

The background features decorative elements: two overlapping light gray circles in the top right corner and two dark green diagonal stripes in the bottom right corner.


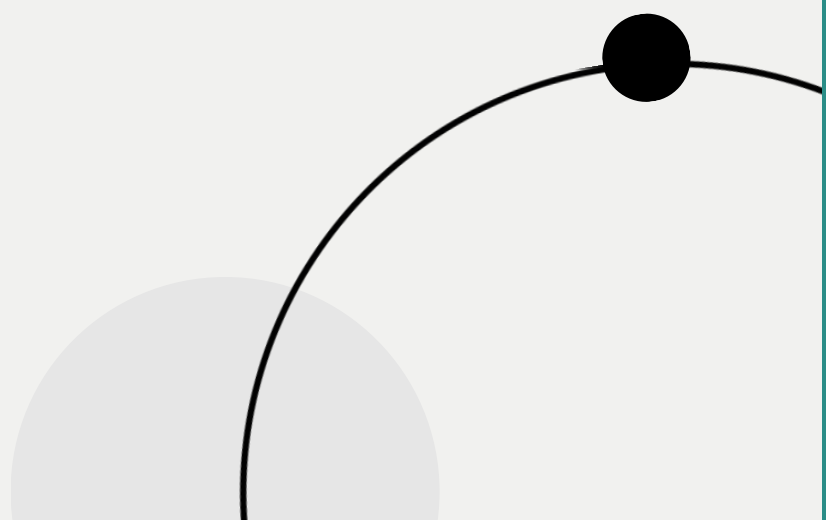
Economic Impact of Oil Price Volatility

Oil Price Shocks & Conflict Escalation

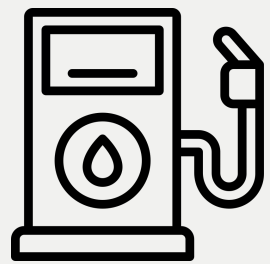
Ian, David, Jana, Artyom



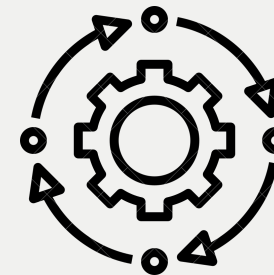
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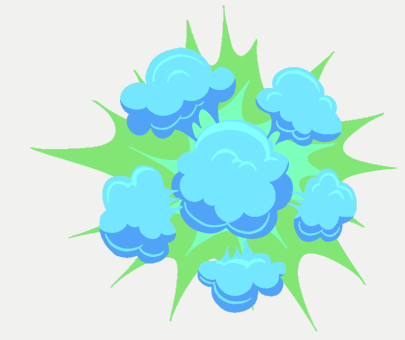
On a mission to explore



The relationship
between crude oil
prices, GDP, inflation
and total export of G20
and OPEC countries.

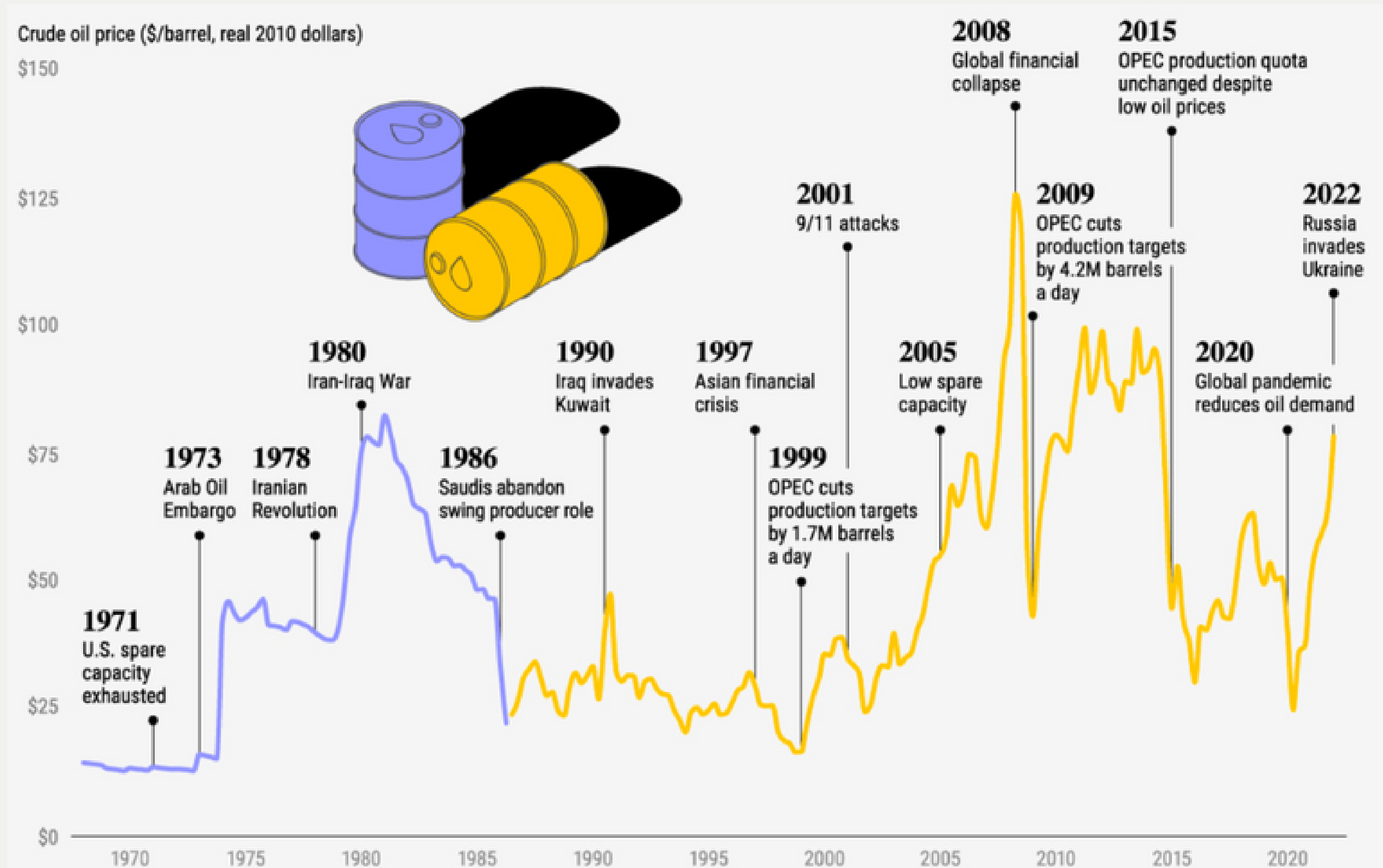


To understand the
impact of oil sector of
the economy.



Why is it important?

Oil sector is cyclical - sensitive to economic cycles





Data Sources

West Texas Intermediate (WTI)

Widely recognized proxy for crude oil

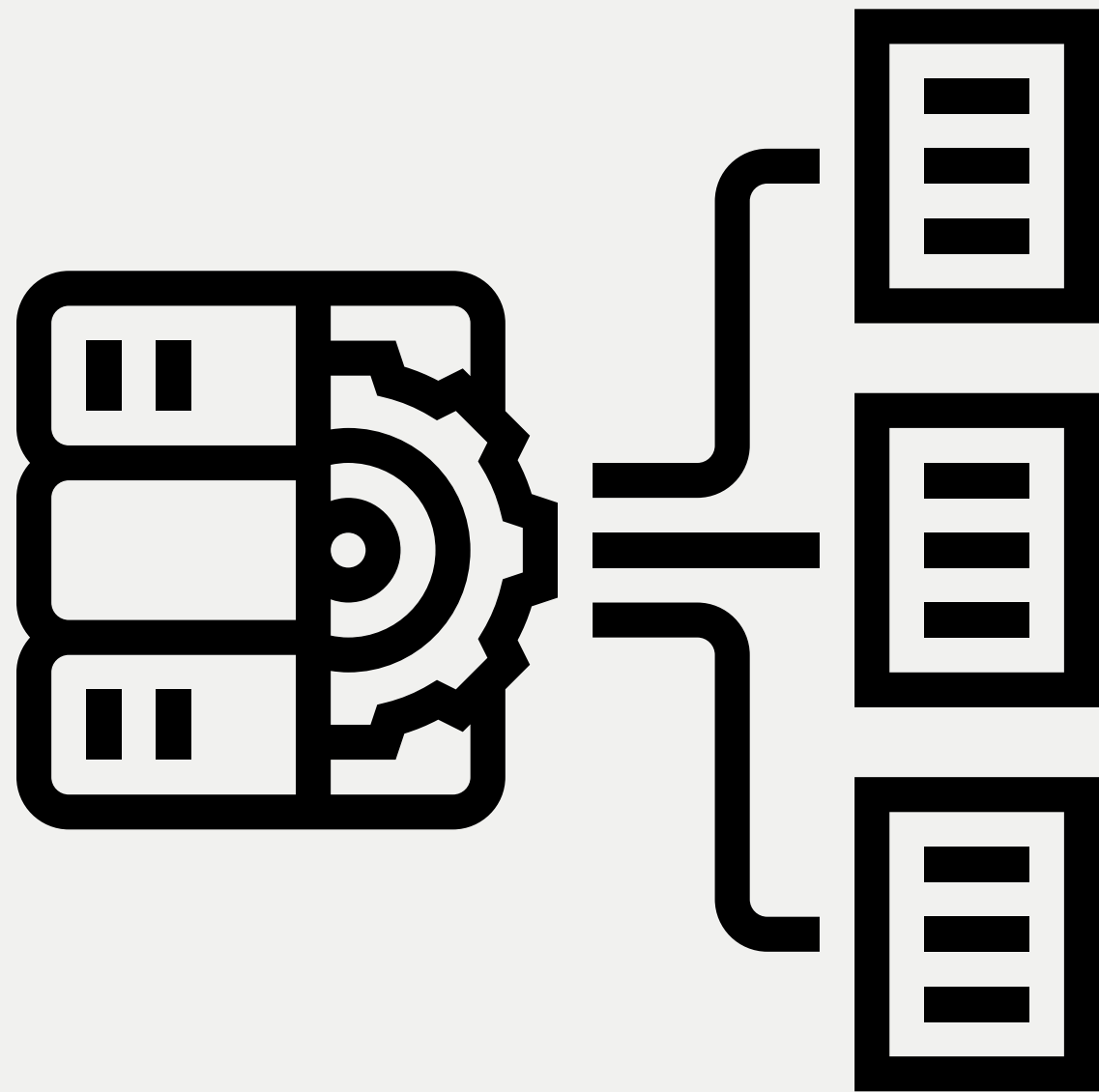
Source: Yahoo API

Economic Indicators (World Bank)

- Exports
- GDP
- Inflation

CO2 Emissions (World Bank)

- CO2 Emissions Value from liquid fuel
- CO2 emissions from Manufacturing
- Electricity Production from Coal
- Energy use



Setup

1. Upload the data in MySQL using Data_Dump_2.sql
2. Run the code from Data_Pipeline.sql
3. Download Knime pipeline
4. Setup your SQL connection using your credentials
5. Run the pipeline
6. Check the resulting correlation matrices.
7. Check the visualizations



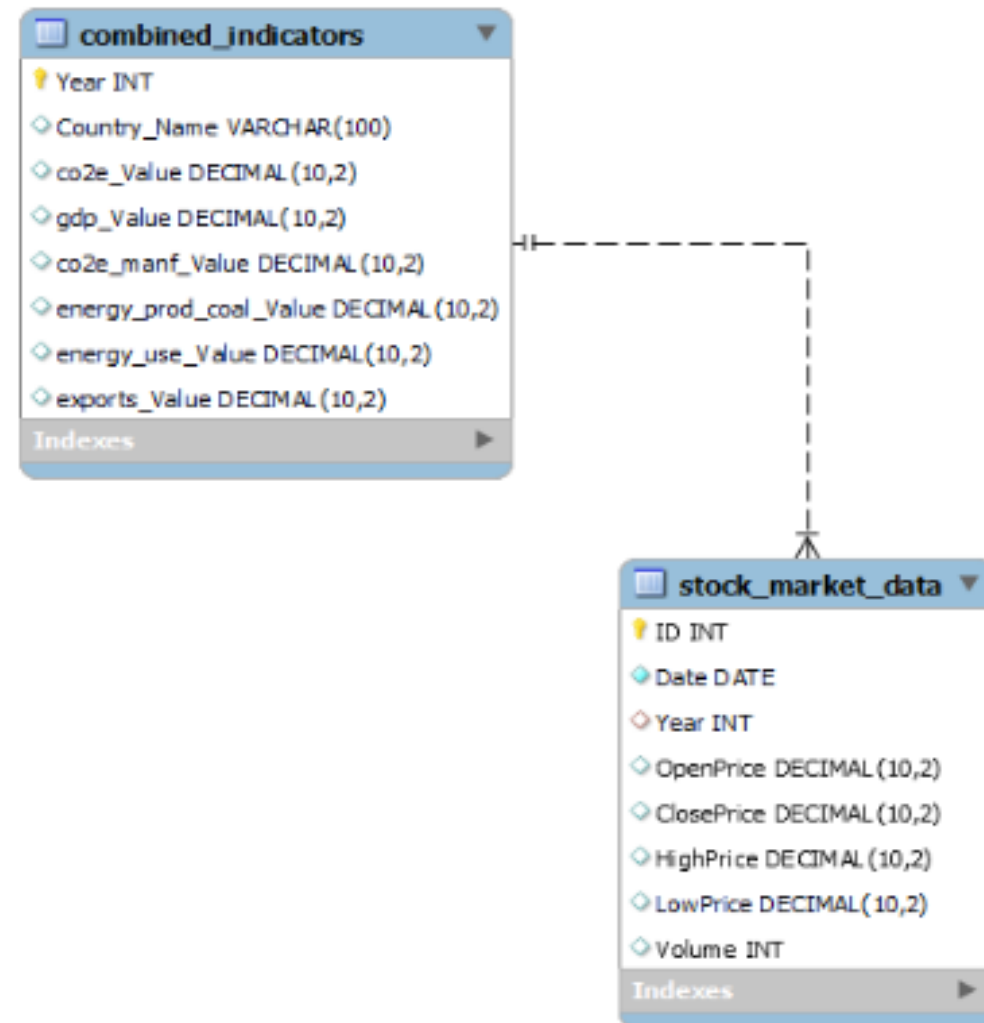


Data Analysis Overview

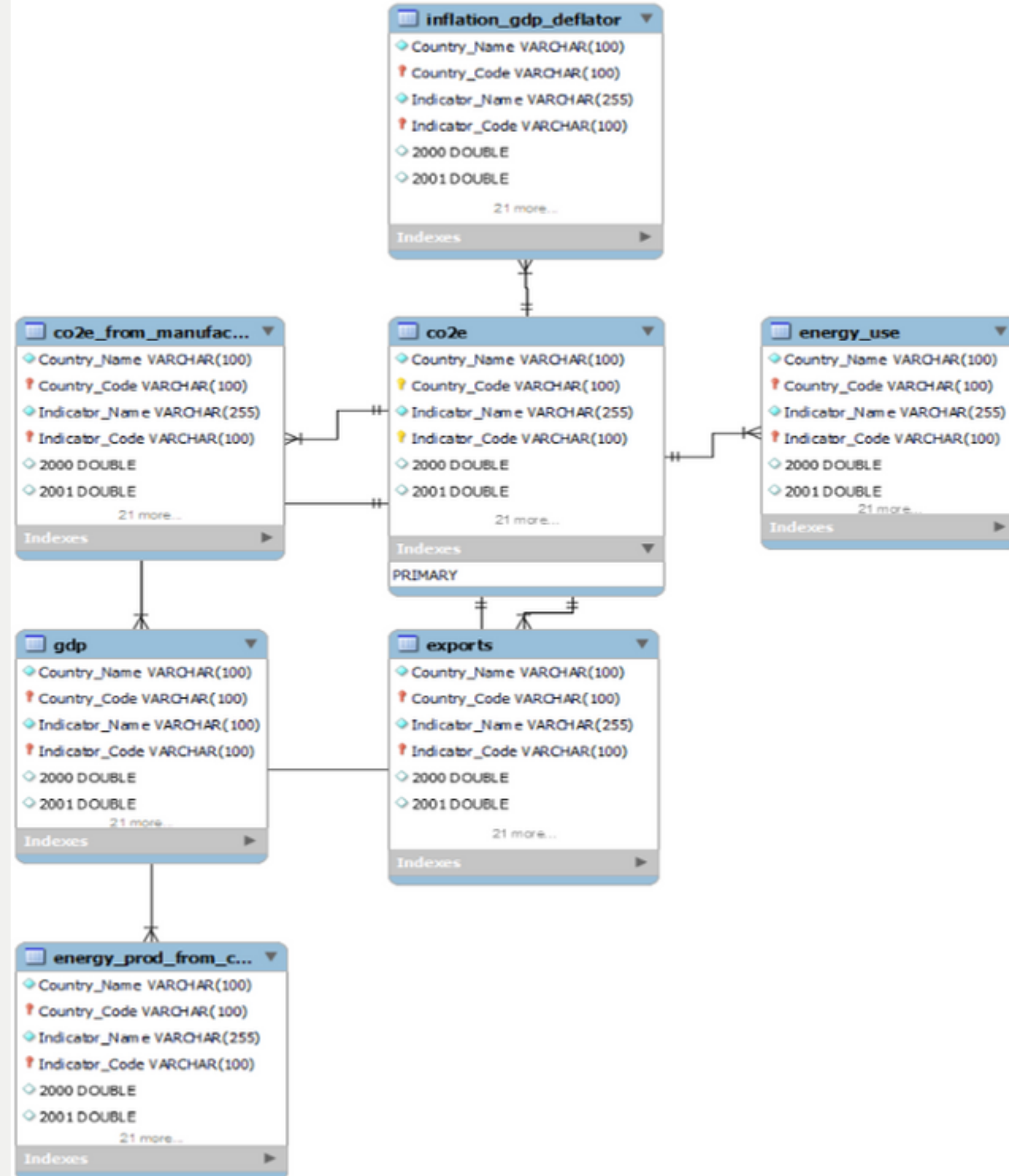
- Annual Data Collection: Sourced exclusively from the World Bank.
- Granularity Limitations: Monthly assessments not possible due to data availability
- Enhanced Classification:
 - G20 membership indicated for relevant countries.
 - OPEC status flagged to enable group analysis.
- Analytical Approach:
 - Developed visualizations and correlation matrices for G20 and OPEC members.
 - Focused on inflation, exports, and WTI prices due to data completeness.
 - Other indicators omitted due to significant data gaps.

EER Diagram

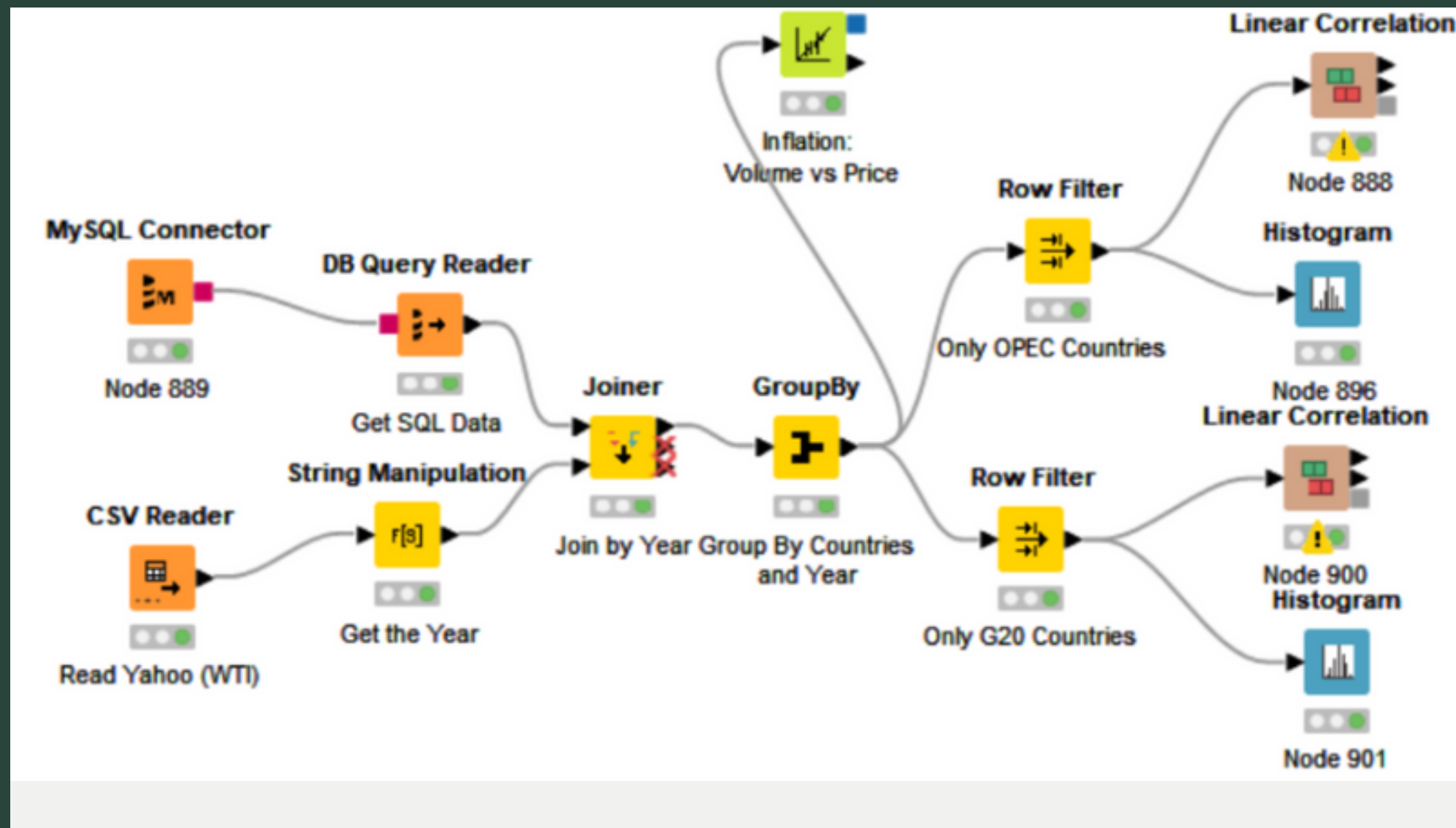
EER diagram with API data



EER diagram of base data



Knime Pipeline



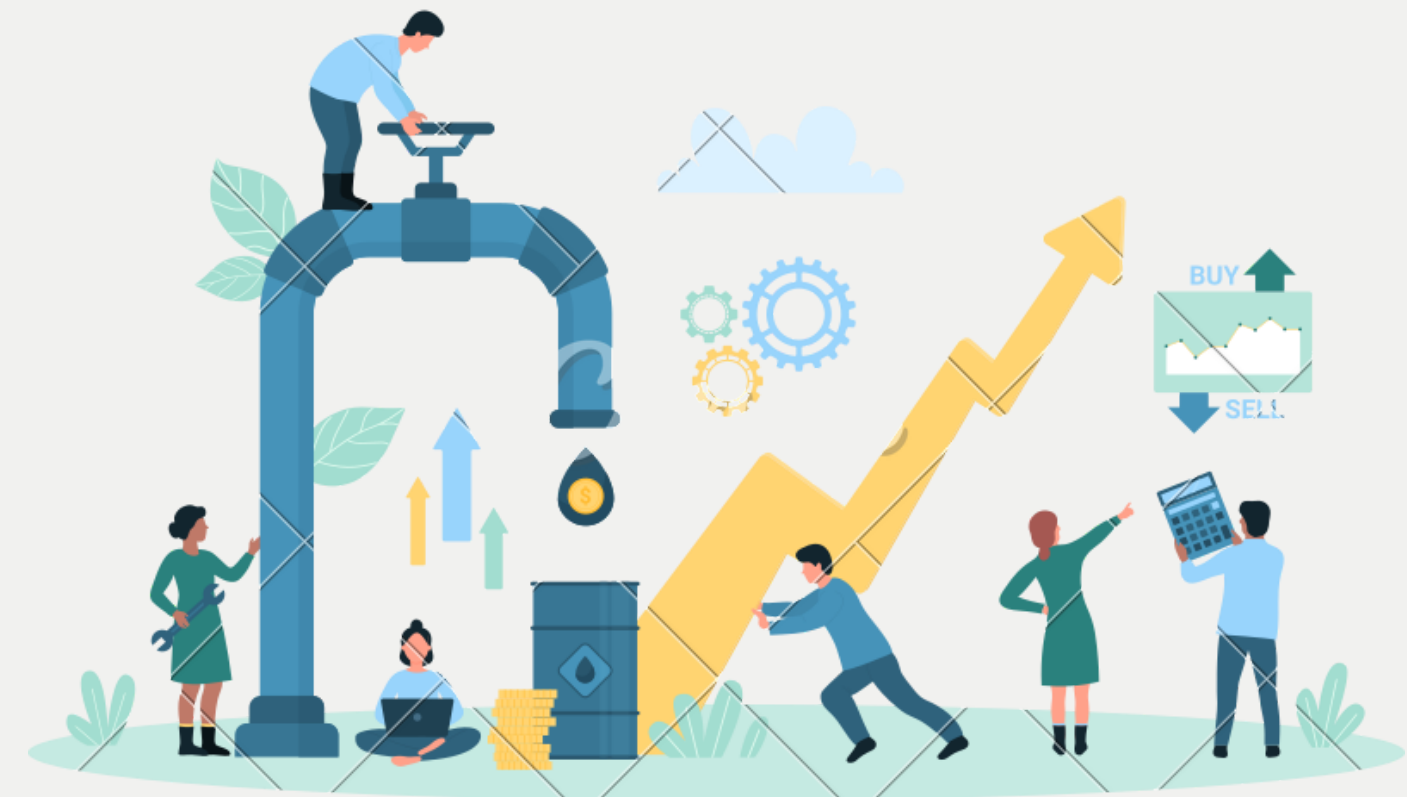
Process

1. Get the transformed analytical table using DB Query Reader.
2. Obtain WTI data using the Yahoo Finance API.
3. Add the year as a column using string manipulation node.
4. Join these two datasets using the year column from both tables.
5. Group the joined dataset by year and country to get one observation per country and year. Note that we used average values to aggregate WTI.
6. Using a row filter based on columns `is_G20` and `is_OPEC`, we created two scenarios.
7. For each scenario, we built a correlation matrix and histogram visualization.



Analytics and Visualization

Correlation Findings for OPEC Countries



Exports & WTI Prices:

Positive, moderate
correlation observed
 $p\text{-value} > 0.1$

Inflation & WTI Prices:

Also a positive, moderate
correlation
 $p\text{-value} > 0.1$

GDP & Exports:

Strong positive correlation
detected
 $p\text{-value} > 0.1$

Correlation Findings for G20 Countries



Exports & Inflation

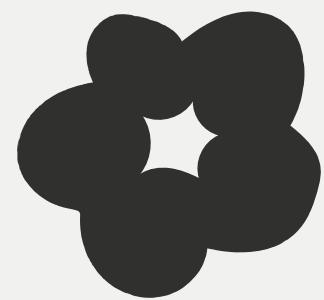
Negative moderate correlation(-0.14)
 $p < 0.05$

GDP & Average WTI:

Negative correlation coefficient (-0.19)
 $p\text{-value} < 0.01$

Any Questions?





Thank you!

Oil Price Shocks & Conflict Escalation

