

PROBLEM SET #1 Suggested Solutions

1. (2 points total; 1 point each) Supply and Demand

For each of the events described below, sketch a supply and demand graph that illustrates the event. Be sure to properly label all curves and relevant points in your graph. In the area to the left of your graph, explain why you think your graph is correct. In that area, also answer the questions asked.

- a. Cups of Coffee at local coffee shops in Berkeley: The minimum wage in Berkeley will rise from \$13.75 to \$15.00/hour on October 1. Most workers in local coffee shops are paid the minimum wage. What is the effect on the price of a cup of coffee at local coffee shops in Berkeley? On the quantity of cups of coffee sold?

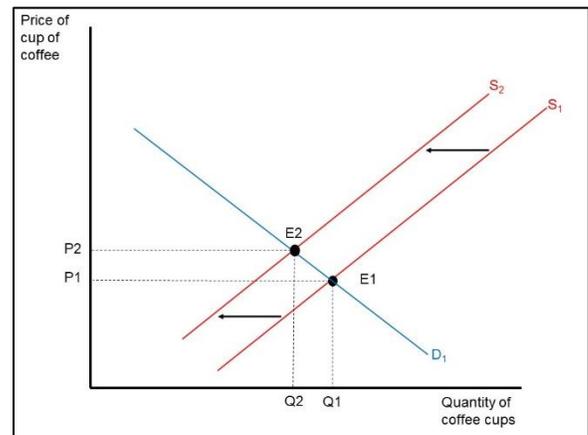
For all supply/demand questions like this, we assume that all other things – aside from what is specified in the question – stay the same (that is, we make the “ceteris paribus” assumption). Do not add events to the question that are not there. Assume all other factors are held constant.

The question asks about the supply and demand for cups of coffee at local Berkeley coffee shops.

Step 1: draw the initial equilibrium (E1) at P1 and Q1.

Step 2: How do we capture the event? When the cost of labor increases, fewer cups of coffee are offered for sale at each price. This is a decrease in supply: at every possible price of a cup of coffee, there is a decreased quantity of cups of coffee available for sale. The entire supply curve shifts to the left.

Step 3: What is the effect on price and quantity? The shift to the left of supply (a decrease in the quantity supplied at every possible price), results in an increase in price and a decrease in the quantity sold. The second equilibrium is shown as E2 in the graph at the right.

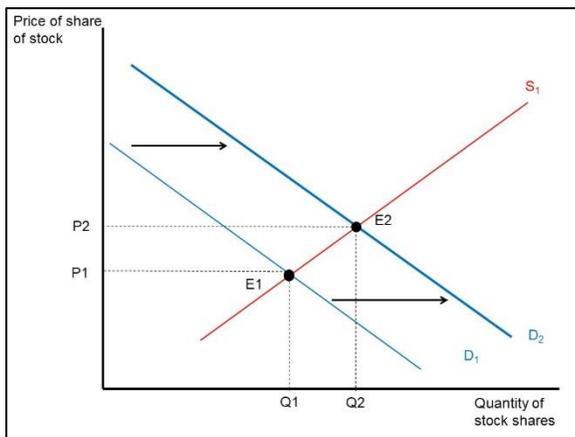


This would have been a sufficient answer. But you could also go further. The City of Berkeley has a population of about 120,000. There are about 30,000 undergraduates and 10,000 graduate students at U.C. Berkeley. Many student workers at UC Berkeley are in minimum wage positions and will also receive the increase in their wages. And so you might have added a second effect: an increase in income for buyers of cups of coffee at local shops in Berkeley. Assuming that coffee purchased in coffee shops is a normal good (a reasonable assumption), then an increase in income will lead to an increase in the quantity of cups of coffee demanded at every price, shifting the demand curve to the right. The combination of a decrease in supply (which raises price and lowers quantity) and an increase in demand (which raises price and raises quantity) will have a certain effect on price: price will rise. The effect on quantity is ambiguous and depends upon which effect is larger: the decrease in supply (lowering quantity) or the increase in demand (raising quantity).

A 2016 study by UC Berkeley labor economists Sylvia Allegretto and Michael Reich of the effects of increases in the minimum wage on restaurant prices is available at <http://irle.berkeley.edu/are-minimum-wage-increases-absorbed-by-small-price-increases/>

A famous study by UC Berkeley economist David Card and Princeton economist Alan Krueger on the effects of an increase in the minimum wage on the fast food industry was published in the *American Economic Review* in September 1994 and is available on Prof. Card's website at <http://davidcard.berkeley.edu/papers/njmin-aer.pdf>

b. Shares of Corporate Stocks in the United States: Following the election of a businessman as President, financial investors anticipate a wave of deregulation and increased business profit, which in turn will increase what they earn from the stocks they own. What is the effect on the price of a share of stock? On the quantity of shares of stock sold?



The question asks about the supply and demand of shares of stocks. A share of stock represents ownership in a corporation. For instance, if Corporation XYZ has issued 1,000,000 shares of stock, then each share represents a 1/1,000,000th ownership of the corporation. If you want to own 40% of this Corporation XYZ, you would need to own 400,000 shares of its stock. Shares of stock are bought and sold every day on the stock market exchanges.

Step 1: draw the initial equilibrium (E1) at P1 and Q1.

Step 2: How do we capture the event? This event is a change in demand due to an increase in the expected earnings from owning stock. You can think of this as a change in preferences. The increase in demand for stock means at every possible price, there is an increased quantity of shares of stock demanded. The entire demand curve shifts to the right.

Step 3: What is the effect on price and quantity? The shift to the right of demand (that is, an increase in the quantity demanded at every possible price), results in an increase in the price and an increase in the quantity sold at equilibrium. The second equilibrium is shown as E2 in the graph at the left.

2. (2 points total; 1 point per part) Positive vs. Normative, Sources of Disagreement

You are an economic policy analyst. A member of the House of Representatives asks you if you think a proposed tax plan is a good plan.

A. Is the question a positive or normative question?

This is a normative question because it is asking you to make a judgment about whether a policy is good (or, implicitly, bad).

Of course, once a goal is specified, then the question changes and becomes a positive question. If the member of Congress says, for instance, "The goal is to increase employment," then the question becomes "Do you think a proposed tax plan will increase employment?" This is now a positive question. You don't have to share the goal but as an economist you can conduct analysis to determine the likelihood that the tax plan will increase employment. As phrased (Is it a "good" plan?), the question is a normative question.

At a minimum, there is one key piece of information you need to have in order to answer the question. What is that one piece of information? Why do you need it?

At a minimum, you need to know the goal in order to answer this question. Without knowing the goal that the member of the House of Representatives wants to achieve with the tax plan, you can't determine whether it is a good plan (achieves the goal) or a bad plan (doesn't achieve the goal).

For instance, suppose the goal is to increase the number of jobs in the economy. In that case, you would want to know whether the tax plan will result in more spending within the economy, and whether that additional spending would lead to more jobs. If so, it would be reasonable to conclude the plan is a "good" plan. On the other hand, suppose the goal is to decrease levels of inequality across the economy. In that case, you would want to know whether the tax plan will disproportionately benefit upper income groups over others. If so, it would be reasonable to conclude the plan is not good. The same tax plan could have both effects – increasing the number of jobs while also increasing (not decreasing) levels of inequality – and so without knowing the goal, you can't come to any conclusion about whether the policy is "good" or "bad."

b. Refer to the four causes of disagreement discussed in article #1 by Fritz Machlup, "Why Economists Disagree." First, list the 4 causes, followed by a one phrase or sentence definition of each.

1. *Different word meanings. There are many words – in economics, in the English language generally – that have more than one meaning. Sometimes we disagree with someone because, often without realizing it, we have two different definitions of a word. (For instance, many of you will ask me, Prof. Olney, "Is Econ 1 curved?" There is more than one definition of "curved" and so we could get into a disagreement because you have one definition in mind and I have another. That's why it's always important when there is more than*

one meaning to a word to clarify with each other what definition you are using.)

2. *Different logical reasoning.* There are common rules of logic (for instance, the rule of transitivity says “if $A \Rightarrow B$ and $B \Rightarrow C$, then $A \Rightarrow C$ ”). (If you’ve never taken a course in logic, consider Philosophy 12A.) Disagreements due to different logical reasoning are usually due to errors made in our logical reasoning (“logical fallacies”). Sometimes those errors are sloppy errors; sometimes they are due to an unfamiliarity with the rules of logic; sometimes they result from complex logical arguments that led to an error in reasoning. For instance, a common logical fallacy says “if $A \Rightarrow B$, then $B \Rightarrow A$.” That’s wrong. It’s a fallacy. The most we can say is “if $A \Rightarrow B$, then if B doesn’t happen we can conclude that A didn’t happen” or in symbolic logic, “if $A \Rightarrow B$, then $\sim B \Rightarrow \sim A$.”

3. *Different factual assumptions.* Sometimes (often!) we disagree because we are making different assumptions about how people behave or about how two things are related to each other or about something else that is relevant to our argument. Some assumptions we make are *explicit*, which means we have spoken them aloud or written them down. Other assumptions are *implicit*, which means we have not verbalized or written the assumption – and often we may not even be aware we are making it! For instance, if we are constructing an argument about how people respond when they lose their income during a period of unemployment, and one of us assumes that unemployed people are able to borrow whatever money they need from banks or relatives and the other person assumes that unemployed people are unable to borrow, then we are going to come to different conclusions about how people respond when they experience a drop in income.

4. *Different value judgments.* We may have different goals for policy, guided in turn by our values, by what we believe, by how we were raised, by what we want to see in the world we live in. We may or may not be able to come to agreement. We may need to agree to disagree.

The member of the House disagrees with your assessment of whether the tax plan is a good plan. Which of these four possible causes of disagreement might help explain why you and the Representative disagree? Explain.

If the Representative and I disagree about whether the tax plan is a “good” plan, our disagreement could be rooted in any of these four causes. It could be that we are defining some words differently. It could be that one of us is making a logical error (this is tricky when it is your boss who is making the error and it falls to you to point it out. . .). It could be that we are making different assumptions about how people will respond to the tax plan, and those assumptions may impact our conclusions about whether the tax plan will achieve the desired goals. And it may be that we do not share common goals for the policy based on differences in our values.

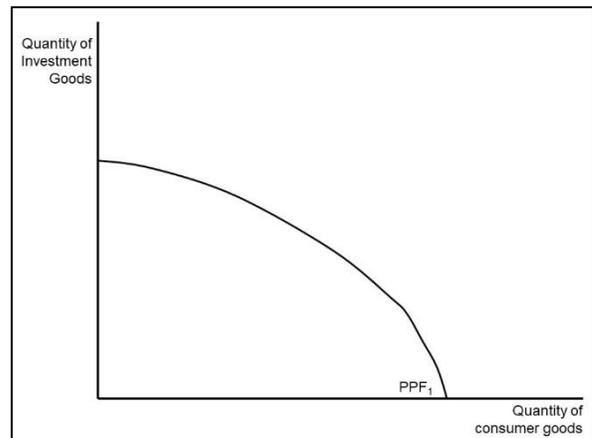
One article that analyzed whether the December 2017 Trump tax cut was “good” or “bad” is https://www.washingtonpost.com/news/fact-checker/wp/2018/01/12/is-the-trump-tax-cut-good-or-bad-for-the-middle-class/?utm_term=.1211aab1279d

3. (3 points total; 1 point each) Production Possibilities Frontier, Growth, Aid

GDP per capita (gross domestic product per person) is a measure of the average income of the population. GDP per capita by state for the U.S. is shown at https://en.wikipedia.org/wiki/List_of_U.S._states_by_GDP_per_capita (despite what your HS teachers told you, wikipedia can be helpful. Just be smart about when you use it. Never for something where views can differ. Often for basic concepts in stats, math, even econ.) The poorest state in the U.S. is Mississippi (MS). Total output in Mississippi can be divided into two categories: investment (capital) goods and consumable goods. An increase in investment goods leads to an increase in both the quantity of capital and the productivity of labor. An increase in consumable goods has no effect on the ability of the economy to produce other goods.

A. At the right, draw a production possibilities frontier that shows the possible combinations of output for the Mississippi economy. Label your axes “I” and “C.” Label your curve PPF_1 .

“Your PPF slopes down because of tradeoffs.” Explain that sentence in words that make sense to someone not taking economics.



At any moment in time, the quantity of available resources is fixed in quantity. If all the economy’s resources are being used, that is depicted as being at a point on the PPF. Producing more of one type of output (e.g., Investment goods) requires more resources. But if all resources are currently being used, there are no currently unused resources available to put to work producing Investment goods. The only

place to find those additional resources is in the production of the other output (e.g., consumer goods). And so to increase the production of one type of output requires moving (re-allocating) resources from the production of the other type of output which will necessarily decrease the amount of the other output. To get more I, the economy will have to produce less C. To get more C, the economy will have to produce less I.

“Your PPF is non-linear because of the law of increasing opportunity costs.” Explain that sentence in words that make sense to someone not taking economics.

Not all resources – land, labor, capital, knowledge – are equally well suited to producing all types of output. We assume that there is no deliberate waste, which means that for whatever combination of output the economy is currently producing, we have allocated the resources so that those most able to produce Investment goods are doing that, and those most able to produce Consumer goods are doing that. So then what happens when we reallocate resources to increase production of one type of output? Each increase in Investment goods production requires a decrease in production of Consumer goods – that was the point of tradeoffs. But the amount of the decrease in production of Consumer goods is going to get larger and larger every time we move resources away from Consumer goods and toward Investment goods production. The first increase in Investment goods will take the resources away from consumer goods production that were the relatively worst at consumer goods and relatively best at investment goods production. The next increase in investment goods production is going to dip further into the resources still producing consumer goods, but the resources that were relatively bad at producing consumer goods have already been shifted over (reallocated) to investment goods production. So next we are taking resources that are less well-suited to producing investment goods, which means it’s going to require even more of those consumer-goods-producing-resources to generate the same sized increase in production of investment goods.

(At this point you probably say to your non-economics friend, “Look this is a whole lot easier to understand with numbers.” And then offer up a numerical example. It’s a real killer of a sentence in a social setting, but in this case it truly is the easiest way for many people to understand the concept.)

b. An economic advisor suggests that the Mississippi state government offer tax incentives to increase the amount of investment in the state. What is one benefit of shifting resources from the production of consumable goods to the production of investment goods? What is one cost of doing so?

Benefit: Investment goods are a resource (capital), and so producing more investment goods increases the quantity of capital available, shifting out the PPF. Moreover, as stated in the prompt, more investment goods increases productivity, further shifting the PPF out. In the long run, the amount of output and the average levels of income in Mississippi will rise faster with the shift from consumable to investment goods production.

Cost: In the short run, employment in the consumable goods sector will go down. Profits in the consumable goods sector will also go down. The costs of shifting resources will be borne disproportionately by the workers and the business owners in the consumable goods sector.

One article about the challenges Mississippi faces is <https://www.clarionledger.com/story/news/2017/08/07/mississippi-delta-poverty/544601001/>. A page that allows you to look at the industries currently in Mississippi (use the drop down menu to look at hospitality) is <https://statisticalatlas.com/state/Mississippi/Industries>.

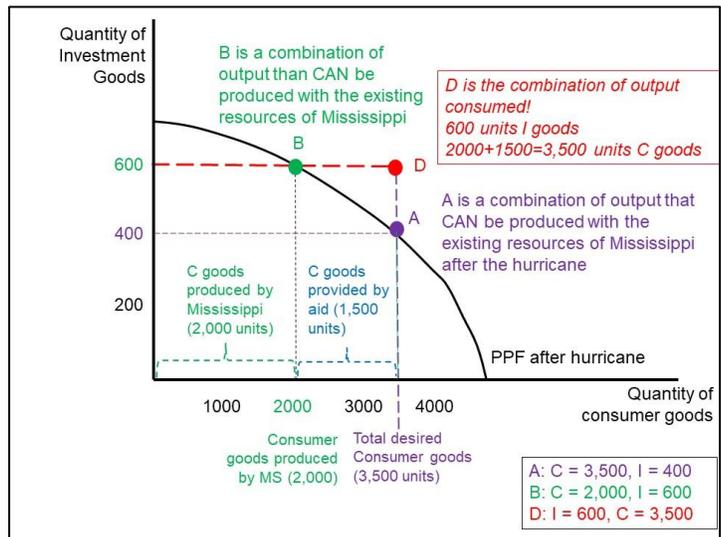
c. A hurricane destroyed a large quantity of the capital used to produce both types of output, shifting Mississippi’s PPF inward toward the origin. Aid from other states, coordinated by the federal government through FEMA, provided large quantities of consumer goods to the MS economy following the natural disaster. How does the provision of aid allow the Mississippi economy to consume a combination of output beyond its PPF? Illustrate your answer with a graph.

The comparison here is between the resources for production [1] coming from the Mississippi economy as opposed to [2] being provided through aid. If aid provides the resources for producing consumer goods, then Mississippi can use more of its own resources – its people, its equipment – for producing investment goods.

In the graph at right, Mississippi uses resources to produce consumer goods output equal to 2,000 units. Aid from outside the Mississippi economy provides consumer goods equal to another 1,500 units. The total consumer goods output in Mississippi is thus the sum, 2,000 units produced with Mississippi’s own resources and 1,500 units produced with aid resources. Because Mississippi is producing only 2,000 units of consumer goods with its own resources, it is able to allocate its remaining resources to the production of investment goods, allowing Mississippi to produce 600 units of investment goods. If Mississippi had been required to use its own resources to produce the additional 1,500 units of consumer goods, the investment goods output would have been only 400 units of investment goods, represented by point A on the graph at the right.

It is important to remember that resources do not include money. Giving money to Mississippi in the wake of a natural disaster will not increase its land, its (physical) capital, its labor force, or its knowledge. To increase the amount of production, it is resources – not money – that are needed. Labor: “Boots on the ground.” Capital: Lumber, concrete, steel, hammers, nails, equipment. Knowledge: Engineers with knowledge of how to produce more efficiently so as to combine the existing capital and labor and land and produce more output. After the immediate period of relief, donations of money are important not for the money itself, but because the donations can be used to pay for these resources that can yield increased output.

An article about the impact of a 2017 hurricane on Mississippi is https://www.washingtonpost.com/news/post-nation/wp/2017/10/08/hurricane-nate-fourth-to-strike-u-s-in-extraordinary-year-slams-mississippi-coast/?utm_term=.694b2563dd0d. An article that looks at the effect of international aid on the provision of health care following the Haitian earthquake is at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4347354/>.



4. (3 points total) Gains from Trade, Opposition to Trade

Lucky you. You have to mediate between two people who are disagreeing, loudly. One is very pro-trade, convinced that trade is great and the government should do everything it can to support trade. The other is anti-trade and supports the imposition of tariffs and other government policies to reduce trade. They aren't listening well to each other. Your task is to write one page which will be given to both people, to try to help each one see the other person's point of view.

Suggested outline:

- Start by explaining the idea of the “gains from trade”
- Then acknowledge that there are also potential costs to trade, and discuss the cost that you think the anti-trade person is concerned about
- Then propose and defend a policy that the government could implement (or highlight a policy the government has already implemented) that these two people might both agree would be a good policy to implement.

A very good paper will make it clear that in addition to the material in the textbook, lecture, and section, that you have read and understood articles #3 and 4 in the reader.

There are many ways you could have gone with this essay, so we can't provide you with “this is what you should have written.”

Guidelines:

- Did you follow the specifications? One-page essay? Max of 400 words? 1” margins? Double-spaced? 10 or 11 or 12 pt font? Your name and date & word count in the top right corner? Your essay stapled at the back of your problem set? Attached your “works cited” list (either at the end of page 1 or on a separate page)? Submitted both via bCourses & in hard copy?

If so, you remained eligible for full credit. If not, you lost 1 point right off the top.

- Did you explain the idea of the “gains from trade”?

You should have noted that the gains from trade is a long-run concept, that the gains are experienced once the economy has returned to full employment. You also should have noted what those “gains” are – an increase in the total output (GDP) of a country. Beyond that, how you phrased it was up to you, so long as the concepts were correctly discussed.

c. Did you discuss a cost to trade that could be the root cause of the other person’s opposition?

There are many possibilities here, so it’s impossible to say “you should have written exactly this.” We discussed several possible reasons for opposition to trade in lecture on August 29, and they are also discussed in the textbooks. You didn’t want a laundry list here, but a reasonable guess as to why someone who feels passionately about trade policies might indeed be opposed to trade.

d. Did you propose and defend a policy that both the pro-trade and anti-trade person might be able to agree to?

Again, there are many possibilities. The key here was thinking about the rest of your essay. Based on the cost to trade you discussed, did your policy address that cost? Did it also maintain the benefits that the pro-trade person is attracted to? Did your defense of the policy take into account both sides, the pro-trade and anti-trade?