Determining the Number of Groups in Latent Panel Structures

Abstract

We consider a latent group panel structure as recently studied by Su, Shi, and Phillips (2013), where the number of groups is unknown and has to be determined empirically. We propose a testing procedure to determine the number of groups. Our test is a residual-based LM-type test. We show that after being appropriately standardized, our test is asymptotically normally distributed under the null hypothesis of a given number of groups and has power to detect deviations from the null. Monte Carlo simulations show that our test performs remarkably well in finite samples. We apply our method to study the effect of income on democracy and find strong evidence of heterogeneity in the slope coefficients. Our testing procedure determines three latent groups among eighty-two countries.