Estimating Inflation-at-Risk (IaR) using Extreme Value Theory (EVT)

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ABSTRACT

The year 2008 saw inflation in the Philippines hit an official 17-year high of 12.5 percent in August after 10 months of continuous acceleration. The alarming double-digit inflation rate was attributed to rising fuel and food prices, particularly the price of rice. A high inflation rate has impact on poverty since inflation affects the poor more than the rich. From a macroeconomic perspective, high level of inflation is not conducive for economic growth. The Bangko Sentral ng Pilipinas (BSP) is the main government agency tasked to maintain stable prices conducive to a balanced and sustainable economic growth. This paper proposes a method of estimating Inflation-at-Risk (IaR) similar to the Value-at-Risk (VaR) used to estimate risk in the financial market. The IaR represents the maximum inflation over a target horizon with a given low pre-specified probability that the actual inflation rate will be larger. It can serve as an early warning system that can be used by the BSP to identify whether the level of inflation is extreme for it to be considered as an imminent threat to the economy. The extreme value theory (EVT), which deals with the frequency and magnitude of very low probability events, is used as the basis for building a model in estimating the IaR. The estimates of the IaR using the peaks-over-threshold (POT) model suggest that the while the inflation rate experienced in 2008 cannot be considered as an extreme value, the inflation rate in August 2008 is very near the estimated 90 percent IaR.

Keywords: Inflation-at-Risk (IaR), Extreme Value Theory (EVT), Peaks-over-Threshold (POT)