Production Possibilities Frontier

Bob'S PPF

Acres of wheat	wheat	corn	Opp. Cost
0	0	45	--
1	20	40	5/20=.25
2	38	34	6/18=.33
3	54	27	7/16=.44
4	68	19	8/14=.57
5	80	10	9/12=.75
6	90	0	10/10=1

Bob's opportunity cost of wheat is the number of bushels of corn given up per bushel of wheat.

Ann'S PPF

Acres of wheat	Wheat	Corn	Opp. Cost
0	0	90	--
1	10	80	10/10=1.0
2	19	68	12/9=1.33
3	27	54	14/8=1.75
4	34	38	16/7=2.29
5	40	20	18/6=3.00
6	45	0	20/5=4.00

If both Bob and Ann are using 3 acres for wheat, Bob's opportunity cost for wheat production is lower than Ann's.

A person with a lower opportunity cost has a comparative advantage.

Bob has a comparative advantage in wheat production (less corn foregone).

Ann has a comparative advantage in corn production.

If two people's opportunity costs differ, there are gains from trade.

Suppose both Bob and Ann are using three acres for wheat.

Acres of Wheat		Production	
Bob	Ann	Corn	Wheat
3	3	27+54=81	54+27=81
4	2	68+19=87	19+68=87
6	0	90+0=90	0+90=90

Such trade can be accomplished at a price between the two opportunity costs.

Bob supplies corn to Ann at a price (units of wheat) higher than his opportunity cost. Bob gets more wheat than he gives up, Ann gets more corn than she gives up.
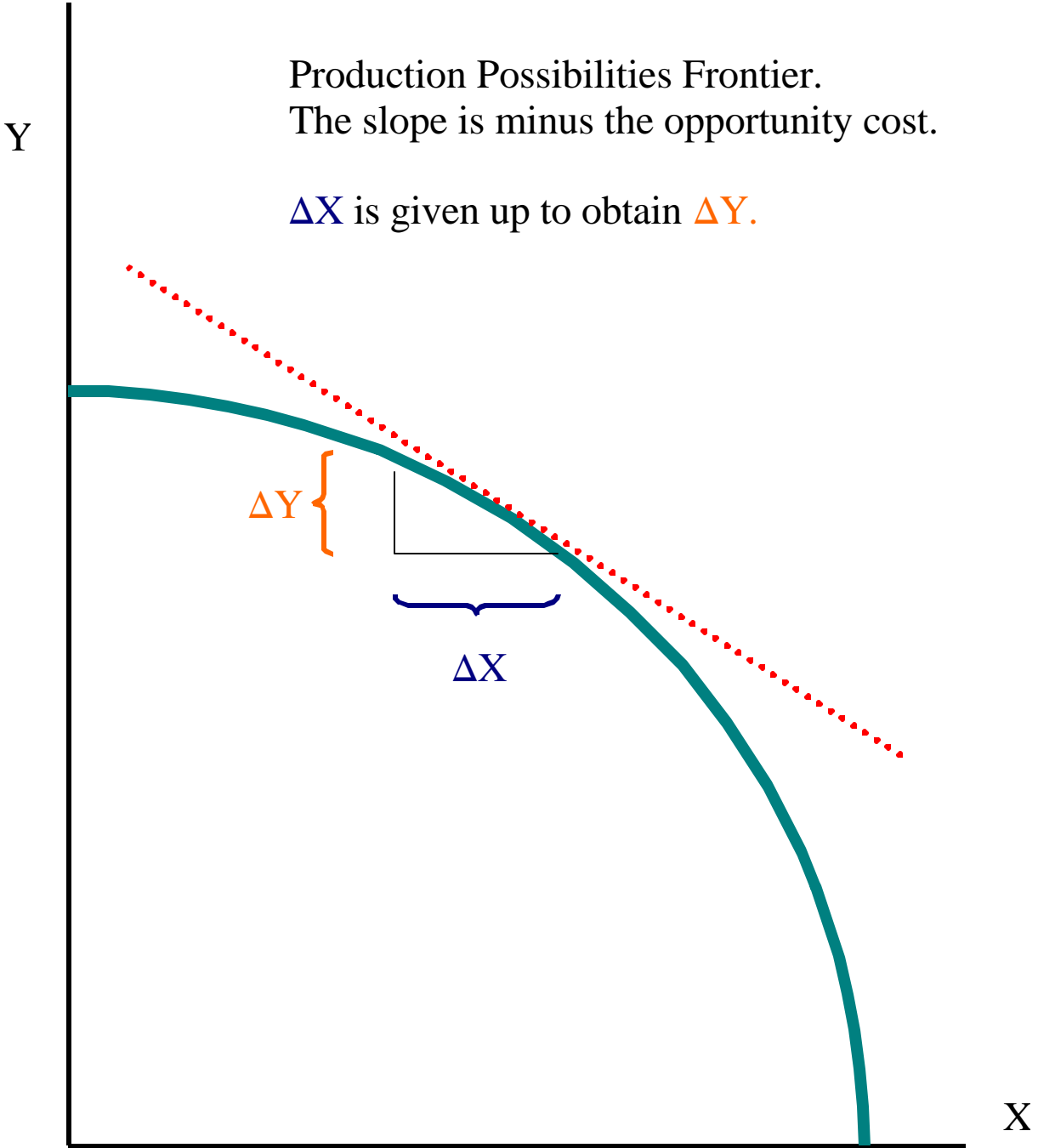
Ann's Revised PPF

Acres	Wheat	Corn	Opp Cost
0	0	180	--
1	20	160	20/20=1.00
2	38	136	24/18=1.33
3	54	108	28/16=1.75
4	68	76	32/14=2.29
5	80	40	36/12=3.00
6	90	0	40/10=4.00

An absolute advantage is the ability to produce more of everything. Here, Ann has an absolute advantage over Bob.

Production Possibilities Frontier.
The slope is minus the opportunity cost.

ΔX is given up to obtain ΔY.

Summary

Absolute Advantage - some individuals, nations are able to have more of everything

Comparative Advantage - having a lower cost, in terms of foregone production of other goods

Opportunity cost of X is the amount of Y given up to get one unit of X.

Opportunity cost of Y is the X to get an additional unit of Y.

The opportunity cost of X (in terms of Y) is the reciprocal of the opportunity cost of Y (in terms of X).

Thus, a nation that has a comparative advantage in X has a comparative disadvantage in Y.

It is not possible to have a comparative advantage in every good.

Trade benefits both parties.

Trade occurs at a price between the opportunity costs. For example, the price of widgets must exceed the opportunity cost of the low cost producer, but be less than the opportunity cost of the high cost producer.

Trade equalizes the opportunity costs of production.

Trade leads to specialization, with nations (or individuals) specializing in the production of goods for which they have low opportunity cost.

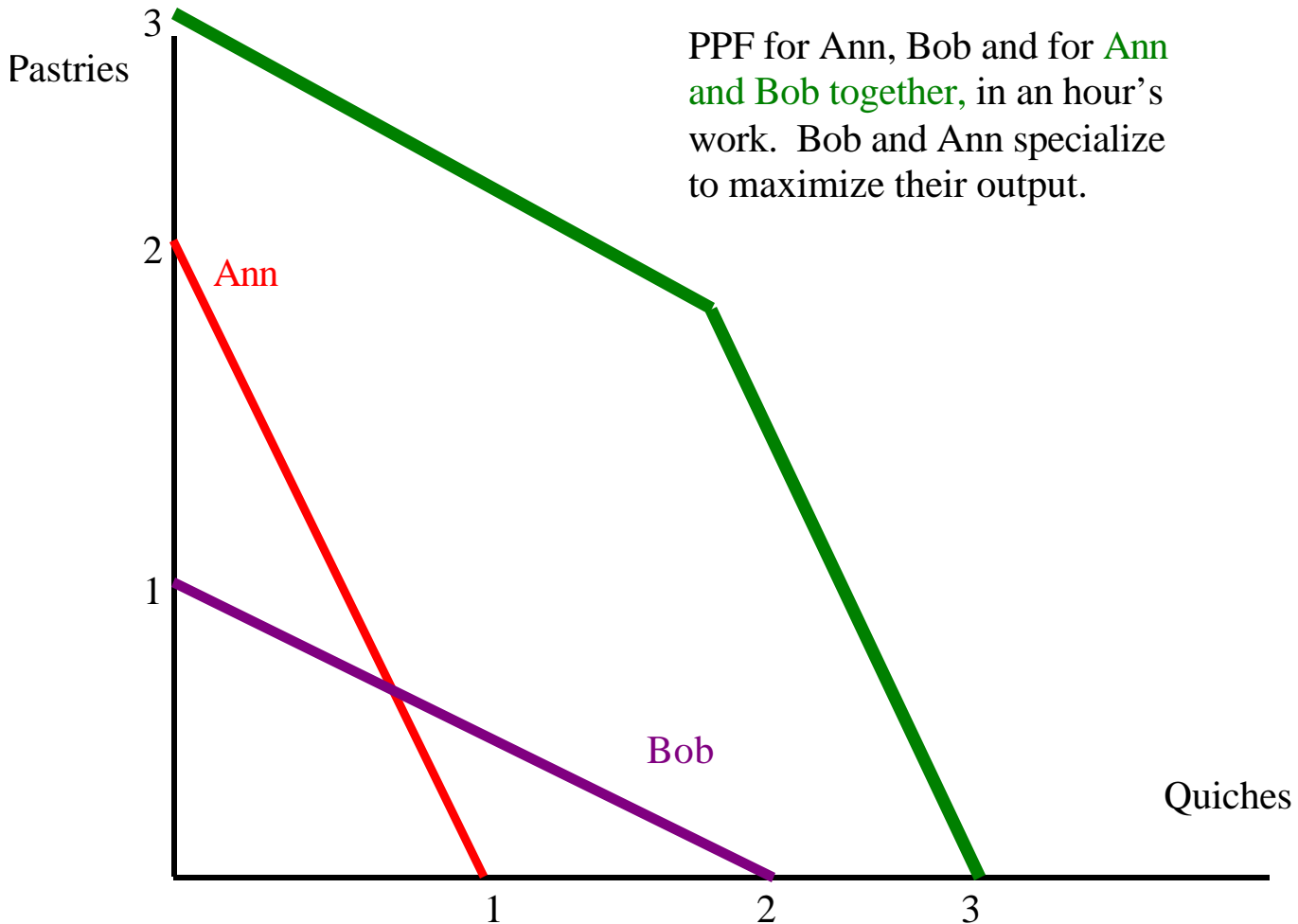Trade occurs even if one party has an absolute advantage.

Trade has distributional effects. Some producers will lose from trade, if the price of their production falls.

For example, US unskilled workers will probably be harmed by US-Mexico free trade, and Mexican computer manufacturers will be harmed.

Trade confers a net benefit--the world has more goods total.

The biggest gains from trade occur between nations (or individuals) who are dissimilar. Thus, one should expect bigger gains from trade from US-Mexico free trade than from US-Canada free trade.
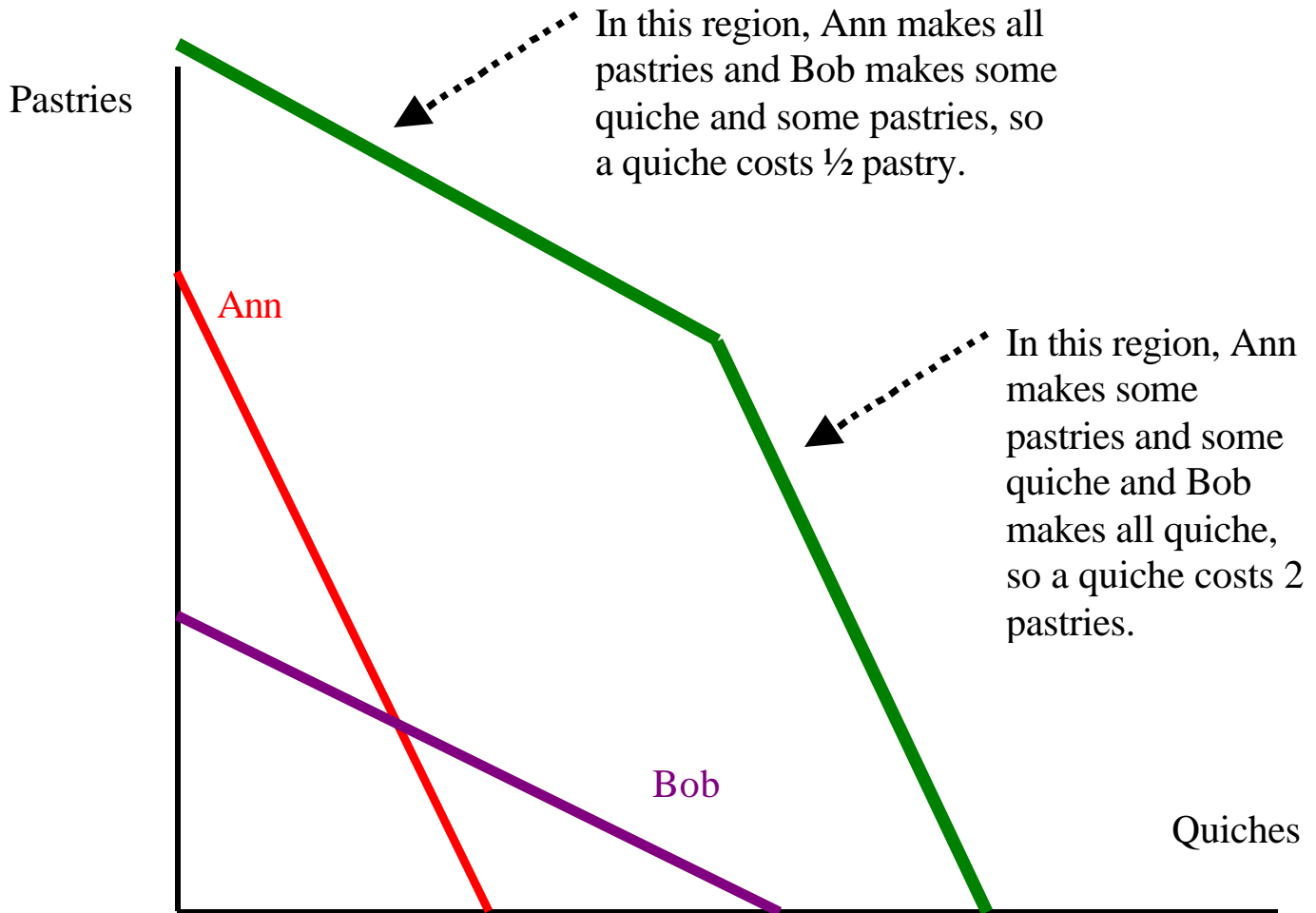
Ann and Bob are having a dinner party. Ann can make two
pastries per hour, and one quiche per hour. Bob can make one
pastry per hour, and two quiches per hour.

PPF for Ann, Bob and for Ann
and Bob together, in an hour's
work. Bob and Ann specialize
to maximize their output.

Ann has a comparative advantage in pastries, with an opportunity cost of ½,
(Ann loses ½ quiche per pastry) while Bob loses 2 quiches per pastry.

Bob has a comparative advantage in quiche, with a cost of quiche of ½ which
is lower than Ann's cost of 2 (pastries per quiche).

What is the lowest cost way of producing 24 quiches and 12 pastries? First,
put Ann on pastries and Bob on quiches. Ann finishes in 6 hours. Bob has
done 12 quiches, so there are 12 quiches to go. Now put both on quiches,
producing 3 quiches per hour, so they finish in 4 hours, for a total of ten hours.

Pastries

In this region, Ann makes all pastries and Bob makes some quiche and some pastries, so a quiche costs ½ pastry.

In this region, Ann makes some pastries and some quiche and Bob makes all quiche, so a quiche costs 2 pastries.

Ann

Bob

Quiches

Bob produces 2 quiches or 1 pastry per hour. Ann produces 3 quiches or 2 pastries per hour.

Who has the comparative advantage?

At what? Bob has a comparative advantage at quiches, with cost ½ which is less than Ann's cost of 2/3. Ann has the comparative advantage at pastry, with cost 1.5, which is less than Bob's cost of 2.

Who has an absolute advantage?

Ann – she can have more quiches and pastries, and leisure!

Ann and Bob would like to produce 60 each of quiches and pastries. What is the quickest time to do so?

Bob has the comparative advantage at quiche, so start with Bob making quiche and Ann making pastries. Ann finishes in 20 hours. At this point, Bob has made 40 quiches, so there are 20 quiches to go. Put them both making quiches and they finish (4 quiches per hour) in 5 more hours, for a total of 25 hours.