Deriving Numbers from A Central Bank’s Textual Releases. The Case Study of The National Bank of Ukraine Twitter/X Posts

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Abstract

There is increasing number of publications using posts in Twitter as a source of data about potential driving factors of the economic evolution. The article’s objective is to evaluate (i) the sentiments of tweets of the National Bank of Ukraine (NBU) in the comparative context (before the invasion and in time of war, on the assumption that the positive stance diminished after the invasion); (ii) the subjectivity of NDU tweets in the comparative context (before the invasion and in time of war, on the assumption that the subjectivity diminished after the invasion); (iii) the applicability of ChatGPT as a tool for analysis of sentiments/subjectivity compared with standard dictionary methods.

555 posts in Twitter were collected for the study purpose, published by NBU on the official profile in English over the period starting from June 6, 2019. The sample ends by August 2023. 64 posts were published after the Russian invasion, contained short and undescriptive messages (with the average number of words being 30), and had relatively low impact on readers measured by the number of responses.

When the sentiments were determined, we compared the sentiments of NBU posts before and after the invasion. At first, we presented a descriptive statistics of sentiments for the whole sample, for the period before the invasion (from September 2019 till February 23, 2022), and after the invasion (from February, 24, 2022 till August, 2023). Then we were seeking for the causal link using Bayesian models of structural time series (Brodersen et al. (2015)). In our case, this invasion of the Russian aggression.

For transforming the textual content of the case into numbers, we used three methods: standard dictionary approach, machine learning model designed to tackle social media content - Valence Aware Dictionary and sEntiment Reasoner (VADER) and sentiments assessment by the ChatGPT. Analysis of texts releases issued by a central bank using NPL methods is not an innovative one, although launched quite recently. It has been applied to discuss monetary policy announcements for about two decades. Analogously, two strands of methods were elaborated: the dictionary method and the first attempts to apply algorithms.

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