Gaming the System — Playing with Supply and Demand

SUBMITTED BY: Michael Ryan Moore, University of Pennsylvania, GSE

SUBJECT(S): Economics

GRADE LEVEL(S): 9, 10, 11, 12

OVERVIEW:

In this lesson, students will reason about supply and demand relationships by playing an economic game inspired by Cyril Morong. This game combines previous lessons on: the laws of supply and demand, shifts in supply and demand, equilibrium prices, and elasticity. In the game, students will work as buyers and sellers to maximize their individual profits. Based on the aggregate of individual decisions, the class will create its own supply and demand curves.

NBEA STANDARD(S):

- Economics, I. Allocation of Resources
- Economics, IV. Markets and Prices

RELATED ARTICLES:

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- “A ‘Sneakerhead’ Shares His Simple Strategy: Buy Low and Sell High”

Common Core Standard(s):

- Mathematics (N-Q), “Reason quantitatively and use units to solve problems”

Objectives/Purposes: The purpose of this lesson is to give students first-hand experience in reacting to supply and demand.

- Students will be able to think about supply and demand from a firm’s perspective.
- Students will be able to compare their own experience to formal *laws of supply and demand.*

Other Resources/Materials:

- Printer/Copier
- Access to Chalkboard/Whiteboard
- Pen and Paper
- Calculator
- Deck of Supply and Demand Cards
- (Optional: Access to a Spreadsheet program)

Activity:

1. Explaining the Game to Students

Today, students will use their knowledge of supply and demand to try and win a class game. In this game, every student will be assigned to either “Supply” or “Demand.” Make sure students are split evenly into both groups. The game will have multiple rounds. In each round, every student is trying to make as much money as possible by buying or selling items. There are no teams. This is an individual game.

Each round, every player picks up a card from their deck. Players on the Supply side will pick a card from the Supply deck. Players on the Demand side will pick a card from the Demand deck. Every player gets one, and only one, card. This card should not be shared with anyone else.

Each card will have a dollar value on it (e.g. $5). For players on the Supply side, this dollar amount represents the LOWEST amount that the supplier can accept for a sale. For example, if I

am on the Supply side and my card says $5, I can only sell to players who are willing to pay $5 *or more*.

Similarly, for players on the Demand side, this dollar amount represents the MOST money a player can pay for a product. For example, if I am on the Demand side and my card says $3, I will only buy from a supplier at $3 *or less.*

Each round, every player on the Demand side will try to make a deal with *every* player on the Supply side. For example, in round 1, if I am a Supply player, I will meet with every single player on the Demand side, one at a time, and try to negotiate a deal. Similarly, Demand players will meet with every single player on the Supply side.

During each negotiation, players must try to make the best deal possible. Supply players want to negotiate as high a price as possible. Demand players want to negotiate as low a price as possible.

Players win points based on their deals. Demand players earn points by negotiating a price LOWER than their card. Supply players earn points by negotiating a price HIGHER than their card.

- For the Teacher:

For this activity, you will need to make multiple decks of cards. Each deck will be used for a different portion of the game.

For the first deck, make supply and demand equal. For example:

Supply: $10, $12, $14, $16, $18

Demand: $10, $12, $14, $16, $18

For the second deck, shift the demand curve outward. For example:

Supply: $10, $12, $14, $16, $18

Demand: $14, $16, $18, $20, $22

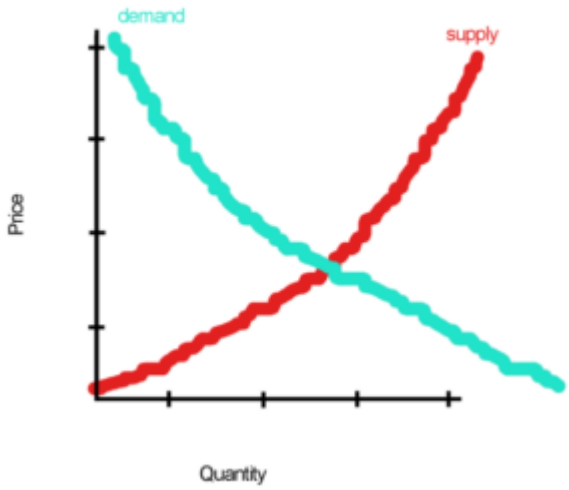
Start the game with the first deck. Make one team (either Supply or Demand) responsible for keeping track of all their negotiations. After each round, create a spreadsheet documenting all

the sales.

We recommend having students play with the first deck for at least 2 to 3 times. After each round, make sure to tally the scores.

Using the spreadsheet (or pen and paper), calculate the average price for each round. Next, show the students what both decks look like. Graph each deck on a chalkboard or whiteboard. Compare the equilibrium of the two graphs (in this example $14), with the average from each round. *(See figure 1)*\

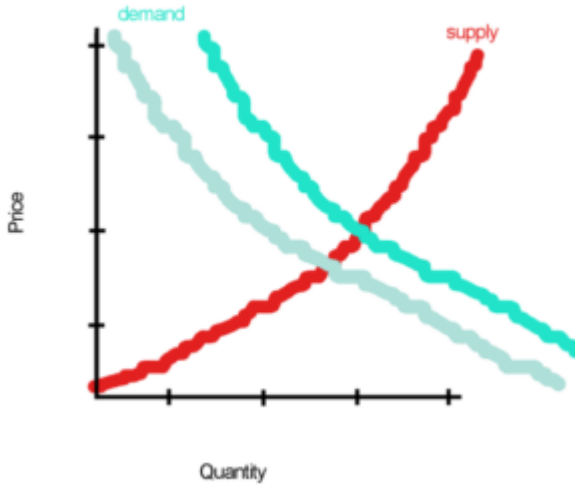
Figure 1



Next, have the students experiment with a different deck. Again, have the students play 2 or more rounds with each deck, and keep track of every sale on the spreadsheet. Once several rounds have passed, calculate the average prices once more.

Again, show students the decks that they played with. The graph for deck 2 is identical to deck 1, except demand has now shifted outward. What happens to equilibrium price on the graph? *(It should increase. See figure 2.)* What happened to the average price in the game that students played?

Figure 2



Time permitting, teachers can create as many decks as they would like. For example, if teachers want to spur discussion about price floors, a deck can reflect that:

Supply: $15, $15, $15, $16, $18

Demand: $10, $12, $14, $16, $18

Or, if a teacher wants to look at an elastic demand curve, for instance, another deck could reflect that:

Supply: $10, $12, $14, $16, $18

Demand: $1, $7, $14, $21, $28

Feel free to experiment depending on what lessons you want to reinforce.

2. Closing

After students play through the game, make sure to acknowledge the winners of each round. Ask students to reflect on what happened. Why did the average price in each round mimic (or differ from) the expected equilibrium? Did it matter that each individual student was acting selfishly (i.e. maximizing his or her own profit?).

Ask students if they think the game is comparable to a real economy. What is the same? What is different? How would these differences change the outcome of the game? (Encourage students to think about asymmetric information, and what happens when suppliers know things that buyers do not, etc.)

What Worked and What I Would Do Differently: When students start the group activity, make sure students realize they must talk to everyone on the opposing team. In other words, if I am on the Demand side, I need to interact with *everyone* on the Supply side (and vice versa). Furthermore, the reflection period after this exercise can be very fruitful. Give students ample time to explain what happened, and whether or not they think the game was a good example of the real economy.