Topic: **To study the impact of the edible oil commodity market due to the COVID and Russia-Ukraine War on the global commodity market.**

Objective: **To study the returns, volatility and volatility spillover among three major oil and oil derivatives due to the shocks of COVID and the Russia-Ukaraine War. The paper will also obtain the linear and non-linear correlations among the pairs of the three oils. Some other parameters we'll find are:**

1. **Volatility clustering**
2. **Granger causality**
3. **Volatility spillover effect**
4. **Augmented dickey-Fuller Test (ADF)**
5. **Jarque–Bera test**
6. **Cross price elasticity**
7. **The use of an internet search index to directly capture the changes in people's sentiment during the pandemic may greatly help to quantify the pandemic severity**

Proposed platforms: **EViews, and R**

Data: **Market share based on the type of edible oil.**

The edible oils market in the world comprises various types of oils. Palm oil is the major player in this category, followed by soybean and mustard oil.

- **Palm Oil**
- **Soybean Oil**
- **Sunflower Oil**
- **Rapeseed Oil**

Most output gains are expected to come from sunflower seed and soybean oil (due to favourable weather conditions in Central Asia and the Americas), while palm oil growth is mainly in Indonesia and Malaysia.

Energy is a key input to grains and oilseeds, affecting production directly through fuel costs and indirectly through fertilisers and other chemical inputs.

Similarly, fertiliser prices, which are also closely linked to energy prices

Some of the indices we can in-cooperate in our paper are:

- **The World Bank's Agricultural Price Index**
- **The World Bank's Oil and Meal Price Index**
- **The World Bank's Fertilizer Price Index**
- **Chicago Board of Trade (CBOT)**
- **Oil World Daily Price Index**
- **S&P Global Platts Vegetable Oil Index**
- **Dow Jones-UBS Commodity Index**

Country specific/ oil specific:

- **Bursa Malaysia Derivatives (BMD) Crude Palm Oil Futures Index**
- **Dalian Commodity Exchange (DCE) Soybean Oil Futures Index**
- **Intercontinental Exchange (ICE) Futures Europe Rapeseed Oil Index**
- **Zhengzhou Commodity Exchange (ZCE) Rapeseed Oil Futures Index**
- **S&P GSCI Soybean Oil Index**
- **Malaysian Palm Oil Council (MPOC) Daily Palm Oil Prices**
- **Indonesia Vegetable Oil Index (IVOI)**
- **China National Grain and Oils Information Center (CNGOIC) Index**
- **Barchart Soybean Oil Index**

Model: DCC-MVGARCH-X depicts the returns and volatilities of three major vegetable oils and can also capture the time-varying correlations among the three futures. But this model can only depict linear correlation among assets; we need to find the non-linear dependency among assets as it is more important for policymakers and portfolio managers.

1. Multivariate cointegration model: find that most co-movements among vegetable oil prices are consistent with the high substitutability between vegetable oils.
2. Brummer et al. (2016) employ a common GARCH approach and a VAR model to identify volatility drivers and spillover effects among oil seeds and vegetable oils markets. They reveal that exchange rate volatility is a very important volatility driver of oil seeds and vegetable oils markets, while the hotly debated financialisation of commodity markets is not.

Linear correlation models:

1. DCC-MVGARCH-X
2. VAR
3. Vector Error Correction Model (VECM)
4. Dynamic Conditional Correlation (DCC) Models

Non-Linear correlation models:

1. Multivariate GARCH (MGARCH) with time-varying parameters
2. Copula-based models
3. Markov-switching models
4. Non-linear autoregressive models (NAR)

5. **Neural network-based models**

Empirical relation:

Conclusion: