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**Special Topics in Applied Econometrics: Cross-Country Studies  
Summer Term 2012**

**Hands-On Assignment 3:  
Estimating A Growth Regression with Fixed Effects**

Please take out the following hands-on assignment in Matlab

The solution to the assignment is given in the program „HandsOn3.m“.

1. Go to the website of Penn World Tables and download data in .csv format on real GDP per capita (rgdp) for all countries for the time period 1970-2009. Import these data into an Excel spreadsheet which can subsequently be loaded into Matlab.
2. Run the program „DataProg.m“ to process the data into a balanced data set of quinquennial data, containing the growth rate of real GDP per capita between  $t$  and  $t-1$  as well as the log of real GDP per capita.
3. Using the data, compute the Fixed Effects estimator for Equation (14) with  $y_{it}$  the growth rate of real GDP per capita between  $t-1$  and  $t$  and  $x_{it}$  the period initial value of the log per capita real GDP, that is,  $(rgdpl_{t-1})$ .  
The coefficient of the independent variable is -0.0961
4. Estimate the asymptotic variance of the regression parameters  
The t-statistic for the independent variable is -4.8221
5. Test for serial correlation in the error terms. If serial correlation is present, calculate a robust variance estimator.  
The t statistic of the coefficient of the lagged error term is 2.4584, that is, it is significant at a 5% significance level. The null hypothesis of no serial correlation is thus rejected.  
The robust t-statistic of the FE estimator equals -3.1180.
6. Compute the FEGLS estimator and its asymptotic variance.  
The coefficient and t-statistic of the independent variable are -0.1797 and -8.5679, respectively.
7. Compare and interpret results.  
Both estimators, the FE and FEGLS indicate that there is significant convergence. However, the FEGLS estimator indicates roughly twice as fast a convergence.