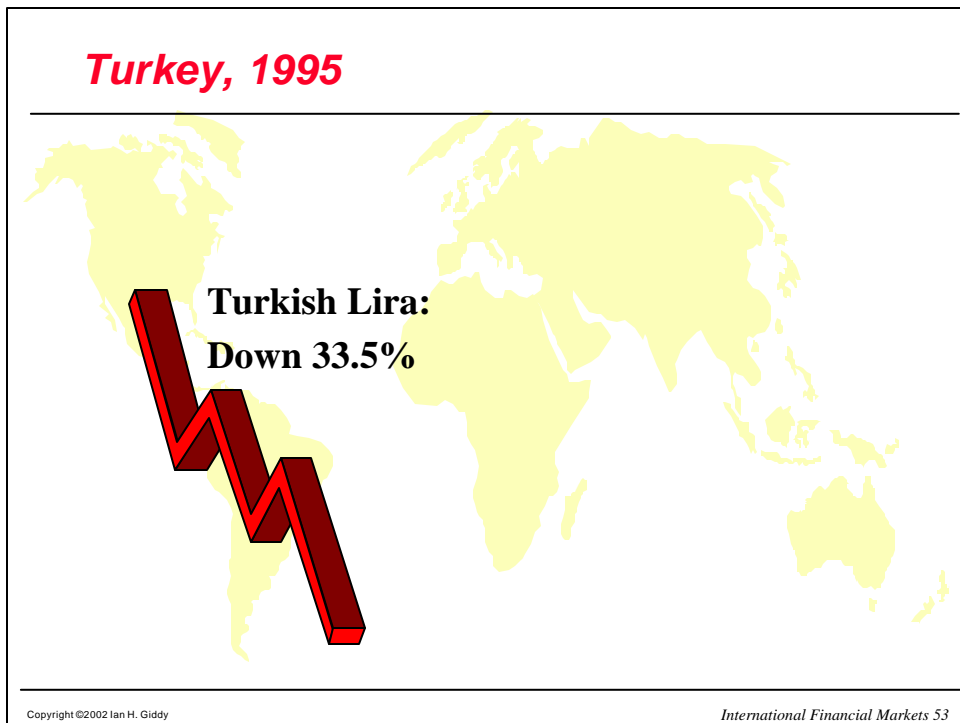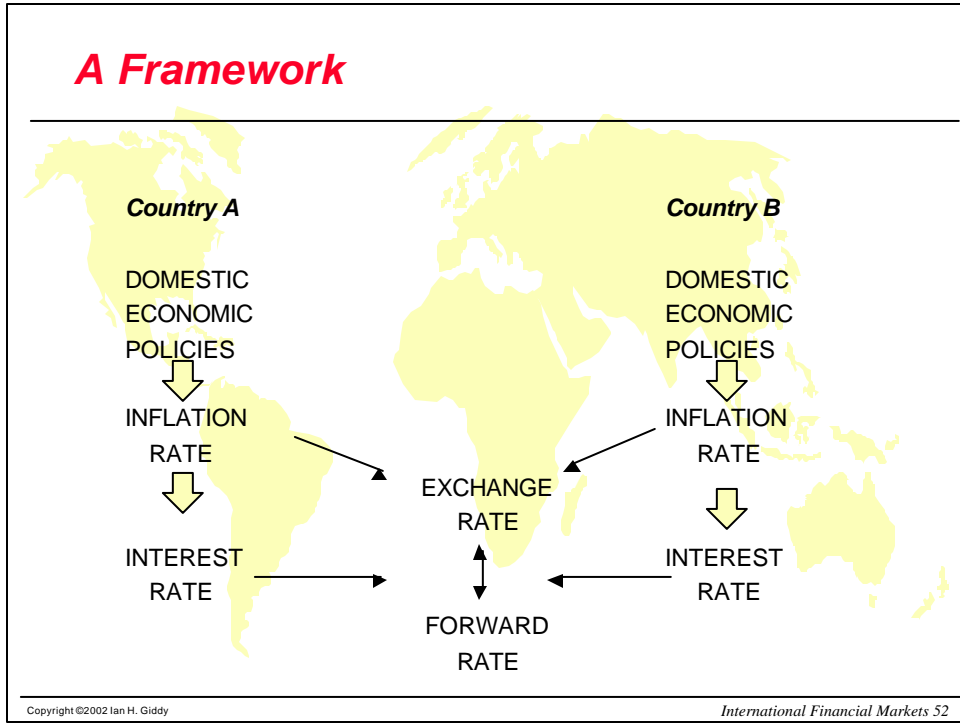
Inflation & Interest Rates

Borrow at US Interest Rate 5%

Invest at Canadian Interest Rate 10%

**Buy Canadian Dollars Forward
(at discount of 5%)**

**Buy Canadian Dollar Futures
(at discount of 5%)**

International Financial Markets 50

The Linkages Again

**RELATIVE
EXCESS
MONEY
SUPPLY**

1

**RELATIVE
INFLATION
RATES**

2   3

**RELATIVE
INTEREST
RATES**   4   **EXCHANGE
RATE
CHANGE**

5   6

**FORWARD
EXCHANGE
PREMIUM
OR DISCOUNT**

International Financial Markets 51

A Framework

Country A

DOMESTIC
ECONOMIC
POLICIES

INFLATION
RATE

INTEREST
RATE

EXCHANGE
RATE

FORWARD
RATE

Country B

DOMESTIC
ECONOMIC
POLICIES

INFLATION
RATE

INTEREST
RATE

International Financial Markets 52

Turkey, 1995

**Turkish Lira:
Down 33.5%**

International Financial Markets 53

Contact Info

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