# ECON6300/7320/8300
# Advanced Microeconometrics
# Linear Panel Models



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Practical 4
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# Introduction



- This class will review:
  - Panel data structure and summaries
  - Panel data regression under the pooled (PA), fixed effects (FE) and random effects (RE) models
  - Specification tests



- We begin with a demonstration from Microeconometrics using STATA Chapter 8



- We move on to a practical looking at doctor's earnings

# Demonstration (1)



- We analyse PSID data from Baltagi and Khanti-Akom (1990) for 595 people observed in 1976-1982
  - We analyse the classical wage equation in which log-wage (lwage) depends on experience (exp), experience squared (exp2), education (ed) and weeks worked (wks)

# Practical (1)



- We have MABEL data on doctor's earnings in Australia (on blackboard)
- We estimate a wage equation. Our wage variable is yearn (use desc command). (You should use log wage as your dependent variable!)
- Our covariates include yhrs female, childu5, visa, expr, fellow, ausmed, selfemp, hospwork, clinpct, ahcall, complex, oppemp and anything else you think is relevant (use desc command)

# Practical (2)

1. Load the data into STATA, summarize and describe
2. Look at the within and between variation. Which variables are time invariant?
3. Estimate the transition probabilities in and out of hospital work
4. Plot the wages over time for a few doctors of your choosing
5. Do a scatter of wage and experience using (i) All of the variation (ii) Within variation only. Determine an appropriate polynomial for experience in your wage regression.
6. Compute the OLS estimator of your wage equation. Make sure your standard errors are appropriate!
7. Is there evidence of serial correlation of your OLS error term $u_{it}$? Is it consistent with $u_{it} = \alpha_i + e_{it}$ where $e_{it}$ is i.i.d.?
8. Compute the PA, RE and FE estimators. For the PA model assume that $u_{it} = \rho u_{it-1} + v_{it}$
9. Test the RE model against the FE model