

# Colombian inflation forecast using Long Short-Term Memory approach

Download Keep in mind

The series Working Papers on Economics is published by the Office for Economic Studies at the *Banco de la República* (Central Bank of *Colombia*). It contributes to the dissemination and promotion of the work by researchers from the institution. This series is indexed at Research Papers in Economics (RePEc).

On multiple occasions, these works have been the result of collaborative work with individuals from other national or international institutions. The works published are provisional, and their authors are fully responsible for the opinions expressed in them, as well as for possible mistakes. The opinions expressed herein are those of the authors and do not necessarily reflect the views of Banco de la República or its Board of Directors.

AUTHOR OR EDITOR Cárdenas-Cárdenas Julián Alonso Deicy Johana Cristiano-Botía Nicolás Martínez-Cortés

The series Borradores de Economía (Working Papers on Economics) contributes to the dissemination and promotion of the work by researchers from the institution. On multiple occasions, these works have been the result of collaborative work with individuals from other national or international institutions. This series is indexed at Research Papers in Economics (RePEc). The opinions contained in this document are the sole responsibility of the author and do not commit Banco de la República or its Board of Directors.

Publication Date: Wednesday, 21 of June 2023 Abstract

We use Long Short Term Memory (LSTM) neural networks, a deep learning technique, to forecast Colombian headline inflation one year ahead through two approaches. The first one uses only information from the target variable, while the second one incorporates additional information from some relevant variables. We employ sample rolling to the traditional neuronal network construction process, selecting the hyperparameters with criteria for minimizing the forecast error. Our results show a better forecasting capacity of the network with information from additional variables, surpassing both the other LSTM application and ARIMA models optimized for forecasting (with and without explanatory variables). This improvement in forecasting accuracy is most pronounced over longer time horizons, specifically from the seventh month onwards.