

1 A few thoughts on comparative and absolute advantage

E.R. Morey: draft, September 8, 2011

Britta, a former 2010 student, found comparative and absolute advantage confusing concepts. I agree.

She asked me to talk about these concepts and, of course, her wish was my command. You too could ask me to lecture on a topic or concept you find confusing.

1.0.1 Comparative and absolute advantage

1.0.2

Different parties (individuals, firms, etc.) having different *advantages* is why there are potential gains from specialization and trade.

Specialization mean we each concentrate on producing only one thing or a few things. We each do not produce everything we consume.

Gains from trade simply means that the parties to the trade are made better off by the trade.

To have an advantage simply means one party is better at something than another party. You are likely a better partyer (partier) than me; I hopefully, am a better econ. lecturer than you.

Few people or firms have an advantage in the production of everything.

2 There are two ways one can have an advantage over another: an *absolute advantage* or a *comparative advantage*

I will discuss these concepts in terms of producing different goods and services.

Imagine a world of two commodities: feeding milk to babies and oil changes.

Fred and Wilma, the "Flintstones." have an old car, it needs a lot of oil changes, and a new baby, Bam-bam, who needs a lot of milk feedings.



How might we determine whether Fred or Wilma has an advantage in each of these activities?

2.1 Absolute advantage

We might consider how long it takes each of them to do each activity. If Fred takes less time than Wilma for activity A Fred has an advantage over Wilma in the production of activity A , an absolute advantage.

If Fred takes less time than Wilma for activity B he also has an advantage over Wilma in the production of activity B , an absolute advantage.

Consider some different possibilities:

World 1	time needed to feed baby	time needed to change oil
Fred	15 min	3hrs
Wilma	30min	2hrs

Wilma has the absolute advantage in the production of oil changes; Fred in feeding baby

World 2	time needed to feed baby	time needed to change oil
Fred	30 min	1hrs
Wilma	1hr	2hrs

Fred has the absolute advantage in both feeding the baby and changing the oil.

If I can produce something faster than you, I have an **absolute advantage** over you in its production.

But there is another way to have an advantage over someone. And that way is more important than absolute advantage when it comes to trade.

2.2 Comparative advantage

Consider now opportunity cost, and think about how one might define *advantage* in terms of opportunity cost.

Consider a world of only two activities: A and B

In terms of opportunity cost, I have an advantage over you in the production of activity A if the opportunity cost of me producing A , sacrificed units of activity B , is less than the opportunity cost to you of producing activity A .

Said differently, if I sacrifice less B when I produce another unit of A than you sacrifice when you produce another unit of A , I have a comparative advantage over you in the production of A .

3 Consider two possible worlds of Fred and Wilma (worlds 1 and 3)

World	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	15 min	3hrs	1/12 oilchange	12 babyfeedings
Wilma	30min	2hrs	1/4 oilchange	4 babyfeedings

Before we consider World 3, consider, in detail, World 1.

First off, what does it tell us?

Fred has the absolute advantage in baby feeding and Wilma the absolute advantage in oil changes.

When Fred feeds the baby, his time goes to baby feeding and there is 1/12 less oil changes. When Wilma feeds the baby, her time goes to baby feeding and there is 1/4 less oil changes.

So the opportunity cost to feed the baby (in terms of lost oil changes) is less for Fred. Fred has a comparative advantage over Wilma in the feeding of the baby.

Now consider the household production of oil changes. When Fred changes the car's oil, rather than feeding the baby, 12 baby feedings are lost. If Wilma allocates her time to changing the oil, 4 baby feedings are lost, so Wilma has a comparative advantage in changing oil.

Not that the opportunity cost of activity A in terms of activity B is the inverse of the opportunity cost of activity B in terms of activity A

$$1/12 = \frac{1}{(12/1)}$$

$$4 = \frac{1}{(1/4)}$$

So the magic result

If you have a comparative advantage over me in the production of activity A then I have a comparative advantage over you in the production of activity B . WOW.

Note that in this example the person with the comparative advantage also had the absolute advantage, but this is often not the case.

3.1 You figure out who has the comparative advantage in baby feeding and oil changes in World 3

World 3	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	1hr	1hr	? oil change	? baby feeding
Wilma	30min	2hrs	? oil change	? baby feedings

World 3	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	1hr	1hr	1 oil change	1 baby feeding
Wilma	30min	2hrs	1/4 oil change	4 baby feedings

In World 3, Fred has a comparative advantage in oil changes, and Wilma in baby feeding

Make up a World 3 where neither Fred nor Wilma has a comparative advantage in either activity. do it on the overhead.

First where they are both identical.
Then where they are not identical

4 Why do we care about absolute or comparative advantage?

When comparative advantage exists there will be a gain if there is specialization and trade

Consider different allocations of Wilma's time and Fred's time between baby feeding and oil changes and how this changes the amount of each produced.

Assume that every day they each allocates four hours to the household chores (oil changes and baby feedings)

First assume each devotes 2 hours to each activity - they share the tasks equally - an "equal marriage." How much will be produced?

4.1 In World 1:

from before

World 1	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	15 min	3hrs	1/12 oil change	12 baby feeding
Wilma	30min	2hrs	1/4 oil change	4 baby feedings

Amount produced in World 1 if Fred and Wilma each allocate 2 hours to each activity

World 1	baby feeding produced	oil changes produced
Fred	8	2/3
Wilma	4	1
total	12	5/3

But in World 1, Fred has a comparative advantage in baby feeding and Wilma in oil changes, so if Fred spends 4 hours feeding the baby and Wilma spends all of her 4 hours changing oil

World 1	baby feeding produced	oil changes produced
Fred	16	0
Wilma	0	2
total	16	$2 = \frac{6}{3}$

With specialization Fred and Wilma end up with more of both commodities: four more baby feedings and $1/3$ more oil changes.

4.2 In World 3:

from before

World 3	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	1hr	1hr	1 oil change	1 baby feeding
Wilma	30min	2hrs	1/4 oil change	4 baby feedings

Amount produced in World 3 if Fred and Wilma each allocate 2 hours to each activity

World 1	baby feeding produced	oil changes produced
Fred	2	2
Wilma	4	1
total	6	3

But in World 3, Fred has a comparative advantage in oil changes and Wilma in baby feeding, so if Fred spends 4 hours changing oil and Wilma spends all of her 4 hours feeding the baby

World 1	baby feeding produced	oil changes produced
Fred	0	4
Wilma	8	0
total	8	4

With specialization Fred and Wilma end up with more of both commodities: two more baby feedings and one more oil change.

5 Consider one more example of comparative and absolute advantage:

World 4	time needed to feed baby	time needed to change oil
Fred	2hrs	3hrs
Wilma	30min	2hrs

Wilma has the absolute advantage in the production of both activities

World 4	time needed to feed baby	time needed to change oil	oil changes sacrificed if feed baby	baby feeding sacrificed if change oil
Fred	2hrs	3hrs	2/3 oil change	3/2=1.5 baby feeding
Wilma	30min	2hrs	1/4 oil change	4 baby feedings

When Fred feeds the baby, his time goes to baby feeding and there is 2/3 less oil changes. When Wilma feeds the baby, her time goes to baby feeding and there is 1/4 less oil changes.

So the opportunity cost to feed the baby (in terms of lost oil changes) is less for Wilma. Wilma has a comparative advantage over Fred in the feeding of the baby (note that she also has an absolute advantage).

Now consider the household production of oil changes. When Fred changes the car's oil, rather than feeding the baby, 1.5 baby feedings are lost. If Wilma allocates her time to changing the oil, 4 baby feedings are lost, so Fred has a comparative advantage in changing oil even though Wilma can do it much faster (Wilma has an absolute advantage in oil changes).

In World 4, while Wilma is better at both activities than Fred (has an absolute advantage in both activities), Fred has a comparative advantage when it comes to oil changes.

Amount produced in World 4 if Fred and Wilma each allocate 2 hours to each activity (no one specializes)

World 4	baby feeding produced	oil changes produced
Fred	1	2/3
Wilma	4	1
total	5	5/3

But in World 4 Fred has a comparative advantage in oil changes and Wilma in baby feeding, so if Fred spends 4 hours changing oil and Wilma spends all of her 4 hours feeding the baby

World 4	baby feeding produced	oil changes produced
Fred	0	4/3
Wilma	8	0
total	8	4/3

Note that we end up with way more baby feedings, but fewer oil changes ($4/3 < 5/3$).

A surprise? Complete specialization did not increase the production of both tasks.

However, what would happen if we had Fred specialize in oil changes and had Wilma use her time to first produce 5 baby feedings (the total number with equal marriage) and then allocate the rest of her time to changing oil.

Fred allocates all four hours to oil changes

Willma 2.5 hours to produce 5 baby feeding and her remaining 1.5 hour to oil changes

World 4	baby feeding produced	oil changes produced
Fred	0	$4/3$
Wilma	5	$3/4$
total	5	$25/12$

We end up with the same number of baby feeding as when they had an equal marriage, but now produce more oil changes. Wow.

So again, the equal marriage allocation was inefficient. Wilma should have married someone who was good at something.

Do a different allocation where Fred allocates all four hours to oil changes, producing $4/3$ of an oil change. Then have Wilma produce $1/3$ oil changes (taking $2/3$ of an hour) so $5/3$ oil changes are produced (the number in an equal marriage). Then have Wilma allocate the rest of her four hours (3 and $1/3$ hours) to baby feedings. How many baby feedings are produced? Almost 7.

6 Make up a multiple-choice question, or true-false question, having to do with comparative and/or absolute advantage that I can put on the exam.

Bring it to your recitation to discuss. The T.A.s will pass along the best one's to me to consider for inclusion on the first midterm. Your question should appear exactly as it would on an exam. Below your question write a few sentences, no more than a paragraph, explaining the answer in a way that most students in class would understand. This explanation will eventually end up on the course web page when the exam results are posted.

Weird is good. Try to make your question such one needs to understand the concept to answer the question correctly. You will find that it is difficult to write multiple-choice questions. Ambiguity is bad and you don't want to be too difficult and you don't want it to be too easy.

If your question is chosen for the exam I will add 3%, a lot, to your midterm grade. My hope is to put one or two of your questions on the exam. You will not get the 3% if I have to significantly edit your question. I, of course, am the sole determiner of what goes on the exams.

Thanks.