

NET 2022 Answers

Power Round - Introductory Macroeconomics Division

May 20, 2022

Problem 1: Endogeneity and Exogeneity in the Phillips Curve (25 Points)

Part A (3) We expect that wages will rise if there is a shortage in workers, since this implies the price of labor is below an equilibrium (market-clearing) level. One channel that this can increase inflation is that the cost of producing goods has increased, which shifts the goods supply curve left as input costs increase. A second channel is an increase in worker's wages increases their total demand, shifting the demand curve for goods right. Together, both of these would imply aggregate price changes (inflation).

One point was given for noting wages will rise. One point was given for isolating a supply channel for inflation. The final point was given for identifying the demand channel.

Part B (2) This was a classical Phillips curve: the graph should be globally negative as an increase in unemployment will decrease inflation using the logic isolated in Part (A).

One point was given for a graph that was anywhere negative. A second point was given for a graph that is everywhere negative.

Part C (2) There were many possible answers. Both points were given for the answer (both naming and explaining the phenomena). Some examples include:

- (1) A fixed price basket is arbitrary as a representative consumer with aggregated preferences cannot exist.
- (2) The consuming patterns of US consumers are too heterogeneous for any measure of inflation derived from "average" consumers to be useful for informing public policy locally.
- (3) Using a fixed basket of goods ignores substitution effects as prices change and may overstate inflation.

Part D (3) This graph is upwards sloping, which is not what we expected based on our answer in Part (B), where there should be at least some downward sloping present. There are a few reasons this might be the case:

- (1) The traditional Phillips curve approach towards understanding the tradeoff
- (2) The CPI is not an accurate measure of inflation and idiosyncratic noise due to measuring led to spurious correlation.
- (3) There exists endogeneity in the interest rate, driving a spurious correlation between the two graphs.

One point was given for noting we did not expect an upwards sloping graph. Two points were given for the quality of the conjecture in the second part of the question.

Part E (3) The economy is experiencing an inflationary gap. By increasing the interest rate, they increase the cost for spending today, which decreases spending by increasing savings. This causes a decrease in aggregate demand, which would help calm inflation.

One point was given for noting savings increases. One point was given for the justification. A third point was given for noting this would decrease inflation if the Fed increased interest rates.

Part F (3) An increase in the interest rate will likely decrease the money spent on projects as the firm's opportunity cost for risky investment increases. This will cause an increase in unemployment as firms produce less and take on less projects, and thus they will need less workers.

One point was given for identifying that investment will decrease. One point was given for identifying the channel. One point was noting this would increase unemployment.

Part G (3) Based on Part (E) and (F), it is likely that when inflation is too high, there is a higher interest rate which will then cause unemployment will increase. Since macroeconomic variables have lag, this is likely seen as high inflation regimes having larger unemployment, which causes the weak positive observed correlation. Alternatively, consider that when inflation is high, the Federal Reserve will tolerate *higher* unemployment to try to tame inflation, which implies high inflation regimes may be associated with high inflation regimes.

One point was given for any logic that implies the Federal Reserve may cause this action. Two points were given for the quality of the response.

Part H (4) This data supports our answer. When there was a high inflation regime (the 70s and 80s), there were upwards sloping curves, while in the other regimes there were downward sloping curves.

One point was given for recognizing the relevant endogeneity. Two points were awarded for using the differing decades to support your answer by invoking the inflationary phenomena in the 70s and 80s but not in other times. A final point was given for the quality of the response.

Part I There were many answers. One point was given for isolating the relevant phenomena, and a second point was given for the justification. Examples include:

- (1) Decreased menu costs due to the virtual nature of pricing, which allows for quicker adjustment to local demand.
- (2) Sustained low inflation during the recent decade due to the nature of the economic recovery leading to littler variation in the data.
- (3) Endogenous decreases in the natural rate of unemployment obfuscating the tradeoff due to improvements in information quality.

Bonus One point was awarded for answering “Japan.”

Problem 2: Comparing Fixed and Floating Exchange Rates (15 points)

Part A Convert the price from Canadian dollars to US dollars: $1200 \text{ CAD} \times \frac{0.78 \text{ USD}}{1 \text{ CAD}} = 936 \text{ USD}$.

(1 point is awarded for multiplying the exchange rate by the number of CAD. 1 point is awarded for having the correct answer.)

Part B As the dollar depreciates, foreign currency can be converted to a greater amount of USD. Thus, the value of US exports becomes cheaper (since less foreign currency is needed to buy) and the value of US imports becomes more expensive (since more USD is needed to purchase foreign goods). Since GDP has a positive relationship with the total value of exports and a negative relationship with the total value of imports, US GDP increases when the dollar depreciates.

(2 points are awarded for a correct explanation of the effects of dollar depreciation on exports and imports. 1 point is awarded for correctly identifying that exports increase, imports decrease, and US GDP increases.)

Part C Deviations from the fixed exchange rate can occur when the true value of a currency (determined by supply and demand) differs from the fixed rate. A central bank can affect the value of its currency by directly affecting the money supply of the currency. By increasing or decreasing the money supply of its currency, it can cause the true value of the currency in its money market to depreciate or appreciate, respectively, until it aligns with the fixed exchange rate, thus preventing deviations. Countries can use various different tools to affect the money supply. Examples include the reserve ratio and open market operations.

(1 point is awarded for correctly identifying a tool which can be used to control the money supply. 1 point is awarded for correctly identifying that an increase/decrease in the money supply causes a currency’s true value to depreciate/appreciate. 2 points are awarded for a correct explanation that involves the money market.)

Part D Since day-to-day fluctuations in an exchange rate cause day-to-day fluctuations in the relative value of financial assets and goods, economies with floating exchange rates usually have relatively unstable environments for prospective investors. Because fixed exchange rates are constant for long periods of time, they

promise more stability. This means that an investor will usually have more accurate knowledge and predictions about their investment value. Consequently, an investor will have an easier time making investment decisions, since they have better information.

(1 point is awarded for relating exchange rates to the value of investments. 1 point is awarded for identifying that countries with fixed exchange rates have more stable investment environments. 1 point is awarded for providing a valid explanation of why investors should prefer stability.)

Part E There are many correct answers to this question. Below, I've outlined a few of them.

- Fixed exchange rates require work by policymakers in a country's central bank to maintain. This can have one of two main negative effects. Firstly, monetary policy is dedicated primarily to maintaining the exchange rate. Monetary policy has many other important macroeconomic uses (such as stabilizing prices, affecting interest rates, etc.), and having a fixed exchange rate directly trades off with the efficacy of monetary policy in these other macroeconomic uses. Secondly, when a country's central bank either intentionally or mistakenly fixes their peg too high, speculation can lead to financial crises as investors attempt to exchange their local currency before it depreciates.

- Although floating exchange rates provide a less stable investment environment, their ability to adjust automatically makes the long-term economy more stable. Since they reflect the state of the money market, changes in the money market (due to factors like the business cycle, economic shocks, etc.) have weaker effects in countries with floating currencies compared to countries with fixed currencies.

(1 point is awarded for correctly identifying either a positive economic effect of floating currencies or a negative effect of fixed currencies. 2 points are awarded for a sufficient explanation of how the type of currency leads to the economic effect identified in the given response.)

Problem 3: Economic Development and the Three-Sector Model (20 Points)

Part A One reason is that, on the demand side, everyone needs food. Therefore, in the absence of spending power or reliable employment opportunities, the market for food is the most reliable market to sell in. Further, you can also eat from your own supply of food, further encouraging farming. A second reason is that, on the supply side, agriculture has much lower barriers to entry than manufacturing or service. Therefore, even with no access to credit, as long as they have land, seeds, and some rudimentary tools, farmers can (theoretically) produce. Other answers also acceptable. Two points awarded for each response.

Part B One difference is in different countries' labor laws. A richer country will likely have a higher minimum wage than a poorer one, so by outsourcing to the poorer country, the firm can save on labor costs. The firm can also save on labor costs if workplace safety and worker health condition legislation is more lax in the poorer country. A second difference is in capital costs: for a specific example, land tends to be much more expensive in rich countries than in poor countries, both because of differences in PPP and in investment in other sectors (i.e. service). Therefore, by building a plant in a poorer country results in a lower start up cost than building a plant domestically. This also manifests as lower costs to expansion of pre-existing plants. Other answers also acceptable. Three points awarded for each response (with the additional point from part A coming from the need to justify *why* the costs are different, not just how).

Part C Similar to part A, the best answers make reference to supply and demand. On the supply side, one example is that service jobs tend to require more formal education than agriculture or manufacturing. Therefore, in rich countries, the inhabitants of which tend to be better educated, these human capital constraints are more easily met. On the demand side, many services often require a certain amount of disposable income to be affordable (i.e. no one is going to an amusement park if they can't pay rent). Therefore, in countries with higher per-capita wealth, demand for these services is more easily met. Other answers also acceptable. Two points awarded for each response.

Part D Many good responses to this question! Respondents discussing article 1 ("How to Keep Crops Alive...") tended to talk about the interconnectivity between the three sectors. Respondents discussing article 2 ("4.3 million people quit...") tended to talk about the relationship between GDP/capita and bargaining power in the labor market. Respondents discussing article 3 ("Samsung Agrees to Compensation...") tended to talk about the relationship between increasing standards of living and increasing political pressure on governments to improve labor laws. Points awarded for accuracy of facts, relationship to the model, and depth of discussion.