MODELING CORPORATE INVESTMENT SENSITIVITY TO ECONOMIC UNCERTAINTY USING EVIEWS

1. Overview

Client:

A U.S.-based business intelligence firm advising Fortune 1000 CFOs on capital allocation strategy

Objective:

To estimate the short- and medium-term effects of economic uncertainty on corporate investment using EViews. The analysis supported CFO decision-making in capital planning under macroeconomic volatility.

2. Background

Business leaders expressed concern about how policy instability and global events influence firm-level investment decisions. The client needed empirical support to incorporate uncertainty measures into their corporate risk models. We used EViews to run a time series regression linking investment patterns with a leading economic uncertainty index.

3. Data Summary

Sample Period:

Q1 1990 – Q4 2022 (132 observations)

Variables:

Variable	Description	Source
Investment_Ratio	Gross fixed capital formation / GDP (quarterly, %)	U.S. Bureau of Economic Analysis
Uncertainty_Index	Economic Policy Uncertainty (EPU) index (log-transformed)	Baker, Bloom & Davis dataset
Interest_Rate	U.S. Federal Funds Rate (quarterly avg.)	Federal Reserve
Output_Gap	Real GDP deviation from potential GDP	Congressional Budget Office

All variables were tested for stationarity. Seasonality adjusted. Logs applied where appropriate.

4. Methodology

Software Used:

EViews 13

Model Type:

ARDL (Autoregressive Distributed Lag) model + Diagnostic Tests

Steps Performed in EViews:

1. **Stationarity Checks:**

   o ADF and PP tests revealed mix of I(0) and I(1) variables → ARDL suitable

2. **Lag Selection:**

   o Optimal lag structure selected via Akaike and Schwartz criteria (lags: 2,1,2)

3. **Model Estimation:**

   o *Quick > Estimate Equation > ARDL* with dependent variable: Investment_Ratio

   o Regressors: lagged values of Investment, Uncertainty_Index, Interest_Rate, Output_Gap

4. **Long-Run Estimation:**

   o Conducted bounds testing for cointegration (F-statistic above upper bound → cointegration confirmed)

5. **Error Correction Model:**

   o Derived ECM from ARDL to examine short-run deviations and adjustment dynamics

6. **Diagnostics:**

   o Serial correlation (Breusch–Godfrey), heteroskedasticity (White), stability (CUSUM, CUSUMSQ)

5. Key Results

Output Metric	Value / Significance

Long-run coefficient on EPU	−0.076 (p < 0.01): 1% increase in uncertainty → 0.076% drop in investment
Short-run coefficient (lag 1)	−0.041 (p < 0.05): persistent lagged effect of EPU shocks
Interest Rate Impact	Negative but statistically insignificant
Error Correction Term	−0.23 (p < 0.01): 23% of disequilibrium corrected each quarter
Adjusted R²	0.68

Model passed all diagnostic tests, indicating good specification.

6. Visual Outputs (Created in EViews)

- Time plot overlay: Investment Ratio vs. Uncertainty Index

- Residual plot and stability diagnostics (CUSUM/CUSUMSQ)

- Impulse response simulations (manual overlay using ARDL dynamics)

- Confidence band chart on long-run estimate

7. Deliverables

- Full EViews .wf1 file with model and test outputs

- PDF report (17 pages) with:

    o Economic rationale and theoretical context

    o Model selection justification

    o Detailed result interpretation

    o Strategic business implications

- Supplement: Excel summary table for CFO dashboard integration

8. Use and Outcomes

- Output used in CFO briefing reports for annual budgeting cycle

- Cited in internal memo for delaying major capital expansion project

- Incorporated in firm's macroeconomic scenario templates for risk-adjusted planning

9. Strategic Value Delivered

- Quantified the **impact of uncertainty on investment**, allowing firms to model capital sensitivity

- Provided CFOs with a **defensible, empirically backed framework** for uncertainty scenario testing

- Demonstrated how EViews can be used for practical corporate strategy support—not just academic forecasting