## Hot off the Press: An Inflation News Index for the Philippines Using Reinforced Lexicons and Memory-Based Deep Learning

Ma. Ellysah Joy T. Guliman<sup>1</sup>, Alan Chester T. Arcin<sup>1</sup>, Genna Paola S. Centeno<sup>1</sup>, Jacqueline Margaux G. Herbo<sup>1</sup>, Sanjeev A. Parmanand<sup>1</sup>, Cherrie R. Mapa<sup>1</sup>

<sup>1</sup>Department of Economic Research, Bangko Sentral ng Pilipinas, Manila, Philippines

Correspondence: Ma. Ellysah Joy T. Guliman, Department of Economic Research, Bangko Sentral ng Pilipinas, Tel: +632-8708-7551, E-mail: gulimanmt@bsp.gov.ph

Abstract. This paper capitalizes on the power of news media to capture real-time information on the price trends of key goods and services as well as other key factors that could influence inflation expectations formation. In particular, we develop an inflation news index for the Philippines through the application of text analytics on news articles collected from different local media websites. Two methods are explored: (1) lexicon-based sentiment analysis refined using reinforcement learning and (2) supervised machine learning method using Multilayer Perceptron and Bidirectional Long Short-term Memory models. The constructed inflation news indices display strong correlation with the actual monthly inflation as well as the survey-based firms' and private sector analysts' inflation expectations. We also find weak to moderate correlation between these news-based indices and the survey-based households' inflation expectations. This suggests that, as may be expected, firms' and market analysts' inflation expectations are more data driven. This also supports the observation in the literature that households are inattentive and tend to be sluggish in adjusting their inflation expectations relative to actual price developments. Given the high frequency nature of news data, these inflation news indices can be generated on a higher frequency compared to surveys, enabling a near real time capture of inflation expectations. Overall, these news-based indices have the potential to serve as alternative and complementary measures of inflation expectations, thereby aiding macroeconomic surveillance. Based on their observed high correlation with actual inflation, their usefulness for nowcasting inflation could also be explored.

**Keywords:** Bidirectional long short-term memory; Inflation; Inflation expectations; Neural networks; Reinforcement learning; Text analysis

## JEL classification: C38, C45, E31, E58

Conference Proceedings, 13<sup>th</sup> International Research Conference (December 2024), Central Bank of Sri Lanka, Colombo.