

# Production Trading Game

*Critical Thinking   Industrial Production   International Trading*

The Production Trading Game is a game that teaches students about international resource trading and production, the forming of economies, all while adapting their critical thinking, interpersonal, and decision-making skills in a traditional classroom setting. The Production Trading Game also allows a platform to show where leadership shines and enables the formation of leaders through ideas. Trade negotiations can improve public speaking skills as well. The Production Trading Game is a fun way to learn complex topics and can be adapted to format essentially any subject while remaining fun and competitive in the classroom.

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# Time and Resource Needs

The Production Trading game requires approximately 90 minutes to complete as an activity at MOBTS: 10 minutes for instruction, 60 minutes for the game, and 20 minutes for debriefing and discussion questions to achieve the learning objectives. The Production Trading Game requires:

- A small bag of candy (100 pc.)
- Access to a computer or projector
  - Can be substituted by printing entire document for professor and class copies of Figures B, C, and D
- 100 Blue Chips (Poker Chips or Plastic Chips)
- 100 Red Chips (Poker Chips or Plastic Chips)

# Introduction

Throughout their coursework, BSBA Management majors at the University of Central Missouri take part in many required experiential learning experiences including the Integrative Business Experience (IBE - 12 credits), eXperience Based organizational behavior (XB - 3 credits) and a manufacturing and supply chain simulation. Additionally, students take part in simulations, activities, client projects, peer reviews, and a host of additional experiential learning approaches intended to push students into becoming highly self-sufficient learners. As they progress through their degree, they are asked to take on more and more of the teaching (training) function. Both faculty and students feel that fresh-out graduates with strong training skills are more likely to make an immediate impact at work.

Occasionally, a student or small group becomes so enamored of the training processes (experiential learning) that they develop their learning activity. Today, simulations (both live and computer-based) seem particularly popular among students and usually match well with outcomes essential to many accrediting bodies. (For AACSB.edu examples of outcomes like engagement, innovation & impact see: <http://www.aacsb.edu/-/media/aacsb/docs/accreditation/standards/business-accreditation-2017-update.ashx?la=en> or NACEweb.org for career readiness competencies <http://www.naceweb.org/career-readiness/competencies/career-readiness-defined/>).

The Production Trading Game, developed by a UCM undergraduate, is a simulation intended to help undergraduate students understand how aspects of international trade and global production can affect factors beyond a country's own individualistic goals. The activity was designed for MGT 3345 International Management to explain trade theory better. While

international business classes later in the curriculum are the primary focus, The Production Trading Game applies to production and operations courses.

# Theoretical Foundation/Teaching Implications

The Product Life Cycle Theory of Trade (Vernon, 1966) probably best explains the theoretical underpinnings of The Production Trading Game (The Game). Participants are assigned to three teams, each representing a nation with different access to natural resources, as well as varying levels of technological and financial capacity. Even though all groups have seemingly equal starting positions, it becomes clear one country is highly industrialized (USA), another country is focused heavily on science and can create manufacturing capacity (other HDCs), and the final country is blessed with natural resources but has little to no manufacturing capacity (developing countries). The flow of The Game tends to follow Vernon's PLC Theory of Trade, but we are dealing with humans playing a game, so at times other trade theories leave stronger footprints (absolute advantage, comparative advantage, and national competitive advantage have their place in the post-simulation debrief). For example, the team assigned to the country blessed with resources intentionally has an absolute advantage (Smith, 1776), but due to a lack of manufacturing capacity always struggles to assert this position fully. However, with even a little bit of cooperation across teams (countries) participants find themselves proving Adam Smith's assertion that trade does not have to be a zero-sum game. Indeed, most iterations of the game result in each team (country) finding at least one source of comparative advantage (Ricardo, 1817), and the team representing the USA is intentionally manufacturing-dependent to foster this outcome.

As noted by Porter (1990), natural resources, or a lack thereof, are not sufficient to create a national competitive advantage or even develop a disadvantage. The link between the determinants of national competitive advantage (Porter's Diamond) and the learning objectives

(LO) is intentional. In the game, the countries that are most likely to succeed will have the financial ability to sustain investment (Determinant 1: Factor Conditions). Porter (1990) suggests that “nations gain a competitive advantage in industries where the home demand gives their companies a clearer or earlier picture of emerging buyer needs, and where demanding buyers pressure companies to innovate faster and achieve more sophisticated competitive advantages than their foreign rivals.” Thus, it is much harder for the LDC to compete in global markets and The Game (Determinant 2: Rivalry).

However, Porter’s Diamond is not a set of four independent elements; it is the interplay of all four that determines national competitive advantage. The Game has teams competing at the national level rather than the firm level, so the last two determinants of national advantage (Demand Conditions and Related & Supporting Industries) are not explicitly included. However, The Game relies on international demand to drive growth, the teams (countries) simply need each other to grow, so demand conditions are indirectly built in. The fourth broad determinant of national advantage, related and supporting industries, is not addressed. We feel that even though two determinants are not explicitly evident by The Game, this knowledge can be used by the instructor to bring out how trade theory has evolved. Specifically, it opens up debrief questions about how firms must adjust to local markets.

# Learning Objectives and Discussion Questions

As a result of taking part in the simulation students will:

1. Explain how different levels of technology impact a country's ability to participate in international trade.
  - a. How did group C's advantage of technology help them during the Bull section of the game?
  - b. How did group B's starting factory and super factory aid them in production?
2. Explain how different levels of natural resources impact a country's ability to participate in international trade.
  - a. Explain why Group A did as well as they did, lacking in both industry and science.
  - b. Why did group A's industrial revolution aid propel them into a global power?
3. Show how a country with deep financial pockets has a huge advantage in international trade.
  - a. Explain why Group C with seemingly no advantage other than money was able to succeed.
  - b. Why did you choose to "do business" with Group C?
  - c. Would it be possible to run without Group C entirely? How?
4. Show that trade is mutually beneficial for all countries.
  - a. Is cooperation mutually beneficial across countries? Why?
  - b. Why did every country do better than they would have done by themselves?



# Exercise Overview

This Production Trading Game allows students to understand how certain aspects of the business world can affect factors higher than their own individualistic goals. The game separates participants into three groups, each representing a country with its perks. Some nations are blessed with natural (blue) resources and can mine them out every single turn of the game, whereas some countries have the technological and monetary capacity to artificially create their resources (red) These can be compared to diamonds in the real world. While not as plentiful as this game would suggest, some diamonds can be found naturally, when coal super compresses within the earth's crust, however, finding these resources are sometimes inefficient, and it is occasionally easier to produce diamonds industrially to use in various building equipment. As with any natural resource, these can easily be traded and improved for some form of currency (candy) These currencies can be used to grow factories and eventually end with a greater economy overall. All groups have equal starts; Some have a highly industrialized society allowing them to produce candies at a naturally faster rate than any other country, whereas some countries have focused heavily on science and can artificially create chips in a lab. Our Final nation has the pure luck ability to be naturally blessed with resources, allowing a steady flow of them into the economy throughout the game.

Factories in the game can be purchased by any society; however, due to societal constraints, it can be hindering on some countries to invest their money in factories and force them to look toward trade to make currency. Factories, without any bonus', can produce one currency per set of chips per turn.

This game also takes into effect the various highs and lows of the economy in three separate stages of the game. Bringing it from a stagnant market to a bull market, to a bear market throughout the game. This helps the player understand that the world will not always be right or steady, and can sometimes take a flip turn. It is essential to know how you can still be productive at even during bleak times

The “People” element of the game is what makes it so unique. Of the various trial runs that I have conducted at the University of Central Missouri, none of them have come out with the same result. This is due to multiple decisions made by the three groups throughout the game and the biases and stigmas that they hold against each other. For example, in one session we had one team refuse a fair trade at the beginning of the game, so the group looking for the deal moved to group C and stuck with them the rest of the game, making it harder for group B to succeed.

# Instructor of Game

It is highly recommended that you read and understand Figures B, C, and D before the game. Essentially these figures allow the guidelines for the game. They explain the given exchange rates of chips to candy (Via factory production), along with rules that groups A, B, and C must adhere to play the game. You will place “Stats” sheets (Figures B, C, & D) at the front of the room to begin the game. These “Stats” will help players make rational decisions for trades amongst countries, while also allowing visual learners a more excellent grasp of the subject material at hand. The game is conducted in 25 rounds; While the instructor can know this time frame, it is highly important that it remains a secret to the players. It is important to keep time so that you can conclude all 25 rounds in no more than 60 minutes time, leaving 10 Minutes for Instructions prior and 20 minutes for post-game discussion. I have found that It works best to decline round time limit as the game goes on, as the first round there will be more conversing and more trades amongst countries, as the game goes on, things will normalize, and trades will become commonplace with further game understanding. Figure A will show a projected time allocation for rounds (This is only a recommendation and can be adjusted to fit the dynamic of the class)

You will need to explain to the class that this activity is very laissez-faire on the part of the instructor. The Instructor can only clarify the rules, and facilitate understanding to the students. It is also recommended that if you see anything noteworthy to write it up on the board so that you can refer back to it during the debrief and discussion time. The activity is designed to be a critical thinking activity that allows students to use decision-making skills to communicate fair market value trades to obtain wealth on the parts of both parties.

# Session Description

**Timeline:**

0 Minutes - 10 Minutes ----- Instructions

10 Minutes - 70 Minutes ----- Activity

70 Minutes - 90 Minutes ----- Discussion

**Participant Involvement:**

Participants will interact thought to play The Production Trading Game. The game is designed as a unique way to show various countries comparative advantages. We will split participants into three separate groups to represent countries A, B, and C. These countries will then compete to earn the most candies by the end of the game via the exchange of other forms of in-game economics such as poker chips. The game combines various economies to show multiple levels of international resource trading and overall currency development. Throughout the session, participants will interact with the undergraduate student who developed The Production Trading Game, along with their peers to determine fair trade deals. We have brought undergraduates to OBTC 3 times before, and if this OBTC history repeats itself, participants will want to ask questions of the undergraduate student who made the game along the way and at the end of the session during the discussion.

**Figure A**

Game Stage	Time Allocation Per Round; Left to Right Starting round 1, After Instruction									
Stagnant	10-15	15-18	18-21	21-24	24-27	27-29	29-31	31-33	33-34	34-35
Bull	35-40	40-43	43-45	45-47	47-49	49-51	51-53	53-55	55-56	56-57
Bear	57-61		61-64		64-66		66-68		68-70	

**Figure B.**

# Production Trading Game

- Group A – Non-Industrialized Resource Blessed, Science Lacking
  - Group A starts off with 30 “Blue” chips and 4 candies.
  - Gains 4 “Blue” Chips per Turn
- Group B – Highly Industrialized, resource lacking, Science Lacking
  - Group B starts off with 16 “Blue” chips and 4 candies.
  - Gains 1 Factory at start
- Group C – Modestly Industrialized, resource lacking, Scientific people
  - Group C starts off with 15 “Red” chips and 6 candies.
  - Can create 6 “Red” chips for 1 candy.

**Factories:**

*Assume “Blue” is Natural Resource Chips and “Red” are artificial resource chips*

- Can produce 1 candy each turn from
  - 4 “Blue” Chips
  - 2 “Blue” Chips and 3 “Red” Chips
- Factories cost
  - 10 Candies for Group A
  - 4 Candies for Group B
  - 7 Candies for Group C
- All Factories can be sold to bank for 3 candies each

**Figure C.**

Group C invests heavily in space exploration and finds a way to produce artificial chips in a greater capacity on their space station. These artificial chips are closer in composition to the natural resource and can now produce candy purely by themselves. Group A has learned many skills are mining their natural resources and has had an industrial revolution in their country. Group B has figured out how to produce candies with one less artificial chips than groups A or C, and also gains a super factory that can produce candies at double the rate of other factories in the world.

- Group A – Highly Industrialized, Resource Blessed, Science Lacking
  - Gains 5 “Blue” Chips per Turn
- Group B – Highly Industrialized, resource lacking, Science Lacking
  - Gains ability to produce 1 candy for 4 “Red” chips
  - **ONE FACTORY** Gains ability to produce 2 candies for 3 “Blue” chips and 4 “Red” chips
    - If not used **Exactly** in this amount. Factory can produce 1 candy/turn as usual
- Group C – Modestly Industrialized, resource lacking, Scientific people
  - Can create 9 “Red” chips for 1 candy.

**Factories:**

*Assume “Blue” is Natural Resource Chips and “Red” are artificial resource chips*

- Can produce 1 candy each turn from
  - 4 “Blue” Chips
  - 2 “Blue” Chips and 1 “Red” Chips
  - 5 “Red” chips
- Factories cost
  - 4 Candies for Group A
  - 4 Candies for Group B
  - 7 Candies for Group C
- All Factories can be sold for 3 candies each

**Figure D.**

Group A's Resources begin to diminish. The Space Station from group C, had a technical problem during research and reentered Earth's atmosphere and fell on group B's Super factory. Disgruntled consumers begin to boycott group C's chips due to reckless space actions, causing them to lose their value.

- Group A – Highly Industrialized, Resource Blessed, Science Lacking
  - Gains 3 Chips per Turn
  - Due to depleted resources, the government offers to buy any additional factory's over 1 for 1 candy each.
- Group B – Highly Industrialized, resource lacking, Science Lacking
  - Retains ability to produce 1 candy for 4 "Red" chips
  - Government felt sorry for ISS crashing into business, offered to buy each additional factory on accordance to the scale below and pay 2 candies for the demolished super factory.
    - 1 Factory=2 Candies
    - 2 Factories= 4 Candies
    - 3 Factories= 5 Candies
    - 4 Factories =6 Candies
- Group C – Modestly Industrialized, resource lacking, Scientific people
  - Can create 5 chips for 1 candy.
  - Due to the depleted value of chips, the government offers a buyout for any additional factories for 1 candy each.

Factories:

*Assume "Blue" is Natural Resource Chips and "Red" are artificial resource chips*

- Can produce 1 candy each turn from
  - 4 "Blue" Chips
  - 2 "Blue" Chips and 1 "Red" Chips
  - 5 "Red" chips
- Factories cost
  - 4 Candies for Group A
  - 4 Candies for Group B
  - 7 Candies for Group C
- Individual governments offer buyouts of companies.



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