

Estimation Procedure for Applied Time Series

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Estimation Procedure ...

□ 1.0 **Methodology**

➤ 1.1 **Model Specification**

- ❖ Theoretical model

- ❖ Econometric model:

 - Theory + Empirical evidence

- ❖ Definition of all the variables and parameters in the model

- ❖ Theoretical expectations

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➤ 1.2 Data Issues

✓ 1.2.1 Data Type

[Time Series, Cross-Sectional or Panel Data]

❖ If you are using Time Series Data; indicate

- Data Frequency [Daily, Weekly, Monthly, Quarterly, Annual etc]

- Sample Period

[with proper justification]

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- ❖ If you are using Cross-Sectional Data; indicate
 - the Cross-sections being analyzed
[Households, Firms, Industries, Sectors, Countries, Regions, etc]
 - Sample size
[with proper justification]

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- ❖ If you are using Panel Data; indicate
 - the Cross-sections being analyzed
[Households, Firms, Industries,
Sectors, Countries, Regions, etc]
 - Sample of Cross-sections
[with proper justification]
 - Sample Period
[with proper justification]

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- ✓ 1.2.2 Data Sources
- ✓ 1.2.3 Data Limitation
- **1.3 Estimation Techniques**
 - ✓ Description of techniques for estimating the specified model.
 - ✓ Justification for the choice of technique(s) [possibly from relevant empirical studies]
 - ✓ Relevant diagnostics to validate the chosen technique(s).

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□ 2.0 **Preliminary Analyses**

➤ 2.1 **Descriptive Statistics:**

- ❖ Mean, Maximum, Minimum & Standard Deviation.
- ❖ Include Kurtosis, Skewness & Normality tests if you are using Time Series data.

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➤ 2.2 Graphical Analyses

Line Graphs & Charts to highlight to some striking features of the data that may not be visible in the descriptive statistics.

➤ 2.3 Formal Pre-tests

[such as Unit Root & Cointegration tests when dealing with Time Series Data].

This is used to determine the appropriate econometric model to estimate.

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□ **3.0 Discussion of Results**

➤ **3.1 Presentation of Regression Results**

- ❖ Report all the relevant statistics for the individual variables [such as the regression coefficients, standard errors, prob. values]
- ❖ Report all the relevant statistics for the overall model [such as the R-Squared / Adjusted R-Squared, F-Statistic, Likelihood Ratio Statistic, Wald-Statistic, etc]

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- ❖ Report relevant diagnostics used in evaluating the validity of the model [such as Serial Correlation test, Heteroscedasticity test, Normality test & Linearity]
- ❖ Interpret your results as follows:
 - (1) Interpret the regression coefficients with respect to their signs, magnitudes and statistical significance

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- (2) Interpret the overall performance of the model
- (3) Show that the results are plausible based on the diagnostics
- (4) Are the results consistent with the theoretical expectations?
- (5) To what extent do the results agree/disagree with the existing literature and why?

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(6) Explain the policy implications of your findings

(7) Suggest areas for future research (if any)

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- Not to worry, we are going to demonstrate all the highlighted procedures shortly using EViews 9.0.

Our Deliverables:

- ❑ At the end of the workshop, participants should be able to:
 - Apply the essential exploratory techniques for summarizing data.
 - Test for the underlying statistical properties of time series including unit root and cointegration tests.
 - Estimate both long-run and short-run models including the Autoregressive Distributed Lag (ARDL) Models

Our Deliverables:

- Perform relevant diagnostic tests for long-run and short run models
- Interpret regression results
- Deal with volatility in time series
- Estimate both symmetric & asymmetric volatility models
- Determine long run persistence and asymmetry effect in time series

Our Deliverables:

- Perform relevant diagnostic tests for volatility models
- We may also extend to multivariate models such as:
 - Vector Autoregressive Models
 - Vector Error Correction Models
 - Toda-Yamamoto
 - Granger Causality

Our Deliverables:

- Variance Decomposition
- Impulse Response
- Relevant Diagnostic Tests