

Change point detection in panel models

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We consider N panels and each panel is based on T observations. We are interested to test if the means of the panels remain the same during the observation period against the alternative that the means change at an unknown time. We provide tests which are derived from a likelihood argument and they are based on the adaptation of the CUSUM method to panel data. Asymptotic distributions are derived under the no change null hypothesis and the consistency of the tests are proven under the alternative. The optimality of the results will also be discussed. Assuming that a change occurs in the mean we define an estimator for the time of change. Several limit results will be derived depending on the size of the change and on the common factors. The asymptotic results are shown to work in case of small and moderate sample sizes via Monte Carlo simulations. Some data examples will also be given.