Seminar 11. Special types of regressions

Task 1. Discrimination issue.
There are different salaries in the firm, which are presented in the table.
1. Test the hypothesis about significance relationship between salary level and length of education.
2. Test the hypothesis about significance relationship between salary level work experience.
3. Test the hypothesis about presence of gender discrimination on the firm.

Position	Salary, USD	Experience, years	Sex	Knowledge of foreign languages	Education, learning years
President	2400	4	M	No	9
Vice-president	2200	8	M	Yes	15
Commercial Director	1500	7	M	Yes	16
Accountant	1150	18	F	No	15
Assistant accountant	670	4	F	No	14
Secretary	720	2	F	No	11
Lawyer	1258	6	M	No	17
Manager	1206	3	M	Yes	16
Manager	1413	5	F	Yes	16
Manager	1087	2	F	Yes	16
Cleaner	298	12	F	No	9
Guardian	480	2	M	No	12
Guardian	480	2	M	No	12

Task 2.
File: macromod.wf1

For each variable from the file find the best trend form. Add seasonal variables if needed. Provide the best econometric model and test it for all necessary tests. If the model is not stable, create a new dummy variable, which will be 1 at periods of instability, 0 otherwise. Reestimate the model.

Task 3.
File: macromod.wf1

Change the sample according your variant. Build all possible smoothing methods (including Hodrick-Prescott Filter) for gdp level (y), money supply (m) and net export (nx). Using your sample calculate forecast one period ahead and compare result with actual value. Choose the best smoothing method for each time series.

1. 1958q1 1978q4	4. 1961q1 1981q4	7. 1964q1 1984q4
2. 1959q1 1979q4	5. 1962q1 1982q4	8. 1965q1 1985q4
3. 1960q1 1980q4	6. 1963q1 1983q4	9. 1966q1 1986q4

10.1967q1 1987q4	16.1973q1 1993q4	22.1979q1 1999q4
11.1968q1 1988q4	17.1974q1 1994q4	23.1980q1 2000q4
12.1969q1 1989q4	18.1975q1 1995q4	24.1981q1 2001q4
13.1970q1 1990q4	19.1976q1 1996q4	25.1982q1 2002q4
14.1971q1 1991q4	20.1977q1 1997q4	
15.1972q1 1992q4	21.1978q1 1998q4	

Task 4.
File: expend.wf1

Investigate the relationship between expenses for food (FOOD) and index of relative food prices (PRELFOOD). Estimate the regression, check it for stability. In case of structural breaks add dummy variables. Modify regression if necessary. Use other tests for improving the model.

Task 5.

Create a database, which includes quarterly data for Ukraine during 2004-2016 of such parameters:

- GDP
- Consumption
- Government expenditures
- Money supply
- Export of goods and services

- Imports of goods and services
- Foreign direct investments
- Exchange rate
- CPI

1. Check all data for stationarity. If they are not stationary provide necessary transformation.
2. Build an econometric model, choose the only one parameter as dependent variable, all other as independent variables. Specify the model, test it for all econometric tests. Modify the model if necessary.
3. Calculate <u>annual</u> forecasts for 2017.
4. Provide a short economic analysis, which explains how variables are related, what is the probability that forecast be successful.