IMF CENTER
a public center for economics education
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The IMF Center of the International Monetary Fund, in partnership with the U.S.'s National Council on Economic Education (NCEE), has launched an instructional program for secondary school students about the effects of globalization and the importance of understanding the dynamics of the global economy. *Thinking Globally: Effective Lessons for Teaching about the Interdependent World Economy* are eight classroom-tested lessons on globalization, comparative advantage, economic growth, exchange rates, and other international topics.

Lessons #1 and 2 focus on the IMF and its role in the global economy.

Lesson #1: Ten Basic Questions about Globalization focuses on the history, impact and future implications of living in a globalized economic system.

Lesson #2: What is the IMF and What Does it Do? Introduces the IMF and its role in fostering global economic stability through monetary and financial cooperation.

Lessons #3-8, on trade, international organizations, currencies and foreign exchange, are previously-released lesson plans produced by NCEE.

Lesson #3: Why People Trade Students participate in a trading simulation and use this experience to discover the benefits of free trade.

Lesson #4: Comparative Advantage and Trade in a Global Economy Students observe or participate in a role-play situation in which one person is better at both of two activities.

Lesson #5: "Hey, Hey! Ho, Ho! Why Do We Need the WTO?" Several activities are used to introduce students to six international institutions that play important economic roles, especially in the areas of international trade, finance and development.

Lesson #6: Why are Some Nations Wealthy? Students work in groups to examine data from several nations regarding size, natural resources and population.

Lesson #7: Foreign Currencies and Foreign Exchange Students participate in a simulated foreign exchange market. Provides an opportunity for students to use supply and demand analysis to explain how flexible exchange rates are established in currency markets.

Lesson #8: Exchange Rates: Money around the World Students participate in two auctions to demonstrate the determination of flexible exchange rates and the need for foreign currency to purchase goods from other countries.

See also:
Press Release: IMF Launches Lesson Plans for Secondary School Economics Teachers, September 21, 2005 (http://www.imf.org/external/np/sec/pr/2005/pr05211.htm)

Lesson plans #1-8 are available in PDF format here:
http://www.imf.org/external/np/exr/center/econed/index.htm#think

Lesson 14 - **Exchange Rates: Money Around the World**

INTRODUCTION

Economics

Because different countries use different currencies, international trade requires an organized system for exchanging money among nations. If an American wants to buy goods produced in Japan, somewhere along the line dollars must be exchanged for yen. An *exchange rate* is the price of one nation's currency in terms of another nation's currency. Exchange rates may be *fixed* (prevented from rising and falling with changes in the supply and demand for the currency) or *flexible* (free to float with changes in the supply and demand for the currency). Today the world's major currencies are flexible (floating), but nations sometimes intervene to try to manage exchange rates. A change in exchange rates may have a significant effect on the flow of trade among nations and on a nation's domestic economy. Many factors affect exchange rates including changes in preferences for foreign goods, relative incomes, inflation, interest rates, and speculation on future values of foreign exchange.

Reasoning

Students who have traveled in other countries or who come from other countries have direct experience with exchange rates but may not have thought about the issues underlying the purposes of these rates and their fluctuations. An important lesson in economics is understanding that forces of supply and demand affect the value of major currencies, which, in turn, affects prices of goods and services and trade among nations.

CONCEPTS

Exchange rates
Fixed exchange rates
Flexible (floating) exchange rates
Foreign-exchange markets
Supply and demand for foreign currency

CONTENT STANDARDS

7. Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.

11. Money makes it easier to trade, borrow, save, invest and compare the value of goods and services.

INSTRUCTIONAL OBJECTIVES

Students will

1. Participate in auctions that demonstrate the role of foreign currency in buying goods from other countries.

2. Define exchange rates and understand that the forces of supply and demand determine flexible exchange rates.

3. Calculate the prices of U.S. goods in foreign currencies whose value changes over time, and explain the role exchange rates have in the price differences.

LESSON DESCRIPTION

Students participate in two auctions to demonstrate the determination of flexible exchange rates and the need for foreign currency to purchase goods from other countries. In the first auction, the students may buy goods produced only in their own countries. In the second auction, the students may buy foreign goods but must first exchange currency in order to do so. They discuss the results of the auctions and the average rate of exchange between the two forms of money used in the auctions. Students then participate in a small-group activity to

determine the price of a bundle of American-made goods in Japanese yen, Canadian dollars and British pounds during two time periods.

TIME REQUIRED

75 minutes

MATERIALS

1. Visual 14.1

2. A package of macaroni and a package of beans to use as money, and small plastic bags. (If the macaroni breaks easily, use two different colors of beans or another item such as paper clips.) Prepare money packages before class by putting 100 pieces of macaroni into one small plastic bag and 200 beans into another small plastic bag.
   (Optional) Prepare two bags each of 100 pieces of macaroni and 200 beans for use in each auction.

3. Twelve valuable items to be auctioned as follows: Four items should be the same and there should be two each of the other four items, which should be different. For example, you could have four school pencils, two library passes, two cards worth 10 extra-credit points each, two chocolate candy bars and two peanut candy bars. (You may use pictures of goods or slips of paper with the name of a good on them instead.)

4. A large amount of two different desirable items such as peanuts and small candies (or slips of paper naming two desirable items). One of these items is for Country A and the other is for Country B. For a class of 30, you need about 50 to 100 of each item to be safe.

5. A copy of Activity 14.1 for each student

6. **(Optional)** Small prizes for the students serving as country leaders

PROCEDURE

AUCTION 1

1. Announce that the class will participate in an auction activity to better understand how money and prices are related through markets.
   A. Divide the class down the middle of the room into two groups of approximately equal size. (If more students are sitting on one side of the room than the other, you may tell a few to immigrate to the other side for the activity.)
   B. Tell the groups they are residents of two neighboring countries that do not permit citizens to trade with each other. One side of the room, Country A, uses macaroni for money. The other side of the room, Country B, uses beans for money.
   C. Quickly distribute the 100 pieces of macaroni and the 200 beans to the students in their respective countries while continuing to discuss the auctions.
   Note: If you have 30 students, the 15 students in Country A will average about six to seven pieces of macaroni each, and the 15 students in Country B will average about 13 to 14 beans each. Do not distribute the money equally within each country; for example, some students in Country B could have five or six beans while others have 20.

2. Tell the students the macaroni and beans represent income that residents of Country A and Country B earned during the past year. They may use the income to purchase goods and services produced in their countries.
   A. Show the goods that are produced by Country A, for example, a library pass, a school pencil, a chocolate candy bar and a large supply of peanuts. List the goods on the board.
   B. Show the goods produced by Country B, for example, a card good for 10 extra-credit points, a school pencil (identical to the one in Country A), a peanut candy bar and a large supply of small candies. List the goods on the board.

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C. Point out that both countries produce one good that is the same (school pencils) but each also produces goods that are unique. Because trade is not allowed, people in Country B cannot purchase the goods that are produced in Country A and vice versa.

3. Appoint leaders for each country and have them stand in front of their countries with the items representing goods their country produced in the past year. Explain that the job of the leaders is to auction off to the highest bidders the three valuable goods for macaroni in Country A and beans in Country B. Leaders will not take part in the auctions themselves. Students who do not get one of the three more valuable items will exchange their income for the small candy or peanuts so everyone will end up with something. Students may not save their bean or macaroni income. **Note:** Choose leaders carefully! They need to conduct the auctions quickly, help distribute candy or peanuts to the students who didn't get the three auctioned items, and collect all the beans or macaroni after the first auction. Tell them this should be done in about 10 minutes or less.

Ask if there are any questions. The students may comment that the income distribution was unfair. You may respond yes, and this is often true in real life, too. They may say they want to buy something from the other country. Point out that this is a problem with trade barriers. The leaders may complain that they can't take part in the auctions, so they will automatically end up with one of the less desirable items. Respond that politicians often don't make a lot of money, or tell them they will receive a small prize or extra-credit points for their work later.

4. Have the leaders conduct the auctions for their countries at the same time. You may want to have one stand in the front of the room and the other in the back of the room to eliminate confusion about who is bidding for what. (The auctions may be done sequentially, but this can be very time-consuming.)

5. After the auctions, the leaders should pass out the candy or peanuts to anyone with money in their country. You may want to ask other students to help so this goes quickly. Make sure all the bean money and macaroni money is collected and returned to you.

6. When both groups have finished:

A. Ask what prices the students paid (in beans and macaroni) for the three auctioned items. Record the prices on the board.

B. Point out that one of the items (pencils) was the same in both countries. Compare the prices students paid for it in beans and macaroni. ***Probably the bean price was higher because there were more beans in circulation.***

C. Probably bean prices were higher in general than macaroni prices. Ask why this was so. ***There were more beans than macaroni in circulation.***

D. Ask whether people in Country B were richer than people in Country A because there were more beans than macaroni. ***The correct answer is no. The amount of money in circulation in a country does not make the country wealthier. What is important is how much the incomes will buy in different countries. This activity does not show that either country is wealthier. However, some individuals within the countries were wealthier because they had higher incomes than others.***

AUCTION 2

7. Tell the students a year has passed and many things have not changed. The leaders are still in power (assuming they did a good job – or you could replace them). The goods produced in each country are the same. Display goods identical to those in the first auction. Country A still uses mac-

aroni money and Country B still uses bean money. Quickly distribute beans and macaroni as before. (Average amounts will be the same in each country because you still have 100 pieces of macaroni and 200 beans for the same number of students. However, different students should have different amounts if you distribute it randomly.)

8. Announce that one important thing has changed: The governments of the two countries now permit people in one country to buy goods in the other country. However, anyone who wants to buy something in Country A needs macaroni, and anyone who wants to buy something in Country B needs beans. Therefore, before the auctions, you will give them time to exchange beans and macaroni if they wish to do so. There is no fixed exchange rate. Students with beans will try to trade for as much macaroni as possible, and students with macaroni will try to trade for as many beans as possible. No one has to exchange currency if they don't want to.

9. Write Beans at the top of one column on the board and Macaroni at the top of another column. Tell the students that if they decide to exchange currency, they must report the completed transaction amount to you. For example, if they trade seven beans for three macaroni, you would write 7 in the bean column and 3 in the macaroni column. Ask if there are any questions. Give the students five to 10 minutes to trade currency.

10. At the end of the currency-trading period, tell the leaders to conduct the auctions (quickly) as before. This time, however, buyers may go to whichever country they choose. (Usually most students have a majority of money from one country or the other. However, a few students may ask what to do if they have currency from both countries and want to bid on items from both places. Instruct them to do what they think is best. Tell them that competition often occurs between buyers, and they can't always get what they want when they want it. Alternatively, you could conduct the auctions one at a time, but this can be time-consuming.)

11. When the auctions are finished, let the students exchange their remaining beans or macaroni for the small candy or peanuts as appropriate.

DISCUSSION

12. Record on the board the prices of the goods in each country from the second auctions, and discuss the changes in prices between the two rounds. ***The sales prices in beans were probably still higher than in macaroni since more beans were in circulation in both auctions. However, relative prices may have changed: Popular goods may have had higher prices in the second auction since there were more potential buyers.***

13. Using Visual 14.1, discuss exchange rates and trade among nations.

WHAT IS AN EXCHANGE RATE?

A. Define exchange rates as the price or value of one nation's currency in terms of another nation's currency.

B. Ask the students if they have had experiences with exchange rates. ***Answers will vary, but they may mention exchanging dollars for foreign currency when traveling in another country.***

C. Determine the exchange rate in the auction activity. Go to the board where you recorded the beans and macaroni exchanged in the activity and total the amounts in each column (e.g., 62 macaroni and 119 beans). Divide these amounts to get the average exchange rate used in the game (for example, 62/119 = .52, and 119/62 = 1.9). Rounding, the exchange rate was one-half macaroni for one bean or two beans for one macaroni. Assuming the goods available in both countries were

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desirable to the students, the exchange rates often are close to 2:1 in this activity because there were twice as many beans in circulation as macaroni.

WHY DO PEOPLE IN ONE COUNTRY WANT CURRENCY FROM ANOTHER COUNTRY?

Ask the students why they wanted the other country's currency in the activity. ***Some citizens of Country A wanted beans, and some citizens of Country B wanted macaroni to buy goods that were not available in their countries.*** This reason is true in real life also. Other reasons for wanting currency from another country include traveling to another country or investing in the assets of another country (for example, wanting to buy stock in a German corporation or real estate in Costa Rica). Some people want foreign currency because they think it may be more stable or safe than their country's currency. Others want it for speculative reasons: They hope to make a profit if the value of currency changes.

WHAT IS A FLEXIBLE (FLOATING) EXCHANGE RATE?

Explain that when exchange rates are flexible, values are determined by the supply and demand for various currencies. In the activity, exchange rates were flexible because the students could exchange money at whatever rate they wanted. Today the major currencies in the world are flexible to a large extent. (However, governments sometimes try to buy and sell large amounts of a nation's currency to try to influence exchange rates, so the system is often called a *managed float.*)

WHAT IS A FIXED EXCHANGE RATE?

Explain that when exchange rates are fixed, the government sets the rate at which one country's money may be exchanged for another country's money. In the activity, if you had announced that the students could exchange two of their beans for one macaroni and no other amount, this would have been an example of a fixed exchange rate.

WHY DO FLEXIBLE EXCHANGE RATES CHANGE?

Explain that flexible exchange rates change frequently over time: over years, months, weeks and even during a given day. The reasons can be related to supply and demand. (Part of this answer is relatively advanced. For average classes, you may wish to briefly discuss supply and demand and focus on reason A: changes in preferences for foreign goods.)

Economists often cite the following factors for changes in exchange rates:

A. Changes in preferences for foreign goods. For example, if Americans want to buy more goods from Japan, they will demand more Japanese yen (and supply more U.S. dollars in exchange for the yen). The dollar/yen exchange rate would change and the yen would be worth more dollars (and the dollar would be worth fewer yen).

B. Changes in prices in different countries. For example, if Russia has high inflation compared with the United States, Russian goods would become more expensive compared with U.S. goods. Russians would demand more U.S. dollars to buy cheaper U.S. goods (and supply more Russian rubles in exchange for the dollars). The dollar/ruble exchange rate would change and the dollar would be worth more rubles (and the ruble would be worth fewer dollars).

C. Changes in interest rates in different countries. For example, if you could earn 10 percent on a savings account in Europe and only three percent on a savings account in the United States, Americans would want to supply their dollars and demand more euros in order to deposit their money in a European bank. The dollar/euro exchange rate would change and the euro would be worth more dollars (and the dollar would be worth fewer euros).

D. Changes in incomes in different

countries. For example, if incomes in the United States were increasing compared with those in Mexico, people in the United States could afford to buy more Mexican goods and more U.S. goods as well. Demand for pesos would go up, and the supply of dollars would increase in exchange for pesos. The dollar/peso exchange rate would change and the dollar would be worth fewer pesos (and the peso would be worth more dollars).

E. Speculation. For example, if many people think the dollar will increase in value compared with the euro, they will buy (demand) dollars today (and supply euros) in hopes of selling the dollars back at higher prices later. The dollar/euro exchange rate would change, and the dollar would be worth more euros (and the euro would be worth fewer dollars).

GROUP ACTIVITY

14. Distribute Activity 14.1, "Working With Foreign Exchange Rates." Divide the students into small groups to answer the questions. To help the students get started, you may want to go over how to convert dollars to another currency using data from the table from 1998 and 2000. For example, if an item cost $10 in the United States in 1998, it would have cost 1,309.9 yen ($10 times 130.99), 14.8 Canadian dollars ($10 times 1.48) and 6.9 British pounds ($10 times .69). If an item cost $10 in the United States in 2000, it would have cost 1,077.3 yen, 14.8 Canadian dollars and 6.8 British pounds.

15. Discuss the answers to the questions in Activity 14.1.

1. It is 1996. Sara is watching her favorite video, wearing her favorite sweatshirt and eating a sandwich. She paid $15.98 for the video, $30 for the sweatshirt and $1.99 for the sandwich.

A. What were Sara's total expenditures for the three goods? ***$47.97***

B. How many yen would a Japanese tourist have exchanged to purchase the same products? ***5,218.18 yen***

C. How many Canadian dollars would a Canadian tourist have exchanged? ***65.24 Canadian dollars***

D. How many pounds would a British tourist have exchanged? ***30.70 British pounds***

2. It is 2002, and prices of the three goods have not changed in the United States.

A. What are the new prices in Japanese yen? ***5,952.60 yen***

B. What are the new prices in Canadian dollars? ***73.87 Canadian dollars***

C. What are the new prices in British pounds? ***33.10 British pounds***

3. Describe what happened to the amounts the tourists would spend in 2002 compared with the amounts they spent in 1996 in each of the foreign currencies. ***In 2002, tourists would have to spend more Japanese yen, more Canadian dollars and more British pounds compared with 1996 to buy the same goods. Although the prices of the goods stayed the same in the United States, the prices people paid in foreign currency changed because of changes in exchange rates.***

4. According to the figures in the table, what happened to the value of the U.S. dollar compared with the Japanese yen between 1996 and 1998, 1998 and 2000, and 2000 and 2002? ***Between 1996 and 1998, the value of the dollar rose, or appreciated, relative to the yen (the dollar could be exchanged for more yen in 1998 than in 1996).***

Between 1998 and 2000, the value of the dollar fell, or depreciated, relative to the yen (the dollar could be exchanged for fewer yen in 2000 than in 1998). Between 2000 and 2002, the value of the dollar rose, or appreciated, relative to the yen.

Note that this could also be

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expressed by saying that the value of the yen fell (depreciated) relative to the dollar between 1996 and 1998, rose (appreciated) between 1998 and 2000 and fell (depreciated) between 2000 and 2002.

CLOSURE

Review the major points of the auctions and Activity 14.1 with the students.

1. Different countries use different currencies.

2. To buy something in or from another country, you generally need currency from the other country. One of the reasons currencies are exchanged among countries is because people want to buy something that isn't available in their country.

3. Currencies are traded in foreign-exchange markets. In the auction activity, the exchange rates were determined by supply and demand or by the students who wanted currency from the other country. This simulated a flexible exchange-rate system. Exchange rates for major currencies in the world today are largely flexible.

4. If the teacher had set the exchange rate at, for example, two beans for one macaroni, this would have simulated a fixed exchange-rate system.

5. Changes in exchange rates cause prices of imported goods to change, even when the prices of the goods haven't changed in the country where the goods were produced.

FOLLOW-UP ACTIVITIES

1. Have the students look up current exchange rates in newspapers and practice converting back and forth among yen, dollars and euros.

2. Make up an international shopping list of items from countries other than the United States and Japan. Price the items in their own currencies. Have the students figure out the cost for each item in dollars and in yen.

VISUAL 14.1
QUESTIONS ABOUT EXCHANGE RATES

What is an exchange rate?

Why do people in one country want currency from another country?

What is a flexible (floating) exchange rate?

What is a fixed exchange rate?

Why do flexible exchange rates change?

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ACTIVITY 14.1
WORKING WITH FOREIGN EXCHANGE RATES

The United States uses dollars for money. When people from other countries want to buy goods and services from U.S. firms, they must pay in U.S. dollars. When Americans want to buy foreign products, they must pay in foreign money. People and businesses get the foreign money they need by buying it in foreign-exchange markets. *Foreign-exchange markets* are like other markets in many ways, except instead of buying and selling goods and services, people buy and sell money from different countries. In terms of supply and demand, Americans who want to buy goods from other countries create a demand for foreign currency. People in other countries who want to buy goods from the United States supply their currency in exchange for dollars.

The following table shows exchange rates among the American dollar, the Japanese yen, the Canadian dollar and the British pound from 1996 through 2002.

Year	**Japanese yen per U.S. dollar**	**Canadian dollar per U.S. dollar**	**British pound per U.S. dollar**
1996	108.78	1.36	.64
1998	130.99	1.48	.69
2000	107.73	1.48	.68
2002	124.09	1.54	.69

(Sources: Data for 1996-2000: Economic Report of the President, 2001, Table B-110. Data for 2002: New York Times, May 22, 2002. 2000 figures are for third quarter. 2002 figures are for May 21, 2002.)

1. It is 1996. Sara is watching her favorite video, wearing her favorite sweatshirt and eating a sandwich. She paid $15.98 for the video, $30 for the sweatshirt and $1.99 for the sandwich.

A. What were Sara's total expenditures for the three goods?

B. How many yen would a Japanese tourist have exchanged to purchase the same products?

C. How many Canadian dollars would a Canadian tourist have exchanged?

D. How many pounds would a British tourist have exchanged?

2. It is 2002, and prices of the three goods have not changed in the United States.

A. What are the new prices in Japanese yen?

B. What are the new prices in Canadian dollars?

C. What are the new prices in British pounds?

3. Describe what happened to the amounts the tourists would spend in 2002 compared with the amounts they spent in 1996 in each of the foreign currencies.

4. According to the figures in the table, what happened to the value of the U.S. dollar compared with the Japanese yen between 1996 and 1998, 1998 and 2000, and 2000 and 2002?