Free Trade

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At this year's CMESG conference in St. John's, I described for my working group a game I invented. It seemed that some of the group found it interesting enough to use in their teaching, so I will share it here. Anyone is welcome to use the game and I don't expect it to be attributed to me. Here are the rules, followed by some comments on my experiences with the game.

Materials: a lot of dice (hopefully at least 5 times the number of players)

To set up: Distribute the dice evenly amongst the players. Then decide who will go first and the order of play (e.g. clockwise around the circle of players).

To play: On your turn, roll all the dice you have, and count the number of sixes that appear. Every player must then give you this number of dice.

> For example, if you have 7 dice, and on your roll you get 2 sixes, then each of the other players has to give you 2 of their dice. If there were 4 other players, you would receive 8 dice to combine with the 7 you had before your turn.

I have played this game with pre-service mathematics teachers (elementary- and secondary-focused), with my family and with my extended family. Usually I don't say that the game is designed to simulate free-market economics, but the name of the game generally gives players this impression. In a classroom, I typically put students in groups of six, giving each group 36 dice. One group plays a few rounds of the game with everyone else watching to ensure that everyone understands the rules.

Some observations:

1) How is Free Trade like free-market economics? The more wealth one has, the easier it is to attain more wealth. The rich get richer, generally, and the poor get poorer because access to resources (capital) is necessary for most profitable ventures. For each of the following observations, it is interesting to think of it in relation to free-market economies.
2) When you have lots of dice, it's hard to roll them all on your turn. You might have to roll them in shifts. I've even seen people with lots of dice enlist others to help with the rolling.
3) I never say that the winner is the one who ends up with all the dice. Invariably, someone celebrates his/her win, to which I enquire, "How do you know you've won? I've said nothing about how the winner is decided."
4) When a class plays the game, there are multiple groups playing and every group plays multiple times. Thus, it is not uncommon for there to be a 'rags-to-riches' story, in which someone with one or two dice ends up with lots of dice. The excitement that is associated with such a story and the reporting of the story drowns out the many defeats and suggests that perhaps the game is fair – anyone can make it big.
5) One time the player with the second most dice gave some dice to a player who ended up losing all his dice before getting a chance to role. The player with the most dice complained saying, "Sure, it's not fair

that he had no chance, but if we just shared our dice all the time, what would be the point of playing the game?"

6) I can feel myself get greedier when I have lots of dice. And I feel like a failure when I have few dice. (I would have thought that I'd be immune to such feelings because I invented the game and because I've played it often.)
7) No one makes any choices in the game (except for the influential choices of who starts and the order of play). Usually I don't like playing games that involve no choices, but I do enjoy playing this game.

The game could be a rich context for posing probability questions. I will leave it to you to pose such questions if you are interested in doing so. I think the game is appropriate to play in mathematics classrooms whether or not we pose explicit probability questions because playing the game raises other important questions about mathematics, including:

1) What are the similarities and differences between a mathematical model such as this and real life?
2) How appropriate is it to use flawed mathematical models to understand real life phenomena?
3) Are any mathematical models without flaw in relation to the phenomenon they model?
4) Is the Free Trade game fair? (Are free-market economies fair? What is fairness?)

If you play this game with friends, family or your classes, I would love to hear your reflections on it; email me at dwagner@unb.ca.