

Illustrating Trade in the Classroom: How Free Trade Can Create Wealth and Decrease Hunger, Literally

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Abstract

This paper illustrates an active learning exercise for use in introductory economics courses to teach the benefits of trade. The easily implemented classroom game allows students to experience the power of trade on a first hand basis. This game stimulates a number of discussion topics including comparative advantage, voluntary exchange, exploitation, externalities of trade, and inequality.

The Importance of Trade

Few topics discussed in an introductory economics course are as important and elicit as much student response as the discussion of gains from trade. Although trade is the cornerstone of market economies, students often hold more preconceived misconceptions about trade than about any other topic. Therefore, it is of the utmost importance that instructors not only convey the wealth-creating role of trade in the economy, but that they also do so as simply and interestingly as possible. We propose that instructors illustrate trade with a concrete active learning exercise.

Researchers have demonstrated active learning techniques as key tools to improve the understanding and retention of economic concepts such as trade. Becker (1997) and Becker and Watts (2001) noted that despite the fact that active learning exercises increase student interest and comprehension, most economics instructors rely primarily on traditional lecturing methods. Siegfried et al. (1991) and Gremmen and Potters (1997) stressed the worth of using alternatives to traditional lecturing methods. Since active learning improves students' interest, understanding, and retention of economic concepts, instructors of economic principles should consider reinforcing the concept of trade with a classroom game, particularly one involving concrete goods. In this vein, we expand upon a game introduced by Houston and Hoyt (2001) with a version that uses candy to emphasize the wealth creating benefits of free trade. The game introduced here is easy to implement, as it requires very little preparation from the instructor and only about fifteen minutes of class time.

Houston and Hoyt (2001) discussed an international trade game involving tickets to fictitious sporting events, concerts, and museums. In their game, the instructor divides students into two countries so they may trade fictitious tickets within and outside their countries to improve their wellbeing. In the first round, students first receive tickets randomly as a perk in their fictitious jobs as accountants, writers, promoters, etc. in the entertainment industry. Suggested tickets include admission to shows such as Muppets on Ice or Regis and Kelly, concerts such as a Dave Matthews Band or a Garth Brooks concert, museums exhibits such as a Van Gogh exhibit at the Metropolitan Museum of Art, or athletic events such as the Superbowl or World Series. Trade in round 1 is prohibited. Students report how much they would have been willing and able to pay for their original ticket from a scalper if they had not received it as a perk. This figure indicates their initial utility.

In the second round of Houston and Hoyt's (2001) game, students engage in trade inside their own countries and reveal how much they would have been willing and able to pay for the ticket they now hold. This indicates their new utility level. In round three, students engage in trade outside their country and

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report how much they would have been willing and able to pay for the ticket they ultimately hold. Increases in total utility are then calculated. In their game, students who do not trade must report that their utility has remained the same. In the fourth round, the instructor selects “undervalued” tickets such as the Superbowl and auctions them off for fictitious fiat money to illustrate how fiat money improves the efficiency of trade.

While our game is similar to this initially proposed game, our active learning exercise involves students trading different types of candy to increase their utility. Our version of the game improves upon Houston and Hoyt’s (2001) game in several ways. The activity proposed in this paper simplifies both the preparation and conduction of the game, so that the game is easier to implement and market signals are easier to spot than with a number of different tickets and ticket types. The game we introduce is easy to conduct in large classrooms. Furthermore, by using real-life goods to trade, the concept of trade becomes immediately relevant as students truly wish to improve their own wellbeing by ending up with a candy that they prefer. Finally, the version of the game proposed in this paper serves as an excellent lead in to discussions of absolute and relative poverty. In order for a game to be successful, it needs to be simple, clear, easily administered in a time efficient manner, and have easily deducted lessons. Our game achieves all of these goals.

Our Trade Game

The only preparation required for our game is the purchase of four different bags of candy. The size of the candy bags will vary depending upon the size of the class in which the game is played. There must be at least one piece of candy for each student. Each bag of candy must be heterogeneous in nature. For instance, we use one bag of Hershey’s miniatures. In this bag there are four separate types of mini candy bars. Our other three bags include Starburst fruit chews, Jolly Ranchers hard candies, and a bag of assorted lollipops. As each piece of candy may be handled a number of times, it is essential that each piece be individually wrapped. Our classes typically consist of 40-50 students, but instructors will find this experiment useful in larger and smaller classes as well. In larger class sizes, a teaching assistant or student volunteer may be useful in noting and tallying scores on the board.

At the start of the game, the instructor breaks the class up into four countries. Each country is given a name that reflects the major output of the country. For instance, we call our countries Miniford, Starworld, Jollyland, and Lolliville. For ease, students are assigned to a country based on where they sit in class. Members of each country are given a piece of candy that corresponds to the name of their country. Students are instructed not to eat their candy until the end of the game.

The instructor then asks students, on a scale of one to ten, how happy that piece of candy makes them. This scale simplifies tabulation of results on the board so that this game can be played in large classes without taking much time. The instructor writes the name of each country on the board and lists the happiness or utility level of each person in that country under the country name.

After everyone has a piece of candy and initial utility levels have been recorded, the instructor may note that not every country is equally wealthy. As resources and standards of living (or eating) differ between countries, some countries have higher levels of wealth (measured by happiness) than others. Since every country doesn’t have to be the same size, the instructor can also point out that the country with the greatest total wealth may not be the country with the highest per capita wealth.

Next, the instructor allows the students to trade their pieces of candy, if they choose, with other members of their country. Because each bag of candy is heterogeneous, students will have different flavors of fruit chews, lollipops, etc. International trade is banned. After two minutes, the instructor again asks each student how happy their piece of candy makes them on a scale of one to ten. Not all students will have traded, as some will be unable or unwilling to trade.

The instructor records the new values on the board in columns next to the initial values (see Table 1, where actual results from a single class period are listed). Once the instructor adds up the new wealth levels of each country, the instructor can note that no country is made worse off from internal trade, and most countries become wealthier. Sometimes, nobody in a country wants to trade so the wealth level doesn’t change. The instructor can use such a case to point out that free trade only creates wealth if individuals actually engage in trade.

Table 1: A Typical Scoreboard for the Trade Game

(Utility levels for individual players are listed in rows, with country totals given below)

Miniford

<u>No Trade</u>	<u>Internal Trade</u>	<u>Regional Trade</u>	<u>World Trade</u>
6	7	8	8
5	5	7	9
7	7	7	8
8	8	8	8
2	4	6	7
7	8	8	10
9	9	9	9
<u>5</u>	<u>6</u>	<u>6</u>	<u>9</u>
49	54	59	68

Starworld

<u>No Trade</u>	<u>Internal Trade</u>	<u>Regional Trade</u>	<u>World Trade</u>
3	3	3	5
4	4	6	8
5	6	6	6
2	4	5	8
1	3	7	7
6	6	7	7
<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
25	30	38	45

Jollyland

<u>No Trade</u>	<u>Internal Trade</u>	<u>Regional Trade</u>	<u>World Trade</u>
5	7	7	8
4	5	6	9
2	2	4	7
4	5	6	6
2	4	7	7
<u>3</u>	<u>3</u>	<u>6</u>	<u>9</u>
20	26	36	46

Lolliville

<u>No Trade</u>	<u>Internal Trade</u>	<u>Regional Trade</u>	<u>World Trade</u>
9	9	9	9
8	8	8	10
6	6	7	9
<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>
32	32	33	37

Notes

These results are from one actual experiment conducted in one of our classes. These results are typical of the results from over 3 dozen iterations we have run of this game. One possible variation that has occurred is that of an individual unable to trade having a decrease in utility. This variation is discussed at greater length in the paper.

Next, the instructor creates two regions, Europe and the Americas and assigns two countries to each region. The instructor announces that NAFTA and the European Union are now in place so that students may trade with anyone in their region. Once the instructor asks for happiness levels and records them on the board by country, most countries will have reported increased levels of wellbeing.

Finally, world trade occurs and the instructor records the new utility levels. Upon the completion of this round, students may eat their candy. The instructor is able to illustrate that as the trading region increases, wellbeing does as well. The poor countries and the rich countries are all made wealthier. No country was made less wealthy by allowing world trade. Often students enter an introductory economics course with the preconceived notion that trade is a zero sum game. With this example, instructors are able to show that the act of trade itself can make countries better off without making any country worse off, in absolute terms.

Other Issues and Extensions

Our results from Table 1 are from one class experiment, but results from other class experiments (approximately 3 dozen) have not varied greatly from those presented, with one exception. In a few cases, students have expressed a decline in utility typically resulting from the fact that others get the type of candy the student would prefer, while the student in question is left holding his or her same initially allocated candy and is unable to trade. This leaves him or her with less utility than if no trade had occurred. Such a situation can serve as a good introduction to arguments for protectionism.

This issue also prompts a discussion of externalities from trade. In our experiment, as in reality, trade can create both positive and negative externalities. The example we describe above illustrates a potential negative externality of trade. The student's envy for another's trade has reduced his or her own happiness. Houston and Hoyt (2001) forbid such occurrences in their game, as students are required to report their utility as greater than or equal to their prior level. However, we suggest that instructors allow utility to decrease if applicable. This situation allows an instructor to point out that while trade increases the well being of a country as a whole, some individuals may be hurt in the short run by allowing trade.

The ability to trade can alternatively create a positive externality, even if individuals do not choose to trade. Simply being able to trade can increase some individuals' utility levels because they are not necessarily stuck with what the professor has allocated to them even if they choose not to trade (just as it decreases utility for others unable to trade). This can introduce a discussion about the many types of costs and benefits associated with trade.

We have in only one instance ever witnessed a student trading and decreasing in utility. In this case, since trade was totally voluntary we asked the student why he traded if it made him worse off. The student professed to have traded to make the other student better off, which upon some reconsideration, he admitted gave him additional utility he had not factored in. In situations such as this, instructors can discuss how rational behavior prevents an individual from voluntarily trading to decrease his or her own wellbeing, although such a trade is possible if it is government mandated.

It is important for the instructor to note that relative wealth levels may change as a result of trade. Income inequality both in and between countries could also change as a result of trade. The numbers on the board can be used to illustrate changes in income inequality. Students commonly object that free trade leads to the exploitation of poor countries. This in class activity can aid in this discussion.

The instructor may wish to point out that not all of the allocations are necessarily equally valuable. In our experience, the country of Hershey typically has no problem trading their goods, while the individual stuck with the mystery flavor Dum Dum is typically unhappy at the start and at the finish. Although we have never experienced this result, it is possible that a country may have one or more individuals who are so dissatisfied by the inability to trade that the country's overall utility declines. If this were to occur, then the instructor can use this as an opportunity to point out that increases in an individual's wealth do not necessary guarantee that utility increases for all or even for society. And, while our experiment is meant solely to illustrate the potential gains from trade, a discussion of international trade should be paired with a discussion of the arguments for protectionism to be complete.

One final extension of the game that instructors can consider is the imposition of a tariff³. For instance at the completion of the experiment, instructors could discuss what effect a tariff of 1 unit of utility would have had on trading. Which trades would not have occurred with this tariff? What would have been the impact on total utility of the country? Would anyone who was made worse off by others trading have been made better off? How would this effect have differed if the tariff were instead 2 units of utility? This extension would serve as a provocative lead in to a discussion of common arguments for protectionism.

Conclusion

We have had a number of students entering our introductory macroeconomics and microeconomics courses with the idea that trade generally hurts the economy. We have found that by introducing the topic of trade with a simple, clear, interesting, concrete, and tasty (who does not like candy?) game, we are able to break down intellectual barriers that students have built around the topic of trade. Not only does our

³ We thank an anonymous referee for suggesting this extension.

trade game shed light on the wealth creating power of trade, it opens students' minds for more complex trade related issues such as outsourcing and the trade deficit.

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Appendix 1: Summary of the Trade Experiment

The Trade Experiment

Class Size: Applicable for large and small classes, although collecting and totaling utility levels will take slightly longer in larger classes and may benefit from help from a volunteer or teaching assistant.

Time Required: 10-15 minutes to conduct the experiment
10-15 minutes for discussion following the experiment

Materials Needed: 4 bags of wrapped candies that are heterogeneous in nature (ex. Hershey's Miniatures, Dum Dums lollipops, Starbursts, and Jolly Ranchers)

Conducting the Experiment:

- The instructor divides the class into four different countries and announces to the class that they will all be allocated with a piece of candy representative of their country's assets. The instructor should ask the students not to eat the candy until the end of the experiment.
- Round 1: Students are asked how happy (on a scale of 0-10) their allocated candy makes them. Students are forbidden from trading in this round. Total utility in each country is then tallied.
- Round 2: The instructor announces that students may now trade candy with anyone in their own country. Utility levels are once again reported. The country's new total utility is tallied, and will have generally risen for each country conducting trade.
- Round 3: The instructor announces that students may now trade candy with anyone in their trading block (the European Union or NAFTA). Utility levels are once again reported and tallied.
- Round 4: The instructor announces that students may now trade candy with anyone in the class. Utility levels are once again reported and tallied.

Questions and Topics for Discussion Following the Experiment:

- The instructor will want to point out the general trend that each country's utility level has taken as trading areas were increased.
- Did anyone's utility fall once trade was allowed? Why might this have happened? What are some of the positive and negative externalities of trade?
- Was there a change in which country was richest or poorest? Did income inequality in or between countries change?
- Which arguments for protectionism does this activity illustrate? Which protectionist arguments does the experiment dispute? What role might tariffs enacted during the experiment have played in the final result?