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Editorial: The role of fiscal decentralization in achieving environmental sustainability in developing and emerging economies

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Editorial on the Research Topic

The role of fiscal decentralization in achieving environmental sustainability in developing and emerging economies

Global warming and environmental issues have garnered widespread attention, necessitating an immediate global response. Previously, various economic drivers of environmental degradation have been identified in the present literature. However, at the same time, less attention has been paid to non-economic factors while investigating the drivers of environmental degradation. In this context, the role of fiscal decentralization (FD) in sustaining environmental quality requires fresh insights into the Perspective of developing and emerging economies. The FD is a non-economic policy level indicator that may provide the best choice for nations to reshape environment-related policies to sustain environmental quality.

Many nations have recently shown an interest in extending their FD policies to expedite sustainable energy innovation and handle the unique market failure concerns (knowledge spillovers) connected with energy innovation (Smoke, 2017). This reflects governments' shift toward a decentralized fiscal structure to increase the efficiency of supplying ecofriendly public goods since localities can effectively meet people's desires for such public goods (Carley and Konisky, 2020). Although there are opposing perspectives, FD has significant implications for government energy RD&D expenditures. For instance, as stated by (Acemoglu et al., 2005), vertical and horizontal decentralization increases the number of political and economic actors

involved in funding and demanding creative activity. This phenomenon will not only enhance R&D activities but will also influence the rate of technological innovation (Robertson and Langlois, 1995; Taylor, 2007). Second, when preferences are diverse, FD provides a better match between people's choices and public goods given by subnational and central governments, according to the "first generation of fiscal federalism" (Oates, 1972). Third, "the second generation of fiscal federalism" contends that competitiveness among local authorities encourages central governments to foster market-oriented growth, which benefits the efficacy of eco-friendly public goods and service supply.

At present, two concepts prevail in the present literature while exploring FD nexus with environmental sustainability; The race to top concept, the believers of this concept support that allocation of power and resources to the sub-level local government will effectively minimize the negative externalities arising from anthropogenic activities (Ahmed Memon et al.; Khan et al., 2021; Tufail et al., 2021; Safi et al., 2022). The rationale behind the race to the top approach, where FD results in environmental sustainability, is the implementation of strict environmental measures to restrict negative externalities arising from human activities (Khan et al., 2021). In the race to the bottom approach, the government relaxes their domestic environment-related policies to attract foreign firms to invest in their economies. In this context, in the absence of stringent environmental measures, the arrival of foreign firms and industries results in environmental degradation.

In this context, a total of 7 articles in the present issues empirically examine the multifaceted linkage of FD with environmental pollution. For example, focusing on provincial-level data of China over the years 2010–2019 (Feng et al.), reports that; (I) the spatial agglomeration impact of China's provincial carbon productivity is apparent, and it is rising, (II) FD have the potential to improve carbon productivity greatly, (III) enhancing FD helps the province's carbon productivity, but it reduces the carbon productivity of surrounding provinces. Finally, the authors make policy recommendations to enhance carbon productivity increase through the channel of FD.

Focusing on the annual data covering the period of 1994–2018. Similarly, (Shi et al.) employed a district based panel data of Beijing and revealed that Beijing's districts had a drop in carbon emission intensity between 2009 and 2020. In all districts, the industrial structure has been upgraded. Beijing's carbon emission intensity exhibits notable positive spatial autocorrelation between 2009 and 2020 and negative spatial autocorrelation between 2015 and 2016. In 2009, 2015, and 2020.

Yuan et al. confirms that fossil fuel-based energy, GDP, and trade liberalization promote carbon emissions in Japan, but FD and green energy help the environment. (Xia et al.; Zhan et al.) discover that FD in eastern China had a substantial positive

association with environmental governance performance. Local governments with strong tax autonomy established the finest tax policies for clean production, increasing excitement for firms' green production. (Wang et al.) supports the fact that FD enables local governments to play a significant role in the local economic system and fosters green economic growth. Environmental regulation is an excellent tool for FD to support green economic growth from the standpoint of policy synergy.

The first-order differential dynamic panel econometrics model was used by (Li et al.; Xia et al.), which report that 1) fiscal disparity reduced CO₂ emissions linked to revenue decentralization and 2) spending asymmetry hindered CO₂ emission control. 2) Transfer payments from the central government mitigate the negative repercussions of a fiscal deficit. Furthermore, the impact of FD on carbon dioxide emissions was impacted by the U-Shape effect in industrial structure. Besides, using the SBM-GML model to evaluate green total factor productivity in China (Zhan et al.), proposed that 1) green total factor productivity improves year after year and is better in central and western regions, 2) FD significantly weakens the increase of green total factor productivity in, 3) FD hinders green total factor productivity in central and western regions with provincial diversity, 4) (4)The link between FD and green total factor production is influenced by local government competitiveness. Moreover, (Rehman Khan et al.) suggest that reducing the risk of pandemic illnesses in the industrial and logistics sectors can improve overall international commerce and logistics. Additionally, businesses handle sustainability challenges related to international commerce and operations by employing affordable, renewable, and efficient energy resources.

In this context, a total of 5 papers examine various determinants of carbon emissions as follows; The article by (Li et al.) affirms that provincial carbon emissions have a favorable influence on life happiness and increases in fuel and power use also indicate a better level of life satisfaction. Furthermore, an increase in relative energy consumption has a detrimental impact on the living satisfaction of Chinese households. Focusing on the possible empirical linkages between renewable energy consumption, eco-innovation and trade openness with carbon emissions in G-7 economies (Olanrewaju et al.) revealed that fossil fuel-based energy and trade openness adds to environmental destruction. In contrast, economic development, renewable energy, and eco-innovation improve environmental quality. addition (Fei et al.) conclude that the COVID19 lockdown has resulted in the improvement of air quality based on city level data of Nanjing. Similarly, (Hasnain et al.) employed Prophet Forecasting Model (PFM) to predict both long and short-run air contamination in Jiangsu Province. The authors confirmed that, PFM correctly forecasted PM₁₀ and PM_{2.5} with R values of 0.40 and 0.52

respectively, RMSE values of 16.37 and 12.07 g/m³, and MAE values of 11.74 and 8.22 g/m³, respectively. In addition to other contaminants, PFM predicted SO₂, NO₂, CO, and O₃ with R values between 5 and 12 g/m³ and MAE values between 2 and 11 g/m³. To test the effect and mechanism of environmental policy on labor income share in China over the period of 1998–2013, (Huang et al.) confirmed that the EPA-TCZ regulations in China considerably raises the labor income share by 2.6% while lowering sulfur dioxide (SO₂) emissions. To comply with environmental regulations, enterprises typically use source control and end-of-pipe treatments, and labor income share is increased through the factor-substitute effect and the cost impact, according to mechanism studies. Moreover, (Mosleh et al.) explore the association between financial development and environment in developed economies in the year 1990–2019. The study found that renewable energy and globalization reduce while financial development, fossil fuel and economic growth activate carbon emissions in Japan. Considering a panel of middle income and higher income countries, (Galvan et al.) examine the effect of economic development, foreign direct investment and GDP on CO₂ emissions in Latin American economies. The findings revealed that FDI and GDP of higher income economies are detrimental for the environment. However, such effect is not significant in middle income economies. Examining the water resource tax of China, (Xin et al.) report that taxing water resources and water pollution together encourages water conservation and the reduces water pollution, and raising both taxes at once has a less detrimental effect on the economy. (Zhang et al.) study the determinants of bilateral trade in renewable energy for China, Japan and ASEAN economies. The authors conclude that bilateral commerce is strongly promoted by the economic sizes of both the exporting and importing nations, the exporter's economic freedom, trade agreements, and participation in common trade regions, however distance from one another had a significantly negative impact.

In the wake of changing climate and rising global temperature, this special issue advances our understanding of the past and present struggle of various nations in limiting environmental pollution through various measures. Specifically, sustaining environmental

quality through policies related to FD, energy consumption, and financial development are well highlighted in the present issue. Based on the evidence from the present literature (Race to the Top Approach), it is rational that the fiscally decentralized nations in the presence of strong institutions and high-income levels perform better than fiscally non-decentralized nations in limiting environmental pollution (Lingyan et al., 2022; Sun and Razzaq, 2022). In contrast, the opposing view of the “Race to the Bottom” approach believes that fiscally decentralization worsens the environment due to various factors, such as attracting foreign direct investment, lack of technological advancement, strong institutions, poor coordination between central and local government and high energy prices (Du and Sun, 2021; Shan et al., 2021).

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Author contributions

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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