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CCAMTAC - Regional Research Seminar Series

“Using Non-Traditional Data Sources for Nowcasting CPI in Central Bank of Armenia”

August 28, 2025

Introduction and moderation:

Mr. Norbert Funke, Director, CCAMTAC

Presenters:

Mr. Tigran Baghdasaryan, Head of Real Sector Statistics Division, Statistics Department, Central Bank of Armenia

Ms. Kristine Karapetyan, Economist-Statistician, Statistics Department, Central Bank of Armenia

Intervention:

Mr. Nurdaulet Abilov, Economist, CCAMTAC

In a recent research seminar, experts from the Central Bank of Armenia’s Statistics Department—Tigran Baghdasaryan and Kristine Karapetyan—gathered to discuss innovative approaches to measuring inflation, focusing on the use of non-traditional data sources for nowcasting the Consumer Price Index (CPI).

The seminar opened with a discussion of the limitations of traditional inflation statistics. The presenters highlighted that official data releases are often delayed and may not fully capture rapid market changes, especially during periods of technological advancement or unexpected shocks such as the COVID-19 pandemic. These challenges underscored the need for alternative data sources that can provide more timely and granular insights into price dynamics.

The core of the presentation centered on the team’s experience with web scraping—collecting price data from online stores using automated software. This approach, they explained, offers several advantages: it enables more frequent and representative data collection, reduces the burden on respondents, and supplements official statistics by providing a real-time check on their accuracy. However, the presenters also acknowledged the technical challenges involved, including the need for programming expertise, ongoing IT maintenance, and occasional issues with website accessibility.



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Empirical evidence formed the backbone of the seminar. The team described their methodology, which involved monitoring prices multiple times a month and expanding the scope of data collection over several years to include a wide range of products and stores. By 2025, their dataset comprised approximately 70 million observations from five major online retailers, covering nearly a third of the official CPI basket. Statistical analysis revealed that web-scraped data is well correlated with official CPI figures, particularly when observations are taken three times a month rather than daily. The findings indicate that the discrepancies between the official data and daily online monitoring results are greater than those observed with monitoring conducted three times a month. Therefore, it can be inferred that the official data may not fully capture the underlying market dynamics, as it is based on observations from only three days each month. The presenters emphasized that web-scraped data is a valuable tool for nowcasting inflation, offering timely information that can supplement or even replace some traditional methods. They also discussed future directions for their research, including the integration of stable CPI components, the use of machine learning to automate product classification, the expansion of product and service coverage, and the incorporation of other non-traditional sources such as scanner data.

The seminar concluded with a consensus on the importance of continued innovation and collaboration in economic measurement. The participants agreed that leveraging non-traditional data sources is essential for improving the accuracy and responsiveness of inflation estimates, ultimately supporting more effective monetary policy and economic stability.

In his intervention, Mr. Abilov highlighted the value of web scraping for real-time CPI inflation measurement, noting its cost-effectiveness and relevance in the context of digitalization and increased online shopping. He pointed out that while Armenia's official CPI is published with minimal delay, web-scraped data may miss prices from mobile apps and markets, especially for food products that make up a large share of the consumer basket. Abilov emphasized the need to synchronize web scraping with official data collection periods, expand coverage beyond the current 65% of CPI items, and complement web scraping with dynamic factor models to address missing data and shifting CPI weights, ultimately suggesting further exploration of its usefulness for measuring core or expected inflation.