EXTRACTING PHILIPPINE ECONOMIC INDICATORS USING DYNAMIC MULTI-FACTOR MODELS

by

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ABSTRACT

Two approaches were utilized to extract the latent factors that capture the co-movement of Philippine economic variables. The first approach directly applies the Dynamic Factor Model with Kalman filtering and smoothing algorithm (DFM-KF) to the 34 variables representing the major macroeconomic sectors. In the second approach (labelled as PC-DFM-VAR), a principal component (PC) analysis was used as a preliminary method for grouping and selecting the variables prior to extracting the factors. The latent factors were then obtained by applying one-factor DFM-KF to each group. These were used as endogenous variables in the Vector Autoregression analysis to forecast the GDP growths. Various model specifications were run for each approach. Results show that the same sets of variables are captured by the latent factors extracted from both methods although variable classification can be more clearly defined in the PC-DFM-VAR. In particular, analyses reveal that the movement of the latent factors related to domestic prices, to the overall index for the current quarter business expectation survey and the UKB loans, as well as factors related to public and private spending capture the movement of the GDP growths. Some latent factors are also linked to the exchange rates and trades although they do not always significantly contribute in predicting GDP growths or in capturing their movement. The latent factors may be used along with other individual variables in the construction of the Philippine composite leading economic indicators.

Keywords: Dynamic Factor Model, Kalman Filter, Vector Autoregression, latent factors, economic indicators