**Univariate Modelling Strategies for Eurozone Harmonized Unemployment Rate**

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**Abstract**

*One of the prominent features of most economic data is that these type of data can usually be exposed to non-stationarity with significant seasonal patterns at frequencies measured with the exception of annual basis, and time series forecasting approaches require identifying the knowledge of seasonal components if available. Unemployment expectations and movements are crucial components in characterizing intense business cycle fluctuations and play a large role in their predictive modelling. In this paper, it has been aimed to analyze the seasonal characteristics of Eurozone harmonized unemployment rate at quarterly frequency using univariate modelling techniques, or more specifically to investigate which type of seasonality -deterministic or stochastic- accounts for the series in the best way based on the knowledge of whether the series follows a seasonally integrated process or not. It has been utilized from seasonally unadjusted data in order to take seasonal patterns into account and the covered time span for the research is 1993Q1-2021Q1. Apart from Dickey, Hasza & Fuller (DHF) (1984) and Hylleberg, Engle, Granger & Yoo (HEGY) (1990) test procedures for seasonal integration and seasonal dummy model; Lagrange-Multiplier based Canova-Hansen (CH) (1995) test as grounded upon the methodology of Nyblom (1989) and Hansen (1990) with the null hypothesis of deterministic seasonality has also been implemented. Findings of the research have indicated that according to DHF test, the series in question does not manifest a seasonally integrated of order one process; HEGY procedure covering two auxiliary regression models (with “Constant & Seasonal Dummies”; “Constant, Trend & Seasonal Dummies”) reveals the absence of a seasonal unit root only for 4 quarters per cycle (i.e. annual cycle) for 5% significance level; CH test regression results imply the stability of seasonal intercepts for all seasons at 5% significance level, but Eurozone harmonized unemployment rate seems to subject to structural change only in the second quarter for 10% critical value and all seasonal cycles related to* * &  frequencies are jointly stationary at 5% significance level, but not at 10%. In brief, all regression models along with CH test regression have confirmed consistently that harmonized unemployment rate series for the Eurozone exhibits deterministic seasonality for 5% significance level. Furthermore, deterministic seasonal effects have been computed through the trigonometric representation.*

***Keywords****: Deterministic Seasonality, Harmonized Unemployment Rate, Seasonal Integration, Canova-Hansen (CH) Test, HEGY Test*

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