Survey of International Economics
Answer Keys

by Steven Suranovic

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DIRECTIONS: As in the popular TV game show, you are given an answer to a question and you must respond with the question. For example, if the answer is, "the value of goods and services sold to foreigners", then the correct question is, "What are exports?"

1. a measure of national output occurring within the nation's borders.
   
   What is gross domestic product? (GDP)

2. a measure of national output including all production by domestic factors regardless of location.
   
   What is gross national product? (GNP)

3. a measure of the value of all capital equipment and services purchased during a year.
   
   What is investment?

4. a country's financial account balance when its trade balance is - $60 billion and its service balance is + $25 billion.
   
   What is a financial account surplus of $35 billion?

5. the level of government spending when the government deficit is $100 billion, transfer payments are $800 billion and tax revenues are $1300 billion.
   
   What is $600 billion?

6. an excess of government receipts over expenditures.
   
   What is a government budget surplus or government saving?

7. international transactions for shares of stock in corporations (in excess of 10% of the company's value) or for real estate.
   
   What is foreign direct investment?
8. national income minus taxes plus transfer payments.

What is disposable income?

9. the balance on a country's financial account when its current account has a deficit of $80 billion.

What is an $80 billion surplus?

10. the financial account balance when foreigners buy more domestic assets than domestic residents buy of theirs during a year.

What is a financial account surplus?

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Many people argue that the gross domestic product is an inadequate measure of a nation’s well-being. **List** five reasons why this may be so.

A. does not include income per capita or per household  
B. does not describe distribution of income  
C. considers only income, not national wealth  
D. measures output but not domestic spending (C + I + G)  
E. does not consider negative social effects of things like pollution  
F. includes reconstruction after natural disasters  
G. does not consider negative effects of some production, like military  
H. “nominal” GDP value does not consider inflation effects.  
I. Does not include many things that affect quality of life.  
J. Does not include non-market activity – housework, barter, etc.  
K. Et.al……
1A. Since the balance on income payments and receipts and unilateral transfers is zero, the current account balance is just the difference between exports of goods and services and imports of goods and services. Thus,

\[ CA = $957 - $1058 = -$101 \text{ billion} \]

The negative sign indicates a deficit.

1B. The merchandise trade balance accounts only for trade in merchandise goods. Thus,

\[ TB = $686 - $888 = -$202 \text{ billion} \]

also a deficit.

1C. First determine exports of services,

\[ EX^s = EX^{G&S} - EX^G = $957 - $686 = $271 \text{ billion} \]

Next determine imports of services,

\[ IM^s = IM^{G&S} - IM^G = $1058 - $888 = $170 \text{ billion} \]

Finally,

\[ SB = EX^s - IM^s = $271 - $170 = +$101 \text{ billion} \]

…. a surplus.

1D. The capital (or financial) account balance will be equal and opposite to the current account balance. Thus since the CA balance is a $101 billion deficit, the capital account would have a +$101 billion surplus.

1E. The government budget balance can be determined by applying the twin-deficit identity. Recall that,

\[(Sp - I) + (IM - EX) = (G + TR - T)\]
From the table we know that (IM - EX) is the capital account balance and we are given $P$ and $I$, thus we can solve the following.

\[(\$1164 - \$1242) + \$101 = ?\]

to get \((G + TR - T) = \$23\) billion,

which, since it is positive, represents a government budget deficit.
1a. The twin-deficit identity is,

\[(S_P - I) + (IM - EX) = (G + TR - T)\]

where (IM - EX) represents the trade (CA) deficit and (G + TR - T) represents the government budget deficit. The identity says that these aggregate variables must always "add-up" as shown. It is possible for both deficits to rise equally and to maintain the identity. However, for that to happen it would also have to be true that the difference between private saving and investment (S_P - I) remains constant. In other words, if one assumed that (S_P - I) always remained constant, then there would be a direct relationship between the twin deficits. An increase in the budget deficit would cause an increase in the trade deficit, in this case. However, the assumption that (S_P - I) is unchanged is unrealistic since these two variables do generally change over time.

1b. Yes. The question asks how it might be possible for the right-hand-side (RHS) of the identity, the government budget deficit, to fall, while the (IM - EX) term, the trade deficit rises. If the RHS of the identity is falling then the left-hand side (LHS) must also fall to maintain the equality. Since the trade deficit on the LHS is rising, there must be an even greater offsetting change in either S_P or I. Possibility one is that S_P falls sufficiently to maintain the identity. Possibility two is that I rises sufficiently. The third possibility is that both S_P falls and I rises.

1c. No. The question asks if (S_P - I), net private saving, is maintained and there is a reduction in the government budget deficit, (i.e., G + TR - T falls), whether the trade deficit, (IM - EX), could rise. This would imply that the RHS is falling while the LHS is rising, thus it could not occur.
Finance Answer Key PS 5 2-3

The Twin-Deficit Identity says,

\((S_p - I) + (IM - EX) = (G + TR - T)\)

1A. Yes, a $10 billion increase in the government budget deficit means that \((G + TR - T)\) of the RHS rises, while a $10 billion increase in the current account deficit means that \((IM - EX)\) on the LHS rises by the same amount. Such equal changes would maintain the identity and thus are possible.

1B. Yes. A $50 billion decrease in the government budget deficit would lower \((G + TR - T)\) on the RHS while a $50 billion increase in private investment would also lower the LHS since \(I\) is subtracted on the left. Such equal changes would maintain the identity and thus are possible.

1C. No. First, if private savings and private investment both rise by $10 billion this would have no effect upon the value on the LHS, we could ignore these two. A $10 billion increase the government budget surplus implies \((G + TR - T)\) on the RHS is decreasing since an increase in the surplus is the same direction of change as a decrease in a deficit. However, a $10 billion increase in the current account deficit, \((IM - EX)\) causes a decrease in the value on the LHS. Since the RHS cannot go up while the LHS goes down, these changes are not possible.

1D. No. A $30 billion increase in the current account surplus means that \((IM - EX)\) is falling on the LHS. A $30 billion increase in the government budget deficit means that \((G + TR - T)\) on the RHS is rising. Since the RHS cannot go up while the LHS goes down, these changes are not possible.
1. Use the economic data for the fictional country of Sandia to answer the following questions. (Assume the unilateral transfers and net income balance is zero)

<table>
<thead>
<tr>
<th>Sandia Economic Data (billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>Imports of Goods and Services</td>
</tr>
<tr>
<td>Investment Spending</td>
</tr>
<tr>
<td>Private Saving</td>
</tr>
<tr>
<td>Exports of Goods and Services</td>
</tr>
<tr>
<td>Government Transfers</td>
</tr>
<tr>
<td>Government Tax Revenues</td>
</tr>
<tr>
<td>Government Spending</td>
</tr>
<tr>
<td>Consumption Spending</td>
</tr>
</tbody>
</table>

A. Calculate Sandia’s Good and Services (G&S) balance. Is it a deficit or surplus?

\[ EX - IM = $100 - $140 = -$40 \text{ billion}, \text{ a trade deficit} \]

B. Calculate Sandia’s government budget balance. Is it a deficit or surplus?

\[ G + TR - T = $140 + $40 - $140 = +$40 \text{ billion}, \text{ a budget deficit}. \]

C. Write out the national income identity. Verify whether Sandia’s data satisfies the identity.

\[ GDP = C + I + G + EX - IM \]
\[ 400 = 280 + 20 + 140 + 100 - 140 = 400 \text{ The identity is satisfied}. \]

D. Write out the twin-deficit identity. Verify whether Sandia’s data satisfies the identity.
\[(Sp - I) + (IM - EX) = (G + TR - T)\]
\[(30 - 20) + (140 - 100) = (140 + 40 - 140)\]
\[50 \neq 40 \quad \text{The identity is NOT satisfied.}\]
1A. A size of a country's current account surplus is the amount that domestic spending on C, I and G falls short of total production (or GDP). CA balance is found by multiplying GDP by 5% to get,

CA = $2,000 * (0.05) = +$100 billion (the + because its a surplus)

Using the national income identity,

GDP = C + I + G + 100 = $2000

Thus,

domestic spending = C + I + G = $1,900 billion

B. In period 2, the $100 billion is paid back to Japan with interest payments of $100 * 0.05 = $5 billion. Thus the CA balance in period 2 is in deficit by $105 billion. Using the national income identity,

GDP = C + I + G - 105 = $2000

Thus,

domestic spending = C + I + G = $2105 billion
1A. If the student takes out a loan to finance spending above his income it is analogous to running a capital account surplus. That is, he is borrowing from the rest of the world. As such, the student is running a trade deficit on the goods and services balance. Another way to see this is to note that the person's exports are his labor services for which he receives an income. His imports are all of the goods and services he buys during the year. Since the money to go on vacation is borrowed, it means that his imports of goods and services exceed his exports of labor services.

1B. Both the antique watch and the "hot" stock are considered assets. Thus for the individual, she is just trading one asset for another. Thus, there is no effect on the trade balance.

1C. Cashing in previously accumulated savings implies the sale of an asset. The asset is sold here to finance consumption spending and allow the couple to spend more than their income. As a retired couple their exports of labor services is zero. They do have capital income however which is payment for their capital services. Nevertheless, by cashing in principle they run a trade deficit since their imports of goods and services exceeds their export of capital services.

1D. This action is a barter exchange. The capenter exchanges his services for the services of the dentist. This corresponds to balanced trade; exports of services equals imports of services.

1E. Paying off past debt requires the family spend less on goods and services than their income. Since household spending is less than income this case is analogous to a country with a trade surplus; the family's exports of labor services exceeds its imports of consumption goods and services.

2A. A current account deficit implies that the money we pay to foreigners for our imports is greater than the money they spend on our exports. This suggests an excess flow of funds abroad. However, these extra $s come back to the country to purchase our assets (like bonds, t-bills, real estate, securities, etc.) That's why we have a capital account surplus. In addition, every transaction recorded on the BoP consists of a trade between two things of equal value. Even when we have a deficit on current account, it results from a series of fair trades. Thus a current account deficit does not imply the country is giving away money.
2B. A CA deficit implies that IM > EX. This could arise because our imports are too large due to foreign competition. If imports were smaller, more goods would be produced at home, creating more jobs. Also exports may be too small. If we could export more, more workers would be needed to produce these goods and create jobs. Thus a CA deficit may mean that the economy has fewer jobs than it would with CA balance.

However, a CA deficit also implies a KA surplus. Foreign purchases of our assets makes money available to the borrowers and can generate new loans, all of which leads to increases in spending and the creation of more jobs. Thus the net job effect in running a CA deficit is uncertain.

2C. A current account deficit implies that a country is spending more on goods and services than it is producing. The country can achieve this by borrowing money from the rest of the world (a capital account surplus) which must be repaid in the future. If the country's extra spending is non-productive and no economic growth is stimulated then once repayment begins the country will be forced to expend less than it produces and its standard of living may fall. However, if the country's extra spending is on investment, training and education then economic growth might be stimulated and result in a higher standard of living even after repayment of principal and interest. Thus a CA deficit need not result in a lower standard of living.
1. Suppose the hypothetical country of Avalon has a current account deficit of $20 billion this year. From the two scenarios listed in each part below, identify which scenario would make this deficit more worrisome to an economic analyst and which scenario would be less worrisome. Briefly explain why.

A. Scenario 1: Avalon's GDP is $80 billion dollars per year.
Scenario 2: Avalon's GDP is $800 billion per year.

In general the larger the deficit as a percentage of GDP the more worrisome it is. In scenario 1 Avalon's trade deficit is 20/80 = 25% of GDP. In scenario 2 its deficit is 20/800 = 2.5% of GDP. Thus, the deficit is much less worrisome in scenario 2. If the corresponding KA surplus is debt obligations, a country of this size could certainly afford to pay back loans of this size. In comparison, the US is currently (2002) running a trade deficit of approximately 4% of its annual GDP which is large enough to be moderately worrisome.

B. Scenario 1: Avalon is a net debtor country.
Scenario 2: Avalon is a net creditor country.

In scenario 1 Avalon is in debt to the rest of the world. When it runs a trade deficit, its international debt will become larger. In scenario 2 Avalon is a net lender or is saving money in the rest of the world. When Avalon runs a current account deficit it is effectively cashing in on its savings and reducing its creditor position. Thus, the second scenario is less worrisome than the first.

C. Scenario 1: Avalon's annual consumption spending is 50% of GDP
Scenario 2: Avalon's annual consumption spending is 90% of GDP

In scenario 1 Avalon's consumption is quite small as a % of GDP. In the US currently it is about 70% of GDP. This means that government and investment spending may be quite high. In scenario 2, because consumption is so high, there is likely to be little left over for investment and government spending. Since current account deficits are less worrisome, the more is channeled into investment and/or
growth enhancing government spending, Scenario 1 is less worrisome for Avalon.

D. Scenario 1: Avalon's GDP grew 1% last year
Scenario 2: Avalon's GDP grew 10% last year

In general, the faster an economy grows, the less worrisome is a current account deficit, thus scenario 2 is less worrisome for Avalon.
1. Suppose that each situation listed is the dominant effect on a country’s balance of payments. Indicate by filling in the blank spaces whether the current account and capital account will be in **surplus** or **deficit**.

<table>
<thead>
<tr>
<th>Current Account Balance</th>
<th>Financial Account Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. a country is a net borrower from the rest of the world</td>
<td>deficit</td>
</tr>
<tr>
<td>B. a country is repaying past debts</td>
<td>surplus</td>
</tr>
<tr>
<td>C. a country exports more goods and services than it imports</td>
<td>surplus</td>
</tr>
<tr>
<td>D. a country sells foreign assets and repatriates the proceeds</td>
<td>deficit</td>
</tr>
<tr>
<td>E. a country is a net lender to the rest of the world</td>
<td>surplus</td>
</tr>
<tr>
<td>F. a country earns more income on foreign assets than foreigners earn in its country</td>
<td>surplus</td>
</tr>
</tbody>
</table>
DIRECTIONS: As in the popular TV game show, you are given an answer to a question and you must respond with the question. For example, if the answer is, "the value of goods and services sold to foreigners", then the correct question is, "What are exports?"

1. An increase in the value of the yen

   What is an appreciation of the yen?

2. This currency value is expressed by the euro/peso exchange rate.

   What is the value of the peso?

3. This has happened to the value of the $ if the $/euro exchange rate rises from 1.10$/euro to 1.20$/euro

   What is a depreciation of the dollar?

4. Term used to describe the process of buying low, selling high to make a profit.

   What is arbitrage?

5. Term used to describe the exchange rate which appears on a contract to exchange currencies either 30, 60, 90 or 180 days in the future.

   What is a forward exchange rate?

6. Term used to describe the exchange rate that prevails for (almost) immediate trades.

   What is the spot exchange rate?

7. Term used to describe process of protecting oneself from the riskiness of exchange rate movements.

   What is hedging?
8. The percentage change in the value of an asset over some period of time.

What is the rate of return?

9. Term used to describe the ease with which an asset can be converted to cash.

What is liquidity?

10. These three variables influence the rate of return on a foreign deposit.

What are the foreign interest rate, the spot exchange rate, and the expected future exchange rate?
1A. The rate of change of the euro value relative to the dollar is the percentage change in $E_{$/€}$, the dollar/euro exchange rate, between Feb 2003 and Feb 2004.

\[ \% \text{ change } E_{$/€} = \frac{(1.25 - 1.08)}{1.08} \]

\[ = 0.1574 \times 100 = +15.74\% \]

Since this is positive it represents an appreciation of the euro (relative to the dollar) by 15.74\%.

1B. The rate of change of the dollar value relative to the euro is the percentage change in $E_{€/$}$, the euro/dollar exchange rate, between Feb 2003 and Feb 2004. Here one must use reciprocals of the dollar/euro rates given.

\[ \% \text{ change } E_{€/$} = \left(\frac{1}{1.25} - \frac{1}{1.08}\right) / \left(\frac{1}{1.08}\right) \]

\[ = -0.136 \times 100 = -13.6\% \]

Since this is negative it represents a depreciation of the dollar (relative to the euro) by 13.6\%.

1C. The rate of change of the dollar value relative to the rand is the percentage change in $E_{R/$}$, the rand/dollar exchange rate, between Feb 2003 and Feb 2004.

\[ \% \text{ change } E_{R/$} = \frac{(6.95 - 8.55)}{8.55} \]

\[ = -0.1871 \times 100 = -18.71\% \]

Since this is negative it represents a depreciation of the dollar (relative to the rand) by 18.71\%.
1D. The expected rate of change of the dollar value relative to the euro is the percentage change in \( E_{E/S} \), the euro/dollar exchange rate, using the forward exchange rate for Feb 2005 and the current exchange rate for Feb 2004. Again one must convert using reciprocals.

Expected % change \( E_{E/S} \) = \( \frac{(1/1.24) - (1/1.25)}{1/1.25} \)

\[ = 0.0081 \times 100 = + .81\% \]

Since this is positive it represents an expected appreciation of the dollar (relative to the euro) by 0.81%.

1E. The expected rate of change of the dollar value relative to the rand is the percentage change in \( E_{R/S} \), the rand/dollar exchange rate, using the forward exchange rate for Feb 2005 and the current exchange rate for Feb 2004.

Expected % change \( E_{R/S} \) = \( \frac{7.42 - 6.95}{6.95} \)

\[ = 0.0676 \times 100 = + 6.76 \% \]

Since this is positive it represents an expected appreciation of the dollar (relative to the rand) by 6.67%.
1. In February 2004 the US dollar - Mexican peso exchange rate was 11p/$. The price of a hotel room in Mexico City was 1000 pesos. The price of a hotel room in New York City was $200.

A) Calculate the price of the Mexican hotel room in US dollars

Convert the peso price of a Mexican hotel room by dividing by the p/$ exchange rate.

\[
\frac{1000 \text{ pesos}}{11 \text{ pesos} / \text{$}} = \$90.90
\]

B) Calculate the price of the US hotel room in Mexican pesos.

Convert the dollar price of the US hotel room to pesos by multiplying by the p/$ exchange rate.

\[
\frac{2200 \text{ pesos} / \text{$}}{11 \text{ pesos} / \text{$}} = 2200 \text{ pesos}
\]

Suppose the exchange rate rises to 12 pesos per $.

C) What does the exchange rate change indicate has happened to the value of the US dollar? ... to the value of the Mexican peso?

The exchange rate in the format P/$ is the value of the $. Since it has increased the dollar value has risen, i.e., the dollar has appreciated. Since the dollar value rises with respect to the peso, the peso value falls relative to the $, i.e., the peso has depreciated.
D) Does the currency change benefit the US tourist traveling to Mexico City or the Mexican tourist traveling to New York City? Explain why.

The price of a Mexican hotel room in terms of dollars is now

\[
\text{p}_{\text{HotelRoom}} = \frac{1000 \text{ pesos}}{12 \text{ pesos/\$}} = \$83.33
\]

Since this is lower than before, it has become cheaper for a US tourist traveling in Mexico.

The price of a NYC hotel room in pesos has now become,

\[
\text{p}_{\text{HotelRoom}} = \$200 \times 12 \text{ pesos/\$} = 2400 \text{ pesos}
\]

Since this is higher, a Mexican tourist will find it more expensive to stay in a hotel room in the US.
1a. First apply the formula from Section 10-4:

\[ \text{RoR}_{C\$} = \frac{E^e_{C\$}}{E_{C\$}} \left( 1 + \frac{i_{C\$}}{E_{C\$}} \right) - 1 \]

plugging in number gives,

\[ \text{RoR}_{C\$} = \frac{0.7468}{0.7541} \left( 1 + 0.025 \right) - 1 = 0.0151 \text{ or } 1.51\% \]

Second apply the formula from Section 10-5:

\[ \text{RoR}_{C\$} = i_{C\$} + \left( \frac{E^e_{C\$} - E_{C\$}}{E_{C\$}} \right) + i_{C\$} \left( \frac{E^e_{C\$} - E_{C\$}}{E_{C\$}} \right) \]

plugging in the numbers yields,

\[ \text{RoR}_{C\$} = 0.025 + \left( \frac{0.7468 - 0.7541}{0.7541} \right) + 0.025 \left( \frac{0.7468 - 0.7541}{0.7541} \right) \]

or,

\[ \text{RoR}_{C\$} = 0.025 + (-0.0097) + 0.025(-0.0097) \]

In percentage form this becomes,

\[ \text{RoR}_{C\$} = 2.5\% - 0.97\% - 0.02\% = 1.51\% \]
1b. The rate of return that arises solely due to the interest earned is given by the first term in the second formula above. This says that the rate of return will rise by 2.5% due to the interest earned.

1c. The rate of return that arises from the percentage change in the value of the principal due to the change in the exchange rate is given by the second term in the second formula above. It indicates that the principal value would fall by 0.97% due to the expected depreciation of the exchange rate.

1d. The rate of return that arises from the percentage change in the value of the interest due to the change in the exchange rate is given by the third term in the second formula above. It indicates that the interest value would fall by 0.02% due to the expected depreciation of the exchange rate.
1a. First apply the formula from Section 10-4:

\[
\text{RoR}_E = \frac{E_E^e}{E_S^e} \left( 1 + i_E \right) - 1
\]

plugging in number gives,

\[
\text{RoR}_E = \frac{1.7956}{1.8574}(1 + 0.045) - 1 = 0.0102 \text{ or } 1.02\%
\]

Second apply the formula from Section 10-5:

\[
\text{RoR}_E = i_E + \left( \frac{E_E^e - E_S^e}{E_S^e} \right) + \left( \frac{E_E^e}{E_S^e} \right)
\]

plugging in the numbers yields,

\[
\text{RoR}_E = 0.045 + \left( \frac{1.7956 - 1.8574}{1.8574} \right) + 0.045\left( \frac{1.7956 - 1.8574}{1.8574} \right)
\]

or,

\[
\text{RoR}_E = 0.045 + (-0.033) + 0.045(-0.033)
\]

In percentage form this becomes,

\[
\text{RoR}_E = 4.5\% - 3.33\% - 0.15\% = 1.02\%
\]
1b. The rate of return that arises solely due to the interest earned is given by the first term in the second formula above. This says that the rate of return will rise by 4.5% due to the interest earned.

1c. The rate of return that arises from the percentage change in the value of the principal due to the change in the exchange rate is given by the second term in the second formula above. It indicates that the principal value would fall by 3.33 % due to the expected depreciation of the exchange rate.

1d. The rate of return that arises from the percentage change in the value of the interest due to the change in the exchange rate is given by the third term in the second formula above. It indicates that the interest value would fall by 0.15 % due to the expected depreciation of the exchange rate.

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1A. The rate of return on dollar deposits is equal to the US interest rate.

The interest rate on German deposits is $R_{DM} = 0.01442$ or 1.442%. Noting that $E_{S/DM}^{f} = 0.5807$ and $E_{S/DM} = 0.5841$ and plugging in to the formula derived in class yields,

$$
RoR_{DM} = 0.01442 + (0.5807 - 0.5841)/0.5841 \\
+ (0.01442)((0.5807 - 0.5841)/0.5841) \\
= 0.008515 \times 100 = 0.8515\%
$$

The interest rate on Canadian deposits is $R_{CS} = 0.00875$ or .875%. Noting that $E_{S/CS}^{f} = 0.7446$ and $E_{S/CS} = 0.7451$ and plugging in to the formula derived in class yields,

$$
RoR_{CS} = 0.00875 + (0.7446 - 0.7451)/0.7451 \\
+ (0.00875)((0.7446 - 0.7451)/0.7451) \\
= 0.008073 \times 100 = 0.8073\%
$$

Thus, $RoR_{S} > RoR_{DM} > RoR_{CS}$ if $R_{S}$ is larger than .8515%. Note that since this is a 90-day interest rate, the rate quote on an annual basis would be $R_{S} > 3.453\%$

1B. Since $RoR_{CS} < RoR_{DM}$ investors will demand DM on the forex in exchange for CSs causing the DM to appreciate, the CS to depreciate implying $E_{CS/DM}$ rises.

2A.

Mexican Peso: $[(1/9.62p/$) - (1/10.03p/$)] / (1/10.03p/$) = 0.043 \times 100 = + 4.3\%$

an appreciation of the peso with respect to the $.$

Russian Rouble: $[(1/25.8r/$) - (1/17.14r/$)] / (1/17.14r/$) = -0.336 \times 100 = -33.6\%$

a depreciation of the rouble with respect to the $.$
2B.

RoR Mexico: \( \text{RoR}_M = .1686 + (1 + .1686) \times (0.043) = 0.219 \times 100 = + 21.9\% \text{ per year.} \)

RoR Russia: \( \text{RoR}_r = .55 + (1 + .55) \times (-0.336) = 0.0292 \times 100 = + 2.92\% \text{ per year.} \)
1. Consider the three different economic changes listed along the top row of the following Table. In the boxes indicate the effect of each change, sequentially, on the variables listed in the first column. For example, a decrease in US interest rates will cause a decrease in the rate of return (RoR) on US assets. Therefore a "-" is placed in the first box of the table. Next in sequence, answer how the RoR on Euro assets will be affected. Use the interest rate parity model to determine the answers. You do not need to show your work. Use the following notation:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A decrease in US</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>interest rates</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RoR on US assets</td>
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<tr>
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<td>0</td>
<td>-</td>
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<td>RoR on Euro assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand for US</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>dollars on the Forex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand for Euros</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>on the Forex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US dollar value</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Euro value</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>E$/Euro</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>
Explanations:

I. The RoR on US assets fall since it is equivalent to the interest rate which has fallen. The RoR on euro assets is immediately unaffected by the drop in US interest rates. However, now the RoR on euros is greater than the RoR on US assets, therefore there will be an decrease in demands for dollars on the FOREX and an increase in demand for euros. The decreased demand for dollars causes a decrease in the dollar value, or a depreciation. The increased demand for euros causes an increase in its value, or an appreciation. Lastly, since the $/euro exchange rate is the value of the “euro”, it rises.

II. The decrease in Euro interest rates has no effect upon the RoR on US assets since this is dependent only on the US interest rate. It will reduce the RoR on Euro assets. This will mean the ROR on dollar assets will now exceed the RoR on euro assets. This will raise demand for US dollars on the FOREX and reduce demand for euros. The increased demand for dollars raises the dollar value, an appreciation. The decreased demand for euros will reduce the euro value, a depreciation. Since the $/euro exchange rate is the value of the “euro,” it falls.

III. A reduction in next year's expected dollar value means investors believe \( E^{\text{euro}} / \text{dollar} \) will be higher. This has no effect upon the RoR on US assets which is only affected by the $ interest rate. The RoR on euro assets rises because investors either believe the euro will appreciate more than before, or they believe the euro will depreciate less than before. Now the RoR on euros is greater than the RoR on US assets, therefore there will be an decrease in demands for dollars on the FOREX and an increase in demand for euros. The decreased demand for dollars causes a decrease in the dollar value, or a depreciation. The increased demand for euros causes an increase in its value, or an appreciation. Lastly, since the $/euro exchange rate is the value of the “euro”, it rises.
1. Consider the economic changes listed along the left column of the following Table. In the boxes indicate the effect of each change on the variables listed in the first row. Use insights from the interest rate parity model or the purchasing power parity model to determine the answers. Assume floating exchange rates. You do not need to show your work. Use the following notation:

- the variable increases
- the variable decreases
0 the variable does not change
A the variable change is ambiguous (i.e. it may rise, it may fall)

<table>
<thead>
<tr>
<th>Economic Change</th>
<th>US dollar value</th>
<th>$E_{$/euro}</th>
</tr>
</thead>
<tbody>
<tr>
<td>A decrease in US interest rates</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>An increase in expected US economic growth that raises expected asset values</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>An expected increase in European stock values</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

A. Calculate and list the price of the CD in terms of UK pounds in all three countries.

Australian CD: $P = \frac{A$25}{2.45} = £10.20$

US CD: $P = \frac{US$19}{1.90} = £10.00$

UK CD: $P = £9$

B. Based on the CD price only and using your answer above, is the British pound overvalued or undervalued with respect to the Australian dollar in terms of PPP? Explain briefly.

Since, to the British, Australian CDs look more expensive, the purchasing power of British pounds is too low relative to PPP. Hence, the pound is undervalued.

C. If the CD prices reflected the overall price levels, would the purchasing power parity theory predict a British pound appreciation or depreciation with respect to the US dollar? Explain briefly.

The PPP theory predicts that the exchange rate would move to equalize the prices between countries as traders buy goods in the cheaper markets and sell in the more expensive markets. Since British goods are cheaper, traders will seek to purchase cheaper UK goods and sell them in the US. This will raise the demand for pounds on the FOREX and cause a £ appreciation with respect to the US$.
1. Use the information in the table below to answer the following questions. 
SHOW YOUR WORK.

<table>
<thead>
<tr>
<th></th>
<th>The Economist Price per issue</th>
<th>Exchange Rate (12/2/99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>$3.95</td>
<td>--</td>
</tr>
<tr>
<td>Canada</td>
<td>C$ 4.95</td>
<td>1.47 C$/¥</td>
</tr>
<tr>
<td>Japan</td>
<td>¥920</td>
<td>102 ¥$/¥</td>
</tr>
</tbody>
</table>

A. Calculate the dollar price of the economist magazine in Canada and Japan as of 12/2/99.

\[
P_{CS} / E_{CS/S} = \text{C$}4.95 / 1.47 \text{ C$/¥} = 3.37
\]

\[
P_{¥} / E_{¥/¥} = ¥920 / 102 ¥$/¥ = 9.02
\]

B. Calculate the implied purchasing power parity exchange rates between Canada and the US, and between Japan and the US based on the price of the Economist magazine.

Here you can simply apply the purchasing power parity formula using the Economist price from each country,

In Canada: \[ E_{CS/S} = P_{CS} / P_{S} = \text{C$}4.95 / 3.95 = 1.25 \text{ C$/}$/\]

In Japan: \[ E_{¥/¥} = P_{¥} / P_{S} = ¥920 / 3.95 = 233 ¥/$\]
C. Is the US dollar overvalued or undervalued with respect to the Canadian dollar and the Japanese yen in terms of purchases of the Economist? State why it is over or undervalued.

One way to answer this is to calculate the dollar price of the Economist in Canada and Japan using current exchange rates. If the dollar price is less than the price of the Economist in the US then the country’s currency is undervalued. If otherwise, then the currency is overvalued.

In Canada: C$ 4.95 / 1.47 C$/=$ = $3.37 This is less than $3.95, the US price, therefore the US dollar is overvalued because from their perspective US magazines are cheaper in Canada.

In Japan: ¥920 / 102 ¥/$ = $9.02. This is greater than $3.95 therefore the US dollar is undervalued because from their perspective US magazines are very expensive in Japan at current exchange rates.
1. Use the information in the table below to answer the following questions.

<table>
<thead>
<tr>
<th></th>
<th>Big Mac Price</th>
<th>Exchange Rate (6/4/98)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>$2.53</td>
<td>--</td>
</tr>
<tr>
<td>South Korea</td>
<td>won 2600</td>
<td>1475 won/$</td>
</tr>
<tr>
<td>Israel</td>
<td>shekel 12.50</td>
<td>3.70 sh/$</td>
</tr>
<tr>
<td>Poland</td>
<td>zloty 5.30</td>
<td>3.46 zl/$</td>
</tr>
</tbody>
</table>

A. Calculate whether the won and the shekel are overvalued or undervalued with respect to the US dollar in terms of purchases of Big Macs. Explain what it means to be over or undervalued.

One way to answer this is to calculate the dollar price of a Big Mac in South Korea and Israel using current exchange rates. If the dollar price is less than the price of a Big Mac in the US then the country’s currency is undervalued. If otherwise, then the currency is overvalued.

In South Korea: $2600 / 1475W/$ = $1.76 This is less than $2.53, the US price, therefore the South Korean won is undervalued.

In Israel: $12.50 / 3.7 sh/$ = $3.38. This greater than $2.53 therefore the Israeli shekel is overvalued.

In Poland: $5.30 / 3.46 zl/$ = $1.53 This is less than $2.53 therefore the Polish zloty is undervalued.
B. What would the exchange rates have to be in order to equalize big Mac prices between South Korea and the US, and Israel and the US?

Here you can simply apply the purchasing power parity formula using the Big Mac price from each country,

In South Korea: \( e_{\text{W/$}} = \frac{P_\text{W}}{P_\text{S}} = \frac{2600}{2.53} = 1028 \text{ W/$} \)

In Israel: \( e_{\text{sh/$}} = \frac{P_{\text{sh}}}{P_\text{S}} = \frac{12.50}{2.53} = 4.94 \text{ sh/$} \)

In Poland: \( e_{\text{zl/$}} = \frac{P_{\text{zl}}}{P_\text{S}} = \frac{5.30}{2.53} = 2.09 \text{ zl/$} \)

These are the PPP exchange rates based on Big Mac prices.

C. If in the long run the exchange rate moves to satisfy Big Mac PPP, will the won, shekel and zloty, respectively, appreciate or depreciate in terms of dollars? Explain the logic.

In order to reach the PPP exchange rate the won would have to change from 1475 W/$ to 1028 W/$. Since this exchange rate is the value of the $ ($s in the denominator) the dollar would need to depreciate, therefore the won would appreciate. This means also that if the won is undervalued the won would need to appreciate to reach its PPP value.

Similarly, the shekel exchange rate would have to change from 3.70 sh/$ to 4.94 sh/$, representing a $ appreciation, or a shekel depreciation.

For the zloty, the exchange would need to change from 3.46 zl/$ to 2.09 zl/$, meaning the $ would have to depreciate or the zloty appreciate.
DIRECTIONS: As in the popular TV game show, you are given an answer to a question and you must respond with the question. For example, if the answer is, "the value of goods and services sold to foreigners", then the correct question is, "What are exports?"

1. name given the currency standard using both gold and silver.
   What is a bimetallic standard?

2. name given to the process describing the functioning of the gold standard.
   What is the price-specie flow mechanism?

3. name give the currency standard in which all countries fix to one central currency, while the central currency is fixed to gold.
   What is a gold exchange standard?

4. name give the currency standard in which all countries fix to one central currency, while the central currency is not fixed to anything.
   What is a reserve currency standard?

5. The currency standard used during the post-WWII Bretton-Woods era.
   What is a gold exchange standard?

6. the name of the international organization created after WWII to oversee the fixed exchange rate system.
   What is the International Monetary Fund (IMF)?

7. Term used to describe currency fixing by adopting the US dollar as one’s currency.
   What is dollarization?
8. These must be equalized between countries for interest rate parity to hold under fixed exchange rates.

What are *interest rates or rates of return*?

9. Account on the balance of payments used to record all central bank transactions.

What are *official reserve transactions*?

10. The balance on the balance of payments when the central bank sells foreign reserves.

What is a *balance of payments deficit*?
DIRECTIONS: As in the popular TV game show, you are given an answer to a question and you must respond with the question. For example, if the answer is, "the value of goods and services sold to foreigners", then the correct question is, "What are exports?"

1. hyperactivity in this aggregate variable is often a reason countries turn to fixed exchange rates.

   Inflation rate

2. this term describes the unpredictable movement of an exchange rate.

   volatility

3. the effect on an importer's profits (higher, lower or no change) if they wait to exchange currency and the foreign currency rises in value vis-à-vis the domestic currency in the meantime.

   lower

4. the effect on an importer's profits (higher, lower or no change) if they wait to exchange currency and the domestic currency falls in value vis-à-vis the foreign currency in the meantime.

   lower

5. the effect on an investor's foreign rate of return (higher, lower or no change) if the foreign currency rises in value more than expected vis-à-vis the domestic currency after purchasing a foreign asset.

   higher
6. *this central bank action*, if repeated frequently, can cause volatility in fixed exchange rate systems.

   Devaluations or revaluations

7. *term* describing the relationship between the US FED and the US government that no doubt has contributed to the low US inflation rate in the past two decades.

   Independent or autonomous

8. in part to achieve *this*, the UK has refused to adopt the Euro as its currency.

   Monetary Independence or autonomy

9. the failure of *this exchange rate system* is a good example of how fixed exchange rates may not lead to lower inflation.

   Bretton-Woods

10. if *these two types of macro policy* are implemented prudently over time, both fixed and floating exchange rate systems can function smoothly.

   Monetary and Fiscal policy

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Last Updated on January 2, 2006
1. What is micro-economics?
2. What is macro-economics?
3. What is laissez-faire?
4. What is autarky?
5. What is production and consumption efficiency?
6. What is the compensation principle?
7. Who is John Maynard Keynes?
8. What is a beggar-thy-neighbor policy?
9. What is a strategic trade policy?
10. What is the controversy between free trade and protectionism?
1. What is a voluntary export restraint?
2. What is an export subsidy?
3. What is the US harmonized tariff schedule?
4. What is a specific tariff?
5. What is a government procurement policy?
6. What are red-tape barriers?
7. What is the World Customs Organization?
8. What is a tariff-rate quota?
9. What is the Agreement on Textiles and Clothing (ATC)?
10. What is an ad valorem tariff?
**Trade Answer Key PS 20 1-1**

DIRECTIONS: These questions have relatively short answers. Use may print this page and use the answer box on the right for your answer.

| Q1. How is an antidumping action initiated in the US? | A1. Antidumping (AD) actions can be initiated if a domestic concern files a petition with the International Trade Administration (ITA) and the International Trade Commission (ITC). The ITA can also initiate an action by its own accord. |
| Q2. Explain how the antidumping process could add to the cost of doing business in the US by foreign firms even if an antidumping petition is denied? | A2. First, the foreign firms charged with dumping would be asked to complete lengthy questionnaires concerning their business practices in the US. This activity will require the industry to devote some resources (perhaps hiring a law firm) to protect its export interests. Second, in the period between the ITA's decision on the margin of dumping and the ITC's decision concerning injury, the foreign firms must pay a security deposit equal in size to the value of the dumping margin times its domestic sales. These payments are only returned after a negative injury determination by the ITC. Note, in over 95% of AD actions the ITA discovers a dumping margin. |
| Q3. What is an antidumping duty? How is its size determined? | A3. An antidumping duty is a tariff applied on imports from the country found guilty of dumping. The size of the tariff will be set equal to the margin between the domestic price and the "fair" market price. |
| Q4. What must US government agencies determine before applying antidumping duties against foreign firms? | A4. Two things must be determined. First the ITA investigates to determine if "less than fair value" (LTFV) sales have occurred. Second, the ITC must render a judgement about whether the dumped imports caused, or threatened to cause material injury to the import-competing industry. |
| Q5. Name two WTO-sanctioned unfair trade laws. | A5. Antidumping laws and Countervailing duty laws |
| Q6. How does US trade law define dumping? | A6. In the US dumping is defined as sales at "less than fair value" (LTFV). LTFV sales can occur in three different ways. First, LTFV sales occur if foreign firms sell their product at a price less than cost. Second, LTFV sales occur if foreign firms charge less in our market than they do in their market for the same product. Third, LTFV sales occur if the foreign firms sell their products in our country at a price less than the price it charges in a third country. |
1. Match the following five terms with a description of its application within the WTO. Place the letter of the appropriate statement next to each term.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade-weighted Average Tariff</td>
<td>A. Type of analysis where the effects of policy actions are examined only in the markets which are directly affected and in which supply and demand curves are used.</td>
</tr>
<tr>
<td>Partial Equilibrium</td>
<td>B. This results when one divides total tariff revenue by the value of imports.</td>
</tr>
<tr>
<td>National treatment</td>
<td>C. A trade law that provides protection against unfair pricing by foreign firms.</td>
</tr>
<tr>
<td>Anti-Dumping</td>
<td>D. Requires that a product made in one WTO member country be treated no less favorably than a similar good originating in another member country.</td>
</tr>
<tr>
<td>Most Favored Nation</td>
<td>E. Requirement that foreign goods, once they have entered a WTO country, be treated no less favorably</td>
</tr>
</tbody>
</table>
A. Pascal Lamy in September 2006

B. January 1, 1995


D. The WTO is GATT plus a lot more. GATT (the institution) was small and provisional, and not even recognized in law as international organization. It has now been replaced by the World Trade Organization. GATT (the agreement) has been amended and incorporated into the new WTO Agreements. GATT deals only with trade in goods. The WTO Agreements now cover services and intellectual property as well.

E. For the most part, all WTO members subscribe to all WTO agreements. These are the multilateral agreements. There are, however, a few agreements which have a narrower group of signatories and are known as "plurilateral agreements.

F. The principle of "national treatment" means that imported and locally-produced goods should be treated equally - at least after the foreign goods have entered the market. The same should apply to foreign and domestic services, and to foreign and local trademarks, copyrights and patents. National treatment only applies once a product, service or item of intellectual property has entered the market. Therefore, charging customs duty on an import is not a violation of national treatment even if locally-produced products are not charged an equivalent tax.

G. In the WTO, when countries agree to open their markets for goods or services, they "bind" their commitments. For goods, these bindings amount to ceilings on customs tariff rates. Sometimes, promising not to raise a trade barrier can be as important as lowering one, because the promise gives businesses a clearer view of their future opportunities.

H. The regular surveillance of national trade policies through the Trade Policy Review Mechanism provides a means of encouraging transparency both domestically and at the multilateral level. The four biggest traders - the European Union, the United States, Japan and Canada (the "Quad") - are examined approximately once every two years. The next 16 countries (in terms of their share of world trade) are reviewed every four years. The remaining countries are reviewed every six years, with the possibility of a longer interim period for the least-developed countries.

I. Trade in services, intellectual property rights, international investments, agricultural subsidies, trade in textiles and clothing, voluntary export restraints, et. al.
A. When a member government believes another member government is violating an agreement or a commitment that it has made in the WTO, it may bring its complaint to the dispute settlement board.

B. In the first stage countries in dispute have to talk to each other to see if they can settle their differences by themselves. If that fails, they can also ask the WTO director-general to mediate or try to help in any other way.

C. If consultations fail, the complaining country can ask for a panel to be appointed. Panels consist of three (occasionally five) experts from different countries who examine the evidence and decide who is right and who is wrong. The panel’s report is passed to the Dispute Settlement Body, which can only reject the report by consensus.

D. Panellists for each case are generally chosen from a permanent list of well-qualified candidates. They each serve in their individual capacities and cannot receive instructions from any government.

E. A procedure for settling disputes existed under the old GATT, but it had no fixed timetables, rulings were easier to block, and many cases dragged on for a long time inconclusively. The Uruguay Round agreement establishing the WTO introduced a more structured process with more clearly defined stages in the procedure.

F. Usually about 9 months without an appeal and 12 months with an appeal.

G. A panel report becomes the Dispute Settlement Body’s ruling or recommendation within 60 days unless a consensus rejects it. This means if only one member accepts the report, it becomes a binding ruling.

H. If the country that is the target of the complaint loses, it must follow the recommendations of the panel report or the appeals report. It must state its intention to do so at a Dispute Settlement Body meeting held within 30 days of the report’s adoption. If complying with the recommendation immediately proves impractical, the member will be given a "reasonable period of time" to do so. If it fails to act within this period, it has to enter into negotiations with the complaining country (or countries) in order to determine mutually-acceptable compensation "for instance, tariff reductions in areas of particular interest to the complaining side.

I. If after 20 days, no satisfactory compensation is agreed, the complaining side may ask the Dispute Settlement Body for permission to impose limited trade sanctions ("suspend concessions or obligations") against the other side.
1. What is the International Trade Commission?
2. What is a countervailing duty?
3. What is the US Congress?
4. What is the General Agreement on Tariffs and Trade (GATT)?
5. What is the US Trade Representative?
6. What is the Reciprocal Trade Agreements Act (RTTA)?
7. What is dumping?
8. What is the Smoot-Hawley trade act?
9. What is the US Trade Representative?
10. What is the US Secretary of Commerce?
1a. The terms of trade represents the quantity of one good that exchanges for a quantity of another good in a market.

In this case the terms of trade is either 2/3 lbs. of peaches per lb. of cherries, or, 3/2 lbs. of cherries per lb. of peaches.

The terms of trade is equivalent to the ratio of the dollar prices of the goods, in reverse order. Thus, if \( P_c \) is the price of cherries, in dollars per lb. and if \( P_p \) is the price of peaches in dollars per lb., then \( \frac{P_c}{P_p} \) is equivalent to the terms of trade with units of lbs. of peaches per lb. of cherries. Each of the following answers will use the terms of trade given by \( \frac{P_c}{P_p} \).

1b. 5 extra pounds of cherries would create an excess supply of cherries at the previous prices. A relative abundance of cherries should push the price of cherries down relative to peaches. This means that \( \frac{P_c}{P_p} \) falls to something less than 2/3 lbs. of peaches per lb. of cherries.

1c. The peach farmer's new skills may enable him to raise the positive impression of his peaches in the mind of the cherry farmer. If so, then the cherry farmer's demand for peaches may rise at every price. The increase in demand would raise the price of peaches relative to cherries. This implies that \( \frac{P_c}{P_p} \) falls to something less than 2/3 lbs. of peaches per lb. of cherries. In other words, the peach farmer will have to give up fewer peaches for each pound of cherries because his peaches are more desirable.

1d. The answer here depends a bit on one's interpretation. If the mold is on 40% of every peach, then the quality of the peaches is lower. As a result the demand for the peaches would fall which would reduce the price of peaches. This implies that \( \frac{P_c}{P_p} \) rises to something greater than 2/3 lbs. of peaches per lb. of cherries. On the other hand, we might imagine that 40% of the peaches are no good, having mold on them, while the remaining 60% are of normal quality. In this case one might throw away the bad peaches and come to the market with a reduced supply of high quality peaches. In this case the lower supply would raise the price of (the remaining) peaches implying \( \frac{P_c}{P_p} \) falls.

1e. A news report indicating that cherries may reduce the risk of cancer may change the preferences of both the cherry farmer and the peach farmer. Both may wish to consume more cherries now. The increase in demand should raise the price of cherries relative to peaches. This implies that \( \frac{P_c}{P_p} \) rises to something greater than 2/3 lbs. of peaches per lb. of cherries.
Jeopardy Questions - Chapter 40-2

1. Who is Robert Torrens?
2. What is the unit-labor requirement in cloth production?
3. What is labor productivity in tomato production?
4. What is the opportunity cost of tomatoes in terms of potatoes?
5. What is kg/liter?
6. What is comparative advantage?
7. What is comparative advantage?
8. What is absolute advantage?
9. What is Pw/Pc?
10. What is the US?

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1A. Ecuador has the absolute advantage in bananas because \( a_{LB}^{E}(4) < a_{LB}^{US}(8) \)

B. Ecuador has the comparative advantage in bananas since \( a_{LB}^{E}(4)/a_{LM}^{E}(4) < a_{LB}^{US}(8)/a_{LM}^{US}(2) \)

C. In the US \((P_B/P_M)_{Aut} = a_{LB}^{US}(8)/a_{LM}^{US}(2) = 4 \) machines/banana.

D. Each country would export their comparative advantage good. Thus Ecuador exports bananas and the US exports machines.

E. Ecuador would shift all of it's labor into banana production and would produce no machines. Using the production function, \( Q_B = L_E(400)/a_{LB}^{E}(4) = 100 \) units of bananas.

F. The free trade terms of trade would lie in between the two country's autarky terms of trade. In Ecuador \((P_B/P_M)_{Aut} = a_{LB}^{E}(4)/a_{LM}^{E}(4) = 1 \) machine/banana. In the US \((P_B/P_M)_{Aut} = a_{LB}^{US}(8)/a_{LM}^{US}(2) = 4 \) machines/banana. Therefore, any terms of trade such that \( 1 < ((P_B/P_M)_{FT}) < 4 \).
1. Consider a Ricardian model with two countries, England and Portugal, producing two goods, wine and corn. Suppose the unit-labor requirements in wine production are: \( a_{LW}^{\text{Eng}} = \frac{1}{3} \) hour per liter, and \( a_{LW}^{\text{Port}} = \frac{1}{2} \) hour per liter, while the unit-labor requirements in corn are \( a_{LC}^{\text{Eng}} = \frac{1}{4} \) hour per kg, and \( a_{LC}^{\text{Port}} = \frac{1}{2} \) hour per kg.

A. (4) Which country has the absolute advantage in wine? ... in corn? Explain why.

England has the absolute advantage in wine because
\[
a_{LW}^{E}(\frac{1}{3}) < a_{LW}^{P}(\frac{1}{2})
\]
England also has the absolute advantage in corn because
\[
a_{LC}^{E}(\frac{1}{4}) < a_{LC}^{P}(\frac{1}{2})
\]

B. (4) Which country has the comparative advantage in wine? ... in corn? Explain why.

England has the comparative advantage in corn since
\[
a_{LC}^{E}(\frac{1}{4})/a_{LW}^{E}(\frac{1}{3}) (=\frac{3}{4}) < a_{LC}^{P}(\frac{1}{2})/a_{LW}^{P}(\frac{1}{2}) (=1) .
\]
Also, since England has the comp. adv. in corn, Portugal must have it in wine.

C. (2) According to Ricardo, state how these two countries would take advantage of the potential benefits of trade?

Ricardo said that a country should specialize in the good in which it has a comparative advantage and export that good in exchange for the other.
1. Consider a Ricardian model with two countries, England and Portugal, producing two goods, wine and corn. The unit-labor requirements are given in the Table. Be sure to include units in your answers when appropriate.

<table>
<thead>
<tr>
<th></th>
<th>Wine</th>
<th>Corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>$a_{LW}^{Eng} = 5 \text{ hours per liter}$</td>
<td>$a_{LC}^{Eng} = 4 \text{ hours per kg}$</td>
</tr>
<tr>
<td>Portugal</td>
<td>$a_{LW}^{Port} = 2 \text{ hours per liter}$</td>
<td>$a_{LC}^{Port} = 2 \text{ hours per kg}$</td>
</tr>
</tbody>
</table>

A. What is labor productivity in wine production in Portugal? ... in England?

\[1/a_{LW}^{Port} = \frac{1}{2} \text{ liters per hour}\]

\[1/a_{LW}^{Eng} = \frac{1}{5} \text{ liters per hour}\]

B. Which country is better in an absolute sense in the production of wine? Explain briefly.

Portugal has an absolute advantage in wine production because $a_{LW}^{Port} = 2 \text{ hours per liter} < a_{LW}^{Eng} = 5 \text{ hours per liter}$. Or because $1/a_{LW}^{Port} = \frac{1}{2} \text{ liters per hour} > 1/a_{LW}^{Eng} = \frac{1}{5} \text{ liters per hour}$

C. What is labor productivity in corn production in Portugal? ... in England?

\[1/a_{LC}^{Port} = \frac{1}{2} \text{ kg per hour}\]
1/a_{LC}^{Eng} = 1/4 \text{ kg per hour}

D. Which country is better in an absolute sense in the production of corn? Explain briefly.

Portugal has an absolute advantage in corn production because a_{LC}^{Port} = 2 \text{ hours per kg} is less than a_{LC}^{Eng} = 4 \text{ hours per kg}. Or because, 1/a_{LC}^{Port} = \frac{1}{2} \text{ kg per hour} > 1/a_{LC}^{Eng} = 1/4 \text{ kg per hour}.

E. How much more productive is Portugal in wine compared to England?

\frac{1}{a_{LW}^{Port}} = \frac{1}{2} \text{ liters per hour} / \frac{1}{a_{LW}^{Eng}} = \frac{1}{5} \text{ liters per hour} = \frac{5}{2} = 2.5 \text{ times more productive}

F. How much more productive is Portugal in corn compared to England?

\frac{1}{a_{LC}^{Port}} = \frac{1}{2} \text{ kg per hour} / \frac{1}{a_{LC}^{Eng}} = 1/4 \text{ kg per hour} = \frac{4}{2} = 2 \text{ times more productive}

G. In which good does Portugal have a comparative advantage? Explain why using productivity comparisons.

Wine, because it is 2.5 times more productive in wine while only 2 times as productive in corn.

H. Suppose the autarky terms of trade in Portugal is 1 kg per liter while in England it is 1.25 kg per liter. Explain the motivation for wine trade between the two countries immediately after free trade is allowed. Which country will export wine?

Profit seeking wine firms in Portugal will raise profit by selling a liter of wine for 1.25 kg of corn in England rather than 1 kg in Portugal. Thus Portugal will export wine.
1. What are factors or resources?
2. What is free and costless factor mobility?
3. What is full employment?
4. What is a cargo truck?
5. What is an accountant?
6. What are young workers?
7. What is depreciation and re-investment?
8. What is the short-run?
9. What is the degree of labor mobility between industries? In the IFM there is no mobility allowed, whereas in the Ricardian mobility is free and costless.
10. What is rectangular?
### Trade Answer Key 90 2-1

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import Tariff by a Large Country - initial tariff is zero</td>
<td>Import Tariff Reduction by a Small Country</td>
</tr>
<tr>
<td>Domestic Market Price</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Industry Employment</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Consumer Welfare</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Domestic Producer Welfare</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Government Revenue</td>
<td>+</td>
<td>A</td>
</tr>
<tr>
<td>Domestic National Welfare</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>Foreign Price</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Foreign Consumer Welfare</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Foreign Producer Welfare</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Foreign National Welfare</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

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### Trade Answer Key 90 2-2

<table>
<thead>
<tr>
<th></th>
<th>I: An Import Quota by a Large Country initially in free trade</th>
<th>II: Import Tariff Reduction by a Large Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Market Price</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Industry Employment</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Consumer Welfare</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Domestic Producer Welfare</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Government Revenue</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Domestic National Welfare</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Foreign Price</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Foreign Consumer Welfare</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Producer Welfare</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Foreign National Welfare</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

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### Trade Answer Key 90 2-3

<table>
<thead>
<tr>
<th></th>
<th>I: Export Subsidy by a Large Country</th>
<th>II: Export Tax by a Small Country initially in Free trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Market Price</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Industry Employment</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Consumer Welfare</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Domestic Producer Welfare</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Domestic Government Revenue</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Domestic National Welfare</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Price</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Foreign Consumer Welfare</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Foreign Producer Welfare</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Foreign National Welfare</td>
<td>+</td>
<td>0</td>
</tr>
</tbody>
</table>
1. If the liberalization of agricultural markets proceeds in the future many countries may eliminate export subsidies to farm products. Use a partial equilibrium (supply and demand) diagram to depict the price and welfare effects of an export subsidy elimination for corn. Assume that the country is small in international markets.

Draw Graph Here:

Identify where on the graph the following appear.

ORIGINAL DOMESTIC PRICE: $P_S$

FINAL DOMESTIC PRICE: $P_{FT}$

INITIAL PER UNIT SUBSIDY:

$P_S - P_{FT}$

CHANGE IN C.S.: $+ (a + b)$

CHANGE IN P.S.: $- (a + b + c)$

CHANGE IN GOVT. REVENUE: $+ (b + c + d)$

CHANGE IN NATIONAL WELFARE: $+(b + d)$
1. Consider the following partial equilibrium diagram depicting the market for radios in Portugal, a small importing country. Suppose $P_{FT}$ is the free trade price, $P_T$ is the price in the Portugal when a tariff is in place. Answer the following questions by referring to the diagram. Assume the letters, A, B, C, D, E, refer to areas on the graph. The letters v, w, x and y refer to lengths. (be sure to include the direction of changes by indicating “+” or “-“)

<table>
<thead>
<tr>
<th>Question</th>
<th>Diagram Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Where on the graph is the level of imports in free trade?</td>
<td>w</td>
</tr>
<tr>
<td>B. Where on the graph is the size of the tariff depicted?</td>
<td>v</td>
</tr>
<tr>
<td>C. Where on the graph is the level of imports after the tariff depicted?</td>
<td>x</td>
</tr>
<tr>
<td>D. Where on the graph is the tariff revenue collected by the importing government depicted?</td>
<td>+ C</td>
</tr>
<tr>
<td>E. Where on the graph is the change in producer surplus from the tariff depicted?</td>
<td>+ A</td>
</tr>
<tr>
<td>F. Where on the graph are the deadweight losses that arise with the tariff?</td>
<td>- (B + D)</td>
</tr>
</tbody>
</table>
1. Suppose there are only two countries, the US and China producing and consuming clothing. Suppose in free trade China exports clothing to the US.

A. At the free trade price, in which country is the supply of clothing greater than demand?

China

B. At the free trade price how does world supply compare with world demand for clothing? (i.e., greater, less, or equal)

Equal

C. If the US and China were in autarky rather than free trade, in which country would the price of clothing be higher?

US

D. Based on our class presentation, in moving from autarky to free trade would the price of clothing rise, fall or stay the same in the US?

Fall

E. Based on our class presentation, in moving from autarky to free trade would the price of clothing rise, fall or stay the same in China?

Rise

F. Starting from free trade, if the US places a tariff on imports of clothing, how would the price of clothing change in the US?

Rise
G. Based on our class presentation, starting from free trade, if the US places a tariff on imports of clothing, how would the price of clothing change in China?

Fall

H. How would a tariff on US imports of clothing affect the amount of clothing produced in the US?

Rise

I. How would a tariff on US imports of clothing affect the amount of clothing demanded in the US?

Fall

J. Suppose a specific US tariff (set at T) is implemented and a new equilibrium is reached. Let $P_c$ be the price in China, $P_u$ the price in the US, $M$ is the quantity of US clothing imports and $X$ is the quantity of Chinese clothing exports. How does the US price compare with the Chinese price?

$$P_u = P_c + T$$
1. When trade policies are implemented it is common to refer to it as “protectionism.” Why? Explain briefly.

When a tariff, quota or export subsidy are implemented, the domestic producers of that product benefit from higher prices and producer surplus (profits). It is the domestic industry that receives “protection” from foreign competition, hence the name.

2. Does trade theory suggest that trade liberalization by a small importing country will make everyone in the country better-off? Why or why not? Explain briefly.

Although national welfare will rise with trade liberalization by a small country, import-competing producers suffer losses while domestic consumers enjoy larger gains. Thus, not everyone is likely to benefit from trade liberalization.

3. If a country implements an import quota with identical price effects, instead of a tariff, what can the government do to assure that the distribution of the gains and losses remains exactly the same? Explain briefly.

An import quota is completely identical to its equivalent tariff when the government sells quota tickets (or rights) for the maximum price possible. The revenues earned on these sales will then match the tariff revenue.
1. Consider the following partial equilibrium diagram depicting two countries, China and the US, trading a product with each other. Suppose PFT is the free trade price, PUS is the price in the US when a tariff is in place, and PC is the price in China when a tariff is in place. Answer the following questions by referring to the diagram. Assume the letters, A, B, C, D, E, F, G, H, I and J refer to areas on the graph. The letters v, w, x, y, and z refer to lengths.

A. Which country is the exporter of the product?  
China

B. Where on the graph is the level of imports depicted with the tariff in place?  
X

C. Which areas on the graph represent the change in consumer surplus for the importing country if the tariff is removed?  (include the sign)  
+ (A + B + C + D)

D. Which areas represent the tariff revenue lost by the importing government?  
+ (C + E)
Trade Answer Key Jeopardy 90-1

1. What is the equilibrium autarky price?
2. What is a "non-binding" quota?
3. What is consumer surplus?
4. What is tariff revenue?
5. What is a "large" country?
6. What is "monopoly" power in trade?
7. What is rises?
8. What is falls?
9. What is rises?
10. What is rises?
1. When trade policies are implemented, the benefits that accrue in the economy are often concentrated in the hands of a relatively small number of citizens, while the losses that accrue are widely dispersed. For each of the trade policies below, indicate which domestic groups benefit and which lose AND whether the effects for each group are relatively concentrated or dispersed.

A. an import tariff on chicken

<table>
<thead>
<tr>
<th>Name of Group</th>
<th>Winners or Losers</th>
<th>Concentrated or Dispersed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken producers</td>
<td>Winners</td>
<td>Concentrated</td>
</tr>
<tr>
<td>Chicken consumers</td>
<td>Losers</td>
<td>Dispersed</td>
</tr>
<tr>
<td>Taxpayers or recipients of government benefits</td>
<td>Winners</td>
<td>Dispersed</td>
</tr>
</tbody>
</table>
B. an export subsidy on soybeans

<table>
<thead>
<tr>
<th>Name of Group</th>
<th>Winners or Losers</th>
<th>Concentrated or Dispersed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean producers</td>
<td>Winners</td>
<td>Concentrated</td>
</tr>
<tr>
<td>Soybean consumers</td>
<td>Losers</td>
<td>Dispersed</td>
</tr>
<tr>
<td>Taxpayers or recipients of government benefits</td>
<td>Losers</td>
<td>Dispersed</td>
</tr>
</tbody>
</table>

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1. Consider the following trade policy game between two small country governments, Kenya and Ethiopia. The policy choices for each government are to choose either free trade on all imports or to place a 15% tariff on all imports. The national welfare payoffs for each country when both choose free trade are given as (100, 100). The first 100 is Kenya’s national welfare, the second is Ethiopia’s.

<table>
<thead>
<tr>
<th>Kenya</th>
<th>(Kenya, Ethiopia)</th>
<th>Ethiopia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Trade</td>
<td>Free Trade</td>
<td>15% Tariff</td>
</tr>
<tr>
<td></td>
<td>(100,100)</td>
<td>(100, 80)</td>
</tr>
<tr>
<td>15% Tariff</td>
<td>(80, 100)</td>
<td>(80, 80)</td>
</tr>
</tbody>
</table>

a. (2) Based on the tariff analysis for a small importing country and assuming symmetry between the two countries, complete the empty two cells in the table above.

The original numbers in the Table reflect the results from a small country case so that a 15% tariff by Ethiopia will reduce its own national welfare (100 to 80) but will not affect its trading partner, Kenya (100 to 100).

Assuming symmetry, when Kenya puts 15% tariffs in place independently, its welfare falls (100 to 80) while Ethiopia’s remains constant (100 to 100). This gives us the southwest box.

Finally if Ethiopia put its own 15% tariffs on top of Kenya’s 15% tariffs, then Ethiopia’s welfare will fall (100 to 80) but Kenya’s would remain the same (80 to 80). This gives the southeast box.

b. (1) Based on the numbers you provided in (a), identify which cell corresponds to the Nash (or non-cooperative) equilibrium.

The non-cooperative, or Nash, equilibrium is found with the following
procedure.

1) Suppose Ethiopia chose 15% tariffs, what is Kenya’s best response? 
Answer: Free trade, since 100 > 80

2) Now suppose Kenya chose free trade, what is Ethiopia’s best response? 
Answer: Free trade since 100 > 80.

3) Finally, suppose Ethiopia chose free trade, what is Kenya’s best response? 
Answer: free trade, again since 100 > 80.

4) If Kenya chooses free trade, Ethiopia chooses free trade, AND if Ethiopia chooses free trade, Kenya chooses free trade. Thus, (free trade, free trade) is the Nash Equilibrium

c. (1) Which cell corresponds to the cooperative equilibrium? 

The cooperative equilibrium is the one that maximizes the sum of the welfare for the two players. This occurs at (free trade, free trade) or (100, 100) with the sum of welfare at 200.

d. Yes or No? Does this game help justify a trade liberalization organization like the WTO?

NO. If countries played this game there is no need for an organization like the WTO to promote cooperation since the cooperative outcome is the same as the non-cooperative outcome.
1. Consider the following trade policy game between two large country governments, US and EU. The policy choices for each government are to choose either free trade on all imports or to place an optimal tariff on all imports. The national welfare payoffs for each country when both choose free trade are given as (50, 50). The first term is the US national welfare, the second is the EU’s.

<table>
<thead>
<tr>
<th></th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>(US, EU)</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td></td>
</tr>
<tr>
<td>Free Trade</td>
<td>(50,50)</td>
</tr>
<tr>
<td>Optimal Tariff</td>
<td>(40, 55)</td>
</tr>
<tr>
<td>Optimal Tariff</td>
<td>(55, 40)</td>
</tr>
<tr>
<td>(55, 40)</td>
<td>(45, 45)</td>
</tr>
</tbody>
</table>

A. Based on the tariff analysis for a small importing country and assuming symmetry between the two countries, complete the empty two cells in the table above.

B. Among the four outcomes, which would the US most prefer? ... which would the EU most prefer?

US (opt tariff, free trade) or (55,40)  EU (free trade, optimal tariff) or (40,55)

C. Identify which cell corresponds to the Nash (or non-cooperative) equilibrium.
D. Which cell corresponds to the cooperative equilibrium?

(opt tariffs, opt tariffs) or (45, 45)

E. Yes or No? Does this game help justify a trade liberalization organization like the WTO?

YES
Trade Answer Key Jeopardy 120-1

1. What is an improvement in national welfare?
2. What is production efficiency?
3. What is the compensation principle?
4. What are market imperfections or market distortions?
5. What is a 2nd-Best equilibrium?
6. What is retaliation?
7. What is a 1st-Best policy?
8. What are information deficiencies?
9. What is lobbying?
10. What is the controversy between free trade and protectionism?