MPP-E1180: Collaborative Social Data Analysis Assignment 2

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Introduction

Today it is widely known the fact that climate change imposes real challenges to societies' environmental and economic wellbeing. This state of affairs urges us to think on ways to cope with the effects of climate change as well as finding potential alternatives to the roots of this human-caused phenomenon. Consequently, this pressure has put into question the traditional energy sources in use which have contributed to high levels of pollution and greenhouse gas emissions worldwide. Besides the fact that renewable energy adoption constitutes a means to deal with this challenge, Ilas (2014) argues that renewable energy sources have also been increasingly adopted worldwide for being a consistent way of improving energy efficiency by reducing energy consumption levels. Recent studies of Eyraud et al. (2011) and Del Río, Tarancón, and Peñasco (2014) identified that renewable energy sources will be the key drivers of the energy sector in coming years. Our main goal with this research project is to identify what are the determinants of investments in renewable sources of energy, namely wind and solar power energy, across European countries and to what extend factors, such as economic growth, changes in fuel prices, and interest rates have a significant impact on green energy investments.

Literature Review

According to Eyraud et al. (2011), green investment can be defined as "investments intended to significantly reduce air pollutants and greenhouse gas emissions (GHG), without significantly reducing the production and consumption of non-energy goods". Ilas (2014) shares Eyraud's understanding and use 'green investments' and 'investments in renewable resources' interchangeably.

Ilas (2014) argue that two thirds of CO2 emissions in the world come from the energy sector and their effect on human livelihood is increasingly negative. They elaborate on this observation by mentioning two measures identified by scientists with the potential of offsetting the impact of GHG, i.e. adaptation and mitigation. While adaptation verses on the efforts to limit human exposure to climate change, mitigation is related to human activities intended to reduce the magnitude of climate change and its impact on human life. Concerning the mitigation aspect, it involves a two-fold strategy. The reduction of GHG as a result of efficiency gains in energy consumption and production, and the shift to other forms of energy production through the adoption of alternative sources.

The increasing importance of generating cleaner energy as a mitigation measure led the IMF to publish a article on its 2013 Energy Policy Journal containing explanation and trend analysis of the green investments. This research articles served as a bases for Ilas (2014) study on the factors affecting green investments at an international level. And now we aim to apply the methodology developed by Ilas (2014) to verify the determinants of green investments in EU countries.

Research Project

This research proposal aims to identify the key determinants of green investments in renewable energy sources by collecting and analyzing data on economic, demographic, and political factors which may be responsible for delimiting a scenario for investment opportunities. We start this project having the following assumptions in mind.

-Economic growth and income generate a higher demand for energy and clean air, and the same can be said about increasing population levels.

-Innovation is essential for advancements in the energy sector as to guarantee environmental-friendly efficiency. It means that human capital and new technologies may play an important role behind green investments. Therefore, by veryfing the percentage of GDP which has been allocated to Research and Development as well as enrollments in tertiary education in EU countries we can attest the role of innovation in investments in renewable energy sources.

-The macroeconomic theory on interest rates, which states that low interest rates are beneficial for long-run investments as it ensures availiability of larger amounts of capital.

-The costs of fossil fuels' energy. The higher the prices of fossil fuels give an incentive for a reduction in renewable energy sources costs. Therefore, we can assume that increases in fossil fuels' prices have a positive effect on the green investments.

Besides those macroeconomic indicators, countries' political tendencies and energy-related policies, such as carbon taxes, cap-and-trade limits, and feed-in-tariffs, may encourage or discourage green investments.

Data Sources and Methodology

A panel data approach will be used to assess the determinants of green investments in EU countries. This cross-country analysis will take into account historical data from Eurostat and World Bank databases covering the period 2010-2015. The model is estimated in real terms using fixed effects methodology. The series of current currency will be converted into constant currency of 2010 to correct for exchange rate fluctuations and domestic inflation. The impact on green investment is calculated on the basis of covarities exposed in the previous section and takes into account country specific fixed effects.

References

PS: Wickham and Francois (2016) and R Core Team (2015) works on R Programming were used as reference for this research proposal.

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