Content-based metric on monetary policy uncertainty by using large language models

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Abstract: Policy uncertainty is a potential source for damaging policy effectiveness. Existing research has measured policy uncertainty by tracking the frequency of specific keywords in newspaper articles. But this keyword-based approach fails to capture the context of the articles and to distinguish the types of uncertainty that such contexts indicate. This study provides a new method to measure different types of policy uncertainty from the content of the news by using large language models (LLMs). Specifically, we differentiate policy uncertainty into forward-looking and backward-looking uncertainty: uncertainty regarding future policy direction and uncertainty about the effectiveness of the current policy. We fine-tune LLMs to identify each type of uncertainty expressed in newspaper articles judging from their context, even if they do not contain specific keywords representing uncertainty. By applying this method, we measure Japan's monetary policy uncertainty (MPU) from 2015 to 2016. To reflect the unprecedented monetary policy conditions during this period when the unconventional policies were taken, we further classify MPU by layers of policy changes: changes in specific market operations and changes in the broader policy framework. We demonstrate that our approach successfully captures the dynamics of MPU, varying significantly depending on the type of uncertainty we focus on. In particular, our indices reveal that forward-looking and backward-looking uncertainties can exhibit different responses depending on the conditions under which changes in the policy framework occur. This suggests that perceived uncertainty regarding monetary policy would be state-dependent, varying with the prevailing social environment.