In the name of God

Principal Component and Factor Analysis
Case Study: Assets Price Evaluation
and Inflation Impacts

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Abstract

Assets market (including money and foreign exchange, capital, and financial and real assets markets) developments have important repercussions on other market developments, inflationary expectations, financing of real sector activities and expansion, and absorption of shocks in the real sector. Different assets prices contain necessary information regarding the status of the national economy, and future developments of inflation, growth, and investment. Therefore, it is highly imperative to extract, compile, and include assets market price developments in policy making exercise.

One approach in this analysis would be to compile assets market price trends into one single index which could appropriately reflect assets market developments. Principal Component Analysis, among multivariate methods, is a statistical technique which is utilized for compilation of a composite index.

In this research, attempts were made to analyze the theoretical basis of Factor Analysis and Principal Component methods, and then by utilizing the latter method and with regard to the assets such as stock, foreign exchange, coin, land, and housing, five vectors of assets price index in Iran were extracted and then the first vector was selected based on given standards. Next, by means of a three-variable VAR model, consisting of two vectors for real and financial assets price index compiled using the mentioned method and consumer price index variable, the effect of assets price index on inflation was specified. Analysis of interactions effects of variables, given the relationship between real and financial markets, shows that slowdown of activities causes financial resources to flow from one market to others. Analysis of inflation impulse of financial and real assets market on the aggregate inflation shows that inflation in these markets is transmitted to the aggregate inflation as of the first period and is tempered after some seasons.

Keywords: Principal Component Analysis, Factor Analysis, Assets Price Index, Growth, Inflation