

# Chapter 50

## Analysis Results for the Effectiveness of Monetary Policies With Cointegration and Causality Analyses

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### ABSTRACT

*The aim of this chapter is to examine the effectiveness of the monetary policies in E7 economies. For this purpose, two different variables are selected, which are central bank interest rate and inflation rate. These variables are tested with the help of Kao panel cointegration analysis, Pedroni panel cointegration analysis, and Dumitrescu Hurlin panel causality analysis. Additionally, monthly data of these variables for the periods between 1996:01-2019:02 is used in the analysis process. The findings show that there is a long-term relationship between interest rate and inflation rate for E7 economies. This situation gives information that monetary policies are used effectively in these countries. On the other side, for all three different lags, it is concluded that interest is the main cause of the inflation rate. This situation gives information that interest rate decisions of the central banks in E7 economies are very successful to control the inflation rate.*

### PEDRONI PANEL COINTEGRATION ANALYSIS

Cointegration analysis aims to identify long term relationship between the variables. Therefore, the main purpose of this methodology in comparison with the similar approaches is that it can be used for panel data (Eti and İnel, 2016). There are 7 different tests in the process of Pedroni panel cointegration analysis that are Panel v-Statistic, Panel rho-Statistic, Panel PP-Statistic, Panel ADF-Statistic, Group

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rho-Statistic, Group PP-Statistic and Group ADF-Statistic. The system provides probability values for each of these tests. On the other side, if the probability value is lower than 0.05, it means that the test is significant. In order to have a long-term relationship between the variables, at least four of them should be significant (Pedroni, 2004). This method was widely preferred in the literature. Some recent studies are illustrated on Table 1.

*Table 1. Studies related to Pedroni panel cointegration analysis*

Author	Subject
Nguyen & Kakinaka (2019)	renewable energy consumption
Jäger & Schmidt (2016)	political economy of public investment
Hassler & Hosseinkouchack (2016)	in the presence of linear time trends
Liu et al. (2016)	economic growth and carbon dioxide emissions
Wang et al. (2016)	urbanization, energy use and carbon emissions
Lu (2017)	energy consumption and economic growth
Balcioglu (2016)	foreign aid and economic growth
Saeed & Hassan (2018)	liquidity and stock returns
Li et al. (2018)	economic development and energy factors
Kirikaleli et al. (2018)	internet, electricity consumption and economic growth
Karanfil & Li (2015)	electricity consumption and economic growth
Ozcan & Ozturk (2019)	renewable energy consumption-economic growth
Salahuddin et al. (2016)	internet usage and economic growth
Khan & Abbas (2016)	electricity demand in Pakistan
Wang et al. (2015)	urban development intensity and carbon dioxide emissions
Saidi & Mbarek (2016)	nuclear energy and economic growth
Saleh et al. (2015)	the impact of tourism on economic growth
Kizilkaya et al. (2016)	foreign direct investments and economic growth
Dong et al. (2017)	impact of natural gas consumption on co2 emissions
Hassan (2018)	long run energy demand
Sharif et al. (2019)	renewable and nonrenewable energy consumption
Saridakis et al. (2016)	self-employment and unemployment
Afolabi et al. (2016)	openness and regional trade
Jin & Kim (2018)	mitigating carbon emissions
Dogan & Inglesi-Lotz (2017)	the effects of real income on carbon emissions
Abdlaziz et al. (2018)	the effect of oil price on agriculture sector
Abdullah et al. (2017)	health care in Asian countries
Ali et al. (2018)	biomass energy consumption and economic growth
Pradhan et al. (2018)	information communication technology infrastructure and economic growth
Işık & Shahbaz (2015)	energy consumption and economic growth

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