

Econ Problem Set #2: Trade (answer key)

Here we continue the example of Mexico and the US, yellow pine logs and computers. Suppose it costs \$500 more to make logging sustainable. Thus we have two possibilities, unsustainable production costs and sustainable production costs. The unsustainable costs are the same as before:

| | Mexico | US |
|------------------|--------|--------|
| Computers | \$4000 | \$2000 |
| Yellow pine logs | \$1500 | \$1000 |

Sustainable production costs are:

| | Mexico | US |
|------------------|--------|--------|
| Computers | \$4000 | \$2000 |
| Yellow pine logs | \$2000 | \$1500 |

We also assume that the value is the same as before, \$2000 for logs and \$5000 for computers, and that both economies have \$60,000 to spend on production.

1. If Mexico doesn't trade, and if it doesn't harvest logs sustainably, and if it wishes to have equal numbers of logs and computers, how many of each can it have? What is the market value of this combination?

11 computers, 11 logs, \$77,000

2. If Mexico doesn't trade, and if it does harvest its logs sustainably, and if it wishes to have equal numbers of logs and computers, how many of each can it have? What is the market value of this combination?

10 computers, 10 logs, \$70,000

3. What is the market value of what Mexico gives up to harvest sustainably without trade? (#1 – #2)

\$7,000

4. If Mexico does trade, and if it doesn't harvest its logs sustainably, which good should it specialize in? If it equals its consumption of computers compared to the no-trade no-sustainability case (#1), how many logs can it consume? (Hint: begin with its specialized production and calculate how much it must trade to achieve the equal-computers result.)

It should specialize in logs. It harvests 40 logs, sells 27.5 to the US and imports 11 computers. This means it consumes 11 computers and 12.5 logs, at a market value of \$80,000.

5. If Mexico does trade, and if it does harvest its logs sustainably, which good should it specialize in? If it equals its consumption of computers compared to the no-trade but sustainable case (#2), how many logs can it consume?

It should specialize in computers. It makes 15 computers, sells 5 to the US and imports 12.5 logs, for a market value of \$75,000.

6. What is the market value of what Mexico gives up to harvest sustainably with trade? (#4 – #5)

\$5,000

7. If Mexico thinks the cost of sustainability in the no-trade scenario (#3) is worth it, does it make sense to think that they would find the cost of sustainability in the with-trade scenario (#6) not worth it? Explain.

No. If it is worth \$7000 to achieve sustainability, it is worth more than \$5000. According to this analysis, environmentalists in Mexico (and elsewhere) should not fear trade, they should welcome it.