"The Allocation of Talent and U.S. Economic Growth"
Replication Instructions

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This file describes the programs that are used to generate the empirical results in the paper. The results can be replicated by following the instructions below. The code has been executed using Matlab 2018b. See the "Online Data Appendix" for the economics behind how the estimation is carried out.

Main Matlab Programs

The basic programs used to produce the results in the paper are listed and described below. All of the programs can be run in the correct order by executing the following master program in the main directory where the matlab files are unzipped:

MasterProgram.m

This program sets up the various cases and runs them, generating *all* the results for the paper. The baseline case is called "Benchmark." The various programs called by MasterProgram.m are discussed next.

ReadCohortData.m Reads the basic data from the csv version of the spreadsheet, "chad_output_file_2019_01_24.csv." Also, calls "*LookatCohortData.m*" to display data

SetParameters.m -- Sets the default Benchmark parameter values.

EstimateTauZ.m -- This is the main program that handles the estimation of the tau, phi, A, and Z parameters (among others).

- *solveWMfor_wZ.m*: Estimate w(i,t), phi(i,t), and z(i,WM) using the occupational choices and wages of young white men
- *GetTExperience.m:* Estimates the "Tbar" returns to experience profile from white men
- *estimatedeltaYWM.m*: Code to estimate delta, the fraction of the population that sorts on preference heterogeneity.
- *estimatetauz.m:* Estimates TauW, TauH, and Z for each group

Note: Previous versions of the paper -- and hence these programs -- used the notation Tig(t-c) and Tbar := T(0)+T(1)+T(2). The paper uses an updated notation (as of Version 5). Here is the concordance, to go between the paper and the programs:

- Tig(t-c) == hbar_ig * gamma(t-c)

- Tbar == hbar_ig * gammabar, with gammabar == gamma(0) + gamma(1) + gamma(2), with gamma(0)=1

CleanandShowTauAZ.m -- Displays the results of the estimation

SolveEqmBasic.m -- Takes the TalentData.mat data on Taus, Z's, A(i,t) and solves for the equilibrium w(i,t) and Y(t). Displays the results.

HowMuchPoorer.m -- Evaluates the contribution of changing tau's to economic growth: "Relative to 2010 in model solution, how much poorer would we be if _____ had occurred?"

Ex: if tau's stayed at 1960 level?
if tauw had not changed since 1960
if tauh had not changed since 1960
if only mean tau had changed since 1960, not dispersion
if dispersion changed, but not the means

That is, allow everything else to change as it did, other than _____

"// Share //" row reports the contribution in terms of growth rates.

Note: We changed notation in the paper after completing the programs. In particular, the variable Tbar in the programs corresponds to the product of hbar*(1+gamma2+gamma3). That is, it includes both the level of talent (in hbar) and the returns to experience (in the gammas).

Important Functions

These programs are described in more detail below.

- *ChadMatlab/* -- subdirectory containing many functions that are called by the main programs.
- *AdditionalFigures.m* -- Produces several key graphs for the paper, including the Blau-Kahn labor supply elasticity graph and the Charles-Guryan graph.
- *how_much_poorer.m* -- Details for executing HowMuchPoorer.m
- *HowMuchPoorer_VaryTheta.m* -- Holds tauw and tauh at their benchmark values and resolves the model for different values of theta.
- *ShowParameters.m* -- Display the chosen parameter values
- *Name67Occupations.m* -- Loads occupation names
- *solveeqm.m* -- details for solving the equilibrium w(i)
- *SolveForEqm.m* -- function called to solve for the equilibrium for a given set of tau's.
- *SolveEqmBasic_Display.m* -- display the results for SolveEqmBasic.m