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- **Prof. Dr. Gary Campbell - Michigan Technological University, USA**
- **Prof. Dr. Berrin Tansel - Florida International University, USA**
- **Prof. Dr. Perry Sadorsky – Schulich School of Business, Canada**

İÇİNDEKİLER

DEPENDENCE OF STRATEGY MINERALS: PROBLEMS AND SOLUTIONS

Prof. Gary Campbell
Natural Resource Economics
Co-Editor of Resources Policy
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Strategic minerals are minerals that a country is highly dependent on from foreign sources. Of special concern are minerals that come from limited and/or uncertain sources. The risks of such dependence are supply cut-offs or its threat because of political unrest at the production site, acts of nature, industrial accidents, political strategy, or other events. The Covid pandemic has shown the potential weakness of international supply chains to disruptive events and the difficulty of supplying necessary goods and products during those times (and after). If the market adequately accounts for the strategic risk through price, market adjustments of supply and demand will bring about corrections for the risk. If the market fails because of a negative externality or other reasons, government intervention may be necessary. The case study of cobalt is used to show that market adjustment does occur, but it may not be enough (as in the case of cobalt) to protect supply chains against effects like the Covid pandemic. Government policies may be necessary to adequate handle the risk.

SMART ENERGY DENMARK- STRATEGIES FOR A FULLY DECARBONIZED SOCIETY

Prof. Henrik Lund
M.Sc.Eng., Ph.D., Dr.Techn. Professor
Energy Planning at Aalborg University, Denmark
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This plenary talk presents the methodology and results of a strategy for achieving a fully decarbonized society. The methodology is applied to the case of the Danish Governments goal of a 70% decrease in CO2 emissions by 2030 and a fully decarbonized society in the years after. The principles and the methodology are relevant for most countries on a global level. The energy system analysis methodology includes hour by hour computer simulations leading to the design of flexible energy systems with the ability to balance all sectors of the complete energy system - also known as a smart energy system. Principles and guidelines are developed on how to design such a system as an integrated part of a global decarbonization taking into account issues such as international shipping and aviation, sustainable use of biomass and exchange of electricity and gas with neighboring countries. Moreover, the energy systems are coordinated with other sectors in order to achieve a fully decarbonized society.

EFFECTS OF EXTREME EVENTS ON ENERGY SECTOR AND GREENHOUSE GAS EMISSIONS

Prof. Berrin Tansel
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Increasing energy demand is among the top ten global environmental challenges. Trends of energy demand are also correlated to other environmental challenges such as rate of global warming and levels of greenhouse gas emissions. Oil market is bigger than the market shares of all raw materials combined. Therefore, any major natural or man-made event that affects the oil market have historically resulted in major market oscillations on oil prices. Globally, most of the oil production locations and oil refineries as well as oil transportation routes would be affected by sea level rise. Greenhouse gases include carbon dioxide, methane, nitrous oxide, hydrogenated gases, and nitrogen oxides. When the levels of greenhouses gases present in the atmosphere increase; they result in increase in the Earth's temperature. During the COVID-19 pandemic and pandemic related global lockdown, there was a significant reduction in oil consumption due to reduction in transportation and industrial activities globally. As a result, the same period there was also significant decrease in greenhouse gas emissions, primarily carbon dioxide. It is important to consider the energy use as a contributing factor for greenhouse gas emissions and increase in global temperatures.

PETROL PRICES AND OBESITY

Prof. Russell Smyth
Economics, Deputy Dean (Research)
Monash Business School, Monash University, Australia

Kushneel Prakash
University of Melbourne

Sefa Awaworyi Churchill
RMIT University

Using 13 waves of longitudinal data from Australia, we examine the relationship between petrol prices and obesity. Applying panel data models that control for individual fixed effects and the endogeneity of petrol prices, our results suggest that petrol prices have a negative effect on obesity. Specifically, our preferred instrumental variable estimates, which instrument for petrol prices using the Arca Oil Stock price and control for individual and time fixed effects, suggest that a standard deviation increase in petrol prices generates a 0.006 standard deviation decline in Body Mass Index (BMI), while a unit increase in petrol prices results in a 2 percentage point decrease in the probability that a survey participant is obese. These results are robust to several sensitivity checks. Back of the envelope calculations suggest that our results imply that a permanent $1 per litre increase in petrol prices would reduce the number of people who were obese by 672,000 and save $1.4 billion dollars in medical expenditure related to obesity every year. We also find that frequency of participation in physical activity and expenditure on meals eaten out are channels through which petrol prices affect obesity.
Keywords: petrol prices, obesity, body mass index, Australia
JEL codes: I12, Q41, R41

MARKET UNCERTAINTY AND CLEAN ENERGY STOCKS: BEFORE AND DURING COVID-19

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Investment in clean energy stocks is being shaped by climate change, green consumers, energy security, fossil fuel divestment and technological innovation. Given the recent outbreak of COVID-19 there are some important questions to ask. How has COVID-19 affected the impact of market uncertainty on clean energy stocks? Are different clean energy equity sub-sectors affected differently? This research investigates the impact of market uncertainty (stock market, oil prices, technology stock prices) on clean energy stock prices. Spectral causality analysis shows that causality was very different during COVID-19. During the COVID-19 time period, there was a lot more causality from market uncertainty to clean energy stock prices. Causality is at higher frequencies. Solar stocks are more affected than wind stocks. Higher volatility during COVID-19 coincided with higher clean energy stock prices. This is unexpected since higher volatility is usually associated with lower stock prices. Standard portfolio analysis like mean-variance or risk parity may miss important risk and return tradeoffs during the COVID-19 time period.

Prof. Scott W. Cunnigham

SYMMETRIC AND ASYMMETRIC ANALYSIS OF TRADE AND ENVIRONMENT IN PAKISTAN

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The study examines how trade influence the environment via scale, composition and technique effect. The study is conducted for Pakistan using time series annual data from 1980 to 2020. The study analyses both symmetric and asymmetric effect of trade openness on environment. Symmetric analysis is carried out though auto regressive distributive lag model (ARDL). ARDL ignores the nonlinear association between the variables and captures only the linear relationship among variables. In this regard Shin et al. (2014) extended the ARDL model and introduced the nonlinear auto regressive distributive lag model (NARDL) that captures the asymmetry. Results of the symmetric analysis show that scale and composition effect positively contribute to carbon dioxide emission while technique effect is negatively related to carbon dioxide emission. Trade openness accelerate the carbon dioxide emission. The findings also confirm the presence of pollution haven proposition. More over natural resource abundance increases emission while better governance reduces the emission. Asymmetric analysis shows that the association between trade openness and carbon dioxide emission is nonlinear. The effect of an increase and decrease in trade openness is found to be positive and insignificant on carbon dioxide emission, respectively. Moreover, the findings of asymmetric analysis follow the findings of symmetric analysis in direction. Study suggests that emission can be reduced by using environmental friendly technology and by improving the governance.

Key words: Scale Effect, Composition Effect, Technique Effect, Environmental Pollution, Error Correction Model Etc.
Jel Codes: F18; Q56; Q3.

ANALYZING THE ROLE OF FISCAL DECENTRALIZATION, NATURAL RESOURCE RENTS AND ECO-INNOVATION IN ENVIRONMENTAL QUALITY: AN EMPIRICAL ANALYSIS FOR BRICS ECONOMIES

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The present study empirically evaluates the role of fiscal decentralization, natural resource rents and eco-innovation in environmental quality for the sample of BRICS economies. To accomplish these objectives, we used annual data from 1996 to 2020. We have applied advanced panel estimation techniques such as Fully Modified Ordinary Least Squares and panel Dynamic Ordinary Least Squares estimation techniques. Dumitrescue-Hurlin (2012) panel causality test is used to see the causal links between the variables. The results elucidate that fiscal decentralization is decreasing the environmental degradation. The natural resource rent surge CO2 emissions. Further, eco-innovation is one of the most prominent factors to decrease environmental degradation in these economies. Moreover, in the sample economies GDP is also proved to be a detrimental factor of environmental quality in the long run. The results provide pertinent policy recommendations for policymakers
Key words: Fiscal Decentralization, Natural Resources, Eco-Innovation, Environmental Quality, BRICS
Jel Codes: Q01, Q50, Q56.

IMPACTS OF ALTERNATIVE ENERGY PRODUCTION INNOVATION ON REDUCTION OF CARBON DIOXIDE EMISSIONS: EVIDENCE FROM CHINA

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Though the impacts of green inventory on reduction of carbon dioxide emissions have been an important topic for research on environmental economics, the previous studies ignore heterogeneity of the green inventory and how it might affect the carbon dioxide emissions. This paper examines the how the alternative energy production innovation in the green inventory process affects the reduction of the carbon dioxide emission. It further examines the interaction effects of the alternative energy production innovation and energy structure on the deduction of carbon dioxide emissions. Using a sample of 30 provinces in China during the period from 1997 to 2017, we find that the alternative energy production innovation is positively related to the deduction of carbon dioxide emissions. By further dividing different types of patents, we find that compared with invention patents of alternative energy production, the impacts of utility model patents on the reduction carbon dioxide emissions are stronger. In addition, the alternative energy production innovation shows a significant response to environmental regulation, which also facilitates to the deduction of carbon dioxide emission. The study contributes to the innovation theory on environmental economics.
Key words: Alternative Energy Production Innovation, Carbon Dioxide Emissions, Green Inventory, Energy Structure.
Jel Codes: Q54.

IMPACT OF GOOD GOVERNANCE AND NATURAL RESOURCE RENT ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY: AN EMPIRICAL ANALYSIS FOR SOUTH ASIAN ECONOMIES

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Good governance and natural resource rent are important pillars of sustainable development. This study provides new insight by introducing the role of Governance and natural resources rent in affecting economic, social and environmental sustainability. For assessing this objective, this paper used panel data from four selected South Asian countries from 1996 to 2020. For empirical analysis, we used the Pedroni, Kao and Westerlund test to confirm the co-integration in three different models which represents the sustainable development and estimate long run coefficients by using fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) models. To check whether the residuals of the model were cross-sectionally dependent or not, we used cross-sectional dependence test of Breusch and Pagan (1980) and Pesaran (2004) tests. In order to ascertain the integration order of variables, the study utilized the Pesaran second-generation unit-root test. The findings reveal that all the variables are stationary at first difference. The long-run results confirm that governance improves the environment by reducing greenhouse gas emission (GGE) and has positive and significant impact on growth and social sector. Moreover, gross domestic product and trade openness are positively related to economic and social effect whereas natural resource rent has positive impact on greenhouse gas emission (GGE). But the results confirm that with good governance the natural resource rent can decrease greenhouse gas emission. For policy implication, this study recommends that governance will reduce GGE emissions, increase social and economic development and shift these countries to more environment friendly sources.

Key words: Governance, Natural Resource Rent, Environmental Sustainability, Sustainable Development, South Asian Economies.
Jel Codes: Q01, Q56.

YENİLENEBİLİR ENERJİ VE TEKNOLOJİK İNOVASYONUN ÇEVRESEL BOZULMAYA ETKİSİ: RALS BİRİM KÖK VE RALS ENGLE-GRANGER EŞ-BÜTÜNLEŞME YAKLAŞIMI

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2015 yılında Birleşmiş Milletler Genel Kurulu, sürdürülebilir bir geleceği güvence altına almak için 2030 yılında tamamlanacak bir yol haritası olarak "2030 Gündemi" adıyla Sürdürülebilir Kalkınma Amaçlarını (SKA) kabul etmiştir. Enerji ve çevre politikalarını yeniden düzenleyerek ekolojik ayak izi yoluyla çevresel bozulma üzerinde kontrol sahibi olmak, sürdürülebilir kalkınma hedeflerine ulaşılmasına yardımcı olacaktır. Sürdürülebilir kalkınma hedefleri, gelişmiş enerji hizmetlerine erişim ve dünya çapında yenilenebilir enerjinin payını artırmak, sürdürülebilirliği sağlamak için önemlidir. Yenilenebilir enerjinin kullanımı ve sürdürülebilir gelişimi için çevre dostu inovatif teknolojilere ve bu teknolojileri ortaya çıkartacak Ar-Ge faaliyetlerine ihtiyaç vardır. Alternatif yenilenebilir enerjilerin keşfedilmesi ve tasarlanması fosil yakıtlı enerjiye olan bağımlılığın ve ekolojik ayak izinin azalmasını sağlayacaktır. Teknolojik yenilik, endüstriyel dönüşüm ve yenilenebilir enerjinin geliştirilmesi yoluyla sürdürülebilir kalkınma, ekonomik ve sosyal kalkınmanın sağlanmasına yardımcı olacaktır. Literatürde son zamanlarda sürdürülebilirlik kavramı ile birlikte yenilenebilir enerji, teknolojik inovasyon ve çevresel bozulma konularında çalışmaların yoğunlaştığı görülmektedir. Bu çalışmada çevresel bozulma göstergesi olarak ekolojik ayak izi verisi kullanılmış ve yenilenebilir enerji ile teknolojik inovasyonun ABD'deki ekolojik ayak izi üzerindeki etkisinin RALS birim kök ve RALS Engle-Granger eş-bütünleşme testleri yapılarak incelenmesi amaçlanmıştır. Kişi başına düşen ekolojik ayak izi sıralamasında ilk on ülke arasında yer alan ABD'nin ekolojik açığı -1,416.05 kişi başına düşen ekolojik ayak izi 8,22 hektar ve biyokapasitesi 3,76 hektardır. Dolayısıyla ABD'de ekolojik ayak izi üzerinde yenilenebilir enerjinin ve teknolojik inovasyonun etkisinin test edilmesi çevresel sürdürülebilirlik açısından önemli rol oynayacaktır. Analiz sonucu değişkenler arasında uzun dönemli bir ilişki olduğunu doğrulamaktadır. Ayrıca çalışmada yenilenebilir enerjinin ve teknolojik inovasyonun ekolojik ayak izini azalttığı bulgusuna da ulaşılmıştır.

Anahtar Kelimeler: Yenilenebilir Enerji, Teknolojik İnovasyon, Çevresel Bozulma, Rals E-G Yaklaşımı.

The Effect of Renewable Energy and Technological Innovation on Environmental Degradation: RALS Unit Root and RALS Engle-Granger Co-integration Approach

In 2015, the United Nations General Assembly adopted the Sustainable Development Goals (SDGs) with the name “2030 Agenda” as a roadmap to be completed in 2030 to secure a sustainable future. Having control over environmental degradation through ecological footprint by reorganizing energy and environmental policies will help achieve sustainable development goals. Sustainable development goals, access to advanced energy services and increasing the share of renewable energy worldwide are important to ensure sustainability. For the use and sustainable development of renewable energy, environmentally friendly innovative technologies and R&D activities that will reveal these technologies are needed. Discovering and designing alternative renewable energies will reduce the dependence on fossil fuel energy and reduce its ecological footprint. Sustainable development through technological innovation, industrial transformation and the development of renewable energy will help achieve economic and social development. In the literature, it is seen that studies on renewable energy, technological innovation and environmental degradation have been intensified recently with the concept of sustainability. In this study, ecological footprint data was used as an indicator of environmental degradation and it was aimed to examine the effect of renewable energy and technological innovation on the ecological footprint in the USA by performing RALS unit root and RALS Engle-Granger cointegration tests. The ecological deficit of the USA, which is among the top ten countries in ecological footprint per capita, is -1,416.05, its ecological footprint per capita is 8.22 hectares and its biocapacity is 3.76 hectares. Therefore, testing the impact of renewable energy and technological innovation on the ecological footprint in the USA will play an important role in environmental sustainability. The result of the analysis confirms that there is a long-term relationship between the variables. In addition, it was found that renewable energy and technological innovation reduce the ecological footprint in the study.

Key words: Renewable Energy, Technological Innovation, Environmental Degradation, Rals E-G Approach.

Jel Codes: Q55, Q43, Q20, C32.

THE ROLE OF ENVIRONMENTAL REGULATION OF HOME COUNTRY IN ENHANCING INNOVATION PERFORMANCE OF CHINESE EMNES

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EMNEs pursuing for innovation performance via internationalization could be affected by the environmental regulation within a global sustainable development context. Building on the institution-based view, we study how external environmental regulations of the home country impact on the innovation performance of EMNE via internationalization. We also examine the moderation roles of OFDI entry mode choice and state ownership background of the EMNEs in this framework. Using a sample of 2313 FDI activities by Chinese EMNEs during the period of 2000-2018, we find that the environmental regulations of the home country is positively related to the innovation performance of the EMNEs via internationalization. Compared with greenfields, the entry mode of acquisition strengthens the positive relativeness between the environmental regulations and innovation performance of EMNEs. This tendency is more significant in the developed host countries compared with the developing ones. In addition, it is found that compared with state-owned EMNEs, the effects of environmental regulation on the innovation performance are more significant in non-state-owned firms. Our research sheds light in the IB research areas in understanding between the institution and innovation performance of MNEs by identifying unique roles of environmental regulations of the home countries and the state ownership background of the EMNEs during the internationalization process.
Key words: Environmental Regulation; Innovation Performance; FDI Entry Mode; State Ownership
Jel Codes: O38.

CLIMATE CHANGE AT LOCAL LEVEL: WHICH COMMITMENTS CITIES UNDERTAKE TO ADDRESS ACTIONS OF ADAPTATION

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Accounting for the 55% of global population and the 70% of global emissions cities are on the frontline of the climate change mitigation policies and have a vital role in meeting global targets. There are many policy options for city to address climate change, such as improving energy saving, reducing emissions, advocating low-carbon life. The role of cities for a sustainable economy has become more urgent with the Covid-19 pandemic, highlighting that cities cannot go back to business as usual. Cities need to find the appropriate low-carbon development pathways for their sustainable development, therefore urban action plans must be tailored according to multiple criteria, including socio-economic factors, spillover effects, the structure of emission sources, etc. The objective of this study is therefore to evaluate the impact of the main drivers on the urban action plans cities implement to build a resilient economy. Data come from CDP-ICLEI Unified Reporting System taking into the socio-economic and program-specific characteristics, the means of implementation and the opportunity of co-benefit area. Accordingly, we analyze the different mitigation actions cities have planned to address climate change. The mitigation actions considered promote several kinds of climate-tech related, among others, to carbon emission reduction in building, transport and energy supply, energy saving in outdoor lighting, encouraging sustainable food production and consumption. Cluster Analysis is applied to classify urban area according to the structure of emissions sources. Mixed model is then used to investigate how city-specific and program-specific characteristics condition the expected targets of the urban mitigation action plans. Variables related to the GDP, population, the structure of emissions and the program-specific characteristics significantly affect the magnitude of targets cities define in terms of emissions reduction, energy saving and renewables production.

Key words: Climate Change, Climate Tech, City Mitigation Program, Equation Systems, Cluster Analysis.
Jel Codes: C31, C38, O38, Q58, R11.

CLIMATE CHANGE AND SOCIAL CHANGE: THE ROLE OF CLIMATE TECH AND NON CLIMATE TECH IN IDIOSYNCRATIC RISK AND GLOBAL FINANCIAL STABILITY

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With COP26, the world is ever more aware of the issues that can arise from climate change. We understand that not only individuals but also large corporations are responsible for some of humanity's most significant environmental impacts. Since large corporations have large amount of money, they can potentially contribute significantly to carbon emissions. This brings us to the question whether the corporations that are environmentally friendly are compensated with low risk premium compared to the ones that are not. To this aim, we chose top 10 tech corporations that are environmentally friendly, the so called climate tech firms and calculate their tail risk and systemic risk. For comparison, we also evaluate the tail risk and systemic risk of the biggest non-climate tech commodity, i.e., Bitcoin. The Cambridge University's Bitcoin Electricity Consumption Index places Bitcoin electricity consumption (133.68 terawatt hours a year) just above Sweden (131.8 terawatt hours a year). Similarly, the Italian Central Bank said the eurozone's payments system, Tips, had a carbon footprint 40,000 times smaller than that of bitcoin in 2019. We name Bitcoin as a non-climate tech commodity. Hence, our paper analyses the tail risk and systemic risk of climate tech and non-climate tech. We find that Bitcoin is riskier individually as well as it poses more threat to the financial system compared to all climate tech firms individually and on average. This threat to the financial system by Bitcoin is both to major economies like the USA, China and the Eurozone as well as to the global financial system. Given the risk Bitcoin poses to regional and global financial system, we argue for regulations for Bitcoin and other crypto currencies. Our paper have phenomenal implications for both country and for global financial regulators.

Key words: Tail Risk; Systemic Risk; Bitcoin; Climate Tech; Asymptotic Dependence; Multivariate Extreme Value Theory.

THE ENVIRONMENTAL EFFECTS OF FOREIGN AIDS IN THE ASEAN LEAST DEVELOPED COUNTRY: THE CASE OF CAMBODIA

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Cambodia, as a member of the Southeast Asian Nations (ASEAN), is categorized as a least developed country by the United Nations with a GNI per capita of 1,530 USD in 2019. Therefore, Cambodia is one of the biggest recipient of official development assistance (ODA) among the ASEAN member states. With the increasing amount of ODA-inflow and ODA-induced projects, the energy consumption may also increase and thus lead to more carbon dioxide spewing into the air. Nerveless, based on the environmental Kuznets curve (EKC) hypothesis, economic growth primarily results in deterioration of environment, but along with the increasing of income, the quality of environment improves after a certain threshold level of economic development. Theoretically, high carbon dioxide emission in low income country should be correlative with high ODA-inflows. However, there is no sufficient empirical research to explore the effect of ODA on carbon dioxide emission in recipient country such as Cambodian. Hence, the impact of ODA on environmental degradation through carbon dioxide emission in Cambodia is an empirical issue that is worth investigating. In the present research, we implement the autoregressive distributed lag (ARDL) model as well as the Granger causality test technique by using time series data of Cambodia, a traditional ODA-dependent country among the ASEAN member states. Besides ODA, we also explore the other potential determinants of carbon dioxide emission including energy consumption, income per capita, and trade openness. Our main findings are threefold. Firstly, A 1 % increase in ODA leads to a decrease in per capita carbon dioxide emissions by 0.616 % in the long run. Secondly, the Toda-Yamamoto approach on Granger causality test supports the empirical results from ARDL model. Thirdly, ODA does not only aim to improve economic development but also prevents environmental degradation for Cambodia.
Key words: ARDL; Cambodia; Carbon Dioxide Emission; EKC; ODA
Jel Codes: F62; F63; O53.

THE NEXUS BETWEEN ENVIRONMENTAL INNOVATION AND CARBON EMISSION FROM POWER SECTOR FOR OECD COUNTRIES

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In this study, the non-linear relationship between environmental innovation and carbon emission from power sector are investigated using the panel data methodologies for OECD countries. According to data availability we use data of 32 OECD countries (Australia, Austria, Belgium, Canada, Chile, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Sweden, Switzerland, Turkey, United Kingdom and United States) for 1995-2018 period. According to test results, environmental innovation has positive effect on carbon emission from power sector upper regime and low regime there is not a significant effect.
Key words: Environmental innovation, Carbon emission, Power sector, Panel Smoot Threshold, OECD countries.

CROSS-QUANTILE DEPENDENCE OF EXCHANGE RATE, COAL PRICE, CRUDE PALM OIL PRICE, AND INFLATION IN INDONESIA

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Indonesia is committed to reducing carbon emission by 29% (unconditional) and up to 41% (conditional) by 2030, comparing the base year 2010 in Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat prior to COP-21. Besides, the economy is pledged to foster its economic growth by roughly 5.5% per year. Given the paradoxical targets, we applied a novel dynamic simulated ARDL approach to measuring carbon emission intensities' response to technology shocks decomposing by oil, gas, and coal uses. We find that the emission-oil intensity responds negatively to the 1% positive technology shock over the next 20 years time horizon and vice versa. Emission-Gas and emission-Coal intensities are appeared to be irresponsive to any technological shocks. We provide several policy implications.
Key words: Carbon Intensities; Decomposed Analysis; Technological Shock
Jel Codes: Q 32.

THE MISSING JIGSAW PIECE: DISRUPTIVE SMART CONTRACTS IN CIRCULAR ECONOMY PRACTICE

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In the development of this innovative paper, we introduce and pioneer smart contracts and blockchain to support circular economy for environmental sustainability. The implementation of circularity as a new emerging paradigm in industrialization has created unique opportunities for achieving sustainability, ethical conformance, environmental sensitivity, longevity of materials and as an inspiration for innovative initiatives. However, within this approach the industry faces many obstacles and challenges. Many organisational decision makers continually focus on generating savings and financial gain as part of value proposition development. Thus, a calculated choice has been made by organisations to focus on the "cradle to the grave" approach in the lifecycle of their products. This approach comes at the detriment of reusing materials and supporting the environment. Thus, as part of this paper we argue that the issues and challenges around circularity still exist, mainly from a practical perspective around establishing trust and legal relationships between partners, to create long lasting environmental benefits. To investigate some of these issues in this paper we discuss and provide a critical insight into the emergence of smart contracts and the blockchain. We fuse the disruptiveness of these two technologies within a circular economy approach to create a partner network for environmental sustainability. This network consists of stakeholders interested in circular means of commerce and trading; thus, this proposed solution would enable partners an equality of access, simplification of legal relationships, better transparency and enabling device for participation. Within this approach we use solidity based smart contracts for the maintenance and development of relationships. We collect empirical data through the monitoring of the Ethereum blockchain, monitoring how the blocks change based on transactions and interactions in the partner network. This robust approach to smart contract development and data collection allows the authors to granularly monitor the exchange of materials and information.
Key words: Circular Economy, Smart Contract, Block Chain, Ethereum Network.
Jel Codes: O

GREEN FINANCE, ROLE OF STATE OWNERSHIP BACKGROUND AND INNOVATION PERFORMANCE OF ENTERPRISES: THE CASE OF CHINA

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Pursuing for innovation performance in a sustainable way has been a crucial strategy for long term development of enterprises under a new context of sustainability development background. As a new type of emerging economic activities to support environmental improvement and respond to climate change, green financing plays an important role in the innovation process. Based on institution based view theory, we study the impact of development level of green finance on the enterprise innovation and the moderation role of state-ownership background in this mechanism. Using a sample of 1842 on-list enterprises in China during the period of between 2008 -2017, we find that development level of the green finance is positively related to the enterprise innovation. In addition, it is found that the state-owned background strengthens the impact of the development level of green finance on the innovation. Our study contributes to the research area on the understanding of the environmental financing and enterprise innovation.
Key words: Green finance, State-owned Background, Enterprise Innovation.
Jel Codes: O31.

CUMHURİYET DÖNEMİ ENERJİ POLİTİKALARI BAĞLAMINDA MADEN TETKİK VE ARAMA ENSTİTÜSÜ

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1929 yılında vuku bulan dünya ekonomik bunalımı tüm dünyayı çok derin bir şekilde etkisi altına almıştır. Bunalımın akabinde özellikle Batılı ülkelerde ve Türkiye'de devletçilik görüşü ağırlık kazanmış ve bu devletlerin çoğu yeni adımlar atmaya başlamıştır. Devletçi uygulamalar Türkiye'de ise özellikle 1933'ten sonra enerji, yeraltı ve ekonomi politikaları bağlamında yoğunluk kazanmıştır. Türkiye Cumhuriyeti yabancı sermayenin elinde bulunan işletmeleri millileştirmiş, Türk lirasının değerinin korunması için yeni önlemler almış ve ekonomide korumacılık olarak adlandırılan devletçi uygulamaları tam olarak benimsemiştir. Stratejik alanlarda yapılan millileştirmelerin bir kısmının ise maden işletmelerine yönelik olduğu görülmektedir. Çünkü Türkiye'nin enerji hammaddeleri bağlamında maden kaynakları bakımından çok zengin olmayışıyla birlikte madenlerin çeşitliliği açısından yeterli bir düzeyde olduğu kabul edilmiştir. Bu noktadaki en önemli uygulama örneklerinden biri ise Maden Tetkik ve Arama Enstitüsü'nün kurulmasıdır. Madenlerin gerekli jeoloji ve madencilik yöntemleri kullanılarak araştırılması ve işletilmesi amacıyla Celal Bayar'ın Ekonomi Bakanı olduğu 22 Haziran 1935 tarihinde 2804 sayılı yasayla Maden Tetkik ve Arama Enstitüsü kurulmuştur. Enstitü, kuruluş kanununa göre; "ülkenin maden ve taş ocakları kaynaklarını aramak, bulmak ve işletmeye uygun olup olmadığını tespit amacıyla gerekli etütleri, kimyasal ve teknolojik analizleri yapmak ve sektöre mühendis, yardımcı personel ve kalifiye işçi yetiştirmekle" görevlendirilmiştir. 1935 yılında az sayıda personelle kurulan MTA Enstitüsü günümüzde genel müdürlük şeklinde varlığını devam ettirmekte ve kuruluş amacına yönelik hizmetleri çok sayıda yetişmiş eleman ve laboratuvar imkanıyla sunmaya çalışmaktadır. Çalışmanın sınırlılığı nedeniyle bildiride sadece bu kurumun bir enstitü şeklinde teşkilatlandığı 1935-1983 yılları arasına odaklanılarak kurumun Türkiye'de uygulanan enerji politikaları çerçevesindeki önemine değinilecektir.

Key words: Enerji, Hammadde, Devletçilik, 2804 sayılı kanun

Mineral Research and Exploration Institute in the Context of the Energy Policies of the Republican Era

The Great Depression in 1929 had a profound impact on the whole world. The concept of statism gained traction, particularly in Western countries and Turkey following the crisis, and most of these countries began to take new steps. Statist practices have intensified especially in Turkey after 1933 in terms of energy, underground and economic policies. The Republic of Turkey nationalized the enterprises under foreign capital, took new measures to protect the value of the Turkish lira, and fully adopted the statist practices called protectionism in the economy. It is observed that some of the nationalization studies carried out in strategic areas are aimed at mining enterprises. Because, it is commonly recognized that Turkey has a suitable level of mine diversity while it is not particularly rich in terms of mineral resources in the context of energy raw materials. One of the most important implementation examples regarding the matter is the establishment of the Mineral Research and Exploration Institute. Mineral Research and Exploration Institute was established with the law numbered 2804 on 22 June 1935, when Celal Bayar was the Minister of Economy, in order to explore and operate the mines utilizing the necessary geology and mining methods. According to the law on the establishment of the institute, the institute is tasked with "searching and finding the resources of the country's mines and quarries and carrying out the necessary studies, chemical and technological analyzes in order to determine whether they are suitable for operation and training engineers, auxiliary personnel and qualified workers for the sector". MTA Institute, which was established in 1935 with a small number of personnel, continues its existence as a general directorate today and attempts to provide services for the purpose of its establishment with a large number of trained personnel and laboratory facilities. The importance of the institution within the context of Turkey's energy policy will be mentioned in the article due to the study's limitations while solely concentrating on the years 1935 to 1983, a time in which the institution was organized as an institute.

Key words: Energy, Raw Materials, Statism, Law No. 2804.

CARBON ABATEMENT COSTS IN CHINA: PROVINCE-LEVEL SECTOR-SPECIFIC ESTIMATES AND THE ASSOCIATION WITH INNOVATION AND SOCIO-ECONOMIC CHARACTERISTICS

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We determine a province-level sector-specific measure of carbon abatement costs in China. Such a measure is important, because recent five-year plans have set national pollution reduction targets, imposing distinct burdens on individual provinces and, within provinces, on different sectors. Therefore, in the first step, we estimate province-specific shadow prices of CO2 emissions using a novel parametric directional distance function approach that endogenizes direction vectors. Although endogenous direction vectors are beneficial given multidimensional heterogeneity in carbon abatement efforts, they have not been considered in related research on China. We find heterogeneous shadow prices that increased over time. Their variations are mostly different to those of alternative measures of regulatory stringency. The shadow prices are positively correlated with province-level innovation activity and income, in particular. Provinces with an increased energy intensity and share of the primary sector tended to have lower shadow prices. In the second step, we interact the shadow prices with provinces' sector-specific pollution intensity to determine sectors' exposure to province-level carbon abatement policies. The sectoral dimension has been largely unconsidered in regional analyses of environmental policy stringency in China, even though it is necessary to precisely estimate regulatory effects on policy-relevant issues such as international competitiveness and labor markets.
Key words: Carbon Abatement Costs; Shadow Prices; China; Directional Distance Function; Endogenous Direction Vectors.

ESTIMATING TIME-VARYING VOLATILITY SPILLOVERS BETWEEN EXCHANGE RATE AND COMMODITY PRICES

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In this study, real effective exchange rates and real commodity prices volatility transmission are investigated for Mexico, Indonesia and Turkey. According to the results, there is a bidirectional causality relationship between precious metals and the real exchange rate. However, this relationship varies over time. Especially in times of crisis such as the Covid pandemic, the transfer of volatility disappears. Precious metals have a safe haven feature against the exchange rate. However, the reverse is not true. On the other hand, during the Covid period, the bilateral risk transfer between crude oil and exchange rate disappears. This situation has the bilateral safe haven feature of crude oil and exchange rate during the Covid period. Only for Indonesia, risk transfer from oil to exchange rate continues.
Key words: Time-Varying Volatility Spillover, Real Exchange Rate, Real Commodity Prices, Emerging Market Economies.

DOES THE INTERACTION OF ENERGY TRANSITION, RENEWABLE ENERGY AND ENVIRONMENTAL INNOVATION ENSURE ENVIRONMENTAL SUSTAINABILITY: CONTEXTUAL EVIDENCE FROM TOP TEN MANUFACTURING COUNTRIES

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Despitee recent debate on environmental degradation, there is lack of scientific research on analyzing how industrial activities in top ten manufacturing countries affect ecological footprint. Current study attempts to fill an important gap by investigating the role of renewable energy, environmental innovation and energy transition (in the presence of economic growth, globalization and financial development) towards ecological footprint in top ten manufacturing countries from 1995-2018. We employ panel estimation techniques to confirm a significant association between energy transition, ecological footprint, renewable energy, environmental innovation, globalization, economic growth and financial development. Our findings from CS-ARDL, AMG, CCEMG and FMOLS confirm that environmental innovation, energy transition and renewable energy have a significant negative association over ecological footprint. Whereas, globalization, economic growth and financial development contribute to environmental degradation. Given these findings, we propose several fruitful policy implications to help achieve environmental commitments under Paris climate agreement and UN sustainable development goals.

Key words: Ecological Footprint; Energy Transition; Environmental İnnovation; Renewable Energy; Top 10 Manufacturing Countries.
Jel Codes: F60; P18; Q42.

ENVIRONMENTAL INNOVATION, CLIMATE CHANGE AND KNOWLEDGE DIFFUSION PROCESS: HOW CAN SPILLOVERS PLAY A ROLE IN THE GOAL OF SUSTAINABLE ECONOMIC PERFORMANCE?

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Technological innovation of firms could affect climate change by two different viewpoints: environmental innovation might be realized without harming economic performance or it is not possible to focus on the sustainability aim without negative repercussions on the economic performance. This paper explores this topic by considering the impact of knowledge spillovers from environmental innovations on climate change in three economic areas (Europe, Japan and USA), over the period 2002–2017. In particular, three indicators are used to capture the climate change: temperature, rainfall and carbon emissions indicators. The findings indicate that knowledge diffusion process affects firms' productivity significantly and positively. The analysis contributes new insights to the sustainable economic performance debate and provides interesting political and managerial implications.
Key words: Environmental innovation; Climate change; Knowledge spillovers; Institutional quality; Environmental policy.

CARBON EMISSION PRICE, COMMODITY FUTURES, EQUITY PRICE AND GLOBAL ECONOMIC POLICY UNCERTAINTY DEPENDENCE STRUCTURE IN BRICS: IMPLICATIONS FOR PORTFOLIO DIVERSIFICATION

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This study examines the short- and medium run dependence structures across carbon emission price, commodity futures, equity prices and global economic uncertainty in BRICS countries. Previous studies have focused on the co-movement between commodity futures and equity price with a few attempts to capture the economic uncertainty in the relationship but failed to look at the wider context of global economic policy uncertainty. Building on the work of Berger and Uddin (2016) and Delatte and Lopez (2013) this paper aims at providing a deeper understanding of the dependence structure between equity and commodity prices when global economic policy is factored in. In this study, we employ the spillover index developed by Diebold and Yilmaz (2012) to identify the dependence structure among commodity futures, equity price and global economic policy uncertainty and a Variational Mode Decomposition (VMD) copula function. Drawing on the data from 3rd January 2003 to 30th July 2021, the key findings suggest that there is a strong medium run dependence structures across commodity futures and equity prices in Brazil, India and South Africa and strong short run dependence structures across commodity futures, equity prices and global economic uncertainty in Russia and China.
Key words: ETS, Carbon Emission Price, Commodity futures, Equity Price, Economic Policy Uncertainty
Jel Codes: C32, C58, G10, Q03, Q04.

SMES RESPOND TO CLIMATE CHANGE: EVIDENCE FROM DEVELOPING COUNTRIES

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This paper examines the impact of climate change on SMEs innovation. Using the Generalized Method of Moments (GMM) estimation of panel data for 443 SMEs firms from 14 developing countries during the time period 2007-2016, we find that climate change has a significant positive impact on SMEs' innovation performance. Interesting results emerged when the sample was divided as high and low growth, high and low profitable, high and low slack resources firms, and high and low vulnerable industries. The results show that SMEs' innovation response to climate change may vary substantially across firms and industries. High growth, high slack resources firms, high profitable and non-vulnerable industries SMEs innovation respond positively to climate change. These results have some managerial and policy implications. SMEs manager can gain competitive advantages of new business opportunities that may arise from responding to climate change. Policymakers of developing countries could promote SMEs innovation activities to mitigate and adapt to tackle climate change and ensure sustainable development.
Key words: Climate change, SMEs, Innovation, Developing countries.

ENERGY PRICE, BITCOIN AND GEOPOLITICAL RISK DEPENDENCE STRUCTURE RELATIONSHIP: IMPLICATIONS FOR PORTFOLIO DIVERSIFICATION: EVIDENCE FROM BRICS

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This study examines the relationship between geopolitical risk, energy price and BTCs. The study further investigates the co-movement between these mentioned variables to investigate the co-movement between geopolitical risk, energy price and BTCs in extreme market conditions. Previous studies have focused on the impact of geopolitical risk on the volatility and risk premium of BTC investment. However, very limited studies have focused on integrating BTC as an extension of the mix of geopolitical risk on the co-movement with energy price. The analysis is based on monthly data of geopolitical risk index for BRICS countries, Brent oil futures, Natural gas futures and BTCs covering the period between March 2012 and Jun 2021. To investigate the co-movement among energy price, geopolitical risk and Bitcoin, this study is employing the recently developed method of the spillover index from Diebold and Yilmaz (2012) and Barunik and Krehlik (2018) to differentiate the spillover index into time frequency. This research project provides useful empirical evidence for assessing the impact of both bitcoin and geopolitical risk on energy prices. Nonetheless, it will also be informative about the likelihood of co-movements occurring at different stages
Key words: Energy Prices, Bitcoin, Economic Policy Uncertainty.
Jel Codes: C32, C58, G10, Q03, Q04.

THE IMPACT OF INCLUSIVE FINANCE ON CARBON DIOXIDE EMISSIONS: EVIDENCE FROM CHINA'S PROVINCIAL REGIONS

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Previous studies have not paid close attention to the effects of inclusive finance on carbon dioxide emissions. Setting research context in China with its rapid development in inclusive finance and pressing target of carbon dioxide neutrality, this paper adopts fixed effects model, moderating effect model, instrumental variable method and quantile regression method to analyze the effects of inclusive financial on carbon dioxide emissions in China. The results show that the inclusive finance is negatively related to the carbon dioxide emissions. This impact is particularly significant in the deep usage of the inclusive finance. It is also found that the inclusive finance can promote enterprise innovation in the region, and reduce carbon emissions by stimulating enterprise innovation to increase productivity. The quantile regression results further show that the effects only exist in the regions within a certain degree of the usage of the inclusive finance. In addition, the results of cross-section analysis signify that compared with manufacturing industry, the effects are only significant in non-manufacturing industry. Moreover, the effects can only be found in inland regions of the country whilst the coastal areas are insignificant. The research contributes to the understanding in development of inclusive finance and relativeness to the carbon dioxide emission issues.
Key words: Inclusive Finance, Deep Usage, Carbon Dioxide Emissions, Technology Innovation.
Jel Codes: Q54.

MULTI-SCALE CORRELATION ANALYSIS BETWEEN CRUDE OIL MARKET AND CHINESE STOCK MARKETS BASED ON PORTFOLIO CONSTRUCTION PERSPECTIVE

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This study examines the correlation between the crude oil market and China's stock markets at six time scales after the financial crisis of 2008 for both composite index and sectoral levels, by using the maximum overlapping discrete wavelet transform (MODWT). Based on the MODWT analysis, portfolios are constructed and corresponding conditional value at risk (CVaR) are calculated to measure the tail risk of each portfolio. Our results indicate that the two markets have no influence in the short-term, medium-long-term, and long-term. However, they exhibit a positive correlation in short-medium-term and the medium-term. Moreover, the wavelet cross-correlations indicate an overreaction to the shock from the crude oil market for the composite indexes and some sectoral indexes. And the CVaR of the portfolios at various time scales are different. Additionally, the optimal portfolio model changes at different time scales when the indexes of the Shanghai stock market and Shenzhen stock market are used to construct portfolios.
Key words: Crude oil market; China's stock market; Multi-scale analysis; Portfolio construction
Jel Codes: G11; G15; Q43.

INTERNATIONAL EXPANSION OF RENEWABLE ENERGY CAPACITIES: THE ROLE OF INNOVATION AND CHOICE OF POLICY INSTRUMENTS

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Which renewable energy (RE) policy instrument is most effective for the international diffusion of RE and what is the role of innovation? We consider rich policy and patent data for 189 countries and territories to investigate these diversely-debated questions for wind and solar photovoltaic capacities. This allows us, firstly, to contribute to the limited evidence on the effect of RE innovation on RE diffusion and its interrelated influence with RE support policies. Secondly, we can evaluate the disentangled individual policies' effectiveness in a broad instrument-country context. Thirdly, we control for the inherent endogeneity of policy instruments and innovation. We find that RE innovation, which appears to be largely policy-induced, is among the most promising ways to increase RE capacities. The most effective policy instruments tend to be quotas with certificate trading, tendering, and fiscal instruments that provide specific investment support, i.e. investment tax credits and capital subsidies. Less tangible and projectable measures, such as the most commonly implemented sales-related tax reductions and emission targets, are least effective. While there are differences in the policies' effectiveness and role of innovation depending on the countries' level of development, omitting simultaneity concerns can severely change the estimated effects of the policy instruments.
Key words: Renewable energy capacity; environmental regulation; renewable energy innovation; solar energy; wind energy.
Jel Codes: H3, Q42, Q48, Q55, Q58.

AN ANALYSIS OF OPEC OIL PRODUCTION TO NON-OPEC OIL SUPPLY

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This paper examines the impact of non-OPEC oil supply on OPEC oil production level at different quantiles of the OPEC production empirical distribution. It employs the Quantile Autoregressive Distributed Lags (QARDL) model that allows to probe simultaneously short-term connections and long-run cointegrating relationships across a range of quantiles. The analysis is undertaken using monthly data from January 1993 to March 2020. The main findings show that the influence of non-OPEC production on OPEC production is symmetric in the long-run but quantile-dependent in the short-run. In the short-run OPEC production decreases significantly following an increase of non-OPEC production. However, in the long run, the increase in non-OPEC production causes OPEC production to rise. Furthermore, the results show that oil prices increase OPEC production in the long- and short-run. The potential policy implications for OPEC and non-OPEC oil production are discussed.

CRYPTOCURRENCY RETURN PREDICTABILITY: WHAT IS THE ROLE OF THE ENVIRONMENT ?

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This paper investigates the lead-lag relationship between among four cryptocurrency returns namely bitcoin, ethereum, tether and trueUSD. It identifies the important role of the environment in forecasting the cryptocurrency returns. The study compares the predictive ability of environmental variables such as temperature anomalies and co2 emissions with that of commodities i.e gold and wti returns. To the best of our knowledge, our study is the first attempt to investigate the leading role of the environment in predicting cryptocurrecy returns. Most studies in the literature examines the environmental cost of bitcoin but none has considered the possible causal effect of the environment on bitcoin returns. Our results show evidence of limited predictive power of lagged commodity returns, while lagged co2 emissions significantly predict volatile cryptocurrencies returns i.e bitcoin and ethereum. On the other hand, environmental variables do not show any predictive power in predicting stable coins (tether and true USD) returns. Our findings highlight the increased awarness regarding the degradation of the environment and the rapid climate change. Our results have important policy implications.
Key words: Cryprocurrencies; Environmental Impact; Energy Consumption; Climate Change
Jel Codes: C54, Q5.

INCOME INEQUALITY, ENERGY POVERTY, AND ENERGY EFFICIENCY: WHO CAUSE WHO AND HOW?

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Income inequality and energy poverty have become the foremost tasks in China's agenda. To investigate the impacts of energy efficiency on income inequality and energy poverty, this study constructs a dynamic panel model based on a balanced panel dataset covering 30 provinces during 2004-2017. By applying the system general method of moments (SYS-GMM) technique, we estimate the role of energy efficiency and further conduct the regional heterogeneous and asymmetric analysis. In addition, we also discuss the potential moderating effect in the relationship between energy efficiency and energy poverty as well as income inequality. The main findings show that: (i) improved energy efficiency can simultaneously alleviate income inequality and energy poverty; (ii) significant heterogeneity and asymmetry exist in the impacts of energy efficiency on energy poverty and income inequality; and (iii) we can enhance the contribution of energy efficiency to the alleviation of income inequality and energy poverty through promoting technological evolution, such as increasing support for green innovation. According to the above findings, several policy implications are proposed to reduce income inequality and energy poverty.

Key words: Energy efficiency; Income inequality; Energy poverty; Asymmetric and heterogeneous analysis; China.
Jel Codes: C33; D31; D61; I32; Q55.

DYNAMIC SPILLOVERS EFFECT AND CONNECTEDNESS AMONG CLIMATE CHANGE, TECHNOLOGICAL INNOVATION AND UNCERTAINTY: EVIDENCE FROM QUANTILE VAR NETWORK AND WAVELET COHERENCE

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This study investigates the time-frequency transmission and connectedness between green indexes dealing with clean energy, environmental preservation, and technological innovation, and information uncertainty related to economics news, COVID-19 pandemic, and Twitter usage. By employing a quantile VAR framework, we firstly assess how the static and dynamic connectedness between markets switch throughout a broad spectrum of market states, particularly bear, normal and bull markets. Secondly, we examine the dynamics of the co-movement between green financial markets and the level of uncertainty in the time-frequency domain using the novel vector wavelet coherence analysis. Our analysis yields the following major findings. Statically, high spillover and volatility effect exists amid the indexes (i). Dynamically, evidence of very strong connectedness between climate change indexes is reported at extreme lower and extreme upper quantiles (ii). The findings further exhibit a switching net contributing/net receiving shock behavior of climate change during the pandemic. According to the multiple, quadruple and vector wavelet analysis, technological innovation, COVID-19 pandemic and uncertainty have strong effect on climate change markets (iii). Finally, interesting implications for both environmental investors and policymakers are highlighted.
Key words: Technological Innovation; Climate Change; Quantile VAR; Wavelet Coherence
Jel Codes: G14, Q55, Q57, B23.

TRENDS IN CAPACITY CHANGES IN THE EUROPEAN ENERGY SECTOR OF OIL REFINING

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Oil is the important product in the world energy sector, and its refining has a significant impact on the world economy's development. The European energy sector is one of the leading for oil refining worldwide. Therefore, the problem of refining capacities development at European refineries is an important political and economic objective. The purpose of this work is to identify trends in the refining capacities in European region. To achieve this goal, it was necessary to develop the methodology for assessing oil refining capacities, to study the dynamics of capacities in European region, to determine the contribution of European states to the capacities of regions, to identify trends in the concentration of capacities of states, to assess the impact of the COVID-19, to forecast the development of oil refining capacities based on identified trends. The time space between 2005 and 2020 was chosen as the study period. Germany, Italy, France, and Spain were leaders among all European countries in terms of refining capacity. The value levels' changes of the values Gini and Herfindahl-Hirschman indices showed a tendency towards a decrease in concentration and a more even distribution of capacities across the territory of European countries. From 2005 to 2020, the share for the Northern region was about 50%, for the Southern ~30%, for the Western ~20% of the total refining capacities in Europe. The COVID-19 impact on the volumes of oil refining capacities was assessed by comparing the total Europe and all its regions capacities in 2019 and 2020. If the rate of change in refining capacities remains at the level highlighted in the studied period, 20% decrease (to 2005 capacities volumes) may occur in the Western and Southern regions by 2027. Northern region will experience the same 20% dropdown around 2043.

CAN NATURAL RESOURCE-BASED COUNTRIES GROW DESPITE THE CURSE? A NON-LINEAR INVESTIGATION OF THE ROLE OF INNOVATION

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The paradox of plenty or natural resource curse phenomenon is still one of the most socio-economic threats in resource-based economies. However, this phenomenon is still a debatable issue in the literature as most of the studies that attempt to empirically validate/refute the resource curse assume the existence of unconditional resource curse without accounting for non-linearity in this relationship. So they fail to account for divergence in growth experiences in resource-dependent countries. Therefore, the major question still burning - does the resource curse exist? If so, can economies still develop despite the resource curse? This paper extends the literature on the natural resource curse by proposing the role of innovation in the relationship between natural resource dependence and economic growth within non-linear model. We hypothesize that innovation can help a country to overcome the resource curse through increasing investment productivity and the creation of highly competitive products that resist the appreciation of the real exchange rate. Using sample data from BRICS countries over the period 1990-2018, the empirical results have established key relationships which have important policy implications. First, natural resource dependence in BRICS countries has a U-shaped non-linear relationship with economic growth. More precisely, natural resource dependence harms economic growth only up to a point; beyond this point, more natural resource begins to promote economic growth. Second, the higher innovation the weaker the negative impact of natural resources on growth. Moreover, when innovation exceeds a certain threshold, the resource curse is averted. Third, innovation can reduce the natural resource curse more through reducing the exchange rate appreciation consequences rather than enhancing the productivity of investment. Natural resource-based economies should harness the wealth earned from natural resource assets to create sustainable economic growth by leveraging innovation, as it must to overcome the natural resource curse.

Key words: Natural Resource curse, Innovation.
Jel Codes: O13, O30, C23.

CAN FINANCIAL INCLUSION FACILITATE CARBON NEUTRALITY IN CHINA? THE ROLE OF ENERGY EFFICIENCY

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With the vigorous popularization of inclusive finance, its carbon emission-reduction effect deserves great attention. For this purpose, we first assess the financial inclusion composite index, and then empirically examine the spatial effect of financial inclusion on carbon dioxide (CO2) emissions by applying a provincial panel dataset for the period 2004-2018. Also, we investigate the moderating and mediating role of energy efficiency in the financial inclusion-CO2 nexus, and conduct a series of robust checks. The primary findings of our study highlight that: (i) China's financial inclusion is positively correlated with the greenhouse effect; in other words, the development of inclusive finance cannot facilitate carbon emission reduction; (ii) the moderating role of energy efficiency can effectively mitigate the promotion effect of financial inclusion on CO2 emissions and significantly enhance the carbon emission-reduction effect of improved energy efficiency; and (iii) China's financial inclusion not only promotes per capita CO2 emissions directly, but also exacerbates the greenhouse effect by impeding the improvement of energy efficiency. Following the three conclusions, we propose the corresponding policy implications.
Key words: Financial inclusion; CO2 emissions; Moderating and mediating effects; Energy efficiency; China.
Jel Codes: C33; G21; Q54; Q55.

CORRELATION AMONG OIL PRICE, COUNTRY ECONOMIC RISKS AND STOCK RETURNS: AN EMPIRICAL ANALYSIS BASED ON 17 COUNTRIES

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During the Covid-19 pandemic the country risks have significantly increased. Current studies have purely paid attention on the relationship between oil price and stock returns, or the relationship between oil price and country risks; however, the correlation among the three of them is highly neglected. Using a monthly panel data from 17 countries during the period between 2000 and 2020, by adopting a panel vector autoregressive model (PVAR), we examine the correlation among oil prices, country risks and stock returns simultaneously. Our research finds that a positive shock to oil prices and stock returns reduces country economic risks. A positive shock to country economic risks (risk reduction) reduces oil prices and stock returns. In addition, the oil price has a positive impact on stock return in the short-term, and a negative impact in the long-term. The stock return is also positively related to the oil prices. Our study contributes to understanding on the correlation among the country risks, financial and oil markets.
Key words: Oil Price, Country Economic Risk, Stock Return, PVAR model.
Jel Codes: G15.

COVID-19 PANDEMİSİ DÖNEMİNDE ENERJİ TÜKETİMİ VE ÇEVRESEL KALİTE

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ÖZET
Covid 19 Pandemisi bütün ülkelerin iktisadi büyüme performansını zayıflattığı gibi işsiz sayısının artmasına da yol açmıştır. Pandeminin daraltıcı etkileri bütün sektörler üzerinde aynı düzeyde değildir. Bazı sektörlerdeki üretimde daralma ve işsiz sayısındaki artış çok belirgin iken, bazılarında daraltıcı etkiler daha hafiftir. İşsizlik artışı ve büyüme performansı üzerindeki negatif etkilerine rağmen, Pandeminin yegane pozitif yönünün çevresel tahribattaki azalma olduğu söylenebilir. İktisadi faaliyetlerdeki yavaşlama ve kapanmanın doğal sonucu olarak enerji tüketiminde bir azalma beklenmektedir.

Bu çalışmada Covid 19 Pandemisinin enerji tüketimi ve çevresel tahribat üzerindeki etkileri ele alınmaktadır. Öncelikle söz konusu değişkenler arasındaki ilişkiyi araştıran çalışmaların bulguları değerlendirilecek ardından enerji tüketiminde etkinlik ve çevresel kalitenin artırılmasına ilişkin politika önerileri sunulacaktır.

ENERGY CONSUMPTION AND ENVIRONMENTAL QUALITY DURING THE COVID-19 PANDEMIC PERIOD

ABSTRACT
The Covid-19 Pandemic negatively impacted the economic growth performance globally, and led to a sharp incline in the unemployment rates. The contractionary effects of the pandemic varied in different industries and sectors. While there has been a severe contraction in production and increase in unemployment due to job losses, the contractionary effects are milder in others. The only positive effect of the Pandemic is the alleviation of environmental degradation since there has been a decline in energy consumption as a consequence of the slowdown in economic activities, and even shutdowns in many industries.

In this study, the impacts of the Covid-19 Pandemic on energy consumption and environmental degradation are discussed. Firstly, the findings of studies investigating the relationship between these variables will be discussed. Then, policy recommendations will be put forth to improve efficiency in energy consumption and environmental quality.

ANALYSIS OF INNOVATIVE AGRICULTURAL APPLICATIONS WITHIN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

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Agricultural innovation is the first use by individuals or organizations of new or existing products, processes or organizational ways in a given context to support efficiency, competitiveness, shock resilience, environmental sustainability, economic development and sustainable natural resource management, thereby contributing to food security. is defined. In this sense, innovative agricultural practices or agricultural innovation are extremely important to lift people out of poverty, fight unemployment for rural women and help the world achieve food security and sustainable development goals. While there have been significant developments in these issues, significant policy changes are needed in the way food and other agricultural products are produced, the scale at which this happens, the geographical locations of agriculture, and perhaps most notably, the agencies and actors that drive these processes.

The growth in the demand for agricultural products is seen as an important problem in terms of environmental sustainability on a global scale, as well as creating an important uncertainty regarding poverty and food supply security in all countries of the world. According to the World Bank 2020 report, approximately 80% of the global poor live in rural areas (World Bank, 2020), making innovative agricultural practices an important development goal in reducing this poverty and the vulnerability of rural life (FAO, 2017). In this respect, eradicating poverty is the first of the UN 2030 Sustainable Development Goals and is directly related to the second Sustainable Development Goal, namely ensuring food and nutrition security and ending hunger.

On the other hand, it is considered that agricultural production with current technology puts a significant pressure on the ecosystem, and agricultural production is among the factors that cause the most global warming and climate change by forming approximately one third of global greenhouse gas emissions (FAO 2016). With this dimension, it can be seen that innovative agricultural practices also offer opportunities for sustainable development purposes such as climate action, responsible production and consumption with their more environmentally friendly structure. Therefore, in this study, it is investigated how existing agricultural innovation systems can be expanded to better support the creation of innovative agricultural practices, how mechanisms can be developed that can support the transition to sustainable agricultural systems at multiple scales, and how efforts to create intersectoral innovation collaborations can be improved.

Keywords: Theories of İnnovation, Agricultural Development, Sustainable Development, Poverty