

This work investigates mainly panel data models in which cross-sections can be considered independent. In the first part, we summarize results in the field of pool models and one-way error component models with fixed and random effects. We focus especially on the ways of estimating unknown parameters and on effects significance tests. We also briefly describe two-way error component model issues. In the second part, estimators of first order autoregressive panel data model parameters are derived, for both fixed and random parameters case. The work proves unbiasedness, consistency and asymptotic normality of selected estimators. Using these features, hypothesis tests about corresponding parameters are derived. Application of models is illustrated using real data and simulated data examples.