Chapter 1: More Than Just the Stock Market. Introduction to Economics

1.1 Reread and reflect on the excerpts from Adam Smith’s books used in class for the Insight Dialogue exercise. Notice that the first excerpt comes from the 1759 edition of The Theory of Moral Sentiments, the second comes from the 1776 edition of The Wealth of Nations, and the third comes from the 1790 edition of The Theory of Moral Sentiments. Address the following points:
   a. How do these three excerpts make sense to you when taken together?
   b. Can sympathy (similar to what we currently call empathy) and self-interest coexist in an individual? Could you give an example?
   c. What do you make of Smith’s emphasis on the self-interested nature of human beings and at the same time of his admonition on the corruption of moral sentiments? Be careful here: Adam Smith does not claim that self-interest, in and of itself, implies or leads to the corruption of moral sentiments…
   d. How did your perception of the role of human nature in economics change, if at all, after these readings and the class exercise?

1.2 Do some basic internet search to clarify the meaning of “conservative,” “liberal,” and “radical” economics, and then provide a brief answer to the following questions: How do you imagine a conservative, a liberal, and a radical economist would respond to the issue of child labor? How do you imagine a conservative, a liberal, and a radical economist would respond to the issue of climate change? As you approach these questions, make sure you can discern between conservative, liberal, and radical economic views vs. conservative, liberal, and radical political views.
Chapter 2: Not in the Garden of Eden. Scarcity and Tradeoffs

2.1 Marlene is a professional basketball player, who is also certified to teach yoga & Pilates classes. Given her team’s schedule, she can devote a max of 15hrs/week to teach these classes at a local studio. Each yoga class lasts 60 minutes, while a Pilates class takes an average of 90 minutes.

a. Determine the opportunity cost of teaching a Pilates class in terms of yoga classes. Explain your thought process and the practical meaning of the number you found.
b. Setting “yoga classes” on the vertical axis, draw Marlene’s production possibility frontier. Make sure you label also the horizontal axis!
c. Find the equation of the production possibility frontier that describes the graph you drew in part b.
d. You should now recognize the opportunity cost you found in part a. in some aspect of the graph you drew/equation you found. Where do you find the opportunity cost in the graph/equation of the PPF? Opportunity cost of what in terms of what?

2.2 Jasper is a family farm operator who owns a 300-acre farm in which only almonds and apples are cultivated. The average yearly yields of the farm are as follows: 2,000 pounds per acre of almonds, and 30,000 pounds per acre of apples. Assume that Jasper utilizes the entire farm to cultivate either only almonds, or only apples, or some combination of the two.

a. Determine Jasper’s opportunity cost of obtaining one additional pound of almonds in terms of (pounds of) apples. Explain your thought process and the practical meaning of the number you found.
b. Setting “pounds of apples” on the vertical axis, draw the farm’s production possibility frontier. What is the value of the slope of the production possibility frontier? Interpret it in terms of opportunity cost: opportunity cost of what in terms of what? What does it mean in practical terms?
c. Find the equation of the production possibility frontier that describes the graph you drew in part b.

2.3 The carwash Boo-Hoo is well-known for its “100% by hand” car wash services. It currently employs 20 workers, who work a total of 160 hours a day. Boo-Hoo offers two services to its customers: a “Plain Car-Wash” (P) and a “Detailed Car-Wash” (D). It takes 20 minutes to get a “Plain Car-Wash” done, and 2 hrs to get a “Detailed Car-Wash” done.

a. Determine the opportunity cost of P in terms of D. Explain intuitively-verbally your thought process, and the practical meaning of the number you find: what does that number actually indicate?
b. Find the equation of the daily Production Possibility Frontier (PPF) of Boo-Hoo.
c. Draw in the appropriate graph the daily Production Possibility Frontier you found in part b., making sure that you clearly label the axes and indicate the values of the intercepts. Interpret the slope of the PPF you drew in terms of opportunity cost: opportunity cost of what in terms of what?

2.4 Suppose an economy only produces beer and wine. The table below indicates a few possible combinations of each.
a. Draw a production possibilities frontier with beer on the vertical axis and wine on the horizontal axis. Label each alternative point.
b. Suppose the economy produces 100 6-packs of beer and 150 bottles of wine. What does this indicate and what action would most economists recommend taking?
c. How much beer must be given up to move from producing 150 bottles of wine to 210 bottles (points C to D)? How many 6-packs of beer per bottle of wine are given up in this move? How much must be given up to move from producing 260 bottles of wine to producing 280 bottles (points E to F)? How many 6-packs of beer per bottle of wine at this point?
d. What do the different tradeoffs from part c suggest about resource use between the two goods? 
e. How is the shape of the PPF connected to this idea?

2.5 Assume that Conrad devotes 100 hours a month to cook meals (M) and clean the house (H). It takes him an average of 2 hrs to cook a meal, and an average of 4 hrs to clean the house.
   a. Determine, and briefly explain your thought process, Conrad’s opportunity cost of cleaning the house in terms of cooking a meal.
   b. Draw Conrad’s production possibility frontier -label the axes freely, but make sure you determine the value of the intersections with the vertical and the horizontal axes-.

2.6 Assume that your monthly budget for downloads of music (D) and movies at the theater (T) is $80. Assume also that the average price of a music download is $2, and the average price of a movie ticket is $10.
   a. Determine the opportunity cost of T in terms of D, and verbally explain its meaning.
   b. Find the equation of the budget constraint (feel free to express it with D or T on the vertical axis).
   c. Interpret the slope of your equation in terms of relative price… relative price of what in terms of what? Verbally explain its meaning.
   d. Graph your budget constraint in the appropriate graph (make sure you label the axes).
Chapter 3: Led by an Invisible Hand - The Market

3.1 In this question you are asked to reflect on and compare the information we obtain from a budget constraint vs. a demand function. Construct your budget constraint for T-shirts (T) and socks (S) assuming the following: you have a budget of $80, the average price of a T-shirt is $16, and the average price of a pair of socks is $10: draw the graph of the budget constraint, making sure you label the axes, and find the equation of the graph you drew. Then, in a separate graph, draw the following demand for T-shirts: \( P_T = -0.5 \cdot T + 40 \), where \( P_T \) indicates the price of T-shirts, and \( T \) indicates the quantity demanded of T-shirts. Make sure you clearly label the axes. Reflect on and carefully compare the two graphs you obtained, which at first glance may look confusingly similar: What sort of information do you get from the budget constraint, vis-à-vis the information you get by observing the demand function? What sort of questions does a budget constraint answer, vis-à-vis those answered by a demand function?

3.2 John perceives beef as an inferior good, chicken a substitute for beef, and beef and potatoes as complements. Currently, the price of beef is $8/pound; at that price, John buys (“demands”) 3 pounds of beef a week. Focusing on John’s demand for beef (B):
   a. Draw a generic demand that represents John’s demand for beef, and pinpoint on your graph the $8/pound price for beef and the corresponding quantity demanded of 3 pounds. Make sure you clearly label the axes.
   b. For each of the following questions, reproduce the graph you drew for part a., and show the following:
      c. how would you modify John’s demand and/or quantity demanded for beef if his income increased (ceteris paribus) while the current price of beef remained at $8/pound?
      d. how would you modify John’s demand and/or quantity demanded for beef if the price of potatoes decreased (ceteris paribus) while the current price of beef remained at $8/pound?
      e. how would you modify John’s demand and/or quantity demanded for beef if the price of beef increased (ceteris paribus)?
      f. how would you modify John’s demand and/or quantity demanded for beef if the price of chicken increased (ceteris paribus) while the current price of beef remained at $8/pound?

3.3 Assume a demand function given by the equation: \( P = -0.1Q + 12 \); and a supply function given by the equation: \( P = Q + 1 \). Draw the supply and demand on the appropriate graph, and algebraically calculate the equilibrium price and quantity in this market.

3.4 Assume that the demand and the supply of milk are given by the following equations:
   \[
   \begin{align*}
   P &= -0.001Q + 10 \\
   P &= 0.001Q + 2
   \end{align*}
   \]
   a. Draw in the appropriate graph the demand and supply of milk. Make sure you appropriately label the axes.
   b. Algebraically determine the price of milk that keeps this market in equilibrium (“equilibrium price of milk”). Find the corresponding “equilibrium quantity of milk.”
   c. Assume now that the following statement is released from the Food & Drugs Administration: “A recent study by a team of the leading medical schools of the world has found that those who drink at least 5 cups of milk a day tend to live 10% longer lives.” What impact would this statement have on the market for milk? Would the demand function change? Would the
3.5 *Pacifica*, like most South-East Asian countries, has rice as a dietary staple of both poor and wealthy households. *Pacifica* demand and supply functions for rice have for a long time been:

\[ P + Q - 20 = 0 \]
\[ \frac{3}{4}Q - P - \frac{25}{4} = 0. \]

a. Draw the market for rice of *Pacifica*, and algebraically determine the market equilibrium.

b. The booming world production of ethanol has recently increased the price of soy (a key input in the ethanol production) so much that several farms of *Pacifica* have turned their production from rice to soy. The *Pacifica* supply function of rice has consequently shrunk, becoming:

\[ \frac{3}{4}Q - P + 2.5 = 0. \]

Draw the new supply function in the same graph you drew for part a., and calculate the new equilibrium price for rice.

c. Because rice is a dietary staple for all *Pacifica* people, the government of *Pacifica* felt compelled to intervene, after these changes, setting a *price ceiling* for rice to $5. Describe verbally, graphically and algebraically the market for rice after the imposition of the price ceiling, paying attention to the following questions: What are the *quantitative* economic effects of this particular price ceiling? What could the social effects be? Do you support this specific government’s intervention? Can you think of any better government policy than the implementation of a price ceiling, given the situation?

3.6 In the small tropical village of Biriburi the fashion statement of the year is: *washable straw underwear*! Four small firms currently produce *straw underwear* (SU) in Biriburi, and the market supply is given by the following function: \[ P = .15Q - 20. \] The village magazine *Rogue* wants to hire you as a *straw underwear* market consultant: you decide to take the job, and travel to the village to figure out the Biriburi’s current market equilibrium for SU and its future prospects. After some studies and surveys, you come to the conclusion that Biriburi’s *current market demand function* for SU is given by the function: \[ P = -.45Q + 100. \] You also come up with the forecast that in six months the village market demand for SU will boom to \[ P = -.45Q + 220, \] while the function of the market supply will remain the same. What follows are the steps you take to complete your consultancy with *Rogue*:

a. Algebraically determine Biriburi’s current market equilibrium (price and quantity) for straw underwear.

b. Draw in the appropriate (large) graph the market equilibrium you found in part a. Make sure you label the axes appropriately, and indicate the values of all the intercepts.

c. Algebraically determine the equilibrium price and quantity of straw underwear you predict will prevail in Biriburi six months from now. Briefly-but-analytically explain the automatic price adjustment mechanism that will take the equilibrium price from its current to its future value.

3.7 You are an industry analyst, and you see that the average price of *houses* has risen. What is one explanation that you could possibly find to explain the increase? Imagine that you rule out a sudden change in consumer tastes or preferences as a cause of the increase. Be sure to tie your explanation to one of the theoretical reasons for a shift in the supply or demand curves. Show on
a supply and demand graph and explain the scenario. Describe what happens to quantity in your story.

3.8 The supply and demand schedule for fidget spinners in Distractopia is given below. It’s discovered that the fidget spinners are made using a rare metal that pollutes the area, imposing an externality damage of $1.00/spinner.

<table>
<thead>
<tr>
<th>Price per spinner</th>
<th>Quantity supplied (thousands of spinners per month)</th>
<th>Quantity demanded (thousands of spinners per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6.00</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>$6.50</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>$7.00</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>$7.50</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>$8.00</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>$8.50</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>$9.00</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>$9.50</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>$10.00</td>
<td>26</td>
<td>18</td>
</tr>
</tbody>
</table>

a. Using a supply and demand graph to support your answer, what is the unregulated market equilibrium (price and quantity) in the fidget spinner market?
b. Add the external costs to your graph from part (a). What is the socially optimal outcome in the fidget spinner market (price and quantity)? Why is this considered socially optimal? What economic policy could be implemented to achieve the social optimum?

3.9 Suppose you own a very small restaurant selling meals for a fixed price. In an attempt to move upmarket, you decide to increase the price of a meal from $45 to $50. However, this causes demand to fall from 25 meals/night to 20 meals/night.

a. What is the price elasticity of demand for your restaurant meals?
b. Based on your answer to part a, if you increase the price of your meals, what will happen to your revenue? Explain your reasoning.

3.10 Assume the following demand function: 10Q + 2P - 120 = 0

a. Draw the demand in the appropriate graph. Make sure you label the axes appropriately, and indicate the values of all the intercepts.
b. Use the “point elasticity” formula discussed in the text to calculate the Price Elasticity of the Demand at P = 32. Is your demand elastic, inelastic, or unitary elastic at that point? What is the practical meaning of the specific value of the elasticity you found? Given the value of the price elasticity you found, would a firm selling this product at P = 32 have some sort of incentive to increase the price? Explain your answer.

3.11 Assume the following demand function: Q + 5P - 1,000 = 0

a. Draw the demand in the appropriate graph. Make sure you label the axes and indicate the values of all the intercepts.
b. Use the “point elasticity” formula discussed in the text to calculate the Price Elasticity of the Demand at Q = 900. Is your demand elastic, inelastic, or unitary elastic at that point? What is the practical meaning of the specific value of the elasticity you found? Explain your answer.

3.12 To start, assume that the market for chicken is in equilibrium. Draw a hypothetical demand and supply of chicken, making sure you label the axes, and indicate the equilibrium price and quantity on your graph.

a. Suppose now that the price of beef increases (no need to draw the graph for the market of beef): how does this affect your market for chicken? Would this change in the price of beef affect the demand for or the supply of chicken? The market equilibrium of chicken? Redraw your initial graph, show the effects of such increase in the price of beef on the market for chicken, and provide a brief explanation of your answer.

b. Back to your original graph (redraw it). Suppose now that the average income of the population increases. Again: how would this affect your market for chicken? Would it affect the demand for chicken and/or the supply of chicken? Would the market equilibrium of chicken be affected, and if yes, how? Show these effects on your graph of the market of chicken, and provide a brief explanation of your answer.

c. Back again to your original graph of the market for chicken (redraw it). Suppose now that a new law intended to protect animal rights imposes new regulations on chicken farms: for instance, fewer chicken can be contained in each cage, and each cage must be twice as large as before. How does this affect your market for chicken? Would this affect the demand for and/or the supply of chicken? The market equilibrium of chicken? Show the effect of this change on your graph, and provide a brief explanation of your answer.
[Note: in your answers, make sure you carefully distinguish between demand and quantity demanded; supply and quantity supplied]

3.13 True or False: “Given that the price of good X is currently increasing, there must be an excess supply (surplus) of good X in the market.” Explain your answer/thought process, both graphically and verbally.

3.14 Assume the following demand function: \[4Q + 2P - 40 = 0\]

a. Draw the demand in the appropriate graph. Make sure you label the axes appropriately, and indicate the values of all the intercepts.

b. Use the “point elasticity” formula discussed in class to calculate the Price Elasticity of the Demand at \(P = 18\). Is your demand elastic, inelastic, or unitary elastic at that point? What is the practical meaning of the specific value of the elasticity you found? Given the value of the price elasticity you found, would a firm selling this product at \(P = 18\) have an incentive to increase the price? Explain your answer.
Chapter 4: Inside the Magic Box. Productivity, Costs, and Profit Maximization

4.1 Jollyroots is a very successful producer of organic tomatoes. The firm has kept its “recipe for success” a secret, but rumors suggest that its success is due to the firm’s practice of having employees whisper love words to the tomato plants. It turns out that the accounting books of the firm in fact have a category of employees identified as “LT,” and people who claim knowledge of the farm say that “LT” stands for “Love-Talkers.” Joshua Nosedigger, a famous tomato expert, was able to obtain data on the firm’s yearly productivities and costs, and here is some of what he found:

<table>
<thead>
<tr>
<th>Number of “LT” employees</th>
<th>Pounds of harvested tomatoes (Q)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td>6</td>
<td>1,500</td>
</tr>
</tbody>
</table>

a. Calculate the Love-Talkers’ Average Productivities and the Marginal Productivities for LT=1, LT=3, and LT=6. Show all your calculations (not just the final result!).
b. Using the results of the calculations performed for part a., sketch the graphs of the marginal and average productivity curves of Jollyroots, making sure you label the axes appropriately.

4.2 When Melania decided to open her ice-cream production facility and parlor, that she called Great Again, she had to buy mixing, homogenizing, freezing, and storing equipment before she could even begin to produce the first pint of ice-cream. The cost of all this machinery, including installation, was $30,000. The facility then began production: at first she was the only worker there, but with time and success output began to grow as the number of workers also increased. The relationship between number of workers and pints of ice-cream produced was as follows:

<table>
<thead>
<tr>
<th>Number of workers per day: L</th>
<th>Pints of ice cream per day: Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>4</td>
<td>1,600</td>
</tr>
<tr>
<td>5</td>
<td>2,000</td>
</tr>
<tr>
<td>8</td>
<td>2,600</td>
</tr>
</tbody>
</table>

Melania paid her workers a wage of $100/day.

a. For each of the quantities given above, algebraically determine and report on clear tables:
   i. Great Again’s Marginal Product of Labor;
   ii. Great Again’s Fixed Cost, Variable Cost, Total Cost;
   iii. Great Again’s Average Fixed Cost, Average Variable Cost, Marginal Cost.
b. [When needed, please approximate to the first two decimals]
c. Report your results in three different graphs: one graph for i), one for ii), and one for iii) --with the exception of the AFC, which is too out of scale--. Make sure you appropriately
4.3 When Bertha decided to become one of Meatloaf’s fisher-women, she had to buy a fishing boat and load the boat with fishing gear before she could even begin fishing. The cost of boat and gear was $50,000. Then she began going out with the boat and different numbers of workers, and finally determined the following pattern:

<table>
<thead>
<tr>
<th>Number of workers per day</th>
<th>Fish caught per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td>4</td>
<td>1,200</td>
</tr>
<tr>
<td>5</td>
<td>1,250</td>
</tr>
<tr>
<td>6</td>
<td>1,270</td>
</tr>
</tbody>
</table>

Meatloaf’s wage rate for fisher(wo)men is $100/day.

a. For each of the quantities given above, algebraically determine and report on clear tables:
   i. Bertha-the-Fisherwoman Inc.’s Marginal Product of Labor;
   ii. Bertha-the-Fisherwoman Inc.’s Fixed Cost, Variable Cost, Total Cost;
   iii. Bertha-the-Fisherwoman Inc.’s Average Fixed Cost, Average Variable Cost, Marginal Cost.

b. Report your results in three different graphs: one graph for i), one for ii., and one for iii.(with the exception of the AFC, which is too out of scale). Make sure you appropriately label the axes.

4.4 Explain why perfectly competitive firms are assumed to make zero economic profits in the long-run. Why would an entrepreneur choose to operate in a perfectly competitive market?

4.5 Suppose you are given the following information regarding the cost structure of a nail polish company that is a monopolist:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
<th>MC</th>
<th>AC</th>
<th>TC</th>
<th>MR</th>
<th>TR</th>
<th>Total Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>30</td>
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<tr>
<td>2</td>
<td>25</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>25</td>
<td>50</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>20</td>
<td>60</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>9</td>
<td>9</td>
<td>33</td>
<td>15</td>
<td>60</td>
<td>--</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>45</td>
<td>10</td>
<td>50</td>
<td>--</td>
</tr>
</tbody>
</table>

a. Assume that the firm has fixed costs of $3. Complete the table above.
b. Graph the marginal cost, average cost, demand, and marginal revenue curves for the firm.
c. What is the profit maximizing level of production for the firm? What price will the monopolist charge for the product at that level of production? Why?
d. Indicate on the graph and discuss why monopolies are considered inefficient.

5.1 As discussed in the text, the *Gross Domestic Product* (GDP) is the most widely used measurement of a country’s aggregate economic activity. It is used not only as a measurement of *domestic product*, but also – when averaged by population, i.e., in *per capita* (per person) terms – as a measurement of the population’s wellbeing: comparisons of *GDP per capita* between countries are often interpreted as comparisons of the average standard of living of the respective societies. GDP, however, is not the only available index: at least three other indexes have gained some popularity in the last few decades: the *Gross National Happiness* index (GNH), the *Human Development Index* (HDI), and the *Genuine Progress Indicator* (GPI).

This question requires you to do some independent research. Provide a complete bibliography of resources used at the end of your answers to the following questions:

- What is GDP? What does it take into account – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – What fundamental ideas of wellbeing justify its use? How widespread is its use around the world?
- What is GDP *per capita*? How is it calculated (given GDP)? what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – What fundamental ideas of wellbeing justify its use? How widespread is its use around the world?
- What is GNH? What does it take into account – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – What fundamental ideas of wellbeing justify its use? How widespread is its use around the world?
- What is HDI? What does it take into account – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – What fundamental ideas of wellbeing justify its use? How widespread is its use around the world?
- What is GPI? What does it take into account – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – and thus, what sort of information does it provide – What fundamental ideas of wellbeing justify its use? How widespread is its use around the world?
- Provide your idea of what should be taken into account to measure the aggregate wellbeing of a country, and to compare the population’s wellbeing across countries.
- Your opinion: in view of your previous answer, how well do the four indexes fare? If you were to choose one, which one would that be, and why?

5.2 Imagine an economy that produces only hats and coats. The following table contains production and price data for 2004 and 2005.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of hats</td>
<td>2,000</td>
<td>2,500</td>
</tr>
<tr>
<td>Price of hats</td>
<td>$1</td>
<td>$2</td>
</tr>
<tr>
<td>Quantity of coats</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Price of coats</td>
<td>$20</td>
<td>$25</td>
</tr>
</tbody>
</table>

- Calculate nominal GDP for years 2004 and 2005, along with the growth rate of nominal GDP between the two years.
- Calculate real GDP for years 2004 and 2005 using 2004 as the base year, along with the growth rate of real GDP between the two years.
c. Explain why the two GDP values differ in 2005.

5.3 Consider the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Real GDP (base-year: 2000)</th>
<th>Nominal GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>2001</td>
<td>1,000</td>
<td>1,050</td>
</tr>
<tr>
<td>2002</td>
<td>1,200</td>
<td>1,300</td>
</tr>
<tr>
<td>2003</td>
<td>1,500</td>
<td>1,500</td>
</tr>
</tbody>
</table>

The following questions are meant to help you reflect more carefully about the meaning of real and nominal GDP, and about what information can be deduced from their values.

a. By what percentage did the economy grow between 2001 and 2002? Show your calculations.

b. Can you calculate the inflation rate between 2000 and 2001? Explain your thought process: if you can determine it, show your calculations.

c. Can you calculate the inflation rate between 2001 and 2002? Explain your thought process: if you can determine it, show your calculations.

d. Can we infer from this table whether the value of aggregate consumption has increased between, say, 2002 and 2003? Again, explain your thought process.

5.4 Consider the following data, retrieved from the Bureau of Labor Statistics’ August 2018 release of “Employment status of civilian population by race, sex, and age”:

<table>
<thead>
<tr>
<th>White</th>
<th>July 2018 (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilian Non-institutional Population</td>
<td>200,236</td>
</tr>
<tr>
<td>Civilian Labor Force</td>
<td>125,720</td>
</tr>
<tr>
<td>Involuntarily Unemployed</td>
<td>4,214</td>
</tr>
<tr>
<td>Men, &gt;20 y.o., Labor Force</td>
<td>65,614</td>
</tr>
<tr>
<td>Men, &gt;20 y.o., Involuntarily Unemployed</td>
<td>1,924</td>
</tr>
<tr>
<td>Women, &gt;20 y.o., Labor Force</td>
<td>55,534</td>
</tr>
<tr>
<td>Women, &gt;20 y.o., Involuntarily Unemployed</td>
<td>1,787</td>
</tr>
<tr>
<td>Both sexes, 16-19 y.o., Labor Force</td>
<td>4,572</td>
</tr>
<tr>
<td>Both sexes, 16-19 y.o., Involuntarily Unempl.</td>
<td>502</td>
</tr>
</tbody>
</table>

| Black or African American                  |                          |
| Civilian Non-institutional Population      | 32,771                   |
| Civilian Labor Force                       | 20,495                   |
| Involuntarily Unemployed                   | 1,351                    |
| Men, >20 y.o., Labor Force                 | 9,320                    |
| Men, >20 y.o., Involuntarily Unemployed    | 569                      |
| Women, >20 y.o., Labor Force               | 10,426                   |
| Women, >20 y.o., Involuntarily Unemployed  | 633                      |
| Both sexes, 16-19 y.o., Labor Force        | 750                      |
| Both sexes, 16-19 y.o., Involuntarily Unempl.| 149                     |
a. Calculate the following:

<table>
<thead>
<tr>
<th>July 2018 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>White</strong></td>
</tr>
<tr>
<td>Labor Force Participation Rate</td>
</tr>
<tr>
<td>Unemployment Rate</td>
</tr>
<tr>
<td>Men, &gt;20 y.o., Unemployment Rate</td>
</tr>
<tr>
<td>Women, &gt;20 y.o., Unemployment Rate</td>
</tr>
<tr>
<td>Both sexes, 16-19 y.o., Unemployment Rate</td>
</tr>
<tr>
<td><strong>Black or African American</strong></td>
</tr>
<tr>
<td>Labor Force Participation Rate</td>
</tr>
<tr>
<td>Unemployment Rate</td>
</tr>
<tr>
<td>Men, &gt;20 y.o., Unemployment Rate</td>
</tr>
<tr>
<td>Women, &gt;20 y.o., Unemployment Rate</td>
</tr>
<tr>
<td>Both sexes, 16-19 y.o., Unemployment Rate</td>
</tr>
</tbody>
</table>

b. As you compare your results for the different categories of our civilian population, pick the category you find most problematic. Briefly explain/support your choice. If you had more time and resources, what sort of study would you want to pursue to better understand the data of the category you picked?

5.5 The November 2019 jobs report from the Bureau of Labor Statistics included the following information for the United States. The civilian non-institutional population over 16 was 260.020 million. 158.593 million people were employed, while 5.811 million were unemployed. Calculate the following labor force statistics for that month.

a. What is the unemployment rate?
b. What is the labor force participation rate?
c. What is the employment-population ratio?

5.6 What conclusions can you draw from the observation that nominal GDP has declined in two consecutive years?

5.7 Assume that the consumption basket of the average urban consumer is composed as follows:

30% of disposable income spent on housing (H)
20% of disposable income spent on transportation (T)
30% of disposable income spent on food (F)
10% of disposable income spent on entertainment (E)
10% of disposable income spent on clothing (C)

Assume the following average prices in 2014 and 2015:

<table>
<thead>
<tr>
<th>Price of Housing</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of Transportation</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Price of Food</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Price of Entertainment</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td>Price of Clothing</td>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>
Calculate the change in the Consumer Price Index (CPI) between 2014 and 2015. What is the inflation rate between these two years, according to the CPI?

5.8 Consider the small island economy of Tropicale with the following production and price information:

<table>
<thead>
<tr>
<th>Year and Product</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangos</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of final sale</td>
<td>$3.00</td>
<td>$4.00</td>
</tr>
<tr>
<td>Quantity</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>Papayas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of final sale</td>
<td>$4.00</td>
<td>$4.50</td>
</tr>
<tr>
<td>Quantity</td>
<td>100</td>
<td>125</td>
</tr>
</tbody>
</table>

a. Calculate real and nominal GDP for years 1 and 2. Use year 1 as the base year for real GDP.
b. Calculate the growth rates of real and nominal GDP, respectively, between years 1 and 2.
c. Calculate a consumer price index for each year using production from year 1 as the basket of goods and the corresponding rate of inflation rate from year 1 to year 2.
Chapter 6: In the Short-Run We Are Alive. Macroeconomic Theory and Policy: The Goods Market

6.1 Assume the following data of a classical macroeconomic model.

\[ S^{Pr} = 0.3 (\bar{Y} - T) \]

where: \( S^{Pr} \) stands for private savings; \( \bar{Y} \) is full employment output; \( T \) stands for taxation;

\[ T = 1,000 \]

\[ G = 1,000 \]

where \( G \) indicates public expenditure

\[ I = -300r + 5,400 \]

where: \( I \) indicates the level of Investments and \( r \) is the interest rate

\[ \bar{Y} = 10,000 \]

a. Algebraically determine the (classical) macroeconomic equilibrium of this economy. Represent your macroeconomic equilibrium in the appropriate graph.

b. Assume that the prospect of an imminent decrease in environmental regulation makes firms more optimistic about future profits and so more willing to invest. Refer to the above data and the graph you drew for part a., but now with the new investment function: \( I = -300r + 6,000 \). What would be the effect on the (classical) macroeconomic equilibrium? Describe/explain your result algebraically, graphically, and verbally.

6.2 Respond to the following:

a. Explain verbally and show graphically the effects of an increase in the budget deficit —ceteris paribus—according to the loanable funds model (classical macroeconomic assumptions).

b. Can an increase in the budget deficit ever affect the level of output (and thus economic growth) positively in the classical paradigm? Carefully consider direct and conceivable indirect effects, and explain your answer.

6.3 Assume that the economy is at full-employment, and that the current political discourse, that emphasizes negative socio-economic effects of immigration, succeeds in reducing the number of legal and illegal immigrants in the country. Use your graphical and analytical skills to answer the following question: Within the context/under the assumptions of the classical macroeconomic model, what effects would a reduction of immigration have on the macroeconomy?

6.4 Address the following scenarios:

a. Show, using the Loanable Funds diagram, the macroeconomic effects of a policy that nudges individuals to save more (everything else the same). Would these effects be evaluated as positive, according to the classical model? Why yes? or, why not?

b. Discuss the effects of a policy that nudges individuals to save more (everything else the same) according to the Keynesian model. Would a Keynesian macroeconomist evaluate this policy positively? Why yes? or, why not?

6.5 Assume a marginal propensity to save of 0.2. Using the appropriate consumption multipliers, determine the quantitative effects of each of the following events on the level of output (income):

a. a wave of optimism in the business world increases Investments by 1,000 (everything else the same);

b. a balanced budget increase in infrastructure spending leads to an increase in Public Spending and Taxation by 1,000 (everything else the same).
6.6 This exercise asks you to practice with the Keynesian macroeconomic model. Assume you have obtained the following information about the economy:

- Marginal Propensity to Save (mps): 0.2
- Autonomous Consumption (a.c.): 1,000
- Taxation: 1,000
- Public Spending: 800
- Investment Function: \( I = -30r + 1,000 \)
- Interest Rate (r): 5

a. Given the above information, determine the equation of the Keynesian consumption function.
b. Draw the Keynesian Cross diagram that corresponds to the above information and your answer to part a.
c. Algebraically determine the equilibrium level of income \( Y^* \). Show your calculations.
d. Assume that the potential (full-employment) level of income \( \bar{Y} \) in this economy is 10,000. Given the equilibrium level of income you obtained in part a., is this economy in a boom or a recession? What policies could the government enact to close the gap between \( Y^* \) and \( \bar{Y} \)?

6.7 Explain why the combined effect of Say’s Law and the assumption that all markets work efficiently implies that output has to be at full employment and that any deviation from full employment can only be short-lived, transitory.

6.8 What is the effect of an increase in the percentage of income spent on consumption –ceteris paribus-- in the loanable funds model? What is the effect of an increase in the percentage of income spent on consumption –ceteris paribus-- in the Keynesian model? Explain verbally and graphically.

6.9 Describe to the best of your abilities what sort of policies/initiatives a policy-maker who embraces the classical macroeconomic model might undertake to pursue:
- GDP growth
- full employment or reduction of unemployment

6.10 Describe to the best of your abilities what sort of policies/initiatives a policy-maker who embraces the Keynesian macroeconomic model might undertake to reduce unemployment or achieve full employment.

6.11 What is the trend of an economy? How important would you say is the knowledge of what the trend of the economy is, in order to evaluate how our macroeconomy is doing today? Explain your answer.

6.12 Is it realistic for someone to follow the classical macroeconomic paradigm while being ideologically progressive? Provide a down-to-earth example that supports your answer. As you approach this question, first briefly explain how you define “classical macroeconomic paradigm” and “ideologically progressive.” You might also want to review the meanings of paradigm and ideology, discussed in the first chapter of the textbook.
6.13 Address the following scenarios:
   a. Show, using the Loanable Funds diagram, the effects of a policy that increases public spending (everything else the same). Would these effects be evaluated as positive, according to the classical model? Why yes? or, why not?
   b. Show, using the Keynesian Cross diagram, the effects of a policy that increases public spending (everything else the same). Would these effects be evaluated as positive, according to the Keynesian model? Why yes? or, why not?

6.14 This exercise asks you again to practice with the Keynesian macroeconomic model. Assume you have obtained the following information about the economy:
   Marginal Propensity to Save (mps): .1
   Autonomous Consumption (a.c.): 200
   Taxation: 1,000
   Public Spending: 1,200
   Investment Function: I = -2 r + 1,000
   Interest Rate (r): 6

   a. Given the above information, determine the equation of the Keynesian Consumption Function
   b. Draw the Keynesian Cross diagram that corresponds to the above information and your answer to part a.
   c. Algebraically determine the equilibrium level of income Y*. Show your calculations.
   d. Assume that the potential (full-employment) level of income Y in this economy is 18,000. Given the equilibrium level of income you obtained in part a., is this economy in a boom or a recession? What policies could the government enact to close the gap between Y* and Y?
   e. Assume that the Government implements an increase of public spending by 200, completely matched by an equal increase in Taxation. Use the appropriate multipliers to calculate the full effect of this combined fiscal policy on the equilibrium level of income. Show all your calculations.

7.1 Assume that the Fed injects $100 million in the economy by purchasing Treasury Bonds. Can you think of practical, concrete ways in which those 100 million dollars actually get to circulate among ordinary people? How can whatever fraction of that injection reach your pocket?

7.2 According to the Quantity Theory of Money, what should the rate of change of money supply be, in order to have an inflation rate of 2.5%, assuming that the economy grows at 1.8% a year and that the velocity of money is constant?

7.3 What fundamental assumption about the money demand allowed Keynes to conclude that the interest rate is determined in the money market rather than the goods market?

7.4 Given the following information that follows that same notation used in the text:

\[ M^S = 1,800 \]
\[ M^D = 3(-200r + .6Y) \]
\[ Y = 3,000 \]

Determine the equilibrium interest rate. Draw a graph that represents \( M^S \), \( M^D \), and the equilibrium interest rate obtained in your solution. Pay particular attention on how you label the axes and the lines/curves of your graph.

7.5 Consider an economy with the following characteristics

\[ M^S = 1,000 \]
\[ M^D = P(-300r + 0.5Y) \]
\[ P=2 \]
\[ Y = 2,800 \]

a. What is the equilibrium interest rate in the money market? Show graphically.

b. Now imagine the central bank reduces the money supply to 800. What is the new equilibrium interest rate? Explain how such a monetary contraction affects aggregate expenditure and output using graphs to illustrate your reasoning.

7.6 Given the following information, that follows that same notation used in the text:

Marginal Propensity to Consume: \( mpc = .8 \)
Autonomous Consumption: \( a = 215 \)
Taxation: \( T = 2,000 \)
Public Expenditure: \( G = 1,000 \)
Investment Function: \( I = -r + 1,000 \)
Money Supply: \( M^S = 5,600 \)
Money Demand: \( M^D = 10(-10r + .2Y) \)

a. algebraically determine the interest rate \( r^* \) and equilibrium income \( Y^* \) that simultaneously keep the Goods Market and the Money Market in equilibrium.

b. given the value of the equilibrium income obtained in part a., and assuming that the full employment income of this economy is at 3,500, would you conclude that the economy is below, above, or on the trend?
c. given your answer to part b., what fiscal and/or monetary policies should be pursued by the government and the central bank to close the gap between equilibrium income and full employment income?
Chapter 8: The Embedded Economy

8.1 This chapter introduces the idea of embedded markets. Explain your understanding of what this means. How does the notion of a market being embedded within a society contrast with the neo-classical view of a market? What are some of the ways that this might affect the operation of a capitalist market-based economy?

8.2 Consider the information presented on time use differences between men and women in Chapter 8 that shows that women, on average, spend more time on paid and unpaid work than men. How might governments make policy that keeps in mind this information?

8.3 Monetized market economies appear to emphasize and validate activities that are transacted in the public sphere for a price, e.g. workers who are employed by a boss to work for a specified wage. Activities that are not remunerated appear in this economic environment to be invisible. Now, think about an economy that depended upon barter (exchange of goods or services for other goods or services without the use of money) rather than money. Do you think this alteration might change the value we put on our various public and private activities? Why or why not?

8.4 Mainstream economists historically argued that free markets should eliminate discrimination because those workers who are discriminated against would eventually receive a better offer (of conditions and/or wages) from an employer who was only interested in better competing in the marketplace. However, real world evidence suggests that this does not happen. Can you think of reasons why markets, on their own, might not eliminate labor market discrimination based on things like sex, race, or sexual orientation?

8.5 Go to the UN Sustainable Development Goals website at https://www.un.org/sustainabledevelopment/sustainable-development-goals/. Choose 3 goals to research a little more thoroughly, considering the current status of the goal and its targets for 2030. Are you optimistic that each of your goals can be met? Why or why not?

8.6 Can you think of important ways in which social norms shape economic activity? Can you think of ways in which social norms shapes the economy’s relationship with the environment?

8.7 If we lived in a society in which the economic goal was degrowth aimed at producing a sustainable economic system, describe what you think would be some of the changes we would experience.