The Effect of Teaching Economics with Classroom Experiments:
Estimates from a Within-Subject Experiment

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Online Appendix

A   Experiment Descriptions

Microeconomics

The microeconomics experiments are all administered on veconlab.econ.virginia.edu.

Consumer Surplus and Producer Surplus

This experiment uses the Input Demand experiment on veconlab. It does not involve inter-action with the other subjects. Students can purchase up to three units of a good. They are told the total amount of value they will receive: $18 if they purchase one unit, $30 if they purchase two units, and $36 if they purchase three units. They play 8 rounds. In each round, the price of the good changes. Students are taught that their earnings will be equal to the value they get from each unit minus the price, and the professor explains that this is the definition of consumer surplus. They learn to maximize their earnings by thinking at the margin. The professor explains the definitions of consumer surplus and producer surplus, how their earnings reflect consumer surplus. After the experiment concludes, the professor explains how consumer and producer surplus are calculated on a supply and demand graph, and refers back to how earnings were calculated in the experiment to enhance understanding of the concept.

Production Possibilities and Gains from Trade (PPF and Gains from Trade Lecture)

The production possibilities experiment uses the default setup in veconlab's Trade experiment. Subjects are randomized into the role of either a small or large producer, and each large producer is randomly paired with a small producer. The subjects have an effort budget

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that they allocate towards the production of two goods, COMs and BOs. They are shown the effort cost to produce each good, and are told how much they are paid for each combination of the two goods they end up with. The large producer has a larger effort budget and a comparative advantage in the production of COMs, while the small producer has a smaller effort budget and a comparative advantage in the production of BOs.

They play two treatments. In the first treatment, no trade is allowed and the players choose how to allocate their effort towards the production of each good. In the second treatment, trade is allowed. The players first can send one message to their partner (to recommend trade terms, for example). The messages are sent at the same time, so they players do not see their partner's message until after sending their own message. There is no follow-up communication. The players then choose simultaneously both their effort allocation and an offer for terms of a trade. The number of units that are traded is the maximum number possible that is compatible with both trade offers. Players play the no trade treatment for two rounds, then play the trade treatment for four rounds.

The effect of shifts in supply or demand on market equilibrium outcomes

This experiment can be implemented one of two veconlab experiments: Call Markets (found in the Micro Principles section) or Double Auctions (found in the Markets section). The setup is based on the experiment entitled "Shifting Supply Curves" in chapter 2 of **?**. Students are randomly assigned to a role of either a buyer or seller. Buyers have unit demand and are assigned a value for a unit of the good of either $25, $20, or $5. Sellers can produce the good for a marginal cost of $1 per unit and no fixed cost. Buyer earnings are their value minus the price they pay via the call market or double auction, and seller earnings are the price they receive minus their marginal cost per unit sold.

In the first set of sessions, sellers are able to produce and sell only one unit of the good. The resulting predicted equilibrium price is $20, which the market usually converges to in two rounds. Supply is then increased by allowing sellers to produce and sell up to three units. This supply increase lowers the predicted equilibrium price to $1 because there are not enough buyers for sellers to be able to sell all of their units of the good. When the market opens, several trades usually occur near the old equilibrium price, but prices fall

as the higher value buyers make trades. Later trades occur at much lower prices. Buyers then realize they can hold out for lower prices, and sellers quickly realize they will have to lower prices as they compete for the few available buyers. The professor points out why this happens, shows the students the supply and demand curves for the market, and explains using this graph how the theory predicts and explains what just happened to the students.

The effect of price controls on market outcomes

This experiment is implemented using the Call Market experiment on veconlab. As with the supply and demand experiment, students are randomly assigned a role as either a buyer or seller with assigned values for the good and costs of producing the good, respectively. It uses the default setup for the experiment, which results in a predicted equilibrium price of $16.50 and an equilibrium quantity of about 16. In the first session which usually converges to predicted equilibrium in two rounds, the market runs without interference. After the market converges, a binding price ceiling of $10 is imposed, which results in a price of $11 and a quantity traded of around 10, as predicted. Students assigned to the role of a buyer struggle to make trades and experience what it means for there to be a shortage. The professor points this out to the students, and shows the students the theory behind what just happened. A non-binding constraint of $22 is then imposed in the next rounds. Students find that the market returns to the original equilibrium, and the professor then explains the theory behind why this occurs.

How firms make decisions under perfect competition in the short run and the long run

This experiment uses the default setup in veconlab's Cost Curves experiment. Students are told the marginal cost of producing up to 5 units of a good. Their marginal cost of production is $1 for the first unit and increases by $2 for each subsequent unit produced, up to $9 for the fifth unit. In a series of 8 rounds, they are told the market price, and decide how many units they want to produce and sell at that price. They also have a fixed cost of $6. There are two treatments. In the first treatment, which lasts for eight rounds, they are effectively in the short run because they are told that they must pay this fixed cost regardless

of whether they produce any of the good or not. They learn through their experience that there are market prices where the best they can do is minimize losses, but they sometimes do so by producing a positive amount. In the next treatment, they are effectively in the long run because in each round, they see the price, and can then decide whether they want to enter the market at all before deciding how many units to sell. They learn that firms will choose to exit the market when losses would be made through this process. After the experiment is finished, the professor teaches how firms make choices in the short run and long run under perfect competition using average and marginal cost curve graphs, and use situations from the experiment as examples which illustrate the theory.

Macroeconomics

The first two macroeconomics experiments are administered on veconlab.econ.virginia.edu, while the other two experiments are administered through software programs created by Sacha Gelfer and distributed to the instructors in each class.

Production Possibilities and Gains from Trade (PPF and Gains from Trade Lecture)

The production possibilities experiment is conducted in the same manner as described above in the Microeconomics section.

Circular Flow Game (Circular Flow Model, Labor Market, Aggregate Demand)

This experiment uses the default setup in veconlan's Macro Markets. It sets up a closed economy with markets for labor and goods. Participants are either workers or firms, who are endowed with money. Firms have the objective to maximize profits and households have the objective to maximize units of utility accumulated through consumption and leisure. Firms begin by posting wages and maximum hire quantities simultaneously, and workers each choose how many units of work they want to supply and for what wage. Jobs are allocated randomly if there is excess supply at a firm, hired workers are paid the posted wage. Firms need units of labor to produce goods in order to sell them in the next phase

and households need wage income in order to buy goods in the next phase.

Then firms post prices and maximum sales quantities and workers (who are also consumers) decide how much of the consumption good they are willing to buy and at what price. Surplus of goods and/or income are carried into the next round. At the end of each round firms are given a total level of profits and households are given a total level of utility units. The game is played a total of 8 rounds with two phases in each round. The instructor can inject money to resemble a monetary policy injection. Students learn the link between good inflation and wage inflation, the link between labor supply and labor demand and aggregate demand and aggregate supply concepts.

Policy Stabilization Game (Stabilization Policy and Monetary Policy)

Students in groups of 5 serve as committee members of the Federal Reserve. Their job is to set monetary policy (Fed Funds rate) to achieve full employment and low price inflation. Students are told that the goal of the game is to keep the output gap at zero, the inflation rate at 2% and the unemployment rate at its natural rate of 4.5%. Each game will last 12 quarters. Along the way students read economic news headlines containing economic stories and economic data releases that they use to adjust future monetary and fiscal policy.

Unaware to the students, each policy selection and set of stochastic supply and demand shocks are inputed into a dynamic AS/AD model which outputs the respected output gap, inflation level and unemployment rate for each country. After each round students are given their country's economic data and a mock news headline about future shocks. The stochastic shocks and/or wrong policy selection result in short-run equilibriums that penalize their score. The country that has the lowest Federal Reserve loss function (volatility away from targets) is to be deemed the winner.

Currency Speculation (FX markets)

In this experiment, two versions of a coordination problem for macroeconomics are run simultaneously in five rounds. Each student in a groups of 10-12 must decide simultaneously whether to attack (speculate/short) on a foreign currency or not and if so, in what direction. A net score for each currency is determined by adding all those that attacked positively

(+1) and negatively (-1) The payoff from shorting a currency is increasing in the number of currency speculators. It pays to short the currency only if there are sufficiently number of speculators and in the correct direction. Speculators that attacked in the wrong direction are penalized points at an increasing rate. Players that do not speculate receive a pre-determined risk-free amount of points no matter what their group's net score is.

The game has two Nash equilibria, everyone attacks or nobody attacks. The black version of the experiment has a lower payoff than the "red" version from non-attacking. Students will likely coordinate on the "attack" equilibrium in the "black" version and on the "no attack" equilibrium in the red version. If time permits a second round of the experiment can be ran where economic examples can be combined with currency speculation to generate a total net score for each group. For example, if the instructor chooses an example where a currency appreciates because of relative low domestic inflation, that country can start out with a net score of (+3). Students are then asked to attack/ not attack and in which direction. Students learn the importance of risk-free return, relative return, coordination and basic economic examples that cause currency appreciation and depreciation.

B Quizzes and Finals

The following are the pdfs of each quiz per topic and final exam questions given to each student at the appropriate time. All quizzes and finals were administered through Qualtrics.

Microeconomics

Consumer Surplus and Producer Surplus Quiz
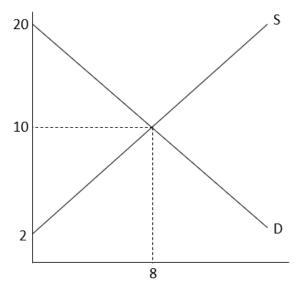
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Please enter your name here:

Please enter your instructor's last name here:

1. Consumer Surplus is equal to:

○ The area under the demand curve, from Q = 0 to the equilibrium quantity.

○ The area under the demand curve and above the supply curve, from Q = 0 to the equilibrium quantity.

○ The area above the supply curve and below the price, from Q = 0 to the equilibrium quantity.

○ The area under the demand curve and above the price, from Q = 0 to the equilibrium quantity.

The next two questions, questions 2 and 3, refer to the following graph:

2. In the graph above, Consumer Surplus is equal to:

○ $80

○ $40

○ $72

○ $32

3. In the graph above, Producer Surplus is equal to:

○ $80

○ $40

○ $72

○ $32

4. A consumer values the first unit of a good that he or she buys at $25, the second unit at $20, and a third unit at $15. Any more units of the good yield no additional utility.

If the price of the good is $18,

○ The consumer should buy 2 units of the good, and would earn $9 of consumer surplus.

○ The consumer should buy 1 unit of the good, and would earn $7 of consumer surplus.

○ The consumer should buy 2 units of the good, and would earn $12 of consumer surplus.

○ The consumer should buy 3 units of the good, and would earn $12 of consumer surplus.

5. A firm can produce up to three units of a good. The first unit costs $5 to produce. The second unit costs $7 to produce. The third unit costs $10 to produce.

If the price of the good is $9,

○ The firm should produce 1 unit of the good, and would earn $6 of producer surplus.

○ The firm should produce 3 units of the good, and would earn $6 of producer surplus.

○ The firm should produce 1 unit of the good, and would earn $4 of producer surplus.

○ The firm should produce 2 unit of the goods, and would earn $6 of producer surplus.

Production Possibilities and Gains from Trade Quiz

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Please enter your name here.

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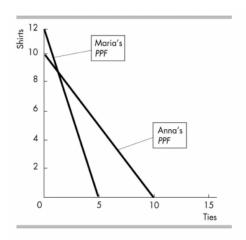
1) The production possibilities frontier is the boundary between

○ A) those combinations of goods and services that can be produced and those that can be
consumed.

○ B) those resources that are limited and those that are unlimited.

○ C) those combinations of goods and services that can be produced and those that cannot.

○ D) those wants that are limited and those that are unlimited.

2)   The best definition for economic growth is

○ A) a sustained expansion of production possibilities measured as the increase in real GDP over a given period.

○ B) a sustained expansion of production possibilities measured as the increase in nominal GDP over a given period.

○ C) a sustained expansion of consumption goods over a given period.

3) Anna and Maria produce shirts and ties. The figure above shows Anna's PPF and Maria's PPF. Anna and Maria can achieve the gains from trade if Anna produces _____ and Maria produces _____.

A) ties; shirts

B) shirts and ties; only ties

C) only ties; shirts and ties

D) shirts; ties

4) If the US is producing at a point on its production possibilities frontier, then the US

A) cannot produce any more of either good.

B) can produce more of one good only by producing less of the other.

C) will be unable to gain from trade.

D) is not subject to scarcity.

5) In one day, Brandon can either plow 10 acres or plant 20 acres. In one day, Christopher can either plow 14 acres or plant 14 acres. Which of the following statements about comparative advantage is CORRECT?

A) Brandon has a comparative advantage in both plowing and planting.

B) Brandon has a comparative advantage only in plowing.

C) Brandon has a comparative advantage only in planting.

D) Christopher has a comparative advantage in both plowing and planting.

Shifts in Supply and Demand Quiz

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Please enter your instructor's last name here:

1. Demand in a market increases. As a result,

○ Equilibrium price will increase, and equilibrium quantity will decrease.

○ Equilibrium price will increase, and equilibrium quantity will increase.

○ Equilibrium price will decrease, and equilibrium quantity will decrease.

○ Equilibrium price will decrease, and equilibrium quantity will increase.

2. Supply in a market increases. As a result,

○ Equilibrium price will increase, and equilibrium quantity will decrease.

○ Equilibrium price will increase, and equilibrium quantity will increase.

○ Equilibrium price will decrease, and equilibrium quantity will decrease.

○ Equilibrium price will decrease, and equilibrium quantity will increase.

3. Supply in a market increases. Which of the following statements correctly describes why and how the market will move to the new equilibrium?

○ The supply increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The supply increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price

until quantity demanded equals quantity supplied.

○ The supply increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

○ The supply increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

4. Supply in a market decreases. Which of the following statements correctly describes why and how the market will move to the new equilibrium?

○ The supply decrease creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The supply decrease creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The supply decrease creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

○ The supply decrease creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

5. Demand in a market increases. Which of the following statements correctly describes why and how the market will move to the new equilibrium?

○ The demand increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The demand increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The demand increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.
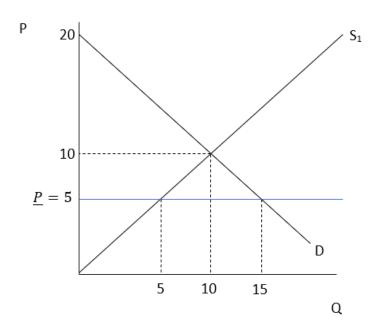
○ The demand increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

Price Controls Quiz

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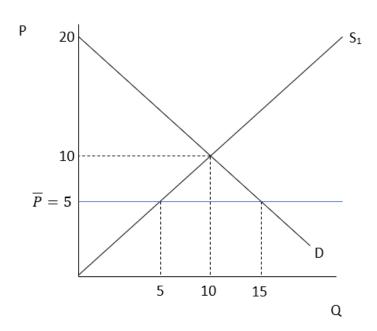
Please enter your name here:

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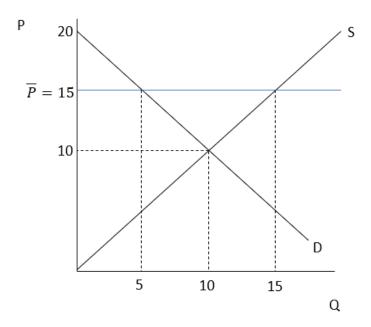1. The graph above shows a price floor that is set at $5. As a result of this price floor,

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○ The equilibrium price and quantity will not change.

○ The price will decrease to $5 and the quantity will increase to 15.

○ The price will decrease to $5 and the quantity will decrease to 5.

○ The price will decrease to $5 and the quantity will stay at 10.

2. The graph above shows a price ceiling that is set at $5. As a result of this price ceiling,

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○ The equilibrium price and quantity will not change.

○ The price will decrease to $5 and the quantity will increase to 15.

○ The price will decrease to $5 and the quantity will decrease to 5.

○ The price will decrease to $5 and the quantity will stay at 10.

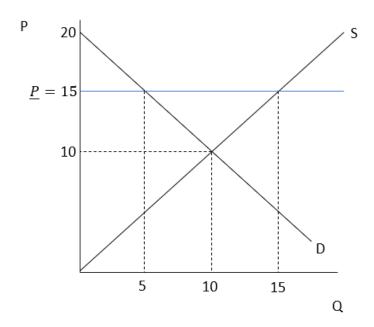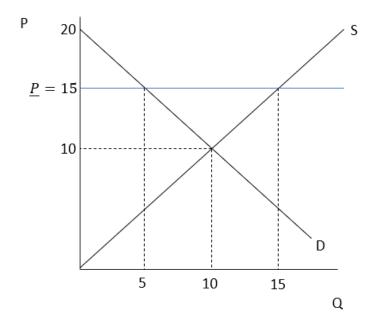3. The graph above shows a price ceiling that is set at $15. As a result of this price ceiling,

○ Sellers and buyers will both be better off.

○ Sellers and buyers will both be worse off.

○ Sellers will be better off, and buyers will be worse off.

○ Sellers and buyers will both be unaffected.

4. The graph above shows a price floor that is set at $15. As a result of this price floor,

○ Sellers and buyers will both be better off.

○ Sellers and buyers will both be worse off.

○ Sellers will be better off, and buyers will be worse off.

○ Sellers and buyers will both be unaffected.

5. The graph above shows a price floor that is set at $15. As a result of this price floor,

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○ There will be a shortage of 5 units of the good.

○ There will be a shortage of 10 units of the good.

○ There will be a surplus of 5 units of the good.

○ There will be a surplus of 10 units of the good.

Perfect Competition Quiz

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A firm must pay a cost of entry of $120. The firm is in the short run, and has committed to paying this cost. It can produce up to 5 units of a good. The variable costs of producing units 1 to 5 are $20, $40, $60, $80, and $100, respectively. The market price of the good is $70. What should the firm do in this situation?

○ Produce 0 units.

○ Produce 1 unit.

○ Produce 2 units.

○ Produce 3 units.

○ Produce 4 units.

○ Produce 5 units.

A firm must pay a cost of entry of $120. The firm is in the long run, and can decide to avoid paying this cost by producing 0 and exiting the market if it wants to. It can produce up to 5 units of a good. The variable costs of producing units 1 to 5 are $20, $40, $60, $80, and $100, respectively. The market price of the good is $70. What should the firm do in this situation?

○ Produce 0 units.

○ Produce 1 unit.

○ Produce 2 units.

○ Produce 3 units.

○ Produce 4 units.

○ Produce 5 units.

Marginal cost eventually increases with output because:

○ variable factors of production are subject to diminishing marginal returns.

○ increasing output spreads overhead costs over a larger number of units.

○ it requires more variable inputs to produce a larger level of output.

○ the price of variable inputs tends to increase when the firm purchases more of them.

A firm is told the market price, and chooses what quantity to produce. It can best maximize profit by:

○ Choosing the quantity that maximizes total revenue.

○ increasing the quantity it produces so long as marginal revenue is greater than marginal cost.

○ Choosing the quantity that minimizes average cost.

○ increasing the quantity it produces so long as average revenue is greater than average cost.

At the current market price, producing the quantity that maximizes profit would result in a loss of $25. The firm's fixed cost is $30. What should the firm do in the short run?

○ Produce the quantity that maximizes profit, even though doing so would result in a loss

○ Shut down production since producing the quantity that maximizes profit would result in a loss

○ Produce more than the quantity that maximizes profit since the profit-maximizing quantity would result in a loss

○ Produce less than the quantity that maximizes profit (but not shut down production fully) since the profit-maximizing quantity would result in a loss

Microeconomics Final Exam Questions

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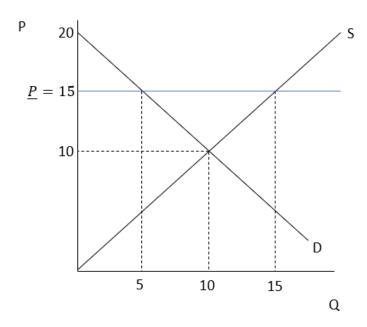[   ]

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1. A firm must pay a cost of entry of $1000. The firm is in the short run, and has committed to paying this cost. It can produce up to 5 units of a good. The variable costs of producing units 1 to 5 are $40, $80, $120, $160, and $200, respectively. The market price of the good is $100. What should the firm do in this situation?

○ Produce 0 units.

○ Produce 1 unit.

○ Produce 2 units.

○ Produce 3 units.

○ Produce 4 units.

○ Produce 5 units.

2. Demand in a market decreases. At the same time, supply in the market increases. As a result,

○ Equilibrium price will increase, and equilibrium quantity will decrease.

○ Equilibrium price will decrease, and equilibrium quantity will decrease.

○ Equilibrium price will increase, and the effect on equilibrium quantity is uncertain.

○ Equilibrium price will decrease, and the effect on equilibrium quantity is uncertain.

3. The production possibilities frontier is the boundary between

○ those combinations of goods and services that can be produced and those that can be consumed.

○ those resources that are limited and those that are unlimited.

○ those combinations of goods and services that can be produced and those that cannot.

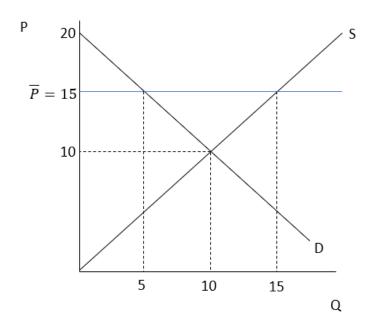○ those wants that are limited and those that are unlimited.

4. The graph above shows a price floor that is set at $15. As a result of this price floor,

○ There will be a surplus of 5 units of the good.

○ There will be a shortage of 5 units of the good.

○ There will be a surplus of 10 units of the good.

○ There will be a shortage of 10 units of the good.

○ There will be no effect on the market.

5. A firm must pay a cost of entry of $1000. The firm is in the long run, and can decide to avoid paying this cost by producing 0 and exiting the market if it wants to. It can produce up to 5 units of a good. The variable costs of producing units 1 to 5 are $40, $80, $120, $160, and $200, respectively. The market price of the good is $100. What should the firm do in this situation?

○ Produce 0 units.

○ Produce 1 unit.

○ Produce 2 units.

○ Produce 3 units.

○ Produce 4 units.

○ Produce 5 units.

6. At the current market price, producing the quantity that maximizes profit would result in a loss of $4,000. The firm's fixed cost is $3,500. What should the firm do in the short run?

○ Produce the quantity that maximizes profit, even though doing so would result in a loss.

○ Shut down production since producing the quantity that maximizes profit would result in a loss that is bigger than its fixed cost.

○ Produce more than the quantity that maximizes profit since the profit-maximizing quantity would result in a loss.
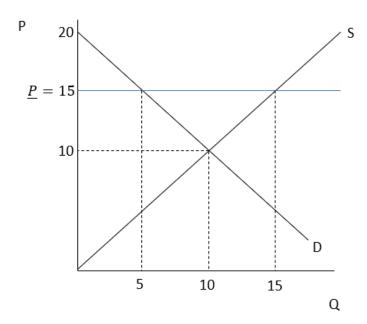
○ Produce less than the quantity that maximizes profit (but not shut down production fully) since the profit-maximizing quantity would result in a loss.

7. Demand in a market increases. Which of the following statements correctly describes why and how the market will move to the new equilibrium?

○ The demand increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

○ The demand increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

○ The demand increase creates a surplus where the quantity supplied is greater than the quantity demanded. In response, sellers increase the price they charge because they can do so and still find buyers for each unit they want to produce and sell. They will keep raising price until quantity demanded equals quantity supplied.

○ The demand increase creates a shortage where the quantity demanded is greater than the quantity supplied. In response, sellers lower the price they charge in order to attract more customers. They will keep cutting price until quantity demanded equals quantity supplied.

8. If the US is producing inside its production possibilities frontier, then the US

○ a) can produce more of either good.

○ b) can produce more of one good only by producing less of the other.

○ c) will be unable to gain from trade.

○ d) is not subject to scarcity.

9. In one day, Brandon can either plow 20 acres or plant 10 acres. In one day, Christopher can either plow 14 acres or plant 14 acres. Which of the following statements about comparative advantage is CORRECT?

○ Brandon has a comparative advantage in both plowing and planting.

○ Brandon has a comparative advantage only in plowing.

○ Brandon has a comparative advantage only in planting.

○ Christopher has a comparative advantage in both plowing and planting.

10. The graph above shows a price ceiling that is set at $15. As a result of this price ceiling,

○ Sellers and buyers will both be better off.

○ Sellers and buyers will both be worse off.

○ Sellers will be better off, and buyers will be worse off.

○ Sellers and buyers will both be unaffected.

11. Supply in a market decreases. As a result,

○ Equilibrium price will increase, and equilibrium quantity will decrease.

○ Equilibrium price will decrease, and equilibrium quantity will decrease.

○ Equilibrium price will increase, and the effect on equilibrium quantity is uncertain.

○ Equilibrium price will decrease, and the effect on equilibrium quantity is uncertain.

12. The graph above shows a price floor that is set at $15. As a result of this price floor,

○ Sellers and buyers will both be better off.

○ Sellers and buyers will both be worse off.

○ Sellers will be better off, and buyers will be worse off.

○ Sellers and buyers will both be unaffected.

0 2 4 6 3 9

Macroeconomics

PPF and Gains from Trade Quiz

Name

_____

Q1 1) The production possibilities frontier is the boundary between

○ A) those combinations of goods and services that can be produced and those that can be consumed.

○ B) those resources that are limited and those that are unlimited.

○ C) those combinations of goods and services that can be produced and those that cannot.

○ D) those wants that are limited and those that are unlimited.

Q2 2)   The best definition for economic growth is

○ A) a sustained expansion of production possibilities measured as the increase in real GDP over a given period.

○ B) a sustained expansion of production possibilities measured as the increase in nominal GDP over a given period.

○ C) a sustained expansion of consumption goods over a given period.

Q3
3) Anna and Maria produce shirts and ties. The figure above shows Anna's PPF and Maria's PPF. Anna and Maria can achieve the gains from trade if Anna produces _____ and Maria produces _____.

   ○ A) ties; shirts

   ○ B) shirts and ties; only ties

   ○ C) only ties; shirts and ties

   ○ D) shirts; ties

Q4 4) If the US is producing at a point on his production possibilities frontier, then the US

   ○ A) cannot produce any more of either good.

   ○ B) can produce more of one good only by producing less of the other.

   ○ C) will be unable to gain from trade.

   ○ D) is not subject to scarcity.

Q5 5) In one day, Brandon can either plow 10 acres or plant 20 acres. In one day, Christopher can either plow 14 acres or plant 14 acres. Which of the following statements about comparative advantage is CORRECT?

   ○ A) Brandon has a comparative advantage in both plowing and planting.

   ○ B) Brandon has a comparative advantage only in plowing.

   ○ C) Brandon has a comparative advantage only in planting.

   ○ D) Christopher has a comparative advantage in both plowing and planting.

Labor and Goods Market Quiz

Name

_____

- -

Q1 1) The labor demand curve slopes downward because

○ A) the firm maximizes profits by hiring more labor when the real wage rate rises.

○ B) workers supply more hours of work when the real wage rate rises.

○ C) the firm maximizes profits by hiring more labor when the real wage rate falls.

○ D) workers supply fewer hours of work when the real wage rate rises.

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Q2 2) If the price level increases, but workers' nominal wage rates remain constant, which of the following is TRUE?
        I.   The quantity of labor demanded will increase.
        II.   The real wage rate will decrease.
       III. The demand for labor curve shifts rightward.

○ A) I only

○ B) I and II

○ C) II and III

○ D) I, II and III

- -

Q3
3) If at the real wage rate is such that, the quantity of labor supplied exceeds the quantity demanded

○ A) there is a shortage of labor.

○ B) the real wage rate will rise to restore equilibrium.

○ C) the real wage rate is greater than the equilibrium real wage rate.

○ D) None of the above answers is correct.

Q4 4) Why does the Aggregate Demand curve slope downward

○ A) an increase in the price level decreases the aggregate quantity of goods and services demanded.

○ B) A rise in the price level raises real wealth and increases desired consumption.

○ C) Lower prices keeps consumers waiting for even lower prices

○ D) Firms will raise prices if the price gets too low

Q5 5) If the price level rises by 3 percent and workers' nominal wage rates increase by 2 percent, then the

○ A) quantity of labor demanded will decrease.

○ B) quantity of labor demanded will increase.

○ C) quantity of labor demanded does not change because there is no change in the real wage rate.

○ D) real wage rate increases.

Monetary Policy Quiz

Name

_____

Q1 1) Which of the following is one of the Fed's policy goals?

○ A) zero unemployment

○ B) exchange rate stability

○ C) monetary base expansion

○ D) Achieving 2% Inflation

Q2 2) If the Fed wished to eliminate an inflationary gap, which of the following would be an appropriate policy?

○ A) raise the federal funds rate

○ B) lower the federal funds rate

○ C) buy government securities

○ D) decease the government budget deficit

Q3 3) If the output gap is positive, the Federal Reserve should

○ A) Increase the Federal funds rate

○ B) Lower Asset Prices

○ C) Decrease the Federal funds rate

○ D) Buy corporate bonds

Q4 4) The U.S. aggregate demand curve shifts leftward if

○ A) the economic conditions in Europe improve so that European incomes increase.

○ B) there is a tax cut.

○ C) the Federal Reserve increases the interest rate.

○ D) Consumer income increases

Q5 In the short run, a supply shock that shifts the short-run aggregate supply curve leftward _____ real GDP and _____ the price level/inflation rate

○ A) increases; raises

○ B) decreases; raises

○ C) increases; lowers

○ D) decreases; lowers

FX Currency Quiz

Name

_____

Q1 1) What factors can change expectations about the exchange rate?

○ A) interest rate parity

○ B) purchasing power parity

○ C) real GDP parity

○ D) Both answers A and B are correct.

Q2 2) If people expect the foreign exchange rate for dollars to rise in the future

○ A) the demand for dollars today decreases.

○ B) the demand for dollars today increases.

○ C) the demand for dollars today is unaffected.

○ D) there is a movement along the demand curve for dollars.

Q3 3) U.S. residents come to believe that the dollar will appreciate in the future, that is, the exchange rate in the future will be higher than the current exchange rate. As a result

- A) the demand curve for dollars shifts rightward.

- B) the demand curve for dollars shifts leftward.

- C) there is a movement downward along the demand curve for dollars.

- D) None of the above answers are correct.

Q4 4) Today, the dollar is worth 1.10 euros. Due to changes in economic conditions, people expect that the dollar will be worth 1.05 euros in the next month. This belief

- A) increases the demand for dollars.

- B) decreases the demand for dollars.

- C) decrease the demand for euros.

Q5 5) Exchange Rates are less likely to change if the payoff from speculation is higher

- A) True

- B) False

Macro Final Questions

Name

_____

Q1 1) The production possibilities frontier is the boundary between

○ A) those combinations of goods and services that can be produced and those that can be consumed.

○ B) those resources that are limited and those that are unlimited.

○ C) those combinations of goods and services that can be produced and those that cannot.

○ D) those wants that are limited and those that are unlimited.

Q2 2) If the US is producing inside its production possibilities frontier, then the US

○ A) can produce more of either good.

○ B) can produce more of one good only by producing less of the other.

○ C) will be unable to gain from trade.

○ D) is not subject to scarcity.

Q3 3) In one day, Brandon can either plow 20 acres or plant 10 acres. In one day, Christopher can either plow 14 acres or plant 14 acres. Which of the following statements about comparative advantage is CORRECT?

○ A) Brandon has a comparative advantage in both plowing and planting.

○ B) Brandon has a comparative advantage only in plowing.

○ C) Brandon has a comparative advantage only in planting.

○ D) Christopher has a comparative advantage in both plowing and planting.

Q4
4) If at the real wage rate is such that, the quantity of labor supplied is below the quantity demanded

○ A) there is a surplus of labor.

○ B) the real wage rate will rise to restore equilibrium.

○ C) the real wage rate is greater than the equilibrium real wage rate.

○ D) None of the above answers is correct.

Q5 5) Why does the Aggregate Demand curve slope downward

○ A) an increase in the price level decreases the aggregate quantity of goods and services demanded.

○ B) A rise in the price level raises real wealth and increases desired consumption.

○ C) Lower prices keeps consumers waiting for even lower prices

○ D) Firms will raise prices if the price gets too low

Q6 6) If the price level rises by 5 percent and workers' nominal wage rates increase by 6 percent, then the

○ A) quantity of labor supplied will decrease.

○ B) quantity of labor demanded will increase.

○ C) quantity of labor demanded does not change because there is no change in the real wage rate.

○ D) real wage rate increases.

Q7 7) Which of the following is one of the Fed's policy goals?

○ A) Achieving an output gap of zero

○ B) exchange rate stability

○ C) monetary base expansion

○ D) Achieving 0% Inflation

Q8 8) If the Fed wished to eliminate a negative output gap, which of the following would be an appropriate policy?

○ A) raise the federal funds rate

○ B) lower the federal funds rate

○ C) sell government securities

○ D) decease the government budget deficit

Q9 9) The U.S. aggregate demand curve shifts leftward if

○ A) the economic conditions in Europe improve so that European incomes increase.

○ B) there is a tax increase.

○ C) the Federal Reserve decreases the interest rate.

○ D)the Federal Reserve maintains the current interest rate.

Q10 10) If people expect the foreign exchange rate for dollars to fall in the future

○ A) the demand for dollars today decreases.

○ B) the demand for dollars today increases.

○ C) the demand for dollars today is unaffected.

○ D) the supply of dollars today decreases.

Q11 11) Today, the dollar is worth 1.10 euros. Due to changes in economic conditions, people expect that the dollar will be worth 1.15 euros in the next month. This belief

○ A) increases the demand for euros.

○ B) decreases the demand for dollars.

○ C) decrease the demand for euros.

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Q12 12) Exchange Rates are less likely to change if the payoff in other assets is higher

○ A) True

○ B) False

C   Additional Analysis: Spillover effects

A feature of the **?** within-subject design strategy is potential spillover effects which could cause a violation of the causal response assumption needed for identification. Classroom experiments conducted to teach treated topics that fall early in the semester might impact learning of other topics that follow, including those in both treatment and control. To control for such potential spillovers, **?** recommend controlling for past treatments by adding controls for the number of previous lessons that were treated. Since this number can be only 0, 1, or 2 in our experiment, we instead control for a dummy variable indicating whether there was one previously treated topic and a dummy variable indicating whether there were two previously treated topics. Zero previously treated topics is the omitted category.

The results are presented in Table A1 below. The treatment effect estimates do change substantially in some cases relative to those presented in Panel A of Table 1 in the manuscript. Many become larger in magnitude in absolute value. For example, without spillover controls, the estimated impact of treatment on the wuiz scores of female students is -0.004 standard deviations as reported in Column 3 of Panel A of Table 1. When spillovers are controlled for as described above, this estimate falls to -0.132 standard deviations. While the point estimates increase in absolute magnitude, they remain statistically insignificant with the exception of the impact of treatment on final exam topic scores for male students. This estimate changes from 0.05 standard deviations to -0.25 standard deviations when spillover controls are added. We must caution, however, that our experiment only involves four topics, there are a very small number of possible permutations of treatment history, and only 15 sections over which treatment order can vary.

Table A1: Effect of classroom experiments on exam performance

Panel A: Quiz scores

	All classes	Microeconomics			Macroeconomics		
		All	Women	Men	All	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.065	-0.054	-0.131	0.009	-0.034	0.176	-0.189
	(0.096)	(0.107)	(0.169)	(0.134)	(0.184)	(0.256)	(0.272)
N	1549	966	442	524	583	272	311

Panel B: Final exam lesson scores

	All classes	Microeconomics			Macroeconomics		
		All	Women	Men	All	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.07	-0.15	-0.04	-0.25	0.04	0.04	0.02
	(0.08)	(0.10)	(0.15)	(0.13)	(0.14)	(0.21)	(0.19)
N	1426	870	402	468	556	268	288

It is not possible to conduct this analysis for many of our topic-specific regressions in Panels B and C since there is no variation in the number of previous experiments the student had been exposed to for both the first and last topics covered in a section.