

EDITORIAL

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The special issue: “Financial innovation for Emission Trading Scheme”

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Against the existential and ubiquitous threat of climate changes to the environment, human health, and economic well-being, the proliferation of carbon neutrality from both government and private sector recently prevails in order to strengthen preparedness for the future global crisis. More than 70 countries and regions have pledged to achieve the goal of carbon neutrality by 2050 (ICAP, 2020). While the momentum toward adopting carbon neutrality targets continue to build, a growing body of countries and subnational governments move toward carbon pricing through rolling out, speeding-up, or strengthening the construct of emission trading scheme (ETS) and carbon financial market. Notwithstanding the laudable objectives of ETS to enable emission reduction, the potential of ETS is still largely untapped, largely stemming from poor financial innovation. This special issue is, therefore, aimed at promoting research on the carbon financial innovations, financial derivatives services, the use of Fintech and the optimization on architectures of the ETS such that ETSs could drive the transformation toward low-carbon development path and the achievement of Carbon Neutrality targets.

This volume is the 37th issue of *Financial Innovation* (FIN), Volume 9, No. 1(2023). In this issue, scholars from Australia, Canada, China, Pakistan, South Africa, Turkey, UK have contributed their most up-to-date studies mainly on the ETS trading mechanism design, the policy effect of the ETS, the new technologies and financial innovation used in the ETS and carbon financial market. The 11 papers explore state-of-the-art technologies including, but not limited to, the following areas:

- ETS trading mechanism design and effect (3 papers)

The evaluation of the ETS implementation effect facilitates to develop optimal emission-reduction strategies and carbon pricing in the carbon market.

The paper “The impact of carbon emission trading policy on firms’ green innovation in China” examines the green innovation effect of the carbon emissions pilot policy in China; the paper “Competition vs cooperation: renewable energy investment under cap-and-trade mechanisms” explores the incentives of investment in renewable energy of two utility firms who compete or cooperate under either a cap-and-trade grandfathering mechanism (GM) or benchmarking mechanism (BM); the paper “Optimal reduction and equilibrium carbon allowance price for the thermal power industry under China’s

peak carbon emissions target” uses fractional Brownian motion to describe the energy-switching cost and constructs a stochastic optimization model on carbon allowance (CA) trading volume and emission-reduction strategy during compliance period with the Hurst exponent and volatility coefficient in the model estimated.

- Financial technology and financial innovation regarding energy (4 papers)

Financial technology and financial innovations promote greater financial inclusion in the ETS and energy structure transformation.

The paper “Digital finance and renewable energy consumption: evidence from China” examines the impact of digital finance on China’s renewable energy consumption (REC) between 2011 and 2018 and explores the underlying mechanisms; the paper “Understanding the financial innovation priorities for renewable energy investors via QFD-based picture fuzzy and rough numbers” evaluates financial innovation priorities for renewable energy investors by generating a novel hybrid fuzzy decision-making model; the paper “A Novel Stochastic Modeling Framework for Coal Production and Logistics through Options Pricing Analysis” proposes a novel stochastic modeling framework for coal production and logistics using option pricing theory; the paper “Investigating the components of fintech ecosystem for distributed energy investments with an integrated quantum spherical decision support system” aims to evaluate the components of a fintech ecosystem for distributed energy investments.

- Financial development and business policy on sustainability (2 papers)

The impact of financial development and business policy has been an important research highlight in the study of ecological sustainability recently.

The paper “Exploring the moderating role of financial development in environmental Kuznets curve for South Africa: fresh evidence from the novel dynamic ARDL simulations approach” investigates financial development’s direct and indirect consequences on ecological quality utilizing the environmental Kuznets curve (EKC) methodological approach. The paper “Asymmetric nexus between commercial policies and consumption-based carbon emissions: New evidence from Pakistan” extends the previous literature by exploring the effects of a newly discovered driver, i.e., import taxes (as a proxy for commercial policies), on the consumption-based carbon emissions (CCO_{2e}) for 1990Q1-2017Q4.

- Risks on financial technology and green stocks (2 papers)

It is important to uncover the risk factors of fintech investments and market volatilities to encourage climatic investment and stabilize market uncertainty.

The paper “Effects of investor sentiment on stock volatility: new evidences from multi-source data in China’s green stock markets” constructs two investor sentiment proxies using Internet text and stock trading data, respectively. In addition, the paper divides the realized volatility into continuous and jump parts, and then investigates the effects of investor sentiment on different types of volatilities. The paper “A hybrid decision support system with golden cut and bipolar q-ROFSs for evaluating the risk-based strategic priorities of fintech lending for clean energy projects” aims

to analyze a unique risk set and the strategic priorities of fintech lending for clean energy projects.

Author contributions

All authors read and approved the final manuscript.

Declarations

Competing interests

The author declares that he has no competing interests.

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