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Pro-poor growth and sustainable development framework: Evidence from two step GMM estimator

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ABSTRACT

The environmental sustainability agenda is not easy to be achieved without implementing pro-growth and pro-poor growth policies across the globe. Pakistan's economy is no exception that strive hard to managed environmental resource capital and pro-poor growth expenditures in order to reduce poverty incidence and carbon mitigation policies, while many efforts need more sustainable instruments to be achieved United Nation's assigned sustainable development target till 2030. The study selected an annual time series data from 1975 to 2016 and employed two −step Generalized Method of Moments (GMM) estimator for robust inferences. The results show that higher economic growth decreases poverty incidence through social reforms, while, deforestation, under −5 mortality rate, trade openness, carbon emissions, and FDI inflows largely increases poverty incidence in a country. The study confirmed Environmental Kuznets Curve (EKC) hypothesis of carbon emissions in relation of per capita income and public spending on education, while 'pollution haven hypothesis' is confirmed due to high involvement of dirty polluting industries in country's economic transformation process. The fossil fuel combustion and high population density increases carbon emissions that sabotage the process of sustainable development in a country. Thus, it is imperative to device sustainable policies for mitigating carbon-fossil emissions with cleaner production techniques and improves the quality of life of poor people through increase social expenditures that trickle down to the poor as compared to the non-poor.

1. Introduction

United Nation (UN) in its 2030 agenda highlights the issues of sustainable development. United Nations (2015) report shows that the world is meeting the challenge of sustainable development in a number of ways i.e., billions of people across the world are living below the poverty line, far from quality life. There is inequality of wealth among countries with disparity regarding gender, opportunities, and power, because of this, unemployment has become a major concern. Terrorism, spiraling conflicts, natural disasters and humanitarian crises have threatened people, in turn; they reverse the development processes of last decade. The depletion of natural resources including land degradation, forest degradation, and fresh water scarcity adds to the challenges. Climate change is the biggest challenge of today and the main hindrance to sustainable development, i.e., rise in sea level, increase in temperature and ocean acidification. In such situations, survival of developed as well as developing economies has become difficult. In addition, a country should focus on poverty reduction policies, promoting pro-equality arguments and sustained economic growth for long-term sustained growth.

In the recent decade, poverty, economic growth, income inequality and carbon dioxide (CO_2) emissions have become the topics of researchers' choice as these have implications for the policymakers (Abdouli et al., 2018). These issues linked further with country's economic development, Foreign Direct Investment (FDI)

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Nomenclature

Acronyms

UN	United Nation
EKC	Environmental Kuznets Curve
GMM	Generalized Method of Moments
FDI	Foreign Direct Investment
SDGs	Sustainable Development Goals
GoP	Government of Pakistan
IPAT	Emissions, Population, Affluence, Technology
GDP	Gross Domestic Product
OECD	The Organization for Economic Co-operation and Development
ASEAN	Association of Southeast Asian Nations
GNI	Gross National Income
HIES	Household Integrated Economic Survey
PIHS	Pakistan Integrated Household Survey
PSUs	Primary Sampling Units
SSUs	Secondary Sampling Units
TOP	Trade Openness
FPROD	Fish Production
LPI	Livestock Production Index
GEEXP	Government Education Expenditures
FFUEL	Fossil Fuel
U5MR	Under −5 Mortality Rate
VAR	Vector Auto Regressive
PIGC	Poverty Interdependence Growth Curve
PPGI	Pro-Poor Growth Index
POV	Poverty Headcount
FDEP	Forest Depletion
PSLM	Pakistan Social and Living Measurement Survey
SEM	Simultaneous Equation Modeling
MDEP	Mineral Depletion
ADF	Augmented Dickey Fuller
PHH	Pollution Haven Hypothesis

Chemical Symbols

CO2	Carbon Dioxide

Greek Symbols

β	Beta's slope coefficient
λ	First lagged exogenous variables
ε	White noise error term

Subscripts

t	Time period

and human made activities (Zhu et al., 2016). FDI inflows and accelerated economic growth can negatively affect a country regarding environmental quality (see, Abdouli and Hammami, 2016), carbon emissions (Xu and Lin, 2018) and the quality of life (Hitam and Borhan, 2012). These issues make this topic of policy-maker's choice (Omri et al., 2014). Further, urbanization is considered as an essential indicator of environment, demographical structure and economic development (see, Sheng and Guo, 2016). The findings regarding economic growth, energy emission, environmental dilapidation, population density, poverty and FDI are mixed and it need to be exercised with the inclusion of large number of socio-economic and environmental factors across the globe (Abdouli et al., 2018).

According to the report of World Bank (2013), in most of the developed countries, quality of life and environment dilapidates because of economic growth, energy emission and FDI. However, in case of developing countries, population density, inequality of income and poverty may also contribute towards environment dilapidation (Khan, 2008). Existing literature motivates the researchers to provide fresh findings on these issues in Pakistan. Pakistan being a developing economy is facing critical poverty-related issues as forty percent of the nation is far away from necessities of life (as per the statistics of 2016). One of the major reasons for poverty in Pakistan is the inequality of wealth, as approximately 66% of the country's industrial assets are in the hands of only twenty-two families. In addition, the value of Gini coefficient is also increasing on an annual basis (Junaidi, 2016). Brocklesby and Hinshelwood (2001) have related poverty with the poor health and natural resource dilapidation. People of developing countries are mostly associated with natural resources, thus affected by natural resource degradation. Pakistan's 2.47% land (1,902,000 ha) is covered with the forests and between 1990 and 2000 the country has been losing 41,100 hectors (1.63%) of forests on an annual basis. However, between 2000 and 2005 the deforestation rate increased by 2.04% per annum, and the country lost 24.7% of its forests between 1990 and 2005. This deforestation has threatened 1027 known species and 4950 species of vascular plants. Deforestation is directly associated with climate change and a cause of global warming.

Although, Pakistan is not a big contributor to greenhouse gases, but still amongst top ten countries that are affected by such gases. Towards achievement of the Prime Minister's goal to be among top 20 economies of the world by 2025, CO_2 emissions in the country have grown to 123% between 1994 and 2015 (Hakim, 2017). The CO_2 emissions were noted a rise of 4 times in fifteen years (i.e. 405 MT in 1994 to 1603 MT in 2015). Following the UN's agenda and challenges faced by Pakistan, the findings of this study would help policymakers regarding sustainable development and pro-poor growth in a country.

1.1. Contribution of the study

The above discussion confirmed the viability of United Nation's Sustainable Development Goals (SDGs) in Pakistan's context by reaching the target of SDG-1 (no poverty), SDG-2 (zero hunger), SDG-3 (good health and economic well being), SDG-5 (quality education), DSG-10 (reduced inequalities), and SDG-13 (climate action). The main contribution of the study is to assess these SDGs under two main heads, i.e., pro-poor growth, which largely covered SDGs −1, 2, 3, 5, and 10; while environmental sustainability agenda assessed by SDG-13. The previous studies evaluated pro-poor growth process without assess environmental sustainability agenda, including Ravallion and Chen (2003), Son (2004), Son and Kakwani (2008), etc., while it is quite obvious that without assess environmental sustainability agenda, the country's growth process would not be equitable and judicious (see, Abrahams, 2018, dos Santos and Gupta, 2017, Meyfroidt, 2018, etc). Thus, it is imperative to evaluate sustainability agenda with pro-poor growth process to make a growth more equitable, environmental friendly, and healthy, which is one of the basis to combined aforementioned SDGs in one study topic to filled the existing literature and proposed target oriented socio-economic and environmental policies to mitigate carbon emissions in a country.