

Some basic documentation - production function estimation

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1 Investment and skill variables used

- Initial conditions: gestation, birth weight, initialconds (walking, talking, late respiration)
- Investments age 7: mother's interest in education, mother's outings, mother reads, father's interest in education, father's outings, father reads, father's involvement in upbringing, Investment index (do parents want child to stay on after minimum school leaving age, have parents taken initiative to discuss the child?)
- Skills age 7: reading, maths, copying, drawing
- Investments age 11: mother's interest, mother's outings, father's interest, father's outings, involvement of father, ambition: child goes to uni, ambition: child continues education, parents: library membership
- Skills age 11: reading, copying, maths
- Investments age 16: mother's interest interest in education, father's interest in education, investment index (was there a parent teacher discussion this year? P-T discussion last year? Child kept at home to help?), parental wishes(child leaves at min age/ FT educ to 18/ FT educ after 18)
- Skills age 16: reading, maths

2 Variables used for identification of lambda

- **Only contemporaneous covariance combinations:** Investments age 7, Skills age 7, Investments age 11, Investments age 16
- **Contemporaneous and intertemporal covariance combinations:** Initial conds, Skills age 16
- **Exact identification:** Skills age 11

3 Scaling of variables

- All investment variables are in zscores
- Skills are in zscores
- Maternal and paternal schooling is in years, but demeaned
- Parental income is in logs, but demeaned

4 Normalizing assumptions

- We assume that in every period, log latent skills and log latent investments have mean zero (!!! Note that this means that in every period, the latent factor is relative to the rest of the cohort. We CANNOT observe individual growth of skills!)
- In every period, one of the log latent factors is normalized to 1
- We assume Cobb-Douglas production functions with NO constant returns to scale

5 Files in folder

- **Bootstrap_awlam:** Runs bootstraps and GMM to resolve overidentification of lambda. This file needs to be run first. It calculates the lambdas which are then used to get all the residualized variables. At the bottom of the file, the full AW code is run which uses the residualized lambdas

- **Bootstrap_shock_vars:** This file estimates the shock variances of the production function. Again, we need to use diagonal GMM to find the variance, as there are several combinations which construct this variance.
- **Part1lambdas:** This is the main code!! It bootstraps the lambdas and then runs the AW estimation. It then bootstraps the AW estimates.
- **Part1:** Runs the AW estimation. Variables need to be residualized before this code can be run!