How Destructive is Innovation?

This document describes the programs used to calculate moments from Census of Manufactures (CMF) and Longitudinal Business Database (LBD). For all the programs, the following adjustments need to be made:

- The directory structure may need to be changed.

- The Census Bureau removed references to specific NAICS and SIC codes in the programs. The user needs to put back in the line where the sample is restricted to non-farm non-mining non-educational private establishments. The programs have a comment that indicate where exactly the references to NAICS and SIC codes should go.

- Some of the programs use a crosswalk between NAICS and SIC codes available in the /public directory at the Census.

A. CMF Moments

This data is used to calculate job flows in manufacturing (Table 11) and the time series of number of products and plants per firm in Figure 10.

The next two programs need to be run in the following order:

1. readcmf.sas

   Reads the raw data of the CMF and creates a clean dataset.

2. readprod.sas

   Reads the raw data of the CMF product trailer data and creates a clean dataset by product-firm.

The next two programs can be run in any order

3. proccmf3.sas.

   This program creates moments of job flows in the CMF in Table 11. It needs to be adjusted in the data step that starts with the comment **KEY* depending on whether the user wants to generate column 1, 2, or 3 in Table 11.

4. procprod.do.

This is a STATA program that generates the average number of products and plants per firm in the CMF. This is the data shown in Figure 10.

B. LBD Moments

The programs need to be run in the following order:

5. Readlbd1.sas

   Reads raw data from LBD.

6. Readlbd2.sas

   Creates cleaned dataset of LBD used by all subsequent programs. Note that the program uses the naics-sic crosswalk available in the public directory of the Census server.

After programs 5 and 6 have been run, programs 7-20 can be run in any order.

7. Proclbd2.sas

   Generates summary statistics (Table 2), employment share of entrants (Figure 5), Employment of Young and Old Firms (Figure 8), and Exit Rate of Large and Small Firms (Figure 9).

8. Proclbd3.sas

   Generates job creation and destruction rates (Figure 4), distribution of job creation and destruction (Figure 6), and share of small job flows (Figure 7).

9. Proclbd2_ict.sas

   Employment share of entrants for ICT sector (Table 15). Sample needs to be restricted to plants in ICT sectors.

10. Proclbd2_noma.sas

    Employment share of entrants for sample where plants that change ownership are removed (Table 10, column 4).

11. Proclbd2_oneyear.sas

Employment share of entrants defined as firms established over the last year (Table 14, column 2) and exit rate of large and small firms over one year (reported in last paragraph of section 3).

12. Proclbd3_ict.sas

    Generates job creation and destruction rates and share of small job flows for firms in ICT sector (Table 15). Sample needs to be restricted to plants in ICT sectors.

13. Proclbd3_noentryexit.sas

    Generates job creation and destruction rates and share of small job flows when new and exiting establishments are removed from sample (Table 10, column 2).

14. Problbd3_noma.sas

    Generates job creation and destruction rates and share of small job flows when plants that change ownership removed from sample (Table 10, column 4).

15. Procllbd3_noma2.sas

    Generates job creation and destruction rates, employment share of entrants and share of small job flows when the direct effect of changes in plant ownership are removed from data, but employment growth in plants that change ownership are attributed to the acquiring firm (Table 10, column 5).

16. Proclbd3_srv.sas

    Generates job creation and destruction rates, employment share of entrants and share of small job flows for service sector (Table 10, column 3). Sample needs to be restricted to establishments in service sectors.

17. Proclbd3_tenyear.sas

    Generates job creation and destruction rates, employment share of entrants, and share of small job flows calculated over ten years (Table 13, column 3).

18. Proclbd3_industry.sas

    Regression of job destruction rate within a sector on the job creation rate in the sector (reported in text in section 5.2).

19. Proclbd3_oneyear.sas

Generates job creation and destruction rates, share of job creation and destruction rates due to incumbents age < 5 and share of small job flows defined over one year (Table 13, column 2).

20. Procplant.sas

Generates plants per firm in LBD sample (shown in Figure 10).

C. Variance-Covariance Matrix of Data Moments

The last two programs can only be run after programs 5-6 have been run. Program 21 needs to be run first.

21. Replicate2.sas

Draws and saves random samples of the raw data.

22. Replicate3.sas

Creates the variance-covariance matrix of estimates of data moments used to estimate the variance-covariance matrix of model parameters in Table 17.