Proposed Topic:

Economic Impact of the Climate Change

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**Research Question:** Can the short term positive impacts of climate change offset the negative outcomes across different regions of the world?

**Motivation:**

Climate change and its total physical impacts on human life has been one of the key concerns of scientists for decades and it has become an essential political agenda for many world countries in recent years.

Studies have identified the physical risks of the climate change as changes in precipitation patterns, shifting deserts and monsoons, sea level rise, more intense and extreme weather, destruction of marine food chain due to ocean acidification as well as changes in ocean circulations. Taking that into consideration, it is needless to argue that such physical risks do contain strong macroeconomic impacts and therefore many economists have tried to study the short and long term effects of the climate change.

To be precise, after the Paris summit in January 2016, one study by the staff members of the IMF (Mai Farid, Michael Keen, Michael Papaioannou, Ian Parry, Catherine Pattillo, Anna Ter-Martirosyan, and others, 2016) suggested that in the absence of mitigation and adaptation policies, it is anticipated that global temperatures will rise by 3-4°C until 2100 as carbon dioxide (CO2) concentrations have increased from 280 parts per million 1 to 400 ppm until 2013, meaning that carbon emissions have increased from 2 Billion metric tons from 1900 to 32 billion metric tons in 2013 and it is anticipated to further grow 700-900 ppm until 2100 which will result in a 0.07%-0.09% concentration of CO2 in earth’s atmosphere which will eventually cause a 3-4% fall in the World GDP.

On the other hand, (Burke, Hsiang, Miguel and others 2012) found during their research that the actual unmitigated impact of the climate is 5-10 times more than the current provided estimates; meaning that the fall in world GDP will account for 15-20%.

Although estimates and anticipations vary in different studies, there seems to be a consensus on the severity of the effects across the different regions of the world. Nearly, all studies conclude that LICs will be affected severely and in particular, sub-Saharan countries (SSA), Middle-East and Northern Africa (MENA) will be the worst affected, following that, countries like the USA, UK and China are those who are assumed to be moderately affected and lastly, European countries are perceived to bear the least negative impact of the climate change and some northern, central and central-eastern European countries can even face a positive growth (at least in the short run)

However, what I am interested to base my research on is whether the moderate and positive short-run effects of the climate change in some regions can be used, in combination with the current mitigation measures to offset the severe short-run negative impacts and if not, I will provide a cost-benefit analysis of relying renewable and green goods.

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1- Currently, the concentration of (CO2) in atmosphere is 400 ppm which means 0.04% of the earth's total atmosphere. *(Earth's atmosphere is consisted of 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.04% CO2 and the rest 2% is water vapor and other gases)*
Methodology

In this paper, I will gather the existing data (From sources such and World Economic Forum, World Bank, IMF, Data.gov and etc) on current and estimated economic growth as well as the estimated output for LICs, developing and developed countries and then will collect data about the extent to which variables such as agricultural output, labor productivity, real state, coastal business investments and so on, contribute to economic productivity and growth of a particular region. Since the mentioned variables are most sensitive (or vulnerable) to the climate change, and given their amount of contribution to a particular regions economic growth– they will provide the severity of the effects of climate change as well as a correlation between rise in temperature and fall/rise in output (Depending on the region). I will then try to analyze whether a total positive impact of one region can be positive enough to offset the total negative impact for the others and if this quantitative analysis show a negative total result – I will then gather data on cost-benefit analysis of switching to renewable and green goods and their contribution to short-term and long term economic growth.

Outline:

- Introduction
- The total global effect of climate change
- Regions effected from most to least
- Macroeconomic effects
- Replacement costs to zero-carbon consumption
- Fiscal policies for mitigation
- Climate Finance
- Role of the non-governmental organization in policy-making
- Conclusion

Bibliography:

2- Oliver Deschenes and Michael Greenstone – The Economic Impact of Climate Change – Evidence from Agricultural output and Random Fluctuations in Weather
3- After Paris: Macroeconomic and Financial Implications of Climate Change - Mai Farid, Michael Keen, Michael Papaioannou, Ian Parry, Catherine Pattillo, Anna Ter-Martirosyan, and others – January 2016
5- Verisk Maplecroft, 2015, Climate Change Exposure Index. Bath, United Kingdom