

**METU Department of Economics**  
**ECON204 Macroeconomic Theory II – Section 1 (Ebru Voyvoda)**  
**Spring 2024-25**

**Assignment 1**

**(Due on 16<sup>th</sup> March 2025, 23:50)**

For this assignment, first you will have to download an Excel add-in application on your computer. This application will carry out and Hodrick-Prescott Filter analysis (that is decomposing the HP-trend from the data).

**To download and activate HPFilter Excel add-in:**

0. **Download the file HPFilter.xla on your computer.**

**Then, In Excel:**

1. Click the **File** tab, click **Options**, and then click the **Add-Ins** category.
2. In the **Manage** box, click **Excel Add-ins**, and then click **Go**.  
The **Add-Ins** dialog box appears.
3. Browse and select the **HPFilter.xla from the location you have downloaded**. In the **Add-Ins available** box, select the check box next to the add-in that you want to activate, and then click **OK**.

For this assignment you will have to work with the countries listed in OECD+. You may reach the data you need from OECD website at: <https://data-explorer.oecd.org/>

**Now choose 3 countries in the dataset to explore. Explain why you choose the three countries.**

[Note that it is highly unlikely that any two of you will be choosing exactly the same set of countries, so be careful!]

**Download the quarterly data (for the period 2014:Q1-2023:Q4) for GDP (Nominal/Real?) and its major components.**

Download the quarterly data for employment (either in terms of number of hours worked or total number of people in employment. Here, based on your country choices, you may have to update the dates, sticking on the quarterly data).

- a. Carry out and HP-filter analysis and decompose your data series into trend and cyclical components.
- b. For each series you have, calculate: (i) volatility (std. dev), (ii) cross correlation with real GDP series.
- c. Using relevant graphs (time series, scatter plots etc.) and the calculations you have made in part b; prepare (at most) 2 A4 page report on the business cycle properties of the economies you have chosen for the period you have analyzed.

[Hint: You may want to make use of the following discussion paper by the CBRT in preparing your report.]

Alp et al. (2012) “Stylized Facts for Business Cycles in Turkey”

<http://www.tcmb.gov.tr/wps/wcm/connect/ec4e33f3-88b1-4c5b-a410-32d4bbbf22/WP1202.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-ec4e33f3-88b1-4c5b-a410-32d4bbbf22-m3fw5XW>