

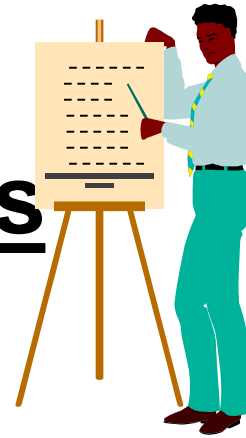
Topic

4

Exchange Rate Determination

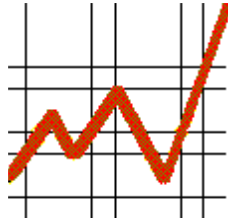


Chapter Objectives



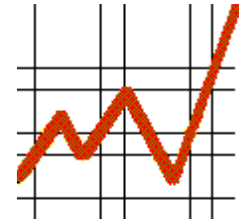
- To explain how exchange rate movements are measured;
- To explain how the equilibrium exchange rate is determined; and
- To examine the factors that affect the equilibrium exchange rate.

Measuring Exchange Rate Movements



- An ***exchange rate*** measures the value of one currency in units of another currency.
- When a currency declines in value, it is said to ***depreciate***. When it increases in value, it is said to ***appreciate***.
- On the days when some currencies appreciate while others depreciate against the dollar, the dollar is said to be “mixed in trading.”

Measuring Exchange Rate Movements



- The percentage change (% Δ) in the value of a foreign currency is computed as

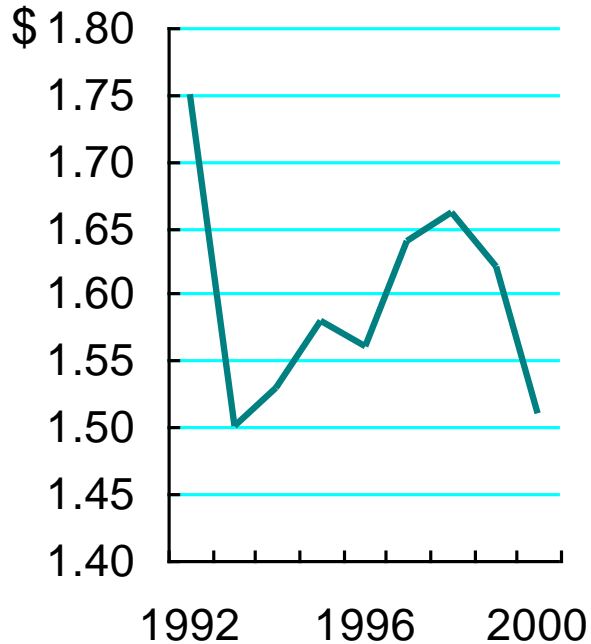
$$\frac{S_t - S_{t-1}}{S_{t-1}}$$

where S_t denotes the spot rate at time t .

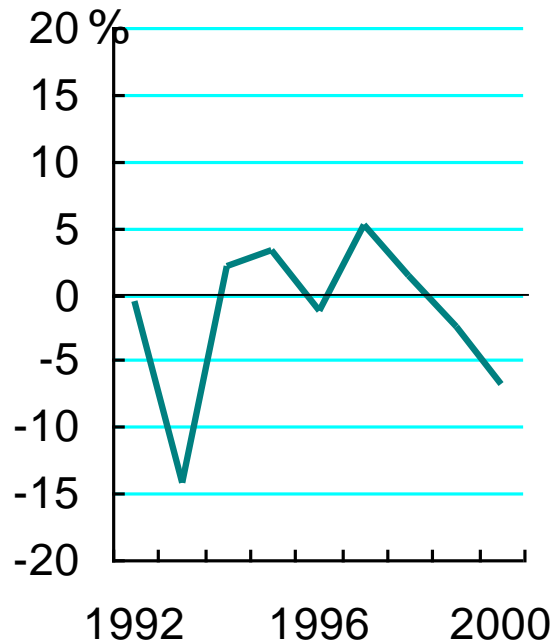
- A positive % Δ represents appreciation of the foreign currency, while a negative % Δ represents depreciation.

Fluctuation of the British Pound Over Time

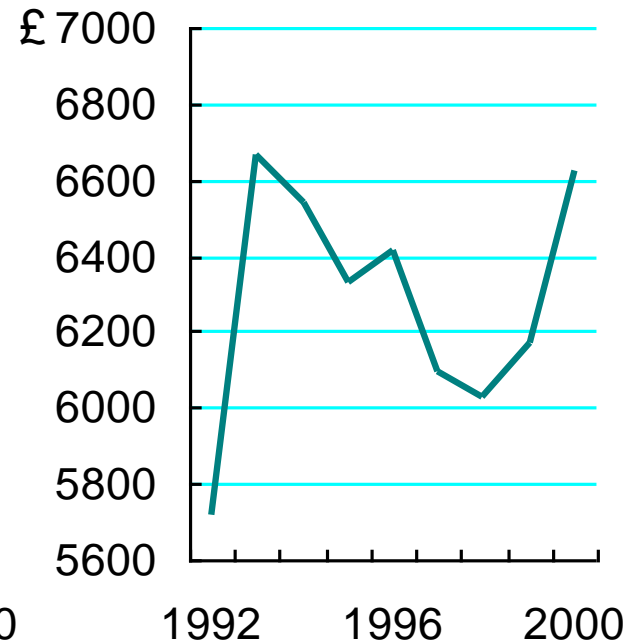
Approximate Spot Rate of £



Approximate Annual % Δ



Approximate £ that could be Purchased with \$10,000



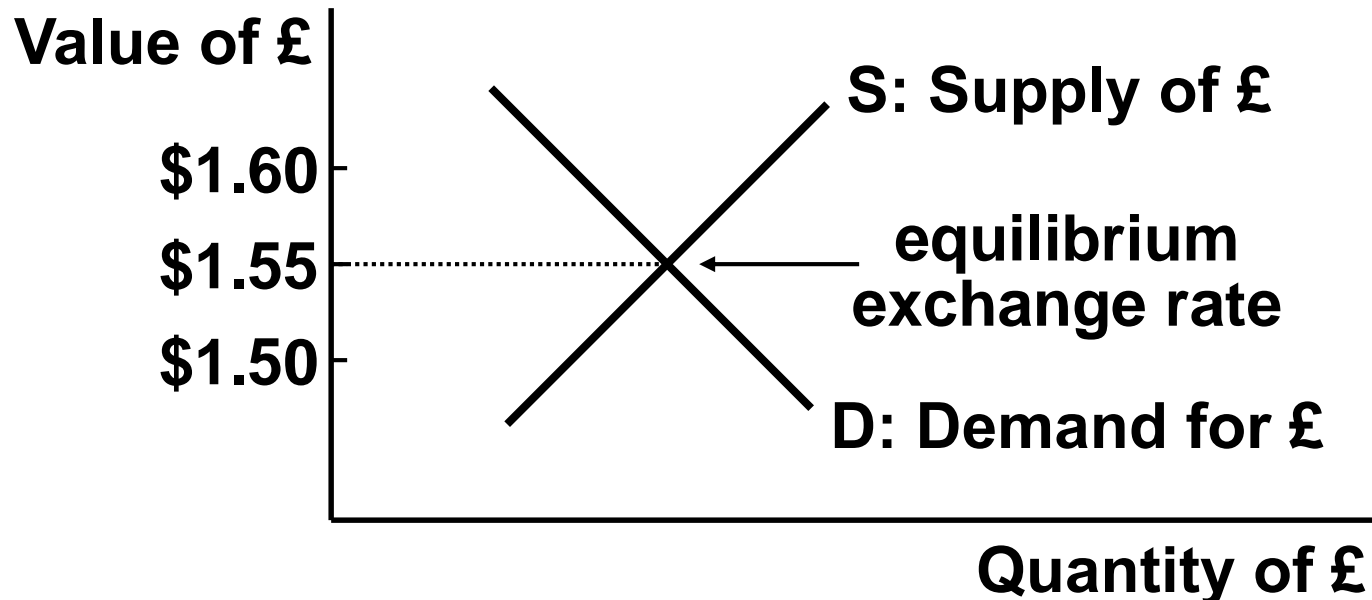
Online Application



- **For the latest exchange rates, visit:**
 - α <http://www.bloomberg.com/>
 - α <http://finance.yahoo.com/>
 - α <http://money.cnn.com/>
 - α <http://www.reuters.com/>

Exchange Rate Equilibrium

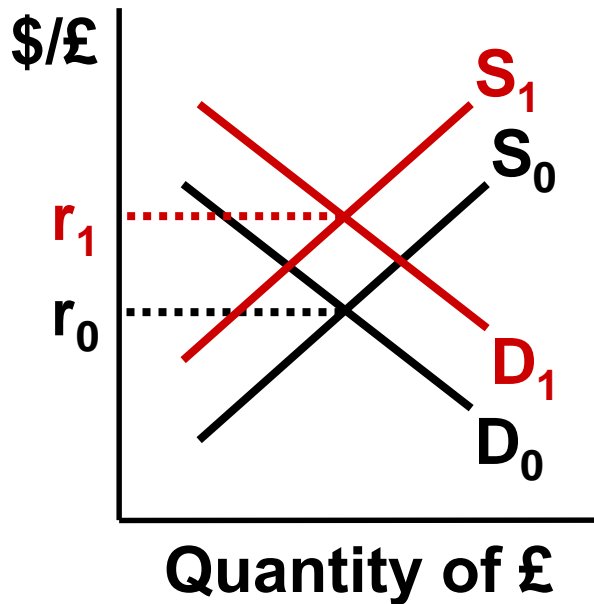
- An exchange rate represents the price of a currency, which is determined by the demand for that currency relative to the supply for that currency.



Factors that Influence Exchange Rates



Relative Inflation Rates



U.S. inflation \uparrow

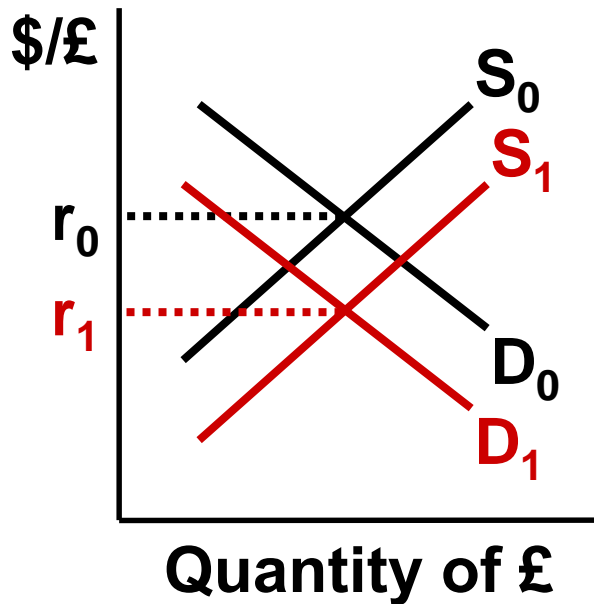
\Rightarrow \uparrow U.S. demand for British goods, and hence \pounds .

\Rightarrow \downarrow British desire for U.S. goods, and hence the supply of \pounds .

Factors that Influence Exchange Rates



Relative Interest Rates



U.S. interest rates \uparrow

\Rightarrow \downarrow U.S. demand for British bank deposits, and hence \pounds .

\Rightarrow \uparrow British desire for U.S. bank deposits, and hence the supply of \pounds .

Factors that Influence Exchange Rates



Relative Interest Rates

- A relatively high interest rate may actually reflect expectations of relatively high inflation, which discourages foreign investment.
- It is thus useful to consider *real interest rates*, which adjust the nominal interest rates for inflation.

Factors that Influence Exchange Rates



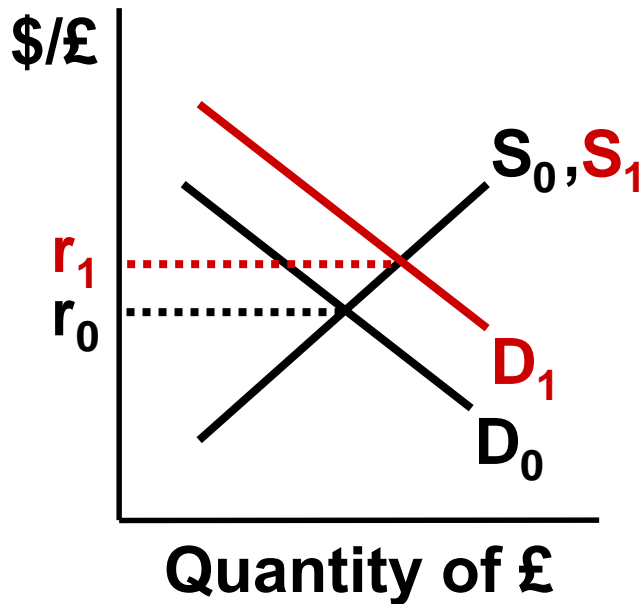
Relative Interest Rates

- $$\text{real interest rate} \approx \text{nominal interest rate} - \text{inflation rate}$$
- This relationship is sometimes called the *Fisher effect*.

Factors that Influence Exchange Rates



Relative Income Levels



U.S. income level \uparrow

\Rightarrow \uparrow U.S. demand for British goods, and hence £.

\Rightarrow No expected change for the supply of £.

Factors that Influence Exchange Rates



Government Controls

- **Governments may influence the equilibrium exchange rate by:**
 - ⌘ imposing foreign exchange barriers,
 - ⌘ imposing foreign trade barriers,
 - ⌘ intervening in the foreign exchange market, and
 - ⌘ affecting macro variables such as inflation, interest rates, and income levels.

Factors that Influence Exchange Rates



Expectations

- **Foreign exchange markets react to any news that may have a future effect.**
- **Institutional investors often take currency positions based on anticipated interest rate movements in various countries.**
- **Because of speculative transactions, foreign exchange rates can be very volatile.**

Factors that Influence Exchange Rates



Expectations

<u>Signal</u>	<u>Impact on \$</u>
Poor U.S. economic indicators	Weakened
Fed chairman suggests Fed is unlikely to cut U.S. interest rates	Strengthened
A possible decline in German interest rates	Strengthened
Central banks expected to intervene to boost the euro	Weakened

Factors that Influence Exchange Rates



Interaction of Factors

- **Trade-related factors and financial factors sometimes interact. Exchange rate movements may be simultaneously affected by these factors.**
- **For example, an increase in the level of income sometimes causes expectations of higher interest rates.**

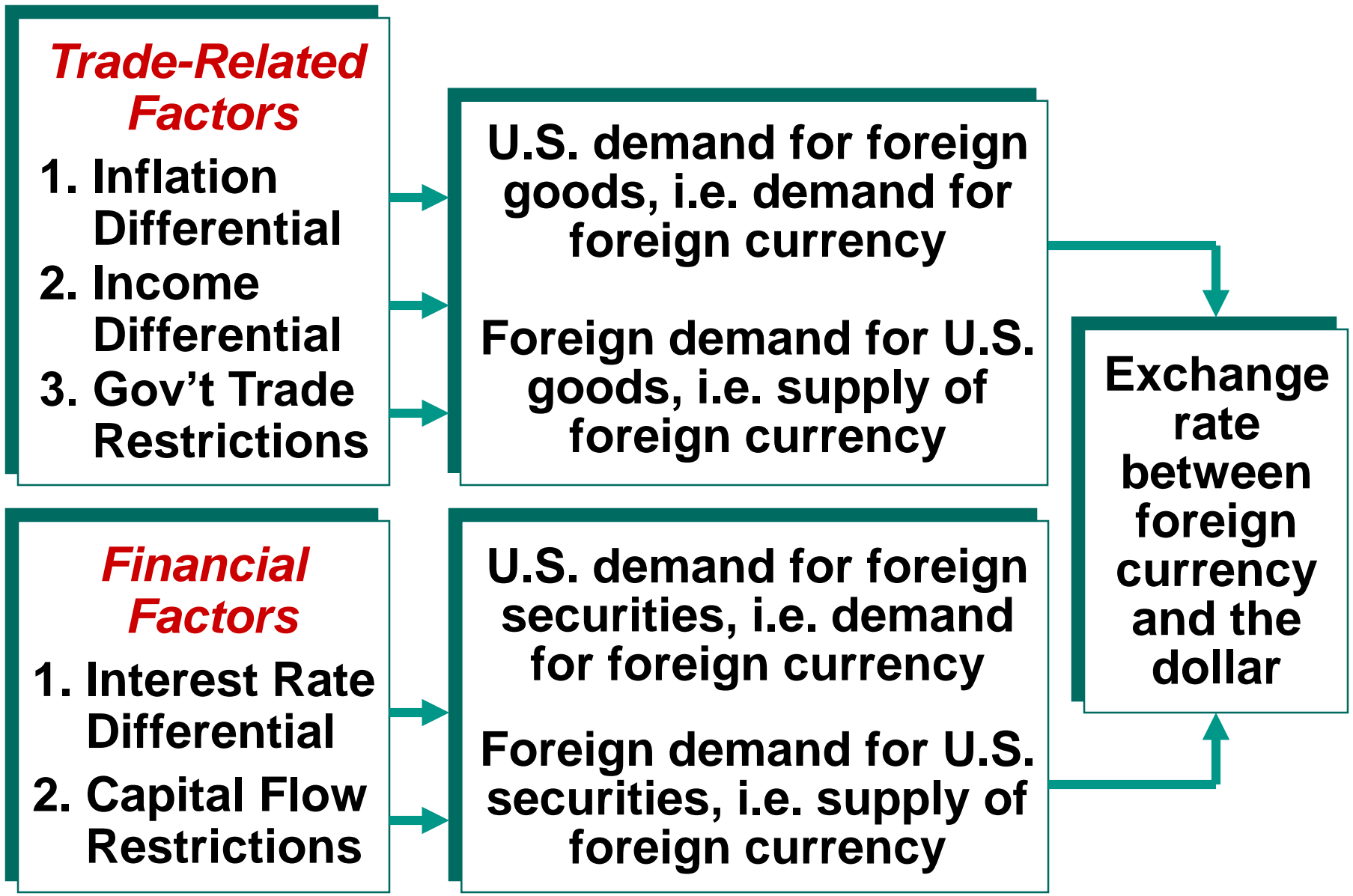
Factors that Influence Exchange Rates



Interaction of Factors

- **Over a particular period, different factors may place opposing pressures on the value of a foreign currency.**
- **The sensitivity of the exchange rate to these factors is dependent on the volume of international transactions between the two countries.**

How Factors Can Affect Exchange Rates



Factors that Influence Exchange Rates

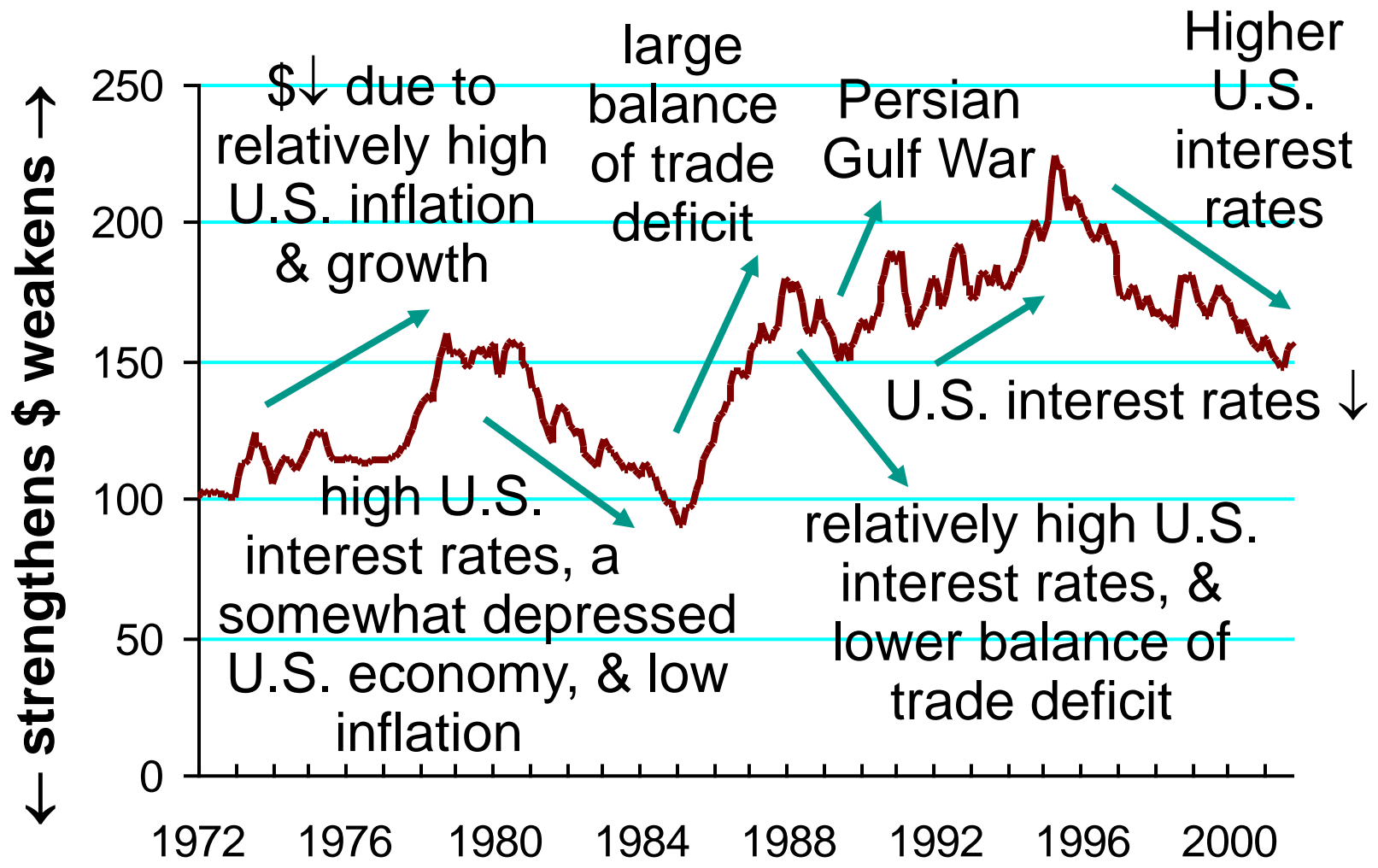


How Factors Have Influenced Exchange Rates

- **Because the dollar's value changes by different magnitudes relative to each foreign currency, analysts often measure the dollar's strength with an index.**
- **The weight assigned to each currency is determined by its relative importance in international trade and/or finance.**

Value of Foreign Currency Index Over Time

With Respect to the Dollar



Note: The index reflects equal weights of £, ¥, French franc, German mark, and Swiss franc.

Online Application



- **Exchange rate releases and historical data may be found at the Federal Reserve website <http://www.federalreserve.gov/>.**

MONETARY

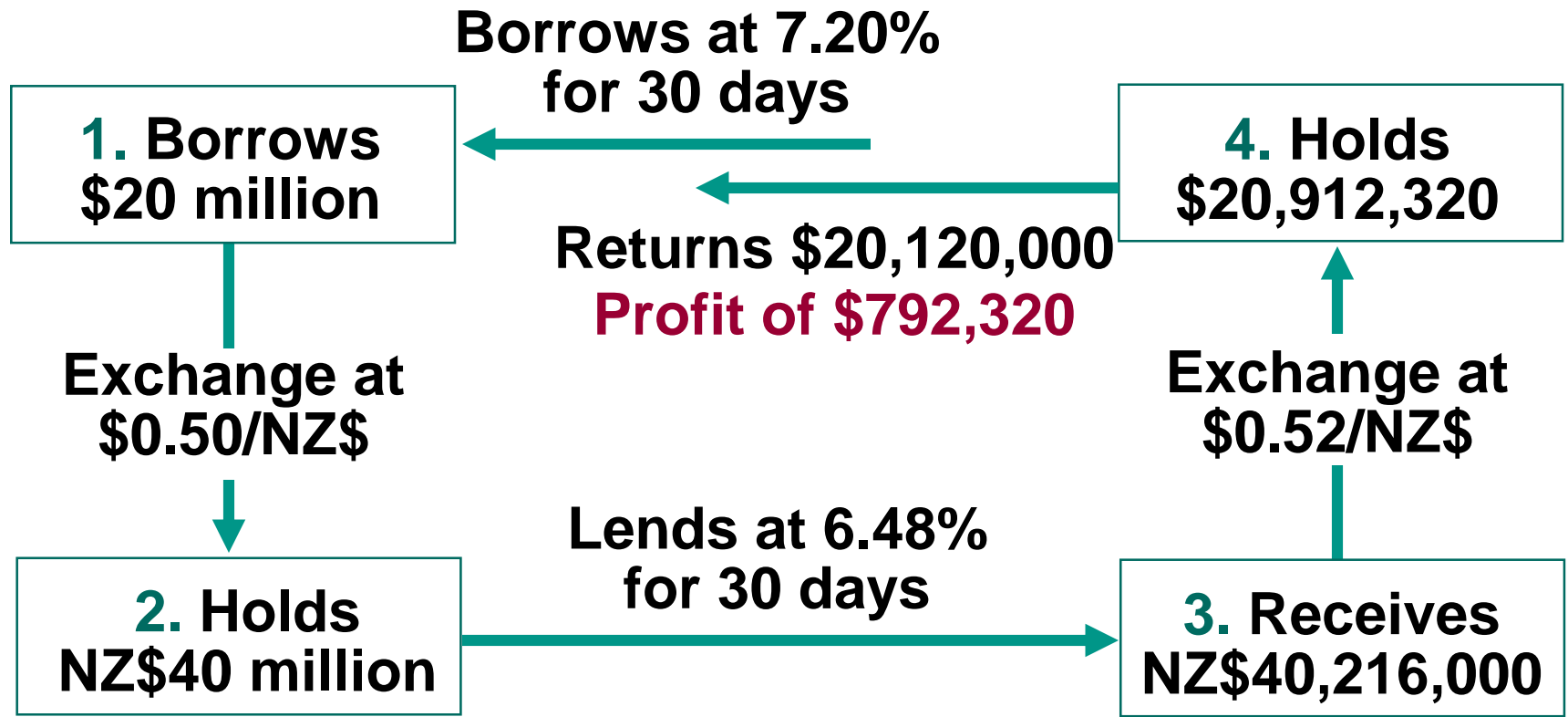
COUNTRY	UNIT	Oct. 1	Oct. 2	Oct. 3	Oct. 4	Oct. 5
*AUSTRALIA	DOLLAR	0.4923	0.4953	0.4971	0.4975	0.5060
BRAZIL	REAL	2.6870	2.7000	2.7290	2.7290	2.7540
CANADA	DOLLAR	1.5794	1.5696	1.5688	1.5680	1.5626
CHINA, P.R.	YUAN	8.2768	8.2768	8.2768	8.2768	8.2768
DENMARK	KRONE	8.1151	8.1267	8.0968	8.1339	8.1115
*EMU MEMBERS	EURO	0.9159	0.9149	0.9181	0.9141	0.9168
	DOLLAR	7.7992	7.7993	7.7995	7.7998	7.7999
	RUPEE	48.03	48.03	47.96	48.04	48.05
	YEN	120.27	120.78	120.67	120.63	120.37
					3.8003	3.8005



The Federal Reserve Board

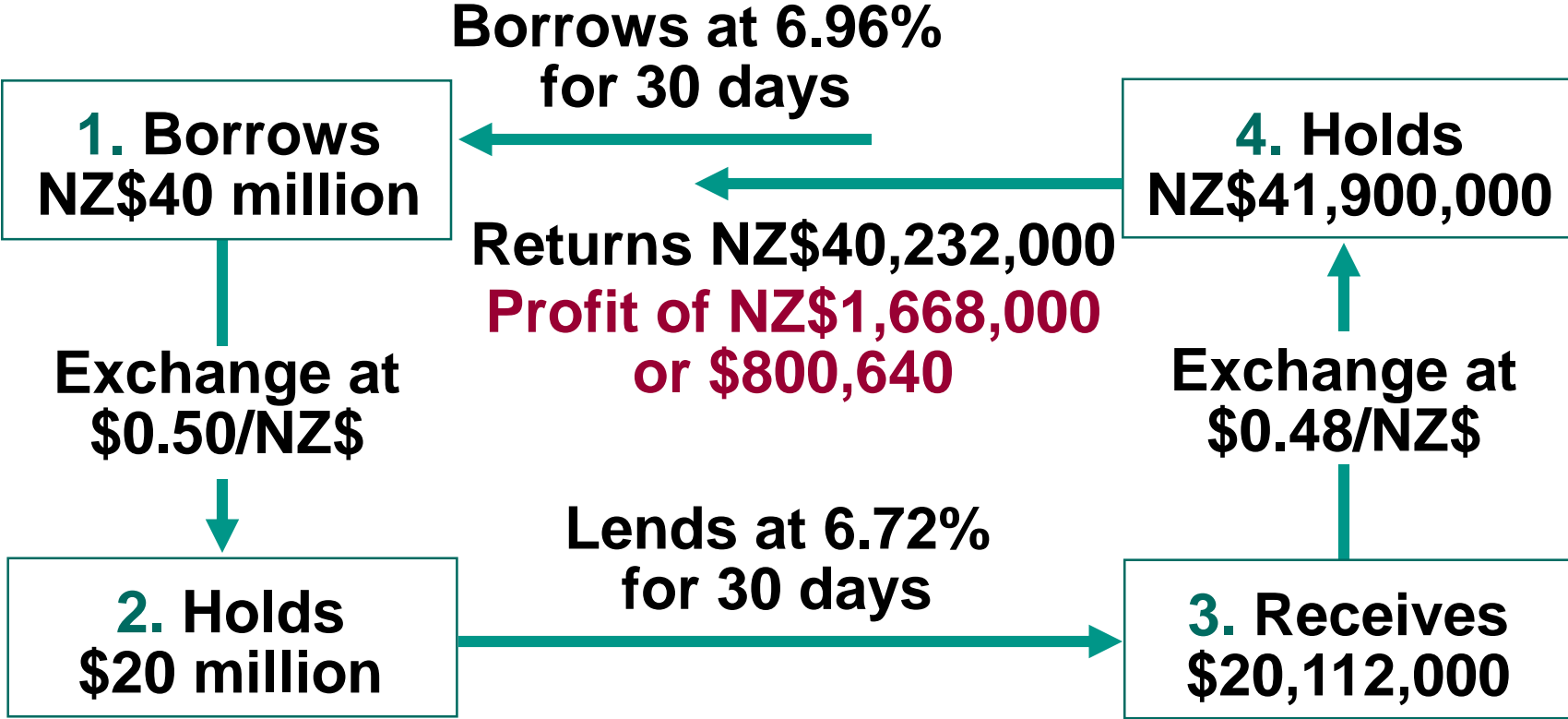
Speculating on Anticipated Exchange Rates

Chicago Bank expects the exchange rate of the New Zealand dollar to appreciate from its present level of \$0.50 to \$0.52 in 30 days.



Speculating on Anticipated Exchange Rates

Chicago Bank expects the exchange rate of the New Zealand dollar to depreciate from its present level of \$0.50 to \$0.48 in 30 days.



Impact of Exchange Rates on an MNC's Value

Inflation Rates, Interest Rates,
Income Levels, Government Controls,
Expectations

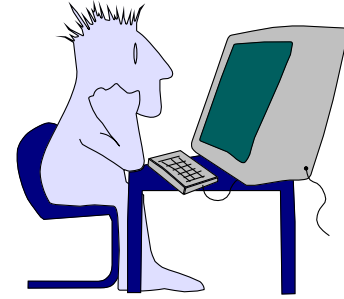
$$\text{Value} = \sum_{t=1}^n \left\{ \frac{\sum_{j=1}^m [E(CF_{j,t}) \times E(ER_{j,t})]}{(1+k)^t} \right\}$$

$E(CF_{j,t})$ = expected cash flows in currency j to be received by the U.S. parent at the end of period t

$E(ER_{j,t})$ = expected exchange rate at which currency j can be converted to dollars at the end of period t

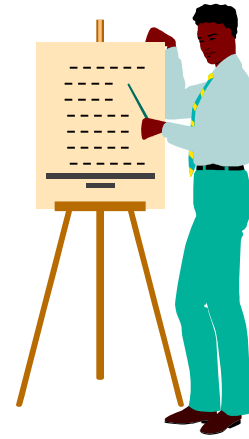
k = weighted average cost of capital of the parent

Online Application



- **Check out these foreign exchange sites:**
 - α <http://pacific.commerce.ubc.ca/xr/>
 - α <http://sonnet-financial.com/rates/full.asp>
 - α <http://www.oanda.com/>

Chapter Review



- **Measuring Exchange Rate Movements**
- **Exchange Rate Equilibrium**
 - ⌘ Demand for a Currency
 - ⌘ Supply of a Currency for Sale
 - ⌘ Equilibrium

Chapter Review

- **Factors that Influence Exchange Rates**
 - Relative Inflation Rates
 - Relative Interest Rates
 - Relative Income Levels
 - Government Controls
 - Expectations
 - Interaction of Factors
 - How Factors Have Influenced Exchange Rates

Chapter Review

- **Speculating on Anticipated Exchange Rates**
- **How Exchange Rates Affect an MNC's Value**