Readme file to accompany 'Envelope Wages, Hidden Production and Labor Productivity' by A. Di Nola, G.Kocharkov and A.Vasilev

Structure of the folder

The folder **DVK_code** contains the files needed to replicate the solution and estimation of the quantitative model, together with the counterfactual experiments presented in Section 5 of the paper. The most important files are:

- main.m: this file runs the minimum distance estimation. If do_experiments=1, it performs the counterfactual experiments.
- f_obj.m: this function solves the model for given parameter values. It is called by main.m

It also contains the subfolder "results" with two subfolders:

- model_fit: it stores the results of the baseline simulation (model fit, comparing model to data targets)
- experiments: it stores the results of the counterfactual experiments.

Estimation

- In order to replicate the minimum distance estimation, please run the matlab file `main.m`. To replicate the estimation starting from a suitable guess, select `do_estimation=1`. We saved a good initial guess in the file `guess_from_file1.txt` in order to speed up the computation. However, if you want to start from an arbitrary initial value, set `param_from_file=0` and input manually the guess in the cell %% SET PARAMETER VALUES.
- If you choose `do_estimation=1`, you can also choose which estimation routine to use with the option `est_algo` (our preferred routine is `nlopt`. If you don't have `nlopt` on your computer you can set `est_algo=simulan` to use a simulated annealing routine coded in Matlab that we provide in the folder).
- If instead you want to run the model at an arbitrary point `x=guess`, set `do_estimation=0`.

Counterfactual Experiments

In order to replicate the counterfactual experiments (Section 5 of the paper), please set `do_estimation=0` and `do_experiments=1` in `main.m`. Then select the experiment that you want to perform, i.e. `experiment_num=1`. The experiment results are saved in a data file for later use.

Sensitivity Analysis

To replicate findings in Section 5.1 (robustness check of counterfactual results to different values of gamma, as shown in Figure 14), please run `results_sensitivity.m`. All results are saved in the subfolder ‘‘`results\experiments`’’.

Figures and Tables

- To generate the figures and tables relative to the model fit (Figures 10-11 and Table 2), please run `results_modelfit.m`. The results are stored in the subfolder ‘‘`results\model_fit`’’
- To generate the figures and tables relative to the counterfactual experiments (Figures 12-13 and Table 3), please run `results_experiments.m`. This file loads existing results and make plots and tables. It stores them in the subfolder ‘‘`results\experiments`’’.

Optimal Taxation

To replicate findings of Section 6, please see folder `optimal tax` and comments therein.