

#### Question 4 for Argentina

Download from International Financial Statistics:

Gross Domestic Product (GDP)	21399B..ZF...
Employment	21367E..ZF...
Gross Fixed Capital Formation	21393E..ZF...
Changes in Inventories	21393I..ZF...
GDP Deflator (2005=100)	21399BIPZF...

Download from World Development Indicators

Population ages 15-64 (% of total)  
Population, total.

In ArgentinaDataQ4.xls, we use the data in the worksheet IFS data to calculate series in the worksheet Constructed data for real GDP and real investment:

$$Y_t = \frac{\text{Gross Domestic Product}}{\text{GDP Deflator}}$$
$$I_t = \frac{\text{Gross Fixed Capital Formation} + \text{Changes in Inventories}}{\text{GDP Deflator}}.$$

Notice that these data go back to 1960: What look like 0s in the IFS data are actually very small numbers. Argentina had a lot of inflation, so GDP and the components of investment measured in current prices and the GDP deflator increased dramatically

To calculate real consumption, we set

$$C_t = Y_t - I_t.$$

To calculate estimates for hours worked in the worksheet Constructed data, we use the data in the worksheet WDI data, setting

$$L_t = \frac{\text{Population ages 15 - 64 (\% of total)}}{100} \frac{\text{Population, total}}{1000}.$$

We divide Population by 1000 because it is measured in persons, while the IFS employment data is measured in 1000s of persons. Unfortunately, there something wrong with the Employment number for 1990, so we omit it.

We can plug the data from ArgentinaDataQ4.xl into the first four columns of data in the worksheet Argentina data in ArgentinaModel.xls. To do the growth accounting, we need to adjust the initial capital stock by doing a Paste Special, Values, repeatedly from cell H2 into cell H3 in worksheet Argentina data.

The final columns — R, S, T, U, V — of worksheet Argentina data in ArgentinaModel.xls calibrate the utility parameters  $\beta$  and  $\gamma$ . Notice that we need to do some adjusting because the years available to do this are limited, 1991–2006. (I have not used the 2007 and 2008 data because they are suspect. I think that the Employment data after 2004 are also suspect.) Specifically, we use the data for 1991–1995 to calibrate  $\beta$  and  $\gamma$ .

Notice that we use all of the available data 1970–2006 to calculate the average growth rate of population in column F and all of the available data 1991–2006 to calibrate the average growth rate of TFP in column K.

Depending on the years for which you have available data, you will have to adjust the cells taking the averages.

The calibrated values of all the parameters are automatically copied into the worksheet Argentina calibration in ArgentinaModel.xls. Depending on the year in which you are starting the numerical experiment, you will need to adjust in the initial value of the capital stock in cell B7 and the data inputs by years starting in row 10.

You need to come up with two text files to input the data in the worksheet Argentina calibration in ArgentinaModel.xls into the MATLAB program. The first you can call paramBase.txt and the second database.txt. Just open Notepad and cut and paste the data in the two areas that are highlighted pink in the worksheet Argentina calibration. (I change the names of these files from paramBase.txt and dataBase.txt to something like paramArgentina.txt and dataArgentina.txt. If you do this, you will have to change two lines of the MATLAB program, as I indicate below.)

You now need to access MATLAB. I will describe how to do it on your computer from home:

1. If you use Windows and you are not using a University IP connection (a University computer or a computer using U of M wireless access), you need to have installed VPN. It can be downloaded at <http://www.oit.umn.edu/vpn/download-vpn/index.htm>. After downloading VPN, you will need to restart your computer. After restarting, run VPN Client, click Connect, and login using your X.500 ID and password.
2. Select Start, Programs, Accessories, then Remote Desktop Connection. (On one of my computers, I needed to reach select Start, Programs, Accessories, Communications, then Remote Desktop Connection.)
3. Enter freya.cla.umn.edu.
4. Before you connect, click Options, Local Resources, More, then check Drives, then OK. Connect.

5. Connect, Enter X.500 ID and password, select AD domain — not CLA FREYA or UMN EDU.
6. Transfer data files from your local computer to the server. There is a tab that pops up at the top of the freya screen that lets you reduce the size of the window.

For Mac users, download Remote Desktop from the following site.

<http://www.microsoft.com/mac/products/remote-desktop/default.mspx>

Open Explorer and download the MATLAB programs depressions.m and solveModel.m from [www.greatdepressionsbook.com](http://www.greatdepressionsbook.com) into the same folder in which you have put your two data files. Click Start, then MATLAB. In the MATLAB window, open depressions.m and, on lines 17 and 18, change the names paramBase.txt and dataBase.txt to whatever you have named your two data files.

Run depressions.

Open output.xls. Copy and paste columns A, B, C, D, and F into columns A, B, C, D, and F in the worksheet Argentina results in ArgentinaModel.xls. Notice that you may need to lengthen or shorten these L–O, Q–R, and T–U depending on how many years you are modeling.

The results of your numerical experiments should now show up in the three charts Y%N Argentina, K%Y Argentina, L%N Argentina. Please notice that you probably need to change the scales and the titles of these graphs, which be done by clicking on them. If you need to change the lengths of the columns of data from the worksheet Argentina results that are depicted in the charts, left click on the chart and select Source Data, Series.

Now go back and clean up your files, changing names of worksheets and so on to match your experiment.