Problem Set 5: Money and Inflationary Debates

ECO 1510 · Principles of Macroeconomics | *Methodist University*

Due: 11/13 by 11:59 pm | Submit via Canvas

Individual assignment

This assignment requires the use of FRED data, the supplemental readings assigned in class: R.A. Radford, "The Economic Organization of a POW Camp,", and concepts from the textbook/lectures.

i. You will retrieve data on the money supply, inflation, and the federal funds rate from FRED, constructing a graph tracing the post-Covid inflation episode and the Federal Reserve's response
ii. Then supplement it with international inflation data to examine how the quantity theory of money holds up across different economic contexts.
iii. Your analysis should evaluate competing explanations for inflation using evidence, and to form a defensible position on what the data actually shows

Overview

The 2021 to 2023 inflation episode is one of the most consequential macroeconomic events of the past several decades. It tested the limits of monetary policy, raises fundamental questions about the rules vs. discretion debate, and illustrated how the quantity theory of money operates under real-world conditions.

Supplemental Reading

Read the required supplemental reading: **R.A. Radford, "The Economic Organization of a POW Camp,"** available via the link in your course supplemental reading list. This reading is required and directly supports your response to Question 1. You do not need to retrieve additional FRED data for this section.

Radford's account of the prisoner of war camp economy is more than a story about how markets emerge spontaneously. It is a rare example of a controlled natural experiment in monetary economics. The camp was a closed system with a fixed and observable supply of the commodity that functioned as money, a constrained and measurable level of real output, and price levels that Radford recorded directly.

The quantity theory of money, expressed in growth rate form as $\dot{M} + \dot{V} = \dot{P} + \dot{Y}$, makes specific predictions about what should happen to prices when the money supply changes and real output is relatively fixed. As you read, pay close attention to the episodes where the supply of cigarettes changed abruptly (Red Cross shipments arriving, supply disruptions, the end of the war) and what followed. You will need to connect what Radford observed to what the quantity theory predicts, and then evaluate whether the same framework explains what your FRED data shows about the modern US economy.

Data Preparation

Step 1: Domestic Data

Complete the following steps in order. Step 2 requires a unit transformation that is essential for reading the graph correctly. Include your completed graph as a screenshot or exported image in your submission.

1. Go to https://fred.stlouisfed.org/ and search for "M2SL" Select the series M2 (M2SL) (Billions of Dollars, Monthly, Seasonally Adjusted).
2. Click "Edit Graph" then select "Edit Line 1." Change Units to "Percent Change from Year Ago." This converts M2 into a year-over-year growth rate.

3. Click "Add Line." Search for "Consumer Price Index for All Urban Consumers: All Items (CPIAUCSL)." Select the Monthly, Seasonally Adjusted series. Click "Add data series." Make sure the Units are set to "Percent Change from Year Ago" so it shows year-over-year CPI inflation.
4. Click "Add Line." Search for "Federal Funds Effective Rate (FEDFUNDS)." Select Percent, Monthly, Not Seasonally Adjusted. Leave this series in its original units.
5. Go under the “Format” tab and select “Right” for the Y-axis position for Line 3. (You’ll see why in the data for FEDFUNDS changes)
6. Set the date range to begin January 1, 2015. Leave the end date as the most recent available data.
7. Label your graph clearly so all three series are distinguishable. Download or screenshot the completed graph and include it in your submission.

Step 2: International Data

Choose two countries to compare with the United States using inflation data from FRED. Search for "Inflation, consumer prices for [Country Name]" or use the series tag "inflation" filtered by country. Most countries have annual CPI inflation data available through the World Bank series on FRED.

Choose countries where the inflation experience over the past decade has been notably different from the United States. Countries that experienced high or hyperinflationary episodes, countries with very stable price levels, or countries whose inflation trajectory diverged sharply from the US during the Covid period are all interesting choices. You **do not** need to add these to your main graph. Reference them in your written analysis using specific values or trends from what you find.

Assignment

Answer each question in complete sentences. There is no minimum for answers, but minimal effort will not result in maximum credit. If you need further clarification on this, refer to the grading philosophy in the syllabus. Use economic reasoning and terminology from class. Imprecise or purely descriptive answers will not earn full credit.

1. Using the Radford reading and the quantity theory from class, identify at least two specific episodes in the POW camp where a change in the cigarette supply produced a predictable change in the price level.

For each episode,

i. state what happened to M

ii. what the quantity theory predicts should follow given the constraints on V and Y in the camp environment

iii. and whether the observed outcome was consistent with that prediction.

2. The quantity theory of money, expressed in growth rate form as $\dot{M} + \dot{V} = \dot{P} + \dot{Y}$, predicts that money supply growth drives inflation when velocity and real output growth are relatively stable.

Using your graph, describe the relationship between M2 growth and CPI inflation from 2015 through 2020.

i. Does the data over this period appear consistent with the quantity theory prediction?

ii. Then describe what happened to M2 growth beginning in 2020 and explain what the quantity theory would predict should follow.

3. During 2021, several prominent explanations for rising inflation circulated in the media and in political commentary: corporate greed, supply chain disruptions, lack of competition, and government spending.

Using your graph as evidence, evaluate two of these alternative explanations. For each, explain what the explanation gets right, where it falls short as a general theory of inflation, and what your data suggests about whether it can account for the scale and persistence of the inflation episode you observe.

4. Using the international inflation data you collected, compare the inflation experiences of your chosen countries with that of the United States over a recent period.

i. Did countries with higher money supply growth tend to experience higher inflation?

ii. Did any of your countries experience dramatically higher or lower inflation than the US, and if so, what does the quantity theory suggest should be true about their monetary policy during that period?

If you found a case where the relationship between money growth and inflation appears to break down, explain what factors might account for that.

5. Milton Friedman argued that inflation is always and everywhere a monetary phenomenon. The post-Covid US inflation episode generated significant debate about whether this claim holds in modern economies with complex supply chains, large government sectors, and globally integrated financial markets.

Using your FRED graph, your international comparisons, and the Radford reading as evidence, construct an argument about how well the quantity theory explains the inflation episode you examined. Your argument should take a clear position, engage with the strongest counterevidence, and explain what you think the data ultimately shows about the monetary origins of inflation.

There is no single correct answer, but the strongest responses will be specific and grounded in what the data actually shows rather than what any one commentator claimed.

Full credit requires precise use of economic terminology and explicit connection to course concepts. The synthesis question requires evidence from your graph, your international comparisons, and the Radford reading. Responses that describe the data without economic explanation will receive partial credit at best.