Box Article 2:

Inflation News Indices: An Alternative Method for Monitoring Inflation[1]

Introduction

Monitoring inflation trends is essential for central banks, particularly those operating under an inflation-targeting framework, such as the Bangko Sentral ng Pilipinas (BSP). Recent advances in sentiment analysis and natural language processing have enabled innovative approaches to track inflation using real-time data sources, including point-of-sale transactions, online retail websites, internet searches, social media posts, and news articles.

This box article discusses the construction of novel indices developed by the BSP to monitor inflation trends using online media reports. Sourcing information from online news platforms offers advantages in timeliness and cost-effectiveness. Additionally, digital press coverage tends to be comprehensive, as media outlets typically report major developments affecting inflation.[2]

The BSP's inflation news indices (INIs) provide quantitative summaries of digital news coverage related to inflation and price movements. Unlike sentiment indices, the INIs do not associate inflation with positive or negative connotations. Instead, they offer insights into inflation trends as reported in Philippine online news and serve as supplementary tools for inflation surveillance.

Data sources

The news articles used in this study were sourced from selected Philippine media outlets, primarily from the business, finance, and economy sections.[3] The news database covers various periods, but the common period with available data from all outlets spans from January 2018 to the present.

To ensure relevance, articles were filtered using the keywords *inflation*, *price*, and *prices*. Only sentences containing these keywords were scored for index construction.

From these, 3,000 randomly selected sentences from relevant articles were annotated. Each sentence was labeled as 1 (indicating increasing inflation), -1 (decreasing inflation), or 0 (no change). This annotation process is critical for generating the indices and implementing further enhancements.

Index construction

Two approaches were used to construct the indices:

- **Lexicon-based sentiment analysis enhanced by reinforcement learning (INI-D index)** [4]**:** This method identifies words closely associated with increases or decreases in inflation based on the annotated dataset. Reinforcement learning is used to refine the lexicon.[5]

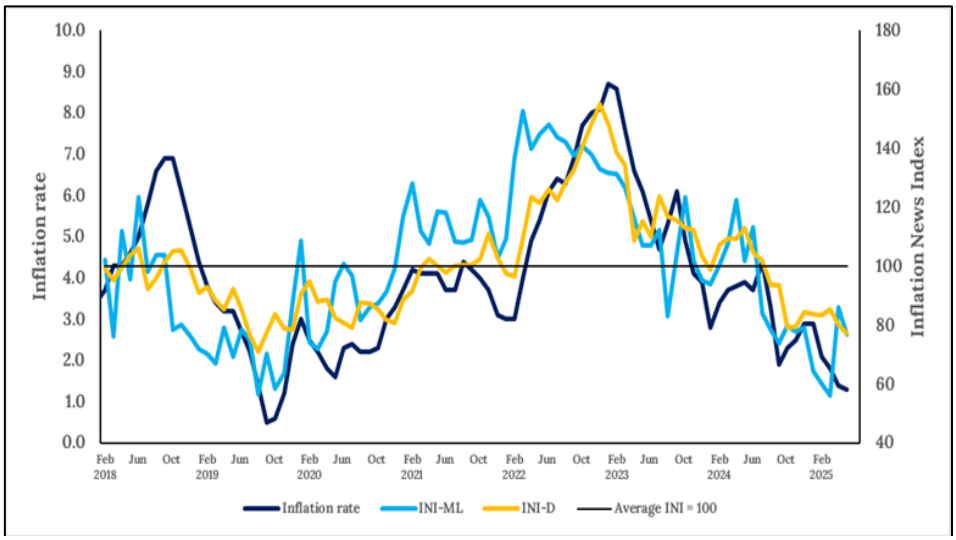
- **Machine learning with Long Short-Term Memory models (INI-ML index):** This approach applies a deep learning Long Short-Term Memory model to predict inflation trends from annotated sentences.[6]

Both methods score relevant sentences, aggregate the scores per article, and compile monthly indices. The INIs are normalized to have a mean of 100. Values above 100 indicate more frequent news coverage of rising inflation than the historical average, while values below 100 suggest fewer media reports on higher inflation compared with the historical norm.

Results

Figure 1

Inflation News Indices as of 31 May 2025



Source: Bangko Sentral ng Pilipinas–Department of Economic Research staff estimates

As shown in *Figure 1*, the INIs closely track actual inflation trends. For instance, during the relatively low inflation period of 2019–2020, the INIs remained below 100, reflecting fewer reports of rising inflation or prices. As inflationary pressures intensified from 2021 to early 2023, the INIs rose above 100, indicating increased media coverage of rising inflation. As inflation pressures subsided in the latter half of 2023, the indices declined. Since June 2024, both INIs have fallen below 100, consistent with low inflation outcomes. The most recent estimates for May 2025 show that the INIs remain below the historical average, suggesting a continued manageable inflation environment.

Conclusion

The INIs developed in this study enable policymakers to leverage news media for real-time insights into price trends and other factors influencing inflation. The results indicate that these indices reliably track inflation trends, serving as valuable tools for inflation surveillance.

These news-based indices offer a timely and cost-effective alternative to traditional surveys. Ultimately, the study contributes to the literature on the use of big data and advanced analytics for monitoring macroeconomic indicators.

ENDNOTES

1/ The authors of this box article are Ma. Ellysah Joy T. Guliman and Alan Chester T. Arcin. The study has been accepted for publication in the Conference Proceedings of the Central Bank of Sri Lanka International Research Conference 2024 and the Conference on Advanced Research Methods and Analytics 2024.

2/ Larsen et al. (2021) found that news topics are good predictors of inflation and expectations.

3/ The media outlets are Business Mirror, BusinessWorld, Manila Bulletin, Manila Standard, and Philippine Daily Inquirer.

4/ Lexicons refer to a predefined set of words usually grouped into classes. In this study, the classes correspond to either "increase" or "decrease" in inflation.

5/ To derive the lexicon from the annotated sentences, Pointwise Mutual Information is utilized to determine the set of words most associated with each of the two classes. Reinforcement learning is then used to refine the lexicon further.

6/ The study employs a Bidirectional Long Short-Term Memory model. This model categorizes sentences into three classes based on the direction of inflation: (a) increase, (b) decrease, and (c) no change.

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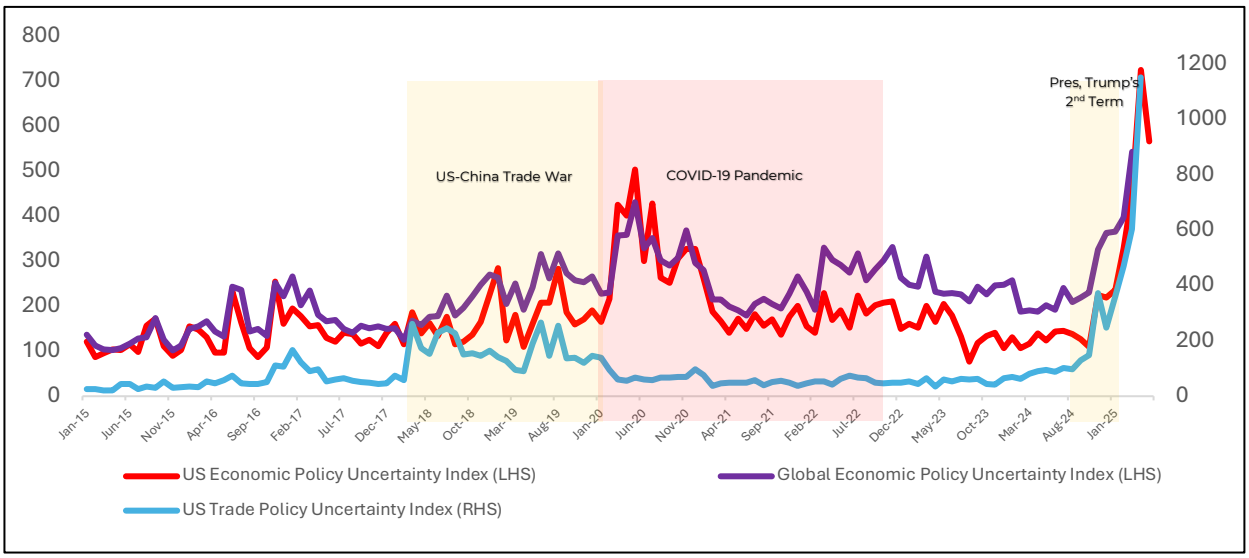
Box Article 3:

Implications of Global Uncertainty for the Philippine Economy[1]

Uncertainty has emerged at the forefront of the global economic landscape following the announcement of new tariff measures by the United States (US) and countermeasures from its trading partners. Although a 90-day tariff pause and prospects of bilateral negotiations provided partial relief to global financial markets, this relief may only be temporary. Ongoing geopolitical tensions in the Middle East are also seen to increase global uncertainty further. As shown in *Figure 1*, record-high levels of economic and trade policy uncertainty in the US, as well as global economic policy uncertainty, were observed starting in late 2024.

Figure 1
Monthly News-Based Uncertainty Indicators



Sources: Caldara et al. (2020); Baker et al. (2016)
LHS – left-hand side
RHS – right-hand side

For small open economies like the Philippines, this heightened environment of uncertainty—primarily driven by international trade tensions and geopolitical instability—poses significant challenges to monetary policy formulation and macroeconomic management. Increased uncertainty can dampen investment, disrupt consumption, and tighten financial conditions (Dees & Güntner, 2014; Kang et al., 2017), making it more difficult for central banks to calibrate policy responses to achieve their primary mandates.

This article examines the response of domestic macroeconomic variables to external sources of uncertainty, quantified through survey-based indicators (i.e., dispersion in professional forecasts for US economic output and prices) and news-based indices (i.e., count of keywords related to uncertainty in foreign news articles). The analysis employs structural vector autoregression (SVAR) and factor-augmented vector autoregression (FAVAR) models, utilizing monthly data spanning the period 2002–2024.