



**PTC India**

**Date: 11<sup>th</sup> March, 2025**

**Listing Deptt. / Deptt. of Corporate Relations  
BSE Limited  
Phiroze Jeejeebhoy Towers, Dalal Street, Mumbai  
Fax- 022-22722037/ 39/41/61/3121/22723719  
Scrip Code: 532524**

**Listing Deptt.  
National Stock Exchange of India Limited  
Exchange Plaza, C-1, Block G  
Bandra – Kurla Complex, Bandra (E), Mumbai -51  
Fax-022-26598237/ 38 - 022-26598347/ 48  
Company Code: PTC**

**Sub: Newspaper advertisement confirming dispatch of Notice of Postal Ballot.**

**Ref: Regulation 30 and 47 of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015**

In continuation to our letter dated 10<sup>th</sup> March, 2025 with regard to the Postal Ballot Notice, please find enclosed copies of newspaper advertisement confirming dispatch of Postal Ballot Notice published in Business Standard (English & Hindi) both on 11<sup>th</sup> March, 2025.

This will also be hosted on the company's website at [www.ptcindia.com](http://www.ptcindia.com).

This is for your information and records.

Thanking You,

**For PTC India Limited**

**Rajiv Maheshwari  
(Company Secretary)  
FCS- 4998**

**Enclosures:**

- Copy of Advertisement in Business Standard Delhi (in English)
- Copy of Advertisement in Business Standard Delhi (in Hindi)
- Copy of Advertisement in Business Standard Mumbai (in English)
- Copy of Advertisement in Business Standard Mumbai (in Hindi)
- Copy of Advertisement in Business Standard Bengaluru (in English)

**PTC India Limited**

(Formerly known as Power Trading Corporation of India Limited)

CIN : L40105DL1999PLC099328

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OPINION

How technology can help in inflation forecasting

The integration of AI in economic forecasting, specifically inflation prediction, is a burgeoning field that leverages advancements in ML and natural language processing



SOUMYA KANTI GHOSH & PULAK GHOSH

"Central banks must feel like they have stepped through a mirror, and who can blame them? They used to struggle to bring inflation down or keep it under control; now they toil to push it up. They used to fear wage increases; now they urge them on. They used to dread fiscal expansion; now they sometimes invoke it."

- Claudio Borio, 2017, former head, Monetary and Economic Department, Bank for International Settlements

Fast forward to 2022, when this cycle was reversed, and it was completely unanticipated, with the world engulfed with a vicious inflation cycle. However, such developments clearly reflected the significant scholastic challenges in monetary policymaking post the global financial crisis and in the aftermath of the pandemic. Interestingly, such challenges now also confront monetary policymaking in India, as we are recently witnessing. In essence, globalisation has acted as a powerful tool in contributing to extended periods of low and high inflation. Additionally, the entry of low-paid workers in the workforce at home and globally, as emerging markets have

opened up, has further complicated monetary policymaking.

Against this background, it is imperative that the economic research methodology at central banks (the Reserve Bank of India included) of forecasting macro variables like inflation keep pace with technological advancements. Remarkably, the new RBI governor has already emphasised the importance of such tools.

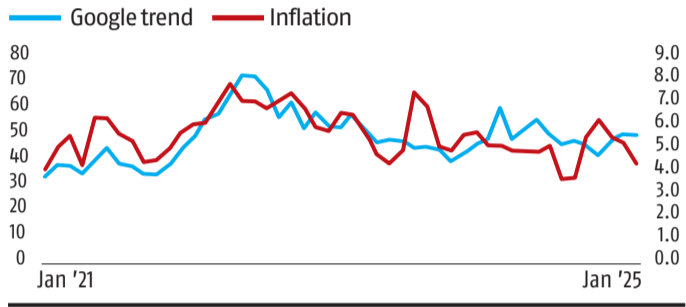
For example, the path of inflation trajectory in the future is fraught with uncertainties since opposite forces are at work. While food price outlook will continue to have a large impact on Consumer Price Index (CPI) inflation (the global food price index has been rising recently), geopolitical uncertainties, like threats of dumping and fall in global oil prices, would have a soothing impact on inflation. Gold prices could also have an impact as central banks had continued to buy gold in recent years, diversifying the reserve base. Clearly, many competing forces are at work. This would also mean that the focus of economic research at central banks will have to be more nimble, agile and fleet-footed to support policymaking. In fact, emerging economy central banks, like the RBI, can take a clearly defined frontloaded initiative in this matter, just as it did recently in frontloading policy actions even before the Fed did.

The increasing adoption of large language models (LLMs) marks a significant shift in such economic research methodology. One important question to the central bank policymakers is: Can LLM be used to understand inflation quickly, more



PHOTO: SHUTTERSTOCK

GOOGLE TREND VS ACTUAL INFLATION: FY22- FY25 (Jan)



accurately and in the most cost-effective way? Additionally, every central bank spends a lot of money on surveying consumers to understand inflation expectations. The obvious question is: Can LLMs replicate key patterns observed in human survey responses regarding inflation expectations? How do these models react to different types of economic information? Can they serve as reliable tools for augmenting traditional survey methods and informing policy design? An LLM can be very useful in inflation estimation in two primary ways. First, by analysing vast amounts of text data from news articles, economic reports, and social media to identify trends and sentiment that might indicate future changes in price levels, potentially providing a

more nuanced and timely understanding of inflation compared to traditional methods that rely solely on numerical data. This can be particularly useful for "nowcasting" or short-term inflation forecasts. Improving classic inflation nowcasting techniques through the use of machine learning (ML) and artificial intelligence (AI) techniques to capture expectations is quite common now.

The integration of AI in economic forecasting, specifically inflation prediction, is a burgeoning field that leverages advancements in ML and natural language processing. Recent studies, such as the one conducted by Miguel Faria-e-Castro and Fernando Leibovici (2024) at the Federal Reserve Bank of St Louis, explore the potential of LLMs like Google's PaLM to generate accurate inflation forecasts. This research demonstrates that LLMs can produce much lower conditional inflation forecasts with lower mean-squared errors compared to traditional methods such as the Survey of Professional Forecasters over multiple years and forecast horizons. The findings suggest that AI-based models can offer an effective and cost-efficient alternative to traditional expert and survey-based forecasting methods. This study aligns with previous works like those by L. Bybee (2023), who used GPT-3.5 to simulate economic expectations, and extends the understanding of how LLMs can be utilised for macroeconomic and financial predictions.

Another angle where LLM can be very useful is deploying AI agents - automated agents

using LLMs with predefined tasks - in structured inflation expectation surveys, and comparing their responses to human survey response data. This can be highly effective, and recent work explores this successfully.

The idea is simple and involves employing AI agents as participants in a survey experiment focused on household and consumer inflation expectations, rather than those of professional forecasters or firms. This focus is particularly valuable as household expectations play a crucial role in determining consumer behaviour and aggregate economic outcomes, while gathering large-scale household response data is often costly and time-consuming. This approach enables AI agents to access and incorporate external knowledge, demonstrating how they process real-world economic information. This approach is especially relevant given that household inflation expectations significantly influence central bank policy design and implementation.

The rapid adoption of generative AI (GAI) across economic sectors adds urgency to this research. Bick et al (2024) find that nearly 40 per cent of US adults used generative AI by August 2024, with 28 per cent using it at work. Aldasoro et al (2024) report almost half of US households use GAI tools, though usage varies significantly across demographic groups. As AI-assisted decision-making becomes more prevalent, understanding these patterns and their implications becomes increasingly important (Korinek, 2023).

However we must remember that there are several caveats in the use of LLMs for forecasting. First, these models are pre-trained by their developers on specific datasets. The user of the LLM has no control over the data used to train these models and retraining them over subsets of data is typically not an option as it involves significant hardware requirements. The training data is typically not time-stamped, which prevents retraining the model on data up to a certain date. This limitation also makes it impossible to produce true out-of-sample forecasts for all dates on which the model has been

trained. Second, publicly available models are regularly retrained by the developers, posing challenges to replicability.

Despite these caveats, the time is ripe to take the first step towards assessing the potential of LLMs as forecasting tools. By comparing these simulated forecasts with the actual inflation data and forecasts from other sources, we can assess the potential accuracy and usefulness of LLMs in inflation forecasting.

The accompanying graph shows the Google trends in inflation from India juxtaposed against the actual inflation. The Google trend inflation is indexed on a scale of 1-100, where a higher number, say, 70 indicates that the noise on inflation is 70 per cent of the all-time high at 100! The trends reveal that the Google trend has been a leading indicator of headline inflation. This was evident in January 2024 and May 2024 when headline inflation was declining but Google trend inflation was increasing. Headline inflation actually jumped thereafter.

We end with an interesting anecdote. Exit poll results for India in June 2024 did dent the credibility of pollsters. While almost all exit polls released on June 1 got their predictions terribly wrong, a more accurate analysis came from a research firm called Kcore Analytics. This company used artificial intelligence gathered from people's social media interactions (if we recollect, a large part of the campaigning for 2024 general elections were driven by unsubstantiated social media cacophony and narratives) - what they were reading, writing, and responding to on the internet - to predict voter preferences. The analysis also used important data like inflation, which could influence elections. The results were almost spot on! Amongst all imprecise exit polls, this AI exit poll has truly been an outlier. Paraphrasing Milton Friedman differently: "Inflation everywhere is a monetary (and a political) phenomenon!"

The authors are, respectively, Member, 16th Finance Commission, and Group Chief Economic Advisor, State Bank of India; and Professor, Indian Institute of Management Bangalore

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