Economic Investigations

Investigation #11: African–U.S. Trade:
What's in it for Africa?

There Is More to the Story

Junior Achievement®

Economic Investigations: There Is More to the Story

"Economic Investigations: There Is More to the Story" was a National Science Foundation funded project, which began in September 2003. The Social Science Education Consortium (SSEC) of Boulder, Colorado, was the grantee agency. James Davis, Executive Director of the SSEC, was the project director, and Donald Wentworth, Professor Emeritus of Pacific Lutheran University, was project co-director.

The overall project goal was to help students achieve a deeper understanding of puzzling economics questions so they could explain and provide thorough, supported, and justifiable accounts of economic phenomena, facts, and data. Three objectives guided project development:

- Create a classroom laboratory orientation for the investigations similar to those students would encounter in a laboratory science course.

- Develop quantitative skills in students—more so than they would acquire in a standard high school economics course.

- Focus the investigations on intriguing economics questions to spark student and teacher interest.

The Investigations

Twelve investigations were created by teams of economics curriculum materials developers and high school economics teachers. The titles of each investigation identify its content area followed by the main question addressed in the investigation. The investigation titles are:

Microeconomic Investigations

1. Women's Wages: Do Women Earn Less Money Than Men?
2. Organ Transplants: Where Are the Missing Kidneys?
3. Minimum Wage: Does Raising the Rate Help Younger Workers?
4. Poverty: How Can a Family Be in Poverty and Not Be Poor?
5. Health Care: Who Should Pay the Cost?

Macroeconomic Investigations

6. Performance of the National Economy: How Do We Measure the Economy's Health?
7. Inflation: Are Higher Prices the Only Problem?
8. Employment and Unemployment: How Can Both Rates Rise at the Same Time?
9. Fiscal Policy: Can Congress Diagnose and Treat an Ailing Economy?
10. Monetary Policy: Can the Federal Reserve Diagnose and Treat an Ailing Economy?

International Investigations

11. African-U.S. Trade: What's in It for Africa?
12. Imports: Does American Employment Decline Because of International Trade?

Investigation and Field Test Results

The investigations were field-tested by high school teachers in the spring semesters of 2004 and 2006. Field test locations included Jefferson County Colorado; Milwaukee, Wisconsin; Sioux Falls, South Dakota; Scottsdale/Mesa, Arizona; and Plano, Texas. Based on this field test, the investigations were found to promote deeper student understanding of economic issues through the use of effective instructional methods. Students acknowledged that they learned a great deal from the investigations and teachers stated they would recommend the investigations to other teachers.

Cooperative Publishing Agreement

The Social Science Education Consortium has transferred the copyright of these investigations to JA Worldwide. JA Worldwide is making them available to teachers by posting them on the JA Worldwide website (www.ja.org) and distributing them in CD-ROM format. The investigations also will be posted on the SSEC website (www.socialscience-ed.org). Ultimately, the investigations will support the revised Junior Achievement high school program, JA Economics.

Authorship and Consultants

The project was fortunate to have an excellent group of authors and consultants. These individuals are listed below.

Colorado Development Team
Laura Burrow, Jefferson County Public Schools
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The economics consultant to the project was Norris Peterson, Professor of Economics, Pacific Lutheran University, Tacoma, Washington.

The project evaluator was William Walstad, Professor of Economics, University of Nebraska, Lincoln.

Nancy Baldrica, Excelsior, Minnesota, served in an editorial and desktop-publishing capacity on the project.

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Investigation # 11:
African–U.S. Trade: What's in it for Africa?

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Investigation #11:   African–U.S. Trade: What's in it for Africa?

Introduction

Trade Policy between the United States and Africa

"In May 2000, the Trade and Development Act of 2000 containing the African Growth and Opportunity Act (AGOA) was passed by the Congress and signed into law. The AGOA establishes a new framework for U.S. trade, investment, and development policy for sub-Saharan Africa. The Administration plans to fully implement the AGOA and to broaden and deepen U.S. relations with the countries of sub-Saharan Africa. The Administration will pursue a strategy to expand free markets, trade, and economic growth in sub-Saharan Africa. Achieving these objectives will benefit the United States and sub-Saharan African countries by helping to create healthier, more-stable economies, stronger, more-democratic governments in Africa; and expanded markets for U.S. exports. Expanding trade with Africa supports the values and policy objectives of this Administration to promote economic development and political freedom and stability in the poorest regions of the world." *(2001 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act.)*

By implementing the AGOA, has the United States achieved all of the above-mentioned goals pertaining to sub-Saharan Africa?

Student Comprehension
This investigation helps students examine the issues related to trade between the United States and sub-Saharan Africa.
- Why do nations trade?
- What is the impact of free trade interference policies?
- How have the United States and sub-Saharan Africa faired 3-1/2 years after implementation of the African Growth and Opportunity Act?

In this investigation, students are asked to determine why nations trade. Students then will investigate the economic impact of free trade interference policies. To conclude the investigation, students will evaluate the progress the United States and sub-Saharan Africa have made toward improving trade relations.

Concepts

Absolute Advantage
Comparative Advantage
Opportunity Costs
Tariffs

Objectives

After completing this investigation, students will be able to:
- Use hypothetical data to determine which party has a comparative advantage in the production of a particular good.
- Analyze how tariffs impact prices.

Economic Principles

When asked why nations trade, people often respond, "to acquire items the domestic nation cannot produce on its own." This certainly is logical, but what if one nation can produce all the goods and services the domestic population needs? Could one conclude that trade is unnecessary? Economists would state that even when a nation can produce everything its citizens need, trade still should take place. This reasoning is based on comparative advantage, where the trading partner with the lowest opportunity cost will produce the designated good. This will result in a more efficient use of economic resources and an improved standard of living for all participants. Regardless of such economic reasoning, some nations will attempt to protect their domestic production through the implementation of tariffs. This will lead to higher prices for the good on the international market, inefficient use of economic resources, and an increase in governmental income through the tariff.

Investigation

Description

Students are introduced to the current policies regarding trade between the United States and sub-Saharan Africa. They apply the concept of comparative advantage to determine why nations should trade. Students then use supply and demand analysis to demonstrate the impact of tariffs on market prices. Finally, students evaluate the progress the United States and sub-Saharan Africa have made in trade with one another.

Time Required: 90 minutes

Materials

Visual #1	Highlights of the African Growth and Opportunity Act of 2000
Visual #2	Absolute and Comparative Advantage
Visual #3	Determining Comparative Advantage: Output Method
Visual #4	Determining Comparative Advantage: Input Method
Visual #5	Sub-Saharan Africa: U.S. Exports and Imports, Annual and Year-to-Date, January to September
Visual #6	Tariffs
Visual #7	Economic Effects of a Tariff
Visual #8	Where is Sub-Saharan Africa Now?
Activity #1	Determining Absolute and Comparative Advantage

Procedure

1. Tell students this investigation will examine why nations trade, and how trade has faired recently between the United States and sub-Saharan Africa. Display **Visual #1 – Highlights of the African Growth and Opportunity Act of 2000.** Provide a brief overview of this act. Tell students that in addition to the requirements set out in the AGOA, a nation "(1) cannot engage in activities that undermine U.S. national security or foreign policy interests, (2) cannot engage in gross violations of internationally-recognized human rights, (3) cannot provide support for acts of international terrorism, and (4) must have implemented commitments to eliminate the worst forms of child labor." (*2003 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act, page 7*)

2. Ask students why nations trade. Students might answer that nations trade to acquire items the domestic nation cannot produce, or to acquire goods produced at a lower cost.

3. Ask students to imagine shopping at a favorite store. Have them imagine all the products that are available for purchase. Have them envision the different colors, styles, and designs of these products. Ask students if they have ever noticed where these products are made.

4. Ask students to identify the nations where some of these products are produced. Have them check their backpacks, shoes, jackets, etc. Record the nations on the board. To add geography to the lesson, have students locate these nations on a world map, if available.

5. Ask students why they think these nations decided to produce these particular goods. Possible answers might include that these nations can produce the products at a lower cost; that these nations are better at producing the products than other nations; or that these nations have found buyers for their products.

6. Display **Visual #2 – Absolute and Comparative Advantage**, showing only page 1 with the definition for absolute advantage. **Absolute advantage** is defined as "a country's ability to produce more of a given product than another country, if measuring output when using the same quantities of inputs" (Clayton, A40). Now, show students the example on page 2 of Visual #2.
   - Have students determine which nation has the absolute advantage in the production of Good A.
     Answer: Country X.
   - Have students determine which nation has the absolute advantage in the production of Good B.
     Answer: Country X.

   Pose this question to students: "If Country X is able to produce more of both Good A and B than Country Y, is there any need for trade between these two nations?" Explain that the answer is "yes." When production is examined through comparative advantage, it becomes clear that each country is able to produce one good at a lower opportunity cost than the other country.

   Now show students the definitions of comparative advantage and opportunity cost found on page 3 of Visual #2. **Comparative advantage** is defined as "a country's ability to produce a given product relatively more efficiently than another country; production at a lower opportunity cost" (Clayton, A41). **Opportunity cost** is defined as "the cost of the next best alternative use of money, time, or resources when one choice is made rather than another" (Clayton, A48).

   - **Teachers Note:** Depending upon the teacher's comfort level for presenting the topic of comparative advantage, one could skip steps 7 and 8, and continue with step 9.

7.   Display **Visual #3 – Determining Comparative Advantage: Output Method.** Show only pages 1 and 2 of Visual #3, including the explanation of an output-type question and the amount of cookies and brownies produced by Gary and Sally. Explain that the method used to calculate comparative advantage depends on whether the question is an output- or an input-type question.

Give students the following definition of an output problem:
"An output problem states that each person gets a certain amount of product out of a given input. Examples of output are tons per acre, miles per gallon, words per minute, apples per tree, and televisions produced per hour" (Morton, 231). When calculating an output question, take the individual's other output over the individual's given output: other output divided by the given output = the opportunity cost of the given good.

Ask students the following questions:
- Who has the absolute advantage in baking cookies?
  Answer: Neither, since Gary and Sally can each bake 50 cookies.
- Who has the absolute advantage in baking brownies
  Answer: Sally, because she can bake 75 brownies to Gary's 40 brownies.

Show students page 3 of Visual #3, displaying the math required to compute an output-type question. Finally, show students page 4 of Visual #3, and discuss why Gary and Sally should each specialize in baking the product that has the lower opportunity cost.

8.   Display **Visual #4 – Determining Comparative Advantage: Input Method.** Show only pages 1 and 2 of Visual #4, including the explanation of an input-type question and the amount of minutes Randy and Janelle need to fold clothes and wash windows.

Give students the following definition of an input problem:
"An input problem states that it takes a certain amount of input to get a given product. Examples of input are the number of hours to do a job, numbers of gallons of paint to paint a house, number of acres to feed a horse, and number of pitches to throw a strike" (Morton, 231). When calculating an input question, take the individual's other input under the individual's given input: given input divided by the other input = opportunity cost of the given good.

Ask students the following questions:
- Who has the absolute advantage in folding clothes?
  Answer: Randy, because he requires 20 minutes to fold clothes, while Janelle requires 25 minutes to fold clothes.
- Who has the absolute advantage in washing windows?
  Answer: Randy, because he requires 40 minutes washing windows, whiling Janelle requires 75 minutes to wash windows.

Show the students page 3 of Visual #4, displaying the math required to compute an input-type question. Finally, show students page 4 of Visual #4, and discuss why Randy and Janelle should specialize in the completion of the household task having the lower opportunity cost.

9.   Distribute **Activity #1 – Determining Absolute and Comparative Advantage.** Allow students ten minutes to complete the activity.

Answers to Activity #1,
Determining Absolute and Comparative Advantage

1.   **Number of Minutes Required to Shovel the Driveway and Sidewalks**

	Shovel Driveway			Shovel Sidewalks		
Fred	3	=	45	30	=	2
	2		30	45		3
Chris	6	=	60	50	=	5
	5		50	60		6

- Who has the absolute advantage in shoveling the driveway and why?
  Answer: Fred, because he requires 45 minutes completing the task, while Chris requires 60 minutes.
- Who has the absolute advantage in shoveling the sidewalks and why?
  Answer: Fred, because he requires 30 minutes to complete the task while Chris requires 50 minutes.
- Which method should be used to determine who has the comparative advantage in shoveling the driveway and shoveling the sidewalks? Output or input?
  Answer: Input.
- Who has the comparative advantage in shoveling driveways and why?
  Answer: Chris, because her opportunity cost of shoveling one driveway is 6/5 of a sidewalk. Fred's opportunity cost of shoveling one driveway is 3/2 of a sidewalk. Since Chris has the lower opportunity cost, she should shovel driveways.
- Who has the comparative advantage in shoveling sidewalks and why?
  Answer: Fred, because his opportunity cost of shoveling sidewalks is 2/3 of a driveway. Chris's opportunity cost of shoveling one sidewalk is 5/6 of a driveway. Since Fred has the lower opportunity cost, he should shovel sidewalks.

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2. **Number of Math and Economic Problems Completed in 30 minutes**

	Math Problems		Economic Problems
	$\frac{2}{5}$	=	$\frac{2}{5}$
Bill	$\frac{5}{2}$	=	2 1/2
Julie	$\frac{1}{5}$	=	$\frac{5}{1}$
	5	=	$\frac{1}{5}$

- Who has the absolute advantage in completing math problems and why?
  Answer: Neither, because they can both produce 5 math problems.
- Who has the absolute advantage in completing economic problems and why?
  Answer: Julie, because she can complete 5 economic problems compared to Bill's 2 economic problems.
- Which method should be used to determine who has the comparative advantage in completing math and economic problems? Output or input?
  Answer: Output.
- Who has the comparative advantage in completing math problems and why?
  Answer: Bill, because his opportunity cost of completing one math problem is 2/5 of an economic problem. Julie's opportunity cost of completing one math problem is 1 economic problem. Since Bill has a lower opportunity cost, he should complete the math problems.
- Who has the comparative advantage in completing economic problems and why?
  Answer: Julie, because her opportunity cost of completing one economic problem is 1 math problem. Bill's opportunity cost of completing one economic problem is 5/2 of a math problem. Since Julie has a lower opportunity cost, she should complete the economic problems.

1.
Number of Minutes Required to Shovel the Driveway and Sidewalks

		Shovel Driveway		Shovel Sidewalks		
Fred	3	=	45	30	=	2
	2		30	45		3
Chris	6	=	60	50	=	5
	5		50	60		6

- Who has the absolute advantage in the amount of paint needed to complete a picture and why?
  Answer: Terri, because she needs only 3 bottles of paint to complete the picture, while Lisa requires 4 bottles.
- Who has the absolute advantage in the amount of paint needed to complete a model and why?
  Answer: Neither, because Terri and Lisa each require 2 bottles of paint to complete the model.
- Which method should be used to determine who has the comparative advantage with regard to the amount of paint needed to complete a picture and a model? Output or input?
  Answer: Input.
- Who has the comparative advantage in the amount of paint needed to complete a picture and why?
  Answer: Terri, because her opportunity cost of painting one picture is 3/2 of a model. Lisa's opportunity cost of painting one picture is painting 2 models. Since Terri has the lower opportunity cost, she should paint pictures.
- Who has the comparative advantage in the amount of paint needed to complete a model and why?
  Answer: Lisa, because her opportunity cost of painting the model is 1/2 of a picture. Terri's opportunity cost of painting one model is 2/3 of a picture. Since Lisa has the lower opportunity cost, she should paint models.

10. Display **Visual #5 – Sub-Saharan Africa: U.S. Exports and Imports, Annual and Year-to-Date, January to September.** This allows students to identify the products these two regions are trading. Discuss which goods are the most imported or exported in the sub-Saharan African region. Explain that exports are U.S. goods going to sub-Saharan Africa. Imports are sub-Saharan African goods going to the United States.

11. Tell students that Visual #5 shows that agricultural and textile/apparel products are two of the five main U.S. imports from sub-Saharan Africa. Tell students that, according to the World Bank, "Agriculture is the largest employer in low-income countries, accounting for about 60 percent of the labor force and producing about 25 percent of the GDP" (World Bank, 103).

   Also tell them "exports of manufacturers have grown at nearly twice the rate of agriculture, and now constitute nearly 80 percent of exports from all developing countries" (World Bank, XIX).

12. For sub-Saharan Africa, the percentage of agricultural and textile/apparel imports entering the United States in 2001 was 3.5 percent and 1.4 percent, respectively. (Statistical Abstract of the United States: 2003, 802).

   Pose this question to the students: "If agriculture and textile/apparel are such important industries for developing nations, why doesn't the United States import more of these products?" Possible answers might include that the United States wants to protect American businesses, or the developing nations are not producing goods the United States wants.

13. Display **Visual #6 – Tariffs.** Show students the definition of a tariff and the data pertaining to the tariffs of different nations. Tell them a **tariff** is "a tax imposed by a nation on an imported good" (McConnell and Brue, G-25).

14. Display **Visual #7 – Economic Effects of a Tariff.** If the good in question is produced domestically, without international trade, the price and quantity would be established at the intersection of domestic demand and domestic supply (P domestic and Qs/Qd). From their work with comparative advantage, students should recognize the benefits of trade.

   Therefore, this particular good now is produced internationally and traded with other nations. Since other nations can produce this good at a lower cost than the domestic nation, the price of the good will decrease (to P world trade). With a decrease in the price of the product, domestic producers will reduce their output (because of the law of supply, to Qs1). The lower price will encourage domestic consumers to purchase more of the good (because of the law of demand) and the quantity demanded will increase (to Qd1).

   At first glance, there appears to be a shortage because the quantity demanded at Qd1 exceeds the quantity supplied at Qs1. This gap will be filled with imports from the comparatively advantaged country. If a tariff is imposed, the price of the imported good will increase (to P tariff). The higher price will encourage domestic producers to increase the quantity supplied of the good (because of the law of supply to Qs2). The higher price will cause domestic consumers to reduce their purchases of this product (because of the law of demand to Qd2). The quantity of goods imported also will decrease from the horizontal distance between points Qs1 and Qd1, to the horizontal distance between points Qs2 and Qd2.

The results of a tariff include the following:
- A price higher than the international price of the good.
- A larger quantity produced by a potentially less-efficient producer.
- A smaller quantity produced by a more-efficient producer.

15. Show students **Visual #8 – Where is sub-Saharan Africa Now?** The African Growth and Opportunity Act certainly has led to an increase in trade between the United States and sub-Saharan African nations. When viewing the entire trade picture for these trading partners (with the exclusion of petroleum) a rather minimal amount of goods are exchanging hands. A continuation of investment in this region of the world would be necessary for sub-Saharan Africa to become a larger player in the international trade market.

CLOSURE

Ask students to summarize the main points of the investigation on trade with sub-Saharan Africa.

- What is the current policy regarding trade with sub-Saharan Africa, based on the African Growth and Opportunity Act of 2000?
  Answer: Expanding free markets, trade, and economic growth; creating healthier, more-stable economies and stronger, more-democratic governments in Africa; and promoting economic development and political freedom and stability in the poorest regions of the world.

- Why is comparative advantage important in international trade?
  Answer: Comparative advantage promotes production of goods and services by those nations that have a lower opportunity cost. This will increase the efficient use of resources.

- What is the potential economic impact of tariff reduction?
  Answer: When nations produce goods for which they have a comparative advantage, a reduction of tariffs should result in a lower price for all consumers.

Multiple Choice (3)

The next two questions are based upon the following information:

> Two nations, the United States and China, are contemplating trading with each other. If the United States uses X amount of resources for the production of kitchen appliances, it can produce 200 units per day. If X amount of U.S. resources are used to produce computers, the United States can produce 150 units per day. China can produce 400 kitchen appliances per day, or 400 computers per day using the same amount of resources (X) as the United States.

Production of Kitchen Appliances and Computers		
	Kitchen Appliances	Computers
USA	200	150
China	400	400

1. Which nation, the United States or China, has the absolute advantage in the production of kitchen appliances? Computers?
   a. The United States has an absolute advantage in both kitchen appliances and computers.
   b. China has an absolute advantage in both kitchen appliances and computers.
   c. The United States has an absolute advantage in kitchen appliances, and China has an absolute advantage in computers.
   d. The United States has an absolute advantage in computers, and China has an absolute advantage in kitchen appliances.

2. Which nation, the United States or China, has the comparative advantage in the production of kitchen appliances? Computers?
   a. The United States has a comparative advantage in both kitchen appliances and computers.
   b. China has a comparative advantage in both kitchen appliances and computers.
   c. The United States has a comparative advantage in kitchen appliances, and China has a comparative advantage in computers.
   d. The United States has a comparative advantage in computers, and China has a comparative advantage in kitchen appliances.

3.   The economic impact of a tariff is:
    a.   A higher price and a lower quantity, when compared to the world price.
    b.   A higher price and a higher quantity, when compared to the world price.
    c.   A lower price and a lower quantity, when compared to the world price.
    d.   A lower price and a higher quantity, when compared to the world price.

ANSWER KEY

Multiple Choice (3)
(Answers are shown in bold.)

The next two questions are based upon the following information:

Two nations, the United States and China, are contemplating trading with each other. If the United States uses X amount of resources for the production of kitchen appliances, it can produce 200 units per day. If X amount of U.S. resources are used to produce computers, the United States can produce 150 units per day. China can produce 400 kitchen appliances per day, or 400 computers per day using the same amount of resources (X) as the United States.

Production of Kitchen Appliances and Computers		
	Kitchen Appliances	Computers
USA	200	150
China	400	400

1. Which nation, the United States or China, has the absolute advantage in the production of kitchen appliances? Computers?
   a. The United States has an absolute advantage in both kitchen appliances and computers.
   b. China has an absolute advantage in both kitchen appliances and computers.
   c. The United States has an absolute advantage in kitchen appliances, and China has an absolute advantage in computers.
   d. The United States has an absolute advantage in computers, and China has an absolute advantage in kitchen appliances.

2. Which nation, the United States or China, has the comparative advantage in the production of kitchen appliances? Computers?
   a. The United States has a comparative advantage in both kitchen appliances and computers.
   b. China has a comparative advantage in both kitchen appliances and computers.
   c. The United States has a comparative advantage in kitchen appliances, and China has a comparative advantage in computers.
   d. The United States has a comparative advantage in computers, and China has a comparative advantage in kitchen appliances.

3. The economic impact of a tariff is
   a. **A higher price and a lower quantity, when compared to the world price.**
   b. A higher price and a higher quantity, when compared to the world price.
   c. A lower price and a lower quantity, when compared to the world price.
   d. A lower price and a higher quantity, when compared to the world price.

Essay (2)

1. Explain why nations should take comparative advantage into consideration when discussing the issue of trade.

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2.   Why would a nation implement a tariff?

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ANSWER KEY

Essay (2)

1. Explain why nations should take comparative advantage into consideration when discussing the issue of trade.

   Answer: The mathematical process of determining comparative advantage indicates which nation can produce a particular good at a lower opportunity cost. This should always result in the most efficient use of the world's scarce economic resources. This leads to the basics of economics, which is how to satisfy unlimited wants with limited resources. To deviate from such a process leads to waste and inefficiency.

2. Why would a nation implement a tariff?

   Answer: A nation would implement a tariff primarily to protect a domestic business. Since the nation with the comparative advantage can produce the designated product at a lower opportunity cost, the quantity supplied by the domestic producer would decrease. As a result, fewer workers would be required to produce the good. The implementation of a tariff would increase the price of the good, leading domestic producers to increase their quantity of the overall supply. This would allow for a greater number of domestic workers to be employed.

Highlights of the African Growth and Opportunity Act of 2000

The Goals of the Act include

- Expanding free markets, trade, and economic growth

- Creating healthier, more-stable economies and stronger, more-democratic governments in Africa

- Promoting economic development and political freedom and stability in the poorest regions of the world

- As of December 2003, 37 of the 48 sub-Saharan African nations are eligible for inclusion in the AGOA.

- Eligibility requires progress toward:

   – A market-based economy

   – Reduction of trade barriers

   – Rule of law

   – Economic policies to reduce poverty

   – Protection of workers' rights

   – Reduction of corruption.

Source: (*2001 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act*, page 1).
(*2003 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act*, page 7).

(*2004 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act*, page 1).

Absolute and Comparative Advantage

Absolute Advantage:

A country's ability to produce more of a given product than another country, if measuring output when using the same quantities of inputs.

If one is measuring input, absolute advantage is a country's ability to produce a unit of output with less input.

Units Produced Per Day

	Good A	Good B
Country X	100	150
Country Y	75	100

- Which nation has the absolute advantage in the production of Good A?

- Which nation has the absolute advantage in the production of Good B?

Comparative Advantage:

A country's ability to produce a given product relatively more efficiently than another country, with production at a lower opportunity cost.

Opportunity Cost:

The cost of the next best alternative use of money, time, or resources when one choice is made as opposed to another.

Source for definitions: Clayton, A40, A41, and A48.

Determining Comparative Advantage: Output Method

The method used to calculate comparative advantage will depend on whether the question is an output- or an input-type question.

An ***OUTPUT*** problem states that each person gets a certain amount of product out of a given input.

Examples of output are:
- Tons per acre
- Miles per gallon
- Words per minute
- Apples per tree
- Televisions produced per hour

Baked Goods Produced Per Hour

	Cookies	Brownies
Gary	50	40
Sally	50	75

When calculating an output question, take the individual's other output over the individual's given output: other output divided by the given output = the opportunity cost of the given good.

(output = over)

Baked Goods Produced Per Hour

Cookies   Brownies

Gary $\dfrac{4}{5}$ = $\dfrac{40}{50}$ ⤬ $\dfrac{50}{40}$ = $\dfrac{5}{4}$

Sally $\dfrac{3}{2}$ = $\dfrac{75}{50}$ ⤬ $\dfrac{50}{75}$ = $\dfrac{2}{3}$

Production of Cookies

- Gary: 1 cookie costs 40/50 = 0.80 brownie.

- Sally: 1 cookie costs 75/50 = 1.50 brownie

Production of Brownies

- Gary: 1 brownie costs 50/40 = 1.25 cookie.

- Sally: 1 brownie costs 50/75 = 0.67 cookie.

Conclusions

- Gary has a comparative advantage in cookie production because he can produce cookies at a lower opportunity cost than Sally. Sally has a comparative advantage in brownie production because she can produce brownies at a lower opportunity cost than Gary.

- Gary should specialize in cookie production. Sally should specialize in brownie production. The two parties will gain from trade.

Determining Comparative Advantage: Input Method

An ***INPUT*** problem states that it takes a certain amount of input to get a given product.

Examples of input are:

- Number of hours to do a job
- Numbers of gallons of paint to paint a house
- Number of acres to feed a horse
- Number of pitches to throw a strike.

Number of Minutes to Complete a Task

	Fold Clothes	Wash Windows
Randy	20	40
Janelle	25	75

When calculating an input question, take the individual's other input under the individual's given input: given input divided by the other input = opportunity costs of the given good.

(input = into)

Number of Minutes to Complete a Task

		Fold Clothes			Wash Windows		
Randy	$\frac{1}{2}$	=	$\frac{20}{40}$		$\frac{40}{20}$	=	$\frac{2}{1}$
Janelle	$\frac{1}{3}$	=	$\frac{25}{75}$		$\frac{75}{25}$	=	$\frac{3}{1}$

Production of Folded Clothes

- Randy: 1 folded clothes costs 20/40 = 0.50 windows.

- Janelle: 1 folded clothes costs 25/75 = 0.33 windows.

Production of Washed Windows

- Randy: 1 window costs 40/20 = 2.00 folded clothes.

- Janelle: 1 window costs 75/25 = 3.00 folded clothes.

Conclusions

- Janelle has a comparative advantage in folded clothes production because she can produce folded clothes at a lower opportunity cost than Randy. Randy has a comparative advantage in washed windows production because he can produce washed windows at a lower opportunity cost than Janelle.

- Janelle should specialize in folded clothes production. Randy should specialize in washed windows production. The two parties will gain from trade.

Sub-Saharan Africa:
U.S. Exports and Imports,
Annual and Year-to-Date,
January to September

Value (1,000 dollars)

(Top exports based on 2002)

Sector	2000	2001	2002	2002 YTD	2003 YTD
Transportation Equipment	1,795,702		1,876,597	1,349,747	1,448,963
Agricultural Products	768,773	657,105	932,923	668,873	807,487
Chemical and Related Products	709,665	779,700	699,251	520,994	518,578
Machinery	560,731	669,414	671,827	482,779	515,828
Electronic Products	703,141	700,353	636,918	470,942	559,985

Value (1,000 dollars)

(Top imports based on 2002)

Sector	2000	2001	2002	2002 YTD	2003 YTD
Energy – Related Products	15,016,274	14,271,302	11,712,706	8,319,879	13,321,717
Minerals and Metals	3,200,500	3,081,792	2,705,009	1,936,983	2,173,418
Textiles and Apparel	789,240	997,995	1,136,316	868,040	1,155,048
Agricultural Products	874,843	835,736	911,645	623,787	828,070
Transportation Equipment	185,206	399,384	621,041	477,230	589,310

Source: http://reportweb.usitc.gov/africa/by_country_all.jsp

Tariffs

A tariff is a tax imposed by a nation
on an imported good.

Country	Average Tariff	Maximum Tariff
Canada	3.8%	238.0%
European Union	19.0%	506.3%
Japan	10.3%	50.0%
United States	9.5%	350.0%
Korea, Rep. Of	42.2%	917.0%
Brazil	12.4%	55.0%
Costa Rica	13.2%	154.0%
Indonesia	8.5%	170.0%
Malawi	15.3%	25.0%
Morocco	63.9%	376.5%
Togo	14.7%	20.0%
Uganda	12.9%	15.0%

Source: World Bank, 119.

Economic Effects of a Tariff
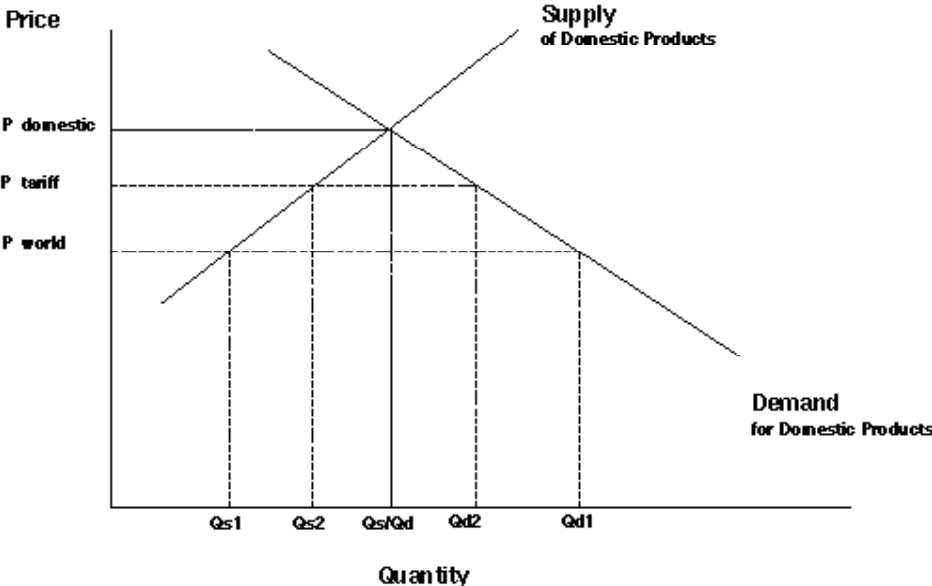
Where Is Sub-Saharan Africa Now?

- "In 2003, 95% of U.S. imports from AGOA-eligible countries entered duty-free."

- "The United States is sub-Saharan Africa's largest single-country export market, accounting for 20% of the region's total exports in 2002."

- "Total trade between the United States and sub-Saharan Africa was just under $33 billion in 2003, with U.S. exports of almost $7 billion and imports of $25.6 billion."

- "At year-end 2002, the U.S. investment position in sub-Saharan Africa stood at $8.9 billion, representing a 12% increase over the previous year."

- "Sub-Saharan Africa accounted for only 1.4% of world trade in 2002, virtually unchanged from 2001."

- "Sub-Saharan Africa accounts for less than 1% of U.S. merchandise exports and less than 2% of U.S. merchandise imports."

- "80% of AGOA imports were petroleum products. With these fuel products excluded, AGOA imports were slightly less than $3 billion."

- "AGOA textile and apparel imports increased by 50% to $1.2 billion. Agricultural products grew 13% to $241 million."

(*2004 Comprehensive Report of the President of the United States on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act*, page 1, 2, 3, 13, and 15).

Determining Absolute and Comparative Advantage

Directions: For the following problems, determine which party has the absolute advantage in the production of a product or the completion of a task and why. Then indicate whether the comparative advantage is determined using the output or input method. Conclude the activity by indicating which party has the comparative advantage in the production of a product or the completion of a task and why.

Number of Minutes Required to Shovel the Driveway and Sidewalks

1.	Shovel Driveway	Shovel Sidewalks
Fred	45	30
Chris	60	50

•   Who has the absolute advantage in shoveling the driveway and why? _____

_____
_____
_____
_____

•   Who has the absolute advantage in shoveling sidewalks and why? _____

_____
_____
_____
_____

- Which method should be used to determine who has the comparative advantage in shoveling the driveway and shoveling the sidewalks: output or input?

  _____

- Who has the comparative advantage in shoveling driveways and why? _____

  _____

  _____

  _____

  _____

- Who has the comparative advantage in shoveling sidewalks and why? _____

  _____

  _____

  _____

  _____

Number of Math and Economic Problems Completed in 30 Minutes

2.

	Math Problems	Economic Problems
Bill	5	2
Julie	5	5

- Who has the absolute advantage in completing math problems and why? _____

  _____
  _____
  _____
  _____

- Who has the absolute advantage in completing economic problems and why? _____

  _____
  _____
  _____
  _____

- Which method should be used to determine who has the comparative advantage in completing math and economic problems: output or input?

  _____
  _____
  _____
  _____

- Who has the comparative advantage in completing math problems and why? _____

  _____

  _____

  _____

  _____

- Who has the comparative advantage in completing economic problems and why? _____

  _____

  _____

  _____

  _____

Number of Bottles of Paint to Complete a Picture and Model

3.

	Picture	Model
Terri	3	2
Lisa	4	2

- Who has the absolute advantage in the amount of paint needed to complete a picture and why?

  _____

  _____

  _____

  _____

- Who has the absolute advantage in the amount of paint needed to complete a model and why?

  _____

  _____

  _____

  _____

- Which method should be used to determine who has the comparative advantage with regard to the amount of paint needed to complete a picture and a model: output or input?

  _____

  _____

  _____

  _____

- Who has the comparative advantage in the amount of paint needed to complete a picture and why?

  _____

  _____

  _____

  _____

- Who has the comparative advantage in the amount of paint needed to complete a model and why?

  _____

  _____

  _____

  _____

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