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

**Hands-On Assignment 9:**  
**Analytical Bias Correction in Dynamic FE Panel Growth Equation**

Please take out the following hands-on assignment in Matlab

1. Replicate part of the Monte Carlo Study of Hahn and Kuersteiner (2002)<sup>1</sup> as outlined on p. 1647: choose  $n=158$ ,  $T=7$ ,  $\theta=(0.3,0.6,0.9,0.99)'$  and make  $s=2000$  MC replications to compute the mean bias of the AR(1) coefficient  $\theta$  with simulated data.
2. 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.
3. 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.
4. Following Acemoglu (2007), the growth regression based on the Solow model investigated in Chapter 1,  $\hat{y}_{it}=c_i+\log y_{i,t-1}\theta+\varepsilon_{it}$ , where  $\hat{y}$  is the growth rate of  $y$ , is approximately equivalent to  $\log y_{i,t}=c_i+(1+\theta)\log y_{i,t-1}+\varepsilon_{it}$ . Estimate this equation within a FE framework with  $y_{it}$  the real GDP per capita of country  $i$  in period  $t$ .
5. Correct the coefficient estimate with the bias correction from Hahn and Kuersteiner (2002) and interpret results.

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<sup>1</sup> Hahn, J. and G. Kuersteiner (2002): Asymptotically Unbiased Inference for a Dynamic Panel Model with Fixed Effects When Both  $n$  and  $T$  Are Large; *Econometrica* 70(4), 1639-1657.