

ANALYSIS OF THE RELATIONSHIP BETWEEN INCOME GROWTH AND, COAL CONSUMPTION AND EMISSIONS FROM NONLINEAR PERSPECTIVE

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ABSTRACT:

In this study, Brazil, Turkey, Australia, Estonia, South Africa (SA), Finland and Sweden are examined by Autoregressive Distributed Lag model (ARDL), non-linear ARDL (NARDL) and Gregory-Hansen (GRHA) cointegration models for the relationship between emissions and growth, and coal consumption (CCSP) and growth. For emissions and growth relationship, environmental Kuznets curve (EKC) is investigated. For coal CCSP and growth relationship, CCSP EKC is investigated.

For Brazil and Turkey, external debt does not have a significant effect on emissions in the long run. For Australia and Finland, EKC is not confirmed. For Estonia, EKC is not confirmed by ARDL model, and no asymmetric relationship is found between emissions and growth by NARDL model. For SA, no asymmetric relationship between emissions and growth is found by NARDL model.

The EKC hypothesis and CCSP EKC are not confirmed for the countries that are included in this study. Although Sweden put great effort to eliminate coal consumption for energy production, CCSP EKC is not confirmed for Sweden in this study. Australia's coal market and renewable energy policies for coal consumption may be an example for the other countries which try to eliminate coal consumption for energy production such as Sweden in this case.

Keywords: coal consumption environmental Kuznets curve; Finland; Sweden; NARDL model

1. INTRODUCTION

EKC is a topic to analyze the relationship between environmental degradation and income. The EKC literature started in the early 1990s and continues to be studied today. It is still an important topic since sustainability studies are one of the hot topics today. The EKC hypothesis states that as income increases till a point environmental degradation increases with income. However, after that point, which is a peak, as income increases environmental degradation decreases. Researchers work on the relationships between income and environmental degradation by using different econometric techniques to analyze whether EKC exists or not. By today, the literature about whether EKC exists or not is inconclusive. Researchers continue their studies by taking different measures for environmental degradation and adding new variables to the relationship between income and environmental degradation.

In this study, the EKC hypothesis is analyzed for different countries by using econometric techniques. The econometric techniques used for the study are not used for the studied countries in the literature.

The main questions in this study are as below.

Does external debt (EDBT) influence emissions in Brazil and Turkey?

Is there an EKC for coal consumption (CCSP) in Sweden?

Is there an EKC between emissions and growth in Australia, Estonia, SA, and Finland?

Significance of this study is that it contributes to the literature by analyzing non-linear relationships between emissions and growth, analyzing CCSP EKC and analyzing the effect of EDBT for related countries in the