

## Teaching International Trade, Tariffs, and Taxes with an Interactive Classroom Activity

Research Article

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### Abstract

The use of interactive games and activities to further engage students and enhance the instruction provided in the classroom has gained considerable interest in recent years. This paper provides instructors with an interactive classroom activity that can be used to teach the lessons of how voluntary trade creates value, how quotas and tariffs can adversely affect this trade, and how taxes create dead weight loss, among other important economic lessons. This learning demonstration gives students a more tangible understanding of these concepts while breaking up the monotony that can accompany the traditional lecture format. Further, this game can be played in both small and large lecture classrooms with students who have either an introductory or advanced understanding of economics. This paper will go through the importance of using interactive activities in the classroom, the background needed by students to play the game, and the execution of the activity itself, as well as applications and extensions that can be employed by instructors depending on their focus and time constraints.

**Keywords:** Economics Education; Teaching; International Trade.

### Introduction

Economics is a discipline whose instruction is often dominated by a lecture-only format in which the instructor orally presents the material while scribbling words, graphs, and equations on the board. This “Chalk and Talk” style of teaching, as dubbed by Becker and Watts who formally studied the prevalence of this type of instruction in economics classes across the United States, seemed to be utilized to a greater degree by economics professors than by professors in most other disciplines [1, 2]. Relying so heavily on this style of instruction may not be beneficial as students have different learning modalities. In fact, the continual use of the lecture-only format for teaching economics was cited as one of the potential causes for a reduction in enrollment in economic classes in the early 1990s [1, 2].

While falling attendance is certainly problematic, a more devastating effect of the over-reliance on lectures will be the inability for students to internalize the concepts that are taught and, thus, fail to retain the information in the long-run. It is difficult for students to learn that in which they are not interested and students tend to find the excessive use of lecturing monotonous, regard-

less of the material's content. As a result, students will temporarily memorize enough of the lecture to get through the class and then dispose of the information as soon as they turn in the final exam. There are many students who have successfully completed one or more economic classes, but would be unable to accurately answer questions about basic economic concepts and philosophies.

Over the years different instructors have come up with successful alternatives to the traditional lecture for teaching economics. An entire course that uses classic films in combination with class discussion to illustrate economic concepts was created and successfully implemented for undergraduate economic students [3]. The use of short segmented clips from movies and television shows has become a popular way to convey to students the inner-workings of various economic concepts. Professor Sexton uses a series of short 5-minute clips to help set up conversations about resource allocation, exchange, opportunity cost, shortages, and other economic lessons [4]. Professor Mateer is also famous for using both music and movies to help teach basic economic principles. His work *Economics in the Movies* also provides short movie clips to motivate various economic topics [5] and this has become an integral part of his textbook [6]. Professor Hall frequently uses

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**Received:** September 06, 2018

**Accepted:** September 24, 2018

**Published:** September 29, 2018

**Citation:** Joab Corey. Teaching International Trade, Tariffs, and Taxes with an Interactive Classroom Activity. *Int J Financ Econ Trade*. 2018;2(3):42-47.

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scenes from the popular and long-running television series. *The Simpsons* to set up or drive home various points within his economic lectures [7].

The use of these pop-culture and cinematic references is a step in the right direction when attempting to get students to internalize the economic way of thinking. By associating the material with that in which they are already familiar, students are able to view their world through the eyes of an economist, even after the class has ended. In his article, Sexton reports that his students consistently comment on his student evaluations that they “can’t see a movie anymore without looking for the economic content” [4]. Further, the use of visual displays will often help to reinforce these basic ideas. However, there are other valuable ways to teach some of these basic economic concepts that students find both entertaining and informative. While some students are auditory learners and respond well to oratory instruction (such as lectures) and some students are visual learners who may learn best from viewing a movie clip, still other students are hands-on learners who may learn best when actually physically interacting in a way that reinforces the concept. In order to attempt to reach the most students, it is important to try to employ all three styles of instruction.

The articles mentioned above provide a good overview of how to use movie clips to effectively teach economics and most instructors are already familiar with the process of lecturing. This paper provides an interactive activity that an instructor can use to teach the concepts of international trade and how voluntary trade creates value, how tariffs and other trade restrictions can reduce the value created, and how taxes can affect trade and create deadweight loss. It can be incorporated in either small or large classroom settings and be used to engage students at any point in their economics instruction. As of this writing there are over 170 such classroom non-computerized games located on the website *Games Economists Play* developed by Delemeester and Brauer [8]. This is one of many resources that an instructor could use, in addition to papers like these, to find interactive learning demonstrations for their class. The next section of this paper will discuss the basic concepts a student needs to understand before an instructor incorporates the activity. This paper then describes, in detail, how to execute the activity, complete with some tips and strategies to help both students and instructors get the most out of the game. The next section provides some applications and extensions that can be incorporated to teach more advanced concepts, and the final section concludes. While trading games like these have started to become common in economics classrooms, to the best of my knowledge, the interactive activity presented in this article was originally conceived and has not been published. Any resemblance it bears to those incorporated by other instructors is coincidental.

### Some Necessary Background Lessons in Basic Economics

While it is possible to incorporate this activity with students who have not had any economics education on the very first day of class and still have them understand the lessons contained within the execution of this learning demonstration, some background information that can be found in the first chapter or two of any introductory economics textbook will be useful in helping stu-

dents both, gain a greater appreciation for that back ground information as well as better understand how to engage in the activity throughout the course of the game<sup>1</sup>. These basic concepts include:

#### The value of a good or service subjective

Throughout history economists have studied what determines an object’s value and have settled on the idea that the value of a good or service depends on the time, place, circumstance, and personal preference of the person who has that good or service. For example, the value of a bottle of water is much greater to a person hiking through the desert suffering from dehydration than it is to a student standing next to a functioning water fountain. Similarly, an umbrella is much more valuable to someone who lives in an area with frequent rainfall than someone who lives in a dry climate where it is unlikely to rain at all. This concept is so important for students to understand that it is considered one of the eight key guideposts to economic thinking in the popular principles of economics textbook entitled *Economics: Private and Public Choice* [9].

#### The difference between voluntary and coerced trade

This interactive activity is designed to teach students how trade creates value, which is true as long it is an informed and voluntary exchange. It is important to explain to students that a voluntary exchange is one in which both parties willingly engage in the trade because they expect to be made better off by the exchange. That is, each person trades something they like less for something they expect to like more, and do this in an effort to make themselves happier and not as a result of being forced by any outside influence. A coerced exchange is one in which some party is willing to devote resources to making you worse off if you do not comply with their request. An example I give my students to illustrate this difference is to ask them to envision the last meal they paid for. The exchange of money for food was voluntary in the sense that if the student chose not to buy the food, then the seller would not do anything to force the transaction or make the student worse off. The student wanted the food more than the money and the seller wanted the money more than the food, so both people were made better off by this voluntary exchanged. By engaging in the transaction, the student was made happier by the existence of the seller. If the student chose not to engage in the transaction, they were made no worse off by the existence of the seller. I then ask students to envision a scenario where they get robbed at gun point: as they are walking late one night an armed thief brandishes a firearm and demands that the student relinquishes their wallet on the threat that the thief will kill the student if they don’t. While the student is trading their wallet for their life, this is not a voluntary exchange but a coerced one in that the thief will devote resources to making the student worse off if they do not comply with the thief’s request. Whether the student chooses to engage in the exchange or not, the student is made worse off by the thief’s presence. It is important to demonstrate that these exchanges do not make both sides better off and, thus, do not create value like the previously mentioned voluntary exchange, but rather shifts value from one party to the other in a zero-sum way.

<sup>1</sup> This said, I have frequently used this game during one day seminars to students ranging in ages from 8 to 18 with little to no problem in understanding how to play the game or being able to discern the lessons being taught by the activity

Armed with this preliminary knowledge, a student can now effectively engage in the following activity, which will further reinforce the concepts they just learned as well as introduce them to new ideas in a way they are likely to internalize and remember, even once the course has concluded.

### The Candy Game: A Lesson in the Value Created by Voluntary Trade

This section will present the actual instructions as to how to execute this learning demonstration in class. This activity provides a hands-on exercise that clearly demonstrates how the subjectivity of a good or service enables voluntary exchange to create value. I have provided a real example from one of my classes to facilitate this explanation. The instructor should divide the class up into groups of equal size with four or five students to a group, although the size of the groups and how many groups you have will depend on the size of the class<sup>2</sup>. Then label each group as A, B, C and so on until all groups are given a letter name. Write these group names across the board, projector, or document camera leaving enough space below them to write in the total value of the candy for each group before trade, after inter-group trade, and after inter-class trade<sup>3</sup>.

**Table 1. Basic set-up.**

Groups	A	B	C	D	E	Total
Before Trade						

The instructor then randomly hands out a junior size piece of candy to each student in the class. You may also want to line up an example of the possible pieces of candy at the front of the class, so that students know what is available in the market<sup>4</sup>. The bigger the variety of candy you make available to students the more effective the activity will be. While this assignment is largely random, you may want to divide up the candy into two bags from which to draw, one for each half of the class, with different types of candy in each bag, just to ensure enough variety throughout the classroom for the final round of trading. It can also be useful to give all of one group the same type candy so that you can explain how trade can greatly benefit countries without a diverse set of resources or means of production. You then ask each individual in a group to state the value that he or she places on their piece of candy using a 1-10 scale where 1 is the lowest and 10 is the highest. Add up the total value for each group and record them on the board.

<sup>2</sup> You may want to employ a student or teaching assistant to work a calculator for you during this example, so that you can quickly and accurately add up the total for each group.

<sup>3</sup> Although, it is recommended to leave the row names out of it so students don't anticipate the game.

<sup>4</sup> In order to be effective, you will want a wide variety of different types of candy, I use Snickers, Butterfingers, M&Ms, Almond Joys, Mounds, Milky Ways, Twix, Skittles, etc. where the junior size pieces come about 6 to 12 in a pack. You want to be sure to have at least one non-chocolate type of candy to accommodate (and, thus, greatly increase the value) those students who might be allergic to chocolate, for this I use blow-pops which have the added variety of different flavors. As mentioned in that article, it can be useful to separate the candy into two bags, where each bag contains different types of candy. For example, I would include regular M&Ms in one bag, and peanut M&Ms in the other bag, Hershey candy bars in the first bag, and white chocolate Hershey candy bars in the second bag. Then use one bag for half the class and the other bag for the other half class. This will ensure enough variety for the final round of trading.

**Table 2. Before Trade Results.**

Groups	A	B	C	D	E	Total
Before Trade	34	19	19	28	9	109

In the next round of the game, allow the class to spend some time (about one minute) trading with only members of their own group. Make it clear that they can only trade with members of their own group, and cannot trade with members of any other group, and that all exchanges are to be completely voluntary. Nobody has to trade or is allowed to force someone else to trade against their will. Once the exchanges are complete, then ask each student again, how much they value their piece of candy on a scale of 1-10 with 1 being the lowest and ten being the highest<sup>5</sup>. Announce that if the students did not make a trade, then just give the candy the same value you gave it in the first round. Then add up the value for each group and the total for the class while remarking about how the value for each group increased after they traded (or potentially stayed the same, but you should not have any group decrease in value). In the demonstration being used as an example for this paper, it was group E where everyone was given the same piece of candy and so the homogenous nature of their resource endowment did not allow for any wealth-creating exchanges. Interestingly, group D, which had a variety of candy was also unable to find any trades so their value did not increase at all, which can happen in this round of the game.

**Table 3. Inter-Group Trade Results.**

Groups	A	B	C	D	E	Total
Before Trade	34	19	19	28	9	109
Inter-group Trade	43	34	21	28	9	135

You can explain to the class that group E was unable to trade because of the lack of variety in their production and that this group was especially hurt by the inability to trade with other groups. Should you get a case where holders of heterogeneous candy fail to trade within their group then you can lump them with group E as those who would greatly benefit from free inter-class trade. You reinforce to the class that people vary in their preference for different types of candy and because the value of this candy is subjective, two people can trade so that both people get a piece of candy that they valued more than the piece they had before the transaction. Two people would not voluntarily trade their candy unless it made both people better off, so, when these trades happen, the value of the candy increases even though the actual candy has not changed at all. The third and final round of the activity involves opening up trade to the entire class, allowing people within a single group to trade with members of other groups. Then, once again, record the value that each student gives to his or her piece of candy and add them up for each group and the entire class.

<sup>5</sup> You may want to make a disclaimer that if you trade your candy for a piece of candy that you value less than the piece you traded for the purpose of improving a fellow classmate (usually of the opposite gender) then you must include the benefit of making that person better off in the value of the candy you received from that trade.

**Table 4. Inter-Class Trade Results.**

Groups	A	B	C	D	E	Total
Before Trade	34	19	19	28	9	109
Inter-group Trade	43	34	21	28	9	135
Inter-class Trade	47	40	27	35	13	162

Then point out how the value for each group and, thus, the value for the entire class has increased even more though the candy circulating throughout the class has not changed. You can then apply this to the benefits of free international trade by explaining that although you called these groups A, B, C, D, E, etc. You could just have easily called them Argentina, Belize, Chile, Denmark, England, etc., and the total for the class represents the total for the entire world and then point out how much better off each country and the world is after the liberalization of trade.

While this activity is most conducive to a class of 25-50 students, I have executed this learning demonstration in classes ranging from anywhere from 15 to 200 students, where every student was given a piece of candy and able to participate with little to no problem. It does take longer to go through the activity when you incorporate more students (as well as get more expensive when buying candy for 200 students), but employing student volunteers or teaching assistants to help with handing out candy and adding up the reported values can cut down on this time requirement. Just using one teaching assistant and myself, I have been able to execute this game in a classroom of 200 registered students (with each group having 10 to 20 students) in about 30 minutes. For those extremely large classes of 500 or more students, where including every student could be incredibly burdensome in terms of both time and money, it is easier to divide the classroom up into sections representing the groups mentioned above and ask for volunteers from each group to come to the front of the class and perform the game for the rest of the students who are using the student worksheet in the [appendix](#) to complete the activity while watching the participants. As someone who regularly teaching large principles of economics classes of 300 or more students, I can say that this activity is equally effective in both small and large classes.

While trading games like this have become common place in economics classrooms, this one is unique in both its quantitative nature, as well as its use of multiple rounds to emphasize the importance of free trade across international borders. It's these qualities that makes this activity a valuable contribution in the field of economics education. In addition to reinforcing how the value of a good or service is subjective as well as how voluntary exchange creates value, this activity can also be used to teach more complicated lessons involving quotas, tariffs and deadweight loss, and even lead into a discussion on comparative economic systems, which are explained in the next section.

### Applications and Extensions: Tariffs, Quotas, Deadweight Loss, and Comparative Economic Systems

Additional lessons can be incorporated into this activity at a minimal cost to the instructor in terms of time and money with some follow-up questions, many of which I have included in the stu-

dent activity sheet located in the [appendix](#) at the end as well as listed here within this section. These questions can help students gain a more intuitive grasp of more complicated and less tangible concepts by asking them to answer the questions immediately after the execution of the game and then referring back to their responses as you approach these concepts later in the course. The following are few useful applications for this particular activity:

#### Application to Quotas

A quota can be defined as a government-imposed trade restriction that limits either the number or the monetary value of goods and services that a country can legally import or export during a given time period. In order to help students understand the effect that quotas can have on a nation's prosperity, it is useful to include a follow up question at the conclusion of the activity that reads:

*“Suppose I banned the final round of trading so that members of one group would never have the opportunity to trade with anybody outside of their group. Do you think any group would have been made better off by this policy? What would have happened to the total value created for the entire class as compared to when there was no ban in place?”*

Most students will instinctively answer that no groups would have been made better off as a result of this policy and that the value created from the candy would only reach the total after inter-group trade, and the additional value increase that resulted from inter-class trade would not have been created. This gives students an intuitive understanding of the damaging effects of trade restrictions before beginning to discuss the concept in detail or illustrating the effects with a graph. This can be particularly useful when teaching a class in international trade.

#### Application to Tariffs

A tariff is an attempt to reduce imports by increasing the price of the imported good or service through the use of a fee or tax. At the conclusion of the activity, it can also be useful to ask this follow-up question:

*“Suppose I allowed everyone to trade freely when trading with members of their own group in the second round but charged everybody a \$0.50 tax for each trade they made with a member from another group. What do you think would have happened to the total number of trades between members from different groups and what would have happened to the value created by the candy compared to when there was no such transaction fee put in place? Are there any benefits to anybody from this policy?”*

The typical student response is that they correctly assume that the number of transactions would go down and the value created by the candy would not have been as high as compared to when there was no transaction fee put in place. Particularly insightful students will answer the last part of the question by saying that the instructor, or whoever claims the tariff revenue, will benefit from this policy and could potentially use the tariff revenue to buy more candy for the class, which could benefit everyone. Asking this question immediately following the query in part A of this section regarding quotas would be particularly useful in helping students understand the difference between the effect of these two trade restrictions, and this intuitive initial grasp of the concept will be beneficial when going over the more complicated graphs and diagrams that could appear later in the class.



### Application to deadweight loss (excess burden) as the result of taxation

Deadweight loss is often a difficult concept for students to intuitively understand. Some students have trouble grasping the esoteric concept of a loss in value that results from the potential transactions that are no longer happening. This game can be extended to provide students with a more tangible understanding of how a tax can reduce the number of transactions and, thus, create deadweight loss. One way to do this is to play this game again when reaching the topic of deadweight loss. In this game, you would distribute three pieces of candy to each student and ask each student how much the combined value of their candy is worth to them on a scale of 1-10. Then repeat the game as described above, but inform each student that they must pay a tax of one piece of candy to the instructor upon each trade<sup>6</sup>. The number of trades should be greatly diminished and the resulting increase in value should be far less than when you first played the game with no tax. You then explain to the class that this reduction in value represents the deadweight loss that results from the reduction in transactions that occurs when a tax is imposed.

If you do not have the time to replay this game in class or are just not inclined to do so then you can still effectively refer to this game when mentioning the concept of deadweight loss. Another follow up question you can include at the conclusion of the game to highlight the concept of deadweight loss is:

*“Suppose I imposed a tax on all trades so that each time a person made a trade, either with a member of their own group or a member of another group, that person would have to give me \$0.50. What do you think would have happened to the number of trades? What would have happened to the total value for the entire class compared to when there was no tax?”*

Most students would correctly answer that the number of trades would go down and the value created by the candy would not go up nearly as high as when there was no tax in place. Later in the course when I am covering deadweight loss, I refer back to this game and their responses to highlight that deadweight loss is that very loss in value. Intuitively, it's that worse piece of candy still sitting in your hand because you were unable or unwilling to complete an exchange.

### Application to comparative systems: central planning vs. market organization

An instructor can also use this game to illustrate why market organization is a more efficient economic system than central planning. Play the game in its original version and explain to the class that when you handed out the piece of candy you were similar to a central planner who cannot possibly know each individual's preferences better than an individual knows his or her own preference. This is why value was so much lower before trade than after trade. Even when the instructor intended to match students with their preferred type of candy, the instructor does not always have the information necessary to do so. This highlights the informa-

<sup>6</sup> While I have yet to do this, you can still give students only one piece of candy and inform the students to bring change such as dimes and quarters with them to class and set the tax rate at 25 cents or 50 cents per trade or change it throughout the game to illustrate the same concept. This would reduce the amount of candy that you have to buy and you would make at least some of your money back.

tion problem inherent in central planning in a tangible way that impacts students first hand. If I am teaching a class where I want to emphasize this concept, then I would include this in my list of follow up questions:

*“Which do you think is a better system of economic organization, one without trade in which one person decides what piece of candy everyone will get, or one where people can trade for the candy that they want? Why?”*

In going over this question with the class, I emphasize that while the answer to this question seems very obvious in this simplified example, in the real world, wars have been fought and many people have died in the pursuit of the answer.

To close out this section, it is worth commenting that which adaptations of the game you choose to employ and which questions you choose to ask would depend on which concepts you choose to emphasize and in what particular class you choose to employ this activity. For example, when teaching a principles of micro or macro class, I just stick to the questions concerning the concepts of trade and deadweight loss, and do not dive into the topics of tariffs and quotas. If I am teaching a class in international trade, then I would use this activity and focus more on the questions that emphasize the difference between quotas and tariffs. When I teach a political economy class or world economic history course, I include the most recent question on economic organization. The student activity sheet located in the [appendix](#) includes all of these questions, so the instructor can incorporate them or exclude them at his or her leisure. This emphasizes the diversity of the game as well as the many potential benefits from executing it in class. I often found that the time that I save from being able to refer back to this activity when covering the concepts later in the course that were first introduced to students during this learning demonstration more than makes up for the time spent playing the game in class.

### Conclusion

This interactive learning demonstration is very versatile in that it can be used in a number of classes to teach a number of important economic lessons. It can be used in a principles of economics class to reinforce how preferences are subjective and to demonstrate how voluntary trade creates value. This activity can also help students gain an intuitive grasp of the concept of deadweight loss which is useful in both principles of economics classes as well as a class on political economy. It can also be used in an international trade class to demonstrate the effect of quotas and tariffs and help economic students distinguish the difference between them. Additionally, it can also lead into an effective discussion on comparative economic systems and, for that reason, I often also use it when teaching a class on world economic history.

Many such trading games currently exist, but this one is unique in its quantitative approach to showing the effect of liberalizing trade across borders, as well as the potential use of the many applications and extensions. While these topics can also be learned through a traditional lecture format, the use of an interactive activity will help engage those who are more active learners while simultaneously break up the monotony of the traditional lecture format. In addition to enhancing student learning, it may also help instructors score higher on their teaching evaluations as these in-

teractive learning demonstrations are frequently cited as my students' most favorite part of the course.

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