Example 7-5

September 11, 2020

```r
[ ]: # install the following packages and libraries
     install.packages("plm")
     install.packages("pder")

     library("plm")

     # import the data
     data("DemocracyIncome", package = "pder")
```

```r
[3]: ##--------------------------------Block 1--------------------------------

     #### Example 7-5 ####

     ## -----------------------------------------------------------------------

     # differenced Generalized Method of Moments estimator
     diff1 <- pgmm(democracy ~ lag(democracy) + lag(income) |
                 lag(democracy, 2:99)| lag(income, 2),
                 DemocracyIncome, index=c("country", "year"),
                 model="onestep", effect="twoways", subset = sample == 1)
     coef(summary(diff1))
```

	Estimate	Std. Error	z-value	Pr(>|z|)
lag(democracy)	0.50499446	0.09049045	5.580638	2.396373e-08
lag(income)	-0.09010807	0.08029127	-1.122265	2.617498e-01

```r
[4]: ##--------------------------------Block 2--------------------------------

     # two-step GMM estimator
     diff2 <- update(diff1, model = "twosteps")
     coef(summary(diff2))
```

	Estimate	Std. Error	z-value	Pr(>|z|)
lag(democracy)	0.554007280	0.10783032	5.13776889	2.780195e-07
lag(income)	0.001843585	0.06053787	0.03045341	9.757054e-01