Exercises Week 12

Econometrics

1. **Exercises 9.14 in ETM**: Suppose that $g_n(\beta) = y_t - x_t\beta$. Show that, in this special case, the estimating equations (or first order conditions for GMM) given by

$$G_n'(\hat{\beta})W_n g_n(\hat{\beta}) = 0,$$

   yield the generalized IV estimator.

   Note that for the linear case, the symmetric and definite positive matrix of instruments W_n is given by the projection matrix P_W.

2. **Exercise 9.3 in ETM**: Consider the quadratic form $x'Ax$, where x is a $p \times 1$ vector and A is a $p \times p$ matrix, which may or may not be symmetric. Show that there exists a symmetric $p \times p$ matrix B such that $x'Bx = x'Ax$ for all $p \times 1$ vectors x, and give the explicit form of a suitable B.

   Hint: Note that $x'Ax$ is a scalar, and hence symmetric.

3. Follow the Illustrative Example on Estimating Intertemporal Asset Pricing Models on the file on Moodle and replicate Table 5.4

   Note: The data for the exercise is available in the *Ecdat* package under the name *Pricing*.