

Module 1 Assignment (Short-Answer and Algebraic Questions): *(The numbers in square brackets give the breakdown of the points for various parts of each question. To receive full credit, please explain your answers.)*

1. This question is based on the article, "[The average American is much better off now than four decades ago](#)," published by *The Economist* on March 31, 2018. The article compares the real income figures for the median American household as calculated by the Census Bureau (CB) and the Congressional Budget Office (CBO). The article mentions three methodological differences that explain the gap between the two measures. It also argues that the CBO measure, which shows a much larger rise in the median household income, is closer to reality.
 - (a) The article shows that the biggest part of gap is due to CBO's use of the personal-consumption expenditures (PCE) index to measure inflation, compared to CB's use of the consumer-price index (CPI). Given what we know about the CPI measurement problems, what are the aspects of PCE that make it a better price index for deflating household income? [16]
 - (b) What is the second most important aspect of CBO measurement that makes it a better gauge of real household income than CB's? How does that factor explain the more rapid rise of the CBO measure over CB's estimate? [11]
 - (c) What are the additional pieces of evidence that the article presents corroborating the picture of income increase painted by the CBO? [11]
2. This year, Company A in the US has developed an AI software package, using only its own labor and capital. The Company has sold the package to Company B and has received \$100,000 in compensation. Company B has in turn put this package into use along with its own capital and labor and no other intermediate input. This has enabled B to offer a new service to its customers as a final good with a sale value of \$200,000.
 - (a) If the AI software package is treated as an intermediate good, how much GDP has been produced by the two companies together? [8]
 - (b) If the AI software package is treated as an investment good, how much GDP has been produced by the two companies together? [8]
3. Suppose this year the prices of goods and services produced in Japan, especially for housing and food, rise in terms of the local currency (Japanese yen), while the market exchange rate and the prices in the US remain constant. Further assume that the quantities of all goods and services consumed in those countries are given.
 - (a) If we measure income by PPP GDP based on US prices in terms of US dollars, how do higher prices in Japan affect its measured per capita income relative to the measured per capita incomes of the US? Why? [8]
 - (b) If we measure income by GDP at market prices and market exchange rates, how do higher prices in Japan affect its measured per capita income relative to the measured per capita incomes of the US? Why? [8]