BUAN 6312 - Applied Econometrics and Time Series Analysis – Group 3 Project Proposal

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Title: Examining the Impact of the Russia-Ukraine War on Key Economic Indicators in the US

Research Question: Is there any econometric evidence of the COVID-19 pandemic and the Russia-Ukraine conflict influencing key US economic indicators?

Objective: This project uses a Vector Autoregression with Exogenous Variables (VARX) model to analyze the impact of the COVID-19 pandemic and the Russia-Ukraine conflict on key U.S. economic indicators, such as inflation (CPI), crude oil prices, unemployment rates, and financial market indices. We aim to provide econometric evidence of how these events influence macroeconomic dynamics and offer insights for policymakers and economists.

Significance and Motivation: The Russia-Ukraine conflict, a major geopolitical event, has had widespread economic effects, especially through rising energy prices and supply chain disruptions. Understanding the conflict's impact on the U.S. economy is crucial for informed policy decisions. While existing studies have explored the impact of geopolitical events on individual economic variables, our contribution lies in modeling these variables' interdependencies using a VAR approach, which provides a comprehensive view of the ripple effects throughout the economy.

Data: We will use high-quality, publicly available monthly data spanning the past 10 years (2013–present) from reliable sources like the Bureau of Labor Statistics (BLS), Federal Reserve Economic Data (FRED), U.S. Energy Information Administration (EIA), and Yahoo Finance. Key variables include – **Consumer Price Index, Crude Oil Prices, Producer Price Index, Unemployment Rate, Federal Funds Rate, S&P 500 Index, Volatility Index, USD/Ruble Exchange Rate.**

Methodology:
  1. **Data Preparation:** Ensure stationarity with transformations as needed**.**
  2. **EDA:** Explore trends and relationships using time series analysis and visualization.
  3. **VAR Modeling:** Use AIC/BIC for lag selection and fitting the VAR model
  4. **Post Model Analysis:** Sensitivity Analysis, Residual Analysis, Stability & Causality Test

Expected Contributions and Policy Implications: Our study will shed light on the transmission mechanisms of geopolitical shocks in the U.S. economy and offer insights into which economic variables are most vulnerable to such shocks. By understanding these dynamics, policymakers can better anticipate and mitigate the effects of future geopolitical crises. The analysis will inform economic policy by highlighting the sensitivity of inflation and other economic indicators to external shocks, aiding in the design of more resilient economic strategies