Problem Set #1: Macroeconomic Data
Revised: September 14, 2014

You may do this assignment in a group. Whatever you hand in should be the work of your group and include the names of all of the contributors.

1. *National accounts in Margaritaville (40 points).* Jimmy Buffett has decided to apply for membership in the European Union on behalf of his newly sovereign nation, Margaritaville. As part of his application, he must provide the EU technocrats with a complete set of national accounts. You have been hired as the Chief National Accountant. Your first day on the job, you receive an official Coral Reefer Crew™ t-shirt and the following information about local economic activity:

   - Local Cheeseburger in Paradise™ cafes sold $63,000 worth of cheeseburgers to local consumers. Their expenses were: imported beef and sesame seeds ($10,000), locally produced catsup ($12,000), wages and benefits ($22,000), and rent ($3,000). Hint: you will need to compute the profit earned by the cafes.

   - Local tomato growers sold $8,000 worth of tomatoes to domestic catsup producers and exported another $3,000 to the US. They paid land rent ($1,000) and wages ($9,000).

   - Local producers of the Margaritaville Frozen Concoction Maker™ sold $100,000 worth of blenders; $50,000 were exported to Europe, the remainder to local consumers. Their expenses were $15,000 worth of imported metal, $20,000 for a new CNC machine imported from Germany, and $90,000 in wages.

   - The domestic catsup industry sold $12,000 worth of product to local cafes. They purchased $8,000 worth of tomatoes from domestic growers and paid $4,000 in wages.

   - The newly-formed government collected $10,000 in taxes from its citizens and paid $10,000 to government regulators, who oversee food and beverage safety.

   You mission is to use this raw data to construct national income and product accounts for Magaritaville. Specifically:

   (a) Compute the value-added of each production unit. What is GDP? (10 points)

   (b) Compute GDP and its expenditure components (consumption, investment, government purchases of goods and services, exports, and imports). (10 points)

   (c) What are saving and investment? Why are they different? Where does the difference go? (10 points)

(d) Jimmy looks over your calculation in (a) and is worried that you made a mistake. Over a couple Land Shark Lagers$^{\text{TM}}$ you explain to him that GDP can be computed three different ways: the sum of value-added across production units (Gross Domestic Product), the sum of expenditure components (Gross Domestic Expenditure), and the sum of payments to labor and capital (Gross Domestic Income). You do the remaining one, payments to labor and capital, and show him that you get the same answer. He buys you a margarita to show his appreciation. (10 points)

2. *Inputs and outputs (20 points).* Specify the most likely direct impact of each of the following on the components of the production function. Don't make this more complicated than it is: we're concerned only with the impact on the components of the production function.

   (a) Investments in transportation infrastructure in India. (5 points)

   (b) A reduction in red tape for construction projects for New York hospitals. (5 points)

   (c) An improvement in education that increases the skill and effectiveness of workers. (5 points)

   (d) A reduction in tariffs in Brazil on imported computer equipment. (5 points)

3. *Saving, investment, and capital flows in China (40 points).* China is known for its unusually high saving and investment rates, and for its trade surplus. Are these things connected?

   We'll attack this question with the data in the spreadsheet attached below to the pdf of this document, attached below, linked on the course page, and posted at

   http://pages.stern.nyu.edu/~dbackus/2303/ps1_q3_f14.xlsx.

   The first sheet, labeled `Data`, includes everything you need: GDP and its expenditure components at current prices from 1952 to 2013. The second contains the data exactly as it comes from CEIC, a commercial data vendor.

   (a) What does "GDP at current prices" mean? Is it "real" or "nominal"? What do those words mean anyway? (10 points)

   (b) Graph saving, investment, and net exports as ratios to GDP. How are these three variables related? As in class, we define saving as $S = Y - C - G$. (20 points)

   (c) Looking at your figure, how much of domestic saving is used to finance domestic investment? What happens to the rest of it? (10 points)

   Note. The data spreadsheet is embedded in the pdf file of this document. To access it, open the pdf file on your computer using the Adobe Reader or the equivalent and click on the pushpin: If you can't get it to work — some pdf viewers won't show the attachments — use the link above.