

Exploring Financial System Convergence in 8 OECD countries by means of the plm package.

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Abstract

The relevance of financial systems for collecting resources from saving households to funds constrained firms is widely recognized.

Taking advantage of a dataset covering the financial accounts for 8 of the main OECD economies we run some experiments of β - and σ - convergence for the main components of the household financial assets. These experiments have been carried out with the **R** package equipped with the plm package for panel data estimation. The empirical literature on β - and σ - convergence is typically based on regression models where the average growth rate of per capita income is assumed dependent on its initial level and possibly on other exogenous variables used to control for country idiosyncracies:

$$\frac{1}{T} \log(y_{i,t+T}/y_{i,t}) = \alpha + \beta \log(y_{i,t}) + \gamma x_{i,t} + \epsilon_{i,t} \quad (1)$$

In this model we say there is *conditional β -convergence* if we find $\beta < 0$. In other words, in presence of β -convergence poor economies tend to grow faster, and therefore to catch up richer countries. Sala-i-Martin (1996) proposed the concept of σ -convergence defined as follows: a group of economies satisfy σ -convergence if the dispersion of their per capita income levels decreases over time: $\sigma_{t+T} < \sigma_t$ where $\sigma_t = \sqrt{\frac{1}{N} \sum_{i=1}^N (\log(y_{i,t}) - \bar{y}_t)^2}$. Using a dataset on financial accounts produced in 2007 by the OECD, Pioneer G.A.M. and some National Central Banks, we have carried out a thorough convergence analysis in the **R** environment. In this paper we explored the behaviour of the total financial assets held by household and four of their main components: **currency and deposits, securities other than shares, shares and other equities, insurance technical reserves.**

The main economic conclusions drawn from the analysis are:

- a) it is found evidence of β - and σ - convergence for the household total financial assets, shares and other equity, and insurance product;
- b) often no convergence is found for currency and deposits and securities other than shares;
- c) the intensity of banking disintermediation for deposits shows marked difference among the OECD countries.

These kind of empirical applications are usually carried out with commercial econometric packages. In this work we compared the numerical results produced by **R** with those achieved with three well know packages such as E-Views, LIMDEP and Stata. Some interesting results can be drawn from this comparison:

- a) the coefficients estimates do always agree among the different packages for the pooled OLS and the fixed effects model;
- b) some differences arise among the numerical values of the standard errors for the fixed effects model;
- c) in some particular situation the random effects model generates the same estimates of the pooled OLS model;
- d) model definition might be improved with the help of an inline symbolic lag/lead operation.