

Fortran computer codes for “Labor-market Frictions, Incomplete Insurance and Severance Payments” by Etienne Lalé

Codes were written in Fortran language, compiled with the Intel(R) Fortran compiler and run on a machine with 64 GBytes memory, and running 64-bit Windows 7 64-bit.

1. `main.f90` is the program where the computation starts. `main.f90` calls subroutines that define values of parameters, compute the asset values, policy and wage functions, cross-sectional distribution, and equilibrium tightness, pension benefits and UI taxes of the model.
2. `misc_functions.f90` contains subroutines to approximate $AR(1)$ processes and to interpolate functions linearly and interpolate using cubic spline approximation.
3. `globals.f90` defines variables that will be assigned values and sets the size of the asset grids and productivity grids. `initial.f90` defines values of parameters used in the computation and defines asset grids and productivity grids. `initial.f90` uses values contained in five `.txt` files saved in the subfolder `input/`:
 - (a) `policy.txt` sets the value of the severance pay rate.
 - (b) `params.txt` and `calib.txt` contain parameter values of the model (`params.txt` for those based on external information and `calib.txt` for calibrated parameter values).
 - (c) `model_type.txt` is a 5×1 vector of 0/1 variables. Set the 1st indicator to 0 to use a flat productivity profile; the 2nd indicator to 0 to use a flat job-tenure profile; the 3rd indicator to 0 to use a flat exogenous job-separation profile; the 4th indicator to 0 to remove pension benefits; the 5th indicator to 0 to set the borrowing limit to zero.
 - (d) `tuple.txt` contains starting guess values for four equilibrium variables (the average wage, equilibrium tightness, pension benefits and UI tax).
4. `check_equilibrium.f90` is the program where the equilibrium is computed for a given value of tightness, pension benefits and UI taxes.
 - (a) `solve_prog_retirees.f90` computes the asset values and policy functions of retired agents.
 - (b) `wage_function.f90` computes the wage functions and, doing so, the asset values and policy functions of non-retired agents by calling subroutines from `solve_prog_workers.f90`. When the severance pay rate is non-zero, `solve_prog_workers.f90` calls subroutines from `predict_u_cont.f90` to predict the asset value of unemployment above the upper limit of the asset grid.
 - (c) `distribution.f90` computes the cross-sectional distribution of the economy.
 - (d) In `main.f90`, the outer loops iterate to find equilibrium tightness, pension benefits and UI taxes. When the severance pay rate is positive, there is an extra outer loop to iterate on the equilibrium average wage used to specify severance payments.
5. `aggregate_var.f90` and `output_res.f90` are programs where the main model outcomes are computed and exported to `.txt` files to construct the plots shown in the paper. These `.txt` files are saved in the subfolder `output/`.