

MIDDLE EAST TECHNICAL UNIVERSITY

STAT 495 – APPLICATIONS IN STATISTICS (3-2) 4

“Data Sources and Analysis for Economic Agents”

COURSE OUTLINE

**Fall, 2022**

**Instructor:** Oğuz Atuk

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**Course Schedule**

Tuesday 12:40 - 12:30 Z – 22

Friday (R) 13:40 - 15:30 Stat-Lab

**Office Hours:**  By appointment.

**Course description and objectives:** This is an applied course - applications of some fundamental statistics tools for economic analysis will be covered. The main objective of the course is to show how agents use economics data and provide meaningful economic analysis of this data. The data include: (A) low and high frequency economics data, (B) survey data and (C) intelligence data. In addition to fundamental descriptive and graphical analyses, seasonal adjustment, calendar effects and outlier detection tools will be covered. In the recitation hours, the applications will be handled with J Demetra+ and Excel.

**Learning goals:**

* To learn sources and characteristics of selected Turkish economics data
* To develop skills to analyze underlying trends of economics data
* To understand how economic agents make decisions using different types of data

**Textbooks:** No specific textbook.

**Reference Books & Papers:**

* Bank of England (1992): *Report of the Seasonal Adjustment Working Party*., No:2.
* Burman, J.P. (1980): "Seasonal Adjustment by Signal Extraction.” *Journal of the Royal Statistical Society*, Ser. A. 143, 321-337.
* Butter, F.A.G. and M.M.G. Fase (1991): *Seasonal Adjustment as a Practical Problem.* Amsterdam: North Holland.
* Cabrero, A. (2000): “Seasonal Adjustment In Economic Time Series: The Experience of The Banco de Espana*”, Banco de Espana*, No:0002.
* Canova, F. and E. Ghysels (1993): “Changes in Seasonal Patterns” *Journal of Economic Dynamics and Control*, 18, 1143-1171.
* Dosse J. and C. Planas (1996): “Pre-adjustment in Seasonal Adjustment Methods: A Comparison of REGARMA & TRAMO”, *Eurostat Working Group Document*, No: D3/SA/07.
* European Central Bank (2000): *Seasonal Adjustment of Monetary Aggregates and HICP for the Euro Area*. Statistical Press Release.
* Eurostat. (2020). *Handbook on Seasonal Adjustment with jDemetra+* https://unece.org/DAM/stats/publications/2020/ECECESSTAT20203.pdf
* Fischer, B. (1995): “Decomposition of Time Series - Comparing Different Methods in Theory and Practice”, *Eurostat Working* Paper, No 9/1998/A/8.
* Gomez,V. and A. Maravall (1998): “Seasonal Adjustment and Signal Extraction in Economic Time Series”, *Banco de Espana*, No 9809.
* Hylleberg, S.(1986): *Seasonality in Regression.* Academic Press Inc*.*Kaiser, R. and A. Maravall (2000): “Notes on Time Series Analysis, ARIMA Models and Signal Extraction”*, Banco de Espana*, No 0012.
* IMF QNA Manual (2001): *Concepts, Data Sources, and Compilation, Seasonal Adjustment and Estimation of Trend-Cycles.*
* Maravall, A. (1997): “Two Discussions on New Seasonal Adjustment Methods*”, Banco de Espana*, No 9704.
* Planas, C. (1997a): “The Analysis of Seasonality in Economic Statistics*” Eurostat Working Group Document.*
* Planas, C. (1997b): “Applied Time Series Analysis: Modeling, Forecasting, Unobserved Components Analysis and the Wiener-Kolmogorov Filter”, *Eurostat Working Group Document.*

**Course Outline:**

1. Economic Data and Analysis Fundamentals
   1. Lecture I
      1. What is the purpose of seasonal adjustment?
      2. The definition of components of time series
      3. Calendar effects
      4. Outliers (types and identification)
      5. Additive vs Multiplicative Models
      6. Different Seasonal Adjustment Methods
      7. REG-ARIMA Model Definition, Regression Variables
      8. TRAMO and SEATS modules
   2. Lecture II
      1. Trading Day Adjustment
         1. How to create TD regressors?
         2. Official TD regressors (types and differences)
      2. Exercises on TD
   3. Lecture III
      1. User Defined Regressors and Outlier Coefficients
         1. How to interpret the coefficients
         2. Outlier types and regressors
      2. Direct vs Indirect Adjustment
      3. Concurrent vs Factor Projected Adjustment
   4. Lecture IV
      1. What is inflation?
      2. What is CPI?
         1. Data Scope
         2. Sources of Weight
         3. Consumption Basket
         4. Index Classification Structure (COICOP)
         5. Price Collection
         6. Formulating the Index
         7. CPI Calculations
      3. CPI calculation exercises
         1. Elementary prices to 2 digit indices
         2. Indices and subindices
         3. How to chain CPI indices
   5. Lecture V
      1. Why is low inflation important?
      2. How is inflation analyzed in Central Bank?
      3. Core Inflation Concept
         1. Why is core inflation important?
         2. Methods to calculate core inflation measures
         3. Core inflation measures published by TURKSTAT
         4. Seasonally adjusted core inflation measures and their interpretations
   6. Lecture VI-VII
      1. Economic Data and Analysis Fundamentals
      2. Real Sector Data and Analysis Examples
         1. Industrial Production Index
         2. Turnover Indices
      3. High Frequency Data Analysis
         1. Different Types of High Frequency Data used by Central Banks
         2. How to analyze
2. Survey Data and Analysis
   1. Lecture VIII

Business Tendency Surveys

* + - * 1. Qualitive vs Quantitative Data
        2. Uses of BTS
        3. Calculation and Questionnaire
        4. Seasonality
  1. Lecture IX-X
     1. Purchasing Managers’ Index (PMI)
        + 1. Methodology
          2. Calculation and Questionnaire
          3. Interpretation
     2. Inflation Expectations Survey
        + 1. Methodology
          2. Calculation and Questionnaire
          3. Interpretation

1. Intelligence Data
   1. Lecture XI-XII
      * + 1. Intelligence Networks of Central Banks

Fed’s Beige Book

Bank of England’s Agency Network

* + - * 1. Methodology
        2. Outputs and Benefits

**Attendance:** A minimum of 70% attendance is required to pass the course.

**Exams and Grading:**

Homework assignments (15%)

Midterm Exam (30%)

Final Exam: (45%)

Attendance: (10%)

**Academic Integrity:** All assignments, quizzes, and exams must be done on your own. Note that academic dishonesty includes not only cheating, fabrication, and plagiarism, but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. You are allowed to use the Web for reference purposes, but you may not copy code from any website or any other source. In short, all submitted work must be your own. Should a student be caught cheating during an examination or be involved in plagiarism, a zero (0) will be assigned for the exam, quiz or writing assignment. Please look at the following page for further information:

<http://www.ueam.metu.edu.tr/TURKCE/ueam/ueam_ilkeler/ueam_ilkeler_honor_code_tab.htm>

**INFORMATION FOR STUDENTS WITH DISABILITIES**

To obtain disability related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the ODTÜ Disability Support Office as soon as possible. If you need any accommodation for this course because of your disabling condition, please contact me. For detailed information, please visit the website of Disability Support Office: <http://engelsiz.metu.edu.tr/>