

Marshall School of Business
University of Southern California

GSBA 549

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Exercise 1
Production, Saving, and the Trade Balance

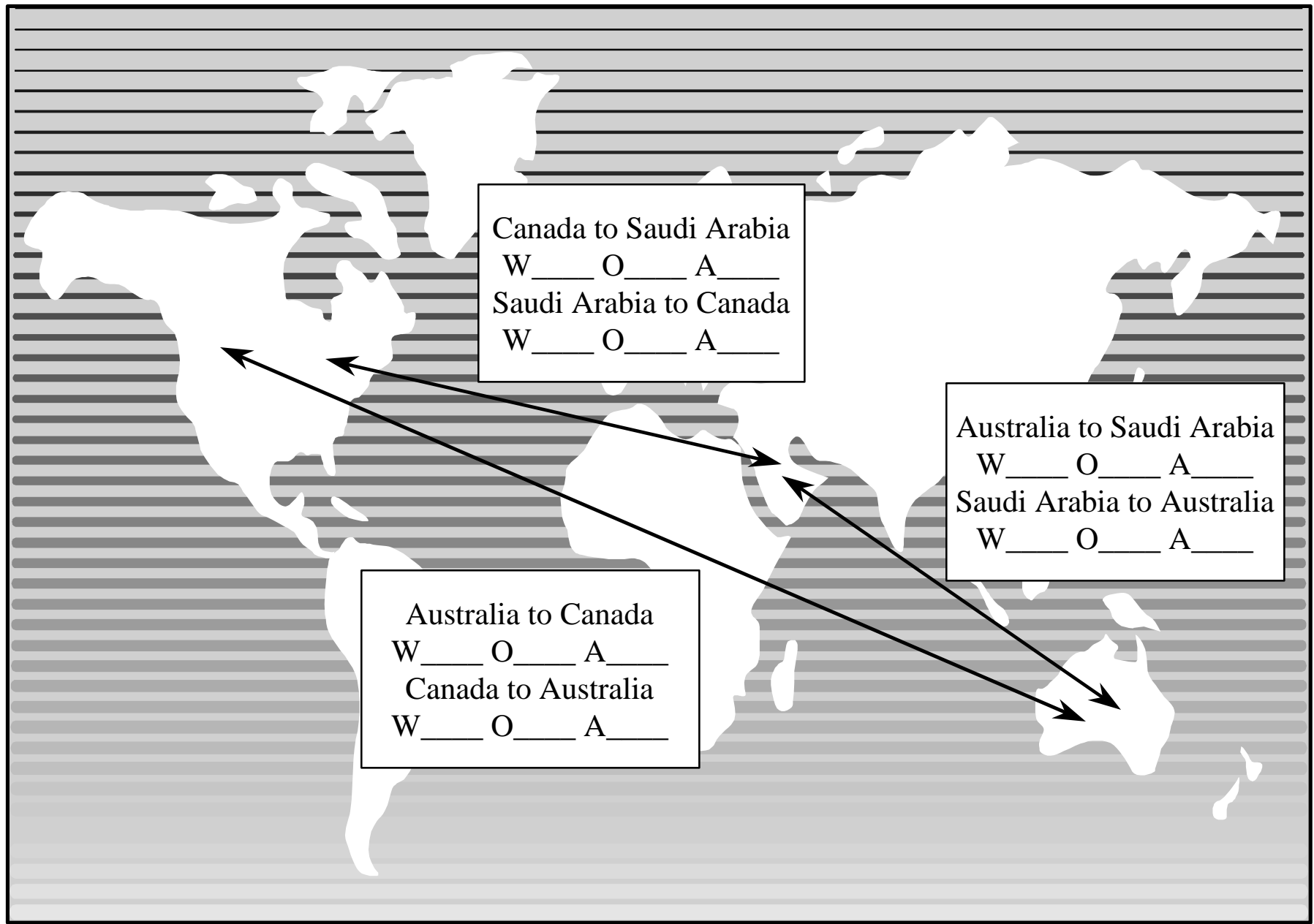
Consider a simple world with three countries: Australia, Canada, and Saudi Arabia. Australia produces only wheat, Canada produces both wheat and automobiles, and Saudi Arabia produces only oil. Each country consumes all three goods. In addition to being used as a consumption good (e.g., as gasoline to power automobiles), oil is an intermediate good in the production of wheat and autos. At current prices, each dollar of wheat produced requires the input of \$0.25 of oil, and each dollar of automobiles also requires the input of \$0.25 of oil. Each country has a zero net foreign asset position, so that its GNP and GDP are equal. Canada is self-sufficient in wheat, meaning that its wheat production exactly equals its wheat consumption. Investment and government purchases are zero in each country. The following table shows consumption of final goods by consumers in each country (in dollars) during the current period.

	Wheat	Automobiles	Oil	Total
Australia	100	100	100	
Canada	200	200	200	
Saudi Arabia	300	300	300	
Total				

1. In the following table, show each country's production (again in dollars) of each good. Remember that a good may be used as a final good or as an intermediate good, and total production must equal the sum of these two uses.

	Wheat	Automobiles	Oil	Total
Australia				
Canada				
Saudi Arabia				
Total				

2. Calculate each country's GDP. How is GDP related to the output shown in the previous table? I.e., how is GDP related to value added, and how are intermediate goods treated?
3. Calculate each country's saving. In this simple setup, saving is equal to GDP minus consumption. Given that domestic investment is zero in each country, calculate how much each country is borrowing from abroad (or investing in the rest of the world) in the current period.
4. On the attached map, record the trade flows among the three countries.
5. Calculate the bilateral trade balance between all three possible pairs of countries.
6. Calculate each country's overall trade balance.
7. What conclusions can you draw from this example? Specifically, what is the relation between a country's overall trade balance and its bilateral trade balance with a particular foreign country? How does a country's overall trade balance compare with investment in the rest of the world? Given the overall trade balance, what determines the pattern of bilateral trade balances between a country and its various trading partners?



Canada to Saudi Arabia

W____ O____ A____

Saudi Arabia to Canada

W____ O____ A____

Australia to Saudi Arabia

W____ O____ A____

Saudi Arabia to Australia

W____ O____ A____

Australia to Canada

W____ O____ A____

Canada to Australia

W____ O____ A____

Answers:

1. From the first table, we know that final consumption of each good is 600. Of each dollar's worth of wheat, \$0.25 is an intermediate input of oil and \$0.75 is value added by wheat growers. A similar situation holds for autos. Thus, the 600 units of wheat and 600 units of autos require 300 units of oil as an intermediate good. Combined with the 600 units of final consumption of oil, this implies a total of 900 units of oil. Neither wheat nor autos are intermediate goods, so that total production of these goods equals final consumption (600). Saudi Arabia produces all 900 units of oil, and Canada produces all 600 units of automobiles. Because Canada is self-sufficient in wheat, it produces 200 units, and Australia produces the remaining 400 units.
2. Saudi Arabia's GDP equals its production of oil, or 900. Australia's GDP (value added) equals its output of 400 units of wheat, less 100 units of oil as an intermediate good. By similar reasoning, Canada's GDP is $800 - 200 = 600$.
3. The GDP numbers from question 2 are equal to consumption for each country, implying saving of zero for each country. Remembering that investment is also equal to zero for each country, this implies that each country borrows zero from abroad (net foreign investment = saving – domestic investment).
4. Canada exports 100 autos to Australia and 300 autos to Saudi Arabia.
Saudi Arabia exports 200 units of oil to Australia and 400 units of oil to Canada.
Australia exports 300 units of wheat to Saudi Arabia.
5. Australia has a deficit of 100 with Canada.
Canada has a deficit of 100 with Saudi Arabia.
Saudi Arabia has a deficit of 100 with Australia.
6. Each country's overall trade balance is zero.
7. Bilateral trade deficits with selected countries do not necessarily imply an overall trade deficit. Bilateral trade balances are determined largely by patterns of comparative advantage, i.e., by which countries are relative good at producing particular types of products. (This can be thought of as a primarily microeconomic question.) A country running a trade surplus is investing in the rest of the world. The overall trade balance is determined by domestic saving and investment, which are macroeconomic variables.