


Chapter 7

Spillovers From Renewable Energy to Life Expectancy in Emerging Market Economies: Panel Vector Auto Regression Analysis

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ABSTRACT

Renewable energy sources have a minimal detrimental impact on health quality compared to non-renewable energy sources owing to the reduced carbon dioxide emissions that reduce negative externalities of pollution. Health quality can be measured through changes in life expectancy owing to changes in variables directly impacted by renewable energy usage. The chapter analyses the impact of renewable energy on life expectancy through four channels for 23 emerging market economies for the time period 1994-2015 using panel vector auto regression. Four hypotheses were developed for four channels: CO2 emissions, GDP per capita, technology level, and urbanization. The results conform to all the hypotheses: increase in renewable energy increases life expectancy by decreasing CO2 emissions and by increasing GDP per capita, technology level, and urbanization. Thus, to increase life expectancy, emerging market economies should increase their renewable energy usage since it reduces per capita CO2 emissions and increases GDP per capita, technological advancement, and urbanization.

DOI: 10.4018/978-1-6684-4610-2.ch007

INTRODUCTION

Life expectancy is a basic measure of health quality which tells the average expected life span of population. Till the end of nineteenth century, life expectancy remained below 40 years for all the nations. In the early 1900s, it started increasing in the industrialized nations and the following years were characterized by inequality between rich and poor nations. Over the recent years, the gap has reduced to an extent that even the nation with least life expectancy now has a value more than the highest life expectancy in the 1800s (Roser et al., 2013). Average life expectancy has more than doubled globally since 1900s but the gap between nations in terms of lowest and highest values remains at 30 years in 2019. In a recent study by Pyrkov et al. (2019), life expectancy has been found to be as high as 120-150 years if various stresses can be checked. This brings out the need to investigate the link that various factors have with rising life expectancy. The idea of life expectancy and its significance has surfaced time and again in forums of discussion on varying socio-economic and political aspects of growth and development. It has been included in numerous indices to measure health quality in general and longevity or mortality in particular. Improvement in life expectancy since early 1900s can be linked to the technical advancements in countries, which in turn have led to higher usage of renewable energy sources. Numerous studies show that increased usage of renewable energy leads to higher life expectancy (Caruso et al., 2020; Steinberger et al., 2020). Renewable energy sources are sustainable in the sense that their supply is not depleted by higher usage. For example, the solar energy that reaches our planet in an hour exceeds the total annual energy demand. The health impacts of renewable energy are similar to nuclear generated electricity owing to lower carbon emissions. Several studies confirm that higher usage of renewable energy leads to lesser carbon emissions (Caruso et al., 2020; Silva et al., 2012). Rising usage of fossil fuels in the past has led to higher carbon emissions, thus increasing the pace of climate change and global warming. This in turn, has had detrimental impact on human health quality and life expectancy. The growing demands to correct this environmental and health impact extends to making it duty of the government to protect the future generations for the same. In this regard, a group of eight teenagers in Australia filed a court case seeking to make government responsible to protect them from climate change (Burton and Wong, 2021). This was in response to Vickery Extension Project to construct an open-cut coal mine. Such instances of growing expectations for sustainable policies put pressure on governments to balance conflicting interests. In that backdrop, renewable energy has increased considerably since 2011 and in 2019, its installed power capacity has grown more than 200 gigawatts (Ranald, 2020). Apart from the health benefits owing to no or low emission of greenhouse gases and air pollutants, renewable energy is cost effective, employment oriented (generating 11million jobs globally in 2018), accessible and secure supply-wise. Increased usage of renewable energy adds to the economic growth of nations, along with technical advancements and urbanization trend.

The present study analyses the impact that renewable energy has on life expectancy of 23 emerging market economies (listed in Appendix-B) for the years 1994 to 2015. The average life expectancy in these countries rose from 69.54 years in 1996 to 74.48 years in 2015, while the percentage of their average renewable energy consumption to total energy consumption fell from 21.41 in 1996 to 18.52 in 2015. Life expectancy was lowest at 60.60 years in South Africa and highest at 77.69 years in Greece in 1996. In 2015, life expectancy was lowest at 62.65 years in South Africa and highest at 82.02 years in Korea Republic. Renewable energy consumption as a percentage of total energy consumption was lowest at 0.01 in Saudi Arabia and highest at 53.77 in India in 1996. In 2015, renewable energy was lowest at 0.01 in Saudi Arabia and highest at 46.48 in Pakistan. The present study identifies four channels

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