

ECO 445: Extra Credit Worksheet 2

Question 1

Go to the Penn World Tables website and download the data for PWT 8.0 in Stata format:

<http://www.rug.nl/research/ggdc/data/pwt/pwt-8.0>

You will have to unzip the data to access the dta file.

1.a) Compute Real GDP per Capita in the dataset

$$\text{Real GDP per Capita} = \frac{\text{Real GDP}}{\text{Population}}$$

You can use this with the **gen** command: **gen rgdp_capita = rgdpo/pop**

pop is population (millions) and **rgdpo** is chain weighted real GDP (millions) measured using the output side approach. **rgdp_capita** is the variable name we chose to represent our computed RGDP per Capita.

1.b) Using the STATA code on my website, compute the volatility of Real GDP per Capita Growth Rates over 1990 to 2005:

$$\text{Real GDP per Capita Growth Rate} = \frac{\text{Real GDP per Capita in Year T+1}}{\text{Real per Capita in Year T}} - 1$$

where the volatility refers to the standard deviation of those growth rates over a period of time.

What is the volatility of annual GDP per Capita growth rates over 1990-2005 for the United States, Korea? What is the average volatility in the dataset?

1.c) Use my STATA code to keep only growth rates for the United States and reshape the dataset back to long form.

Construct a kernel density plot using the command: **kdensity rgdp_capita_growth, normal**

Right click on the graph that STATA generated and click Save As. Save it to the desktop, selecting **.png** as the file type. Note that STATA generates a command for you that can be used to save graphs without needing to right click them. This is useful if you want to automatically have charts update as you include more data for instance.

How well does a normal distribution seem to fit the distribution of GDP growth rates?

Question 2

Download the file Firm_Data.dta from my website

2.a) Convert the reported sales into annual sales in USD, to do this you need to adjust for the number of months, the exchange rate, and the units the sales are reported in.

gen salesLCU = tot_rev*12/months

gen salesUSD = salesLCU*exrate_usd

replace salesUSD = salesUSD*10^unit

Also, drop firms with zero or negative sales and select only a single sales for each firm if there are multiple reportings in a single year.

2.b) Use the stata code on my website to compute an estimated (sales-weighted) elasticity according to

$$\epsilon = \frac{1}{\text{Gross Margin}}$$

Use the estimated elasticity to compute an estimated optimal markup. Where the markup in % is

$$\text{Markup} = 100 \times \left(\frac{\epsilon}{\epsilon - 1} - 1 \right)$$

2.b) Use the STATA code on my website to compute the herfindahl index for each country for both all firms in the dataset and just the 100 largest firms. What is the correlation between the two measures?

2.c) What country has the smallest reported Herfindahl Index? What country has the largest?

2.d) What is the largest firm headquartered in Korea? What is the sales of that firm relative to GDP?

2.e) For the U.S, construct a log-log plot of sales vs rank for all firms and for just the top 100 firms. What is the slope of the regression between log rank and log sales? Recall this is how we estimate γ for the Pareto distribution.