

Title: Stochastics and Dynamic Convergence of Selected Commercial Banks with Respect to tax Collection in the Philippines

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Abstract:

Convergence, in general, is a state wherein a series of values gradually approach toward one point. It has been introduced in applied research in early 1990s. Haldane and Hall (1991) and Hall, Robertson and Wickens (1992) employed it on exchange rate convergence. Button and Pentecost (1993) did it on Service sector employment in Britain. Carlino and Mills (1993) did it on regional incomes of USA. Win Lin Chou (2006) applied it on the service sector employment in China. In the Philippines, this paper is a pioneering one in utilizing convergence in applied research using Kalman filter.

This paper examines stochastic and dynamic convergence of 16 commercial banks with respect to tax collection using panel data for the period 2003-2006. In this paper, stochastic convergence is determined by using Levin, Lin and Chu (LLC) and Im, Pesaran and Shin (IPS) panel unit root tests. Rejection of the null in favor of no unit root, i.e. stationarity, indicates stochastic convergence. Although the tests are useful in determining the existence of stochastic convergence, they do not measure the dynamic measure of convergence nor illustrate any change in the process of convergence over the sample period. It is on this context that dynamic convergence becomes more important. Dynamic convergence is determined in this paper by time-varying parameter (TVP) model using Kalman filter. A  $0 \leq \beta_i(t) < 1$  suggests convergence toward the overall average growth rate while  $\beta_i(t) < 0$  shows that the particular bank is lagging behind the overall average growth rate.

Statistical results indicate the following:

- 1) There is evidence that stochastic convergence exists among the 16 commercial banks with respect to tax collection in 2003-2006.
- 2) Dynamic convergence among the 16 commercial banks showed convergence toward the overall average growth rate, i.e. none exhibits convergence toward the lead bank. Only few of the banks lag behind.
- 3) Banks with less than P100.0 million average total tax collection per month have higher time-varying beta coefficient and volatility compared to those with higher total tax collection.

Key Words: Panel Unit Root Test, Time-varying Parameter(TVP) Model, Kalman Filter, Stochastic Convergence, Dynamic Convergence, Tax Collection