Enhancing Demand and Risk Forecasts with Macroeconomic Data

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In this research, we plan to integrate macroeconomic data such as GDP growth, inflation rates, consumer spending, and consumer confidence along with historical sales data to enhance a firm's demand forecasting. To this end, we use the Bayesian forecasting techniques, by updating the firm's historical data-driven priors with macroeconomic indicators to create a comprehensive model. This will provide a probabilistic range of future demand, enabling more accurate and informed strategic planning and risk management. The first step for this research is to use learning models such as large language models (LLMs) to learn about the pattern of macroeconomic forecasts.

To use an LLM to learn about trends in macroeconomic data, we can extract data and report from different sources such as major datasets and news articles related to key economic indicators such as GDP, inflation, and interest rates. As an example, we can use Yahoo Finance API to receive updated information and use LLM to analyze these inputs, summarize historical data, identify patterns, and highlight key trends. It can also extract insights from complex research papers or expert analyses to provide an overview of how specific macroeconomic factors have evolved over time. Additionally, by leveraging its ability to detect correlations, the LLM can help predict future trends based on historical patterns, aiding decision-making and forecasting.