Problem Set #1 – ECON 3311, Spring 2025 **[Answer Key]**

Due: 2/12 at 11:59pm.

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1) **Is all government spending included when using the expenditure approach to measuring GDP? Mention examples in your explanation.**

2) **Suppose you are calculating the GDP of a country, and there has been a decrease in inventories of firms from last year. Which component of GDP is this counted in? Why is it important to account for changes in inventories when measuring GDP?**

3) **Suppose that in 1965 Japan had an initial per capita GDP of $12,000 per year and China had an initial per capita GDP of $5,000. Suppose China grew at a constant 5 percent per year and Japan grew at a constant 3 percent per year. What is the GDP of each country in 2016? Make sure to show all of your work.**

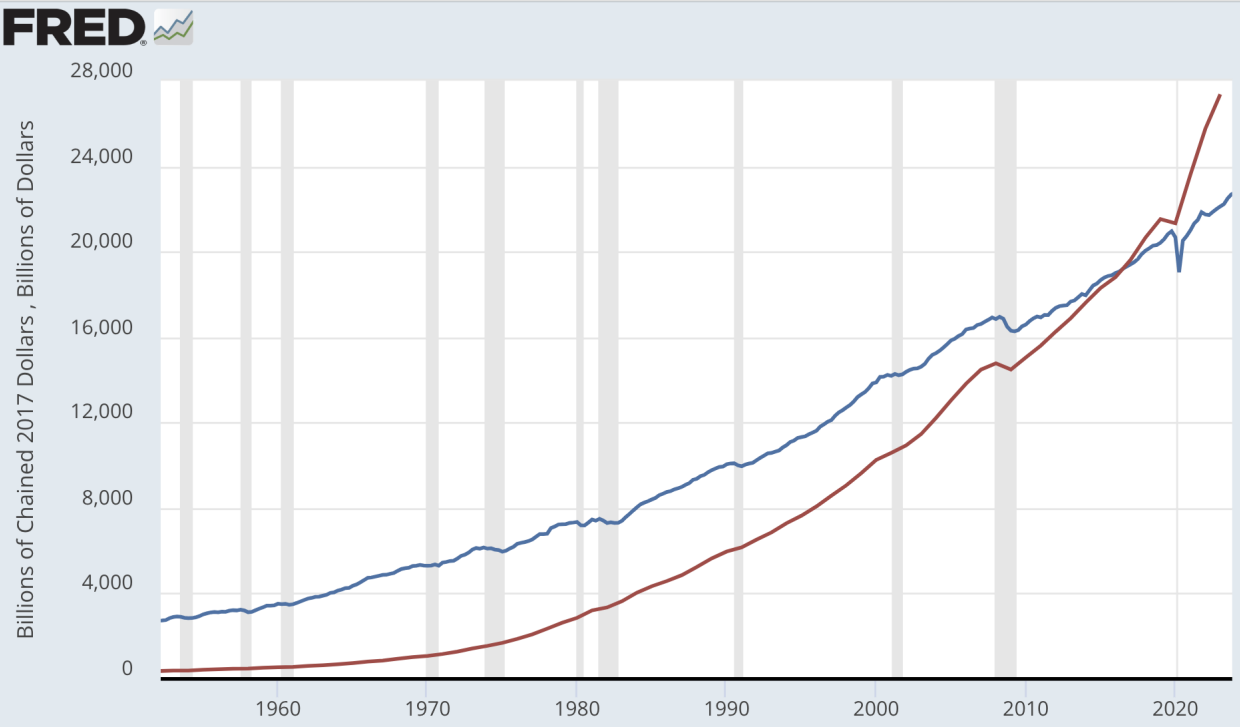
4) Suppose that you are comparing GDP in 2010 to GDP in 2023. Smartphones became much more commonplace after the first Iphone was introduced in 2007, and have since become much more popular and less expensive (holding quality constant). How would this affect the rate of GDP growth that is calculated using 2010 prices (Laspeyres index) as the base year versus 2023 prices (Paasche index) as the base year? Explain.

5) Suppose that the GDP of Thailand in 2017 was 200 trillion baht, while US GDP was $17.7 trillion. The exchange rate in 2017 was 40 baht per dollar. Moreover, prices are lower in Thailand: the price level in Thailand divided by the price level in the US is equal to 0.4 in 2017.

a. If we do not take into account the relative price differences in the two countries, but only the exchange rate, how much larger is US GDP relative to Thailand GDP? Show your work.

b. If we take into account the relative price differences in the two countries, how much larger is US GDP relative to Thailand GDP? Show your work.

6) The graph below shows nominal GDP and real GDP in the United States from 1952 to 2023.



a. Which line represents real GDP and which line represents nominal GDP? Explain how you arrived at your answer.

b. What is the significance of the year where the two curves intersect? Briefly explain.

c. How would the two lines look different relative to each other if the price level had increased by more than it actually increased by (e.g. if every year prices increased by 2% more than it actually did)? Explain how you arrived at your answer.

7) Suppose *k*, *l*, and *A* grow at constant rates given, respectively, by $\bar{g}_k$, $\bar{g}_l$, and $\bar{g}_A$. What is the growth rate of *y* if $y = Ak^{\alpha} l^{1-\alpha}$, $\alpha > 0$?