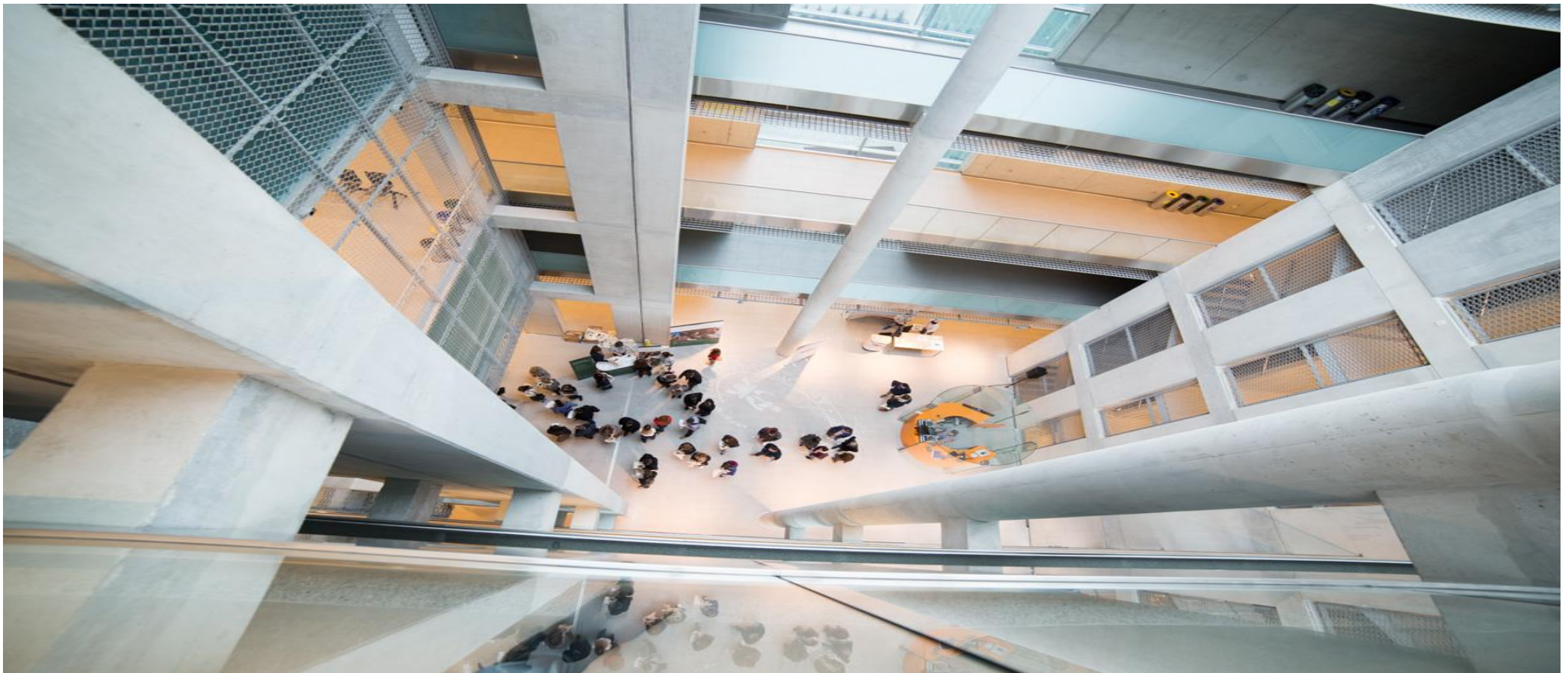# INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMIC POLICY (6 TH EDITION)

POZNAŃ, NOVEMBER 17-18, 2022

NEW ECONOMY – TOWARDS DIGITAL AND SUSTAINABLE DEVELOPMENT

BOOK OF ABSTRACTS

EDITED BY ANNA WARCHLEWSKA

INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMIC POLICY (6 TH EDITION)

Welcome to ICOFEP (6th edition)

Dear Colleagues, Dear Friends,

It is with great pleasure that we welcome you to our online conference. First, we would like to thank all of you for your participation at the conference. In the current edition of the ICOFEP, the main aim is to share knowledge and expertise on the New Economy of post-pandemic reality, technological changes, and its application to the economy, fastening digital transformation and the rising importance of sustainable development. The sixth edition of ICOFEP was divided into three major tracts: economy, finance, and management.

We do hope that you enjoy your online attendance at the ICOFEP 2022!

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HEAD OF THE ORGANIZING COMMITTEE

PROF. KAMILLA MARCHEWKA-BARTKOWIAK

</div>

KEYNOTE SPEAKER

KLIMAS PATRYCJA

ASSOCIATE PROFESSOR AT WROCLAW UNIVERSITY OF ECONOMICS, POLAND

Patrycja Klimas, Ph.D. is an associate professor at Wroclaw University of Economics. As a researcher, she conducts research within strategic management, focused on inter-organizational cooperation, and coopetition considered under dyads, networks, and ecosystems. In particular, she investigates antecedents, drivers, and outcomes of inter-organizational phenomena, i.e. multidimensional proximity, formal or informal relationships, and multifaceted innovativeness.

Her interest as well as the research projects granted by National Science Centre in Poland and European Commission targets high-tech and creative industries including aviation, the video game industry, entertainment, and tourism to the greatest extent. She uses both qualitative and quantitative research methods while specializing in multiple and multivariate regression, structural equation modelling, and social network analysis.

Her recent publications in top-tier journals (e.g. Long Range Planning, Industry Marketing Management, European Management Review, European Management Journal, Review of Managerial Science) include innovation networks, organizational innovativeness, cooperative processes, organizational proximity, antecedents of collaboration in dyads and networks, coopetition, and organizational culture. She is experienced in the implementation of research projects at the local, national and European level. She is a member of the European Academy of Management, Strategic Management Society, European Group for Organizational Studies, and International Society for Professional Innovation Management. Currently, she cooperates with the Katowice City Hall on the project of Technology and Gaming Hab aimed to be the largest innovation gaming ecosystem worldwide. She loves dogs and swimming.

KEYNOTE SPEAKER

PAPSDORF PATRIC

EUROPEAN CENTRAL BANK

Patrick Papsdorf is the Head of the Payments Oversight Section in the Directorate of General Market Infrastructure and Payment at the European Central Bank. His team covers the oversight activities related to payment systems and the broader payment ecosystem, including payment innovations and cyber resilience. Prior to this, he has been Adviser in the ECB's Directorate General Market Infrastructure and Payments (DG/MIP) for Eurosystem-operated market infrastructures.

He contributed to the development of the Eurosystem's FMIs with a strong focus on business continuity, crisis management, and analytics. Earlier positions include a commercial bank, the Deutsche Bundesbank, and the Federal Reserve Bank of New York. Patrick holds a BA from the University of the Bundesbank, an MA in Global Management, and official recognition as a bank officer in Germany.

KEYNOTE SPEAKER

SCHANZENBACH DIANE WHITMORE

NORTHWESTERN UNIVERSITY IN EVANSTON, ILLINOIS

Diane Whitmore Schanzenbach is a leading economic expert in anti-poverty programs, food insecurity, and education policy. Schanzenbach is regularly quoted in media outlets such as the New York Times, Wall Street Journal, and National Public Radio, and has testified before both the Senate and House of Representatives on her research.

She is a leading academic voice on the impacts of recessions and income support programs on low-income populations.Schanzenbach is the Director of the Institute for Policy Research and Professor of Education and Social Policy at Northwestern University in Evanston, Illinois. She was formerly the Director of the Hamilton Project at the Brookings Institution.

She graduated magna cum laude from Wellesley College with a BA in economics and religion, and received a PhD in economics from Princeton University. She is an elected member of the National Academy of Education and the National Academy of Social Insurance, and serves on the board of directors of the Greater Chicago Food Depository, the Food Research & Action Center (FRAC), and Chicago HOPES for Kids. Schanzenbach's work is motivated by a desire to offer evidence and solutions, based on rigorous research, to enhance opportunities for low-income children and their families.

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SECTION 1: ECONOMICS

BERĘSEWICZ MACIEJ, NIKULIN DAGMARA, SZYMKOWIAK MARCIN, WILAK KAMIL

COVID-19 AND THE GIG ECONOMY IN POLAND

M. Beręseiwcz: Poznań University of Economics and Business, Poland
D. Nikulin: Poznań University of Economics and Business, Poland
M. Szymkowiak: Poznań University of Economics and Business, Poland
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We use a dataset covering nearly the entire target population based on passively collected data from smartphones to measure the impact of the first COVID-19 wave on the gig economy in Poland. In particular, we focus on transportation (Uber, Bolt) and delivery (Wolt, Takeaway, Glover, DeliGoo) apps, which make it possible to distinguish between the demand and supply parts of this market.

Based on Bayesian structural time-series models, we estimate the causal impact of the first COVID-19 wave on the number of active drivers and couriers. We show a significant relative increase for Wolt and Glover (15% and 24%) and a slight relative decrease for Uber and Bolt (-3% and -7%) in comparison to a counterfactual control. We observe a substantial change in the working hours proxy measured by gig apps activity. The change for Uber and Bolt can be partially explained by the prospect of a new law (the so-called Uber Lex), which was already announced in 2019 and is intended to regulate the work of platform drivers.

Key words: mobile big data, platform economy, labour market, hard-to-reach population
JEL codes: J21, J40, C32

CZYŻEWSKA-MISZTAL DOROTA

TERRITORIAL DIMENSION OF AI IN POLAND

Poznań University of Economics and Business, Poland

Nowadays, artificial intelligence is reshaping economies and societies, promising to improve efficiency, lower costs, and generate productivity gains. We can find it everywhere and in almost everything, from manufacturing, and production systems, to analytics, machine learning, chatboxes, and autonomous vehicles. It can contribute to better lives and help people improve their decision-making. As this technology is still in the development phase, one can hardly predict what will be its role in the future. On the other hand, the rapid progress of AI has raised a number of concerns related to its trustworthiness, privacy, and uncontrollable use.

As AI is increasingly present in all spheres of our life, the European Union as an international organization as well as its member states issue strategies related to this domain in which aims, proposed action plans, and outcomes are drawn. Polish AI strategy was published in 2021 with a long list of actions to be undertaken from a short and medium-term perspective. At the EU level, the attention is however focused on the ethical aspects of AI, regulation, and coordination action plans within EU member states and in the EU as a whole. The analyses on territorial dimensions of AI in Europe and in Poland in particular are still rather scarce; this study aims to fill this gap to some extent.

 The aim of the paper is to shed light on the territorial dimension of artificial intelligence in Poland by: 1. underlining the territorial aspects of AI; 2. depicting the state of the art of AI in Poland based on available statistics and reports, 3. assessing territorial aspects of AI in the Polish AI strategy and other AI-related documents. The research methods used are: analysis of texts and statistical analysis. The results of the study show that AI as technology is more and more present in numerous spheres of Polish society and economy nevertheless it is too early to assess its impact on the Polish economy. Some proposed actions are promising but their territorial dimension will need to be gauged in some years.

Key words: artificial intelligence, Poland, territorial dimension
JEL codes: O38, O52

GUTA SILETHEMBA MEDELLINE

CHALLENGES OF THE NEW ECONOMY AND THE PARADIGM SHIFT IN CONTEMPORARY AFRICAN POLITICAL ECONOMY: THE REPUBLIC OF SOUTH AFRICA

Marie Curie Skłodowska University, UMCS, Poland

The paper examines the challenges that have arisen for African governments in dealing with the paradigm shift as well as the new economy.

The link between the paradigm shift as mentioned by Thomas Kuhn and the new economy will be established. Subsequently, governments as key decision makers in a state are facing various realities in the globalized world that are both positive and negative when viewed from different perspectives. Furthermore, the paper will explore the role of social media and the pandemic in changing the political economy in African states. The case study is The Republic of South Africa's (RSA) Political Economy. The new economy brings about a rise of investors and business opportunities that are different in their manifestos and not all of them pay attention to Environmental, Social and Governance attributes (ESG).

The methodology to be applied is a critical analysis of the RSA's political economy juxtaposed with the paradigm shift as well as the new economy. The paradigm shift works hand in hand with the new economy as it represents a form of a shift that is scientific. Therefore, the paper will triangulate the country's political economy, new economy, and paradigm shift to understand and shed more light on outcomes that the sudden rise of events beyond any institution or country control have impacted the political economy.

LESZCZYŃSKI MARCIN, METELSKI ADAM, RABCZUN ALEKSANDRA

DIGITALIZED SPORTS PRODUCTS AND VARIOUS GENERATIONS IN THE ERA OF INDUSTRY 4.0

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A. Metelski: Poznań University of Economics and Business, Poland
A. Rabczun: Poznań University of Economics and Business, Poland

In modern times of Industry 4.0, digital solutions are used in an increasing number of branches of the economy, and this also applies to sports. Generational cohorts provide a way to understand how different life experiences affect people's views of the world. There is a new growing group of sports fans—modern fans—who have been functioning in the digital world since birth and therefore have their specific behavioral patterns, habits, and expectations. For this reason, the sports industry must adapt properly to continue to develop.

This article aims to identify how consumers representing various generations on the Polish market consume sports products provided by digitized channels. The study focused on three areas: the source of information about the sport, devices on which consumers watch sports, and the evaluation of the attractiveness of sports products (full games, game highlights, and behind-the-scenes).

The study was conducted in the form of an online survey in 2021, and 581 Polish volleyball fans took part in it. The study showed a strong dominance of digital media over traditional media as the main source of information for fans. In fact, in every generation, the press and television were the least frequently used media to obtain information about sports. The results also indicate that social media are becoming increasingly important in sports, especially for younger generations. Reports cited in this article pointed to the dominance of highlights/short-form content and team/athlete-generated content over the whole game. However, our study showed that in the Polish market these products are much less attractive than the whole game. This may be related to the low popularity of using computers, tablets, and smartphones to watch sports. Representatives of all generations in Poland still most often use TV to watch matches, but almost 20% of Generation Y and Z also use computers and smartphones. Given the above, it should be stated that digital transformation undoubtedly has an impact on the sports industry. Today every sports organization must have and actively use social media to communicate with fans. Also, sports clubs need to provide content different than whole games if they want to maintain or increase the number of their fans. Undoubtedly, digital transformation in the future will bring many challenges and opportunities for the sports industry, and club representatives will have to react accordingly.

ŁOZOWICKA ANNA, LACH BARTŁOMIEJ

CI-DEA: A WAY TO IMPROVE THE DISCRIMINATORY POWER OF DEA - ON THE EXAMPLE OF THE EFFICIENCY ASSESSMENT OF THE DIGITALIZATION IN THE LIFE OF THE GENERATION 50+

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B. Lach: Analyx® sp. z o.o. sp.k., Poland

Data envelopment analysis (DEA) is a popular and universal method for examining the efficiency with which decision-making units (DMUs) transform multiple inputs into multiple outputs. However, DEA has its limitations, one of them being its decreasing discriminatory power and overestimation of efficiency scores of the surveyed DMUs that lead to an increased number of units considered to be efficient.

This problem appears when the number of analyzed units is insufficient or when there are too many variables (inputs/outputs) describing them. The simplest way to deal with this problem would be to increase the number of DMUs under study or to reduce the number of variables. However, there may occur situations where resigning from any of the variables is impossible or undesired, or where the number of units cannot be increased. In such situations, CI-DEA, a new method that is proposed, proves to be helpful. It consists in replacing the inputs and/or outputs of the studied DMUs with a smaller number of aggregate variables (i.e. composite indicators). Composite indicators are built as objectively as possible, and therefore the aggregation of variables is not based on the subjective decisions of the analyst, but solely on correlations that exist between variables. The construction of the CI-DEA model, which is a modification of the basic DEA model, makes the interpretation of the results unambiguous and easy.

The reliability of the results obtained with CI-DEA and the credibility of the model have been confirmed by extensive simulation studies performed under conditions of known and predetermined real-efficiency of DMUs. The usefulness of CI-DEA on real data has been demonstrated on the example of the efficiency assessment of digitalization in the life of Generation 50+ in 32 European countries.

Key words: data envelopment analysis; efficiency; discriminatory power; CI-DEA; PCA-DEA; digitalization; Generation 50+
JEL codes: C65, C88, O33, O57

MADIAS KONSTANTINOS, BORUSIAK BARBARA, SZYMKOWIAK ANDRZEJ

INNOVATIVE TECHNOLOGY FOR SUSTAINABLE BEHAVIOUR - INVESTIGATING PREDICTORS OF CONSUMERS' INTENTION TO USE SMART WATER METERS

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Water shortage is a very serious problem worldwide, so it is necessary to implement solutions supporting water conservation in households. A smart water meter is an innovative and technologically advanced tool, Internet of Things (IoT) based, which is designed to deliver very precise data on the amount of water used by a consumer. Knowledge gained with this device may lead to water-saving behavior. Even though there are many researches on the effect of smart water meters on the reduction of water consumption, not many papers have examined what influences consumers to adopt smart water meters in their households.

The objective of the current study is to investigate the predictors of a consumer's intention to install a smart water meter. Technology Acceptance Model was applied as the main theoretical framework of the research. We hypothesized that the intention to apply smart water meter is predicted by attitude towards smart water meters, which, in turn, is predicted by the perceived usefulness of smart water meters and by the perceived ease of smart water meters use. We also hypothesized that the intention to apply a smart water meter is predicted directly by both the perceived usefulness and the perceived ease of smart water meters use. Data were collected from 366 respondents through an online survey conducted in 2021. Structural equation modeling let us verify the hypotheses.

We found out that the intention to adopt smart water meters was predicted mainly by attitude towards smart water meters use which, in turn, was predicted both by the perceived ease of smart water meter use and by the perceived usefulness of these devices. We also found the direct positive impact of perceived ease of use on the intention to adopt smart water meters, whereas the relation between the perceived usefulness of smart water meters and the intention to adopt smart water meter turned out to be statistically insignificant.

Key words: smart water meter, intention to adopt innovative technology, water, sustainability, Technology Acceptance Model
JEL codes: D12, Q25, Q55

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MERLING LARA

CLOSING THE GAP OR WIDENING IT: DIGITALIZATION AND GLOBAL INEQUALITIES

Bucharest University of Economics, Romania

Digitalization has the potential to reduce global and regional inequalities and help address development challenges. However, current trends in the adoption of digital tools and processes have often harmed workers, or small companies, and benefiting companies with large market power. A growing digital divide is emerging in both who has access to and the ability to use digital tools, and who accrues the benefits and material gains from processes reshaped by digitalization. The intersection of digitalization and traditional development prescriptions is used as the basis to assess the potential of digital tools through a framework that identifies factors behind the current digital divide.

The paper provides an overview on some of the trends in digitalization and how it has been used by both the private and public sectors, as well as how it is reshaping market processes, service provision, as well as employment, and production structures. The paper discusses issues around the infrastructure that supports digitalization and skills needed to use digital tools around the issue of closing diving on access to digital tools as one aspect of reducing inequities. Then, looking and where and how digitalization is deployed, the question on how the benefits are distributed is addressed. Following this analysis principles for a governance framework that can deploy digitalization to reduce inequalities are proposed.

Key words: global development, inequality, digital divide
JEL codes: O1, O3, D63

MICHOWSKA KAMILA

ECO-LABELS AND SUSTAINABILITY CLAIMS. WHAT SHOULD BE IMPROVED SO THEY BETTER FOSTER RESPONSIBLE CONSUMPTION?

Poznań University of Economics and Business

Even though consumers are getting more and more conscious about their purchasing choices, the mistrust towards eco-labels and lack of structurization in that field still remain a big obstacle to the development of responsible consumption. Therefore, the main aim of the paper is to systematize eco-labelling systems and sustainability claims and identify the issues that make them hard to understand for consumers and other participants of the market. The secondary goals are to provide an overview of the approaches to classify the labels and a critical analysis of the recently proposed Eco-Score, which is based on a nutri-score and puts sustainability on a scale instead of a single label. The methodology used in the research is based on critical analysis of the secondary data and literature on the subject.

One of the most important results of the research is the conclusion, that the policy landscape of eco-labelling is broad and unorganised. One of the causes of that disorder is the fact, that the level at which those issues should be addressed remains unclear. Currently, we have for example The Global Ecolabelling Network on the international level, the green leaf on the European level, and French AB (Agriculture Biologique) on the national level is also no consensus on whether the labels should be issued by governments or rather by third-party organizations. Another conclusion is that the labelling schemes of single-labels face multiple trade-offs between reliability, strictness, expensiveness, and accessibility that have to be taken into account but could be resolved by eco-score. Even though single-label approaches as for example European green leaf have helped to create recognizable and generally trusted label it also provides customers with rather truncated information.

The novelty of the research relies on creating a broad overview on eco-labels and sustainability claims and identifying the issues that make them confuse the customers. Those topics were already brought up in literature, however, there is a lack of a holistic overview, because current research focuses on specific trade-offs, rather than on the full landscape. Another point that makes the research novel is that the eco-score, even though already implemented by Lidl, Colruyt and Carrefour, is a new scheme. As a result of that, there is very little research made and available on this topic. The paper provides a critical overview of this new approach.

MUKHERJEE SONIA, BHATTACHARYA NAIRITA, INGALE KAVITA

ROLE OF ENTREPRENEURSHIP IN DIGITAL TRANSFORMATION SINCE THE COVID-19 PANDEMIC: A CASE STUDY OF INDIA

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N. Bhattacharya: MIT World Peace University
K. Ingale: MIT World Peace University

Nations around the world have been disrupted by the onset of the Covid-19 pandemic. With successive lockdowns, and restrictions on the movement of goods and services, digitalization has been the new norm in today's time. Before the pandemic, firms were highly reluctant to use digital technologies. However, with time, firms are moving towards digital transformation and are planning to invest more in technologies such as Artificial Intelligence, IoT, blockchain, and cloud computing. Firms under the category of agriculture, alcohol, and tobacco have experienced a rise in online sales through the usage of B2C websites. There are numerous paybacks that digitalization offers in day-to-day life. Examples are the intensive usage of QR codes, wallets, UPI, and contactless cards for doing transactions in the banking and financial sector have risen over time. Firms, numerous businesses, and industries have adopted different business models using digital tools resulting in a spike in the usage of e-commerce platforms for the sale of goods and services.

To accelerate the digital transformation process, entrepreneurs, play an important role. Entrepreneurs can use new digital tools and technologies, help in the invention of new business models, undertake coordination in the production process, improve the productivity and efficiency of the firms, help increase investment and further motivate research and development over time. A prominent example of the role of an entrepreneur is founder fellow Davis Musinguzi running a telemedicine company, changing his business model to creating an e-commerce platform for PPEs. Factors such as digital literacy and training, reskilling, supportive government policies, use of the latest technology, marketing policies, and availability of capital, etc. are found to play a prominent role in boosting entrepreneurship.

Against this backdrop, the study will analyze the role of entrepreneurs in helping Indian firms in the digitalization process. Using theoretical insights, a theoretical model will be developed to show the importance of entrepreneurs for the growth of a business firm followed by a regression analysis over the last 5 years (2015 onwards). Data will be compiled from various government annual reports. The expected result indicates that fostering entrepreneurship expedites the process of digital transformation of firms. The novelty of the study lies in studying the different types of entrepreneurship, their importance to the firm's growth, and in addition to the role of women entrepreneurs and their importance in the pandemic times.

PERONE GAETANO

THE CAUSAL RELATIONSHIP BETWEEN RENEWABLE ENERGY PRODUCTION AND CO2 EMISSIONS IN 27 OECD COUNTRIES IN THE PERIOD 1965-2020: A PANEL ARDL AND GRANGER CAUSALITY APPROACH

University of Pisa, Italy

The main goal of this paper was to investigate the relationship between renewable energy production and carbon dioxide (CO_2) emissions per capita (measured in metric tons) for a panel of 27 OECD countries, over the period 1965–2020.

Pooled mean group (PMG), mean group (MG), and dynamic fixed effect (DFE) panel-autoregressive distributed lag (ARDL) models were used to analyze the long-run dynamic connection between CO_2 emissions and energy production from six renewable energy sources (biofuel, geothermal, hydropower, nuclear, solar, and wind). Fully modified ordinary least square (FMOLS) and dynamic ordinary least square (DOLS) methods were used as a robustness check. Then, I investigated Granger's non-causality between CO_2 emissions and renewable energy production using a generalized method of moment framework for panel vector autoregression (PVAR) models. Panel-ARDL models revealed that biofuel, geothermal, hydropower, solar, and wind were negatively and strongly correlated with CO_2 emission, at a statistical significance level of 1%.

The most effective renewable resources in reducing CO_2 emissions were hydropower, geothermal, and solar. Specifically, an increase of 10 terawatts per hour (TWh) in hydropower, geothermal, and solar energy generation was associated with an average reduction of 0.62, 0.6, and 0.54 metric tons of CO_2 emissions per capita. A 10 TWh increase in the production of wind and biofuel energy was associated with an average reduction of only 0.21 and 0.12 metric tons of CO_2 emissions per capita. Granger non-causality tests showed that the relationship was mostly unidirectional from renewable energy production to CO_2 emissions, at a statistical significance level ranging from 1% to 5%. Thus, the results were robust across alternative specifications and suggested the use of biofuel, geothermal, hydropower, wind, and solar energy to reduce CO_2 emissions in OECD countries.

Key words: CO2 emission, renewable energy, geothermal, solar, OECD countries, Panel-ARDL, Granger causality.
JEL codes: Q20, Q4, Q5

SANTOS MARCELO, SIMÕES MARTA, SOUSA SÍLVIA

HUMAN CAPITAL FORMATION IN THE OECD: EXPLORING THE ROLE OF WELFARE STATE COMPOSITION

M. Santos: Univ Coimbra, CeBER, Portugal
M. Simões: Univ Coimbra, CeBER, Portugal
S. Sousa: Univ Minho, NIPE, School of Economics and Management, Portugal

Social expenditure has the potential to foster human capital accumulation and, in this way, increase economic growth and make the distribution of income less unequal. We employ a fixed effects model with Driscoll-Kraay standard errors to evaluate the response of health human capital to changes in the size and composition of social spending in a sample of 37 OECD countries observed over the period 1985-2018.

Our findings reveal that the composition of social spending from the perspective of its distribution across the nine social policy areas defined by the OECD influences health human capital formation. These findings have implications for social policy design in the aftermath of the COVID-19 crisis period with its direct impact on health human capital formation but also because it is eroding the ability of the education system to promote human capital accumulation.

Key words: Social Expenditure, Human Capital, Health, Education, OECD
JEL codes: H19, H53, I28, I38, P50

SANTOS MARCELO, SIMÕES MARTA

SOCIAL EXPENDITURE COMPOSITION, WELFARE MODELS AND MACROECONOMIC PERFORMANCE IN THE OECD

M. Santos: Univ Coimbra, CeBER, Portugal
M. Simões: Univ Coimbra, CeBER, Portugal

This paper investigates the relationship between welfare state effort measured as social expenditure and macroeconomic performance examining whether it is possible to design social policies that more effectively promote economic growth by taking into account the composition of social expenditure. We are also interested in mapping the effects across the six welfare state regimes that characterize the 36 OECD countries in our sample over the (maximum) period 1980-2018.

We investigate the medium and long-term effects of the welfare state on macroeconomic performance based on an empirical model inspired by recent studies and apply the bias-corrected LSDVC for dynamic panel data with small N and T proposed by Bruno (2005a, b). We measure macroeconomic performance as real GDP per capita and welfare state effort as public social expenditure as a percentage of GDP, total and disaggregated according to ten welfare programs: old age, survivors, incapacity-related benefits, health, family, active labour market policies, unemployment, housing, other social policy areas, and education. The effect of this set of variables is analysed in the medium – 5-years periods– and in the long(er)-run–10-year periods. To estimate welfare regime-specific social spending effects we include in the baseline regression interaction terms between social expenditure and dummy variables representing different welfare state regimes: the Anglo-Saxon or liberal welfare model; the continental, conservative or corporatist welfare model; the Mediterranean or Southern European welfare model; the Central and Eastern European countries welfare model; and the others/residual welfare model. The additional determinants of economic growth considered in the econometric analysis are the growth rate of capital, average years of schooling, total factor productivity, income inequality, wages, and economic globalization.

Our findings reveal that public social expenditure related to the labour market has an impact on economic growth both in the medium and in the long run. Other components of social expenditure only have an impact in the longer run, which is the case for the family, housing, survival pensions, and other social policy areas. Additionally, in the analysis considering welfare state regimes, the Mediterranean model stands out as the one for which more components of public social expenditures have a positive impact on economic growth.

SIWIEC ANNA

MINIMUM CIT RATE AND THE LEVEL OF DIGITALIZATION IN THE EU- INCREASING REGIONAL INEQUALITIES

Poznań University of Economics and Business, Poland

The aim of this article is, first of all, to show the dependence between the different level of digitalization of countries in the European Union and the new directive proposal announced by the European Commission in December 2021 regarding the minimum effective CIT rate. Secondly, to signal the potential effects of such dependence for corporate taxation in the EU, and, consequently, for the economic growth of EU countries.

The analysis of the text of the directive proposal and statistical data on the level of digitalization in the EU taken from Eurostat for the years 2019-2021 allowed for conclusions to be drawn in terms of increasing inequalities between EU countries as a result of digitalization accelerated by COVID-19, additionally supported by a potential reform of corporate taxation.

The minimum effective CIT rate of 15% is to apply mainly to large international digital enterprises with annual global revenue from 750 million euros and above and their greatest sales take place in the most digitalized countries. In 2022, the difference in the Digital Economy and Society Index between the most and least digitalized countries in the EU is forty percentage points. As a consequence, it means higher budget revenues from CIT and faster economic development for the countries with the highest level of digitalization.

The differences in the rate of economic growth will increase to a greater and greater extent between the more and less digitalized countries. The article addresses a new approach to digitization in juxtaposition with the EU corporate tax reform to enter into force in 2023.

STĘPIEŃ SEBASTIAN, SMĘDZIK-AMBROŻY KATARZYNA

ARE SMALL FARMS SUSTAINABLE AND TECHNOLOGICALLY SMART AT THE SAME TIME?
EVIDENCE FROM POLAND, ROMANIA AND LITHUANIA

S. Stępień: Poznań University of Economics and Business, Poland
K. Smędzik-Ambroży: Poznań University of Economics and Business, Poland

The sustainable development of farms is determined by many factors and, in recent years, the significance of modern technologies and artificial intelligence (AI) has been pointed out, especially in terms of beneficial effects on economic performance and natural resources. Therefore, it is interesting to answer the question whether AI technologies are used by small-scale farms.

Thus, the aim of the study is to assess the level of use of modern technologies (AI) in smallholder farms in Poland, Romania, and Lithuania. The research includes units with a relatively high index of economic, social, and environmental sustainability. In this way, the authors ask whether there is a synergy between sustainability and the degree of adaptation of modern technologies. At the same time, the rationale for using innovative solutions and the barriers associated with it are indicated. This makes it possible to formulate recommendations for agricultural policy regarding the implementation of artificial intelligence in the smallholder sector. The article uses a rare qualitative research approach - in-depth interviews with farm owners - which is a kind of contribution to the analysis of the phenomenon. The questions and statements found in these interviews fit into the theory of reasoned action (TRA), which is a psychological theory that links beliefs to behaviour. To the best of our knowledge, there are no similar studies for Central and Eastern European countries, hence it is reasonable to conclude that the article fills a research gap in this area.

The conducted analysis proves that the level of use of modern technology in small farms, even those with a high sustainability index, is in practice zero. Thus, the title question can be answered: small sustainable farms in Poland, Romania and Lithuania are not technologically smart at the same time. This fact manifests the necessity of dedicating artificial intelligence-based solutions to small farms. This is especially true for countries with a high share of smallholder agriculture and a fragmented agrarian structure, as the low scale of production and land area, in addition to high acquisition costs, are considered as the main barriers to the application of AI.

Key words: small-scale farms, technology, artificial intelligence, sustainable development, interview research, farmers opinions
JEL codes: O33, Q01, Q12, Q16, Q55

ŚLIWIŃSKA MAGDALENA, RADOMSKA EWA, MAKULSKI TADEUSZ

FAIR TRADE AS A DRIVER FOR SUSTAINABLE CONSUMPTION. THE POLISH PERSPECTIVE

M. Śliwińska: Poznań University of Economics and Business, Poland
E. Radomska: Pedagogical University of Kraków, Poland
T. Makulski: Polskie Stowarzyszenie Sprawiedliwego Handlu, Poland

Increasing global challenges demonstrated the need for sustainable development, which is addressed by various activities of governments and international organizations, Agenda 2030, and the formulation of the SDGs. One of the key elements of all actions is raising public awareness about responsible consumption. It is becoming apparent that achieving these goals is not possible without the active involvement of civil society. Therefore, the aim of this paper is to show, how Fair Trade, an international grassroots socio-economic initiative, supports the institutionalization of sustainable consumption. On the example of Poland, the ways this initiative contributes to the creation and advancement of institutions supporting responsible consumption will be shown. The methodology used is based on a critical analysis of existing literature and an extensive case study of the development of the Fair Trade movement and market in Poland.

The results are twofold. On the one hand, it is argued that the Fair Trade movement and market create an institutional framework supporting responsible consumption. Crucial elements of this framework are Fair Trade organizations, certification schemes, and values. In the case of Poland, the key role plays Polish Fair Trade Association and Fairtrade Poland. The most common Fair Trade label constitutes the Fair Trade International. Both, Fair Trade organizations and certification schemes support the development and reinforcement of „invisible institutions" – values that are crucial for sustainable consumption, like solidarity, altruism, and the need to help the weaker participants of the market. On the other hand, it is argued that Fair Trade influences the activities of national, and local authorities in the form of different policies, regulations, and activities concerning sustainable consumption, which in turn support further development of the Fair Trade market and movement.

The novelty of this paper lies in its approach to the problem of sustainable consumption, which is to look for factors that influence the institutionalization of responsible consumption, in treating Fair Trade as a new phenomenon in the global economy that may appear to be a crucial factor in this process, in identifying the interdependence between civil society and the state in the path of institutionalizing responsible consumption, and in conducting this analysis on the example of Poland, representing one of the emerging Fair Trade markets and movements.

ŚLIWIŃSKI RAFAŁ

ARTIFICIAL INTELLIGENCE SUPPORTING THE COMPETITIVENESS OF THE SALES PROCESS

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Artificial intelligence (AI) is one of those modern technologies which in a short time began to have a significant impact on the economy, individual industries, and competitive relations between enterprises. Its role (presence) is fully in line with Schumpeter's concept of creative destruction, because new tools and ways of working outclass the traditional ones, causing their displacement.

Thanks to AI, commercial solutions, e.g. in terms of acquiring new customers or increasing customer satisfaction with the purchasing process, or with the purchased item, have exceeded all expectations, and now it seems that traditional solutions in the field of sales techniques are not able to cope with the modern solutions that contain more and more or to a lesser extent, an AI component. It is worth realizing that the change is so significant that it causes growing income inequalities between companies using traditional and AI-based sales systems. This change is both qualitative and quantitative.

The literature on the subject treats the links between the sales area and AI quite selectively. Usually, one selected aspect is described, but there is no broader overview of solutions that will create a more accurate picture showing the potential, of a a wide spectrum of using modern AI-related tools to increase competitiveness in the broadly understood sales area. For the above reasons, the purpose of this article is to present modern methods of sales support by AI in the sales process of various organizations and in electronic and traditional commerce. The benefits that companies will be able to derive from this technology will be presented, and how artificial intelligence is able to strengthen or create a competitive advantage in the sales process or in trade. This article uses the method of systematic scope review around the topic AI-supported sales. The results offer both academic and practical contributions. Based on a broad scope review the article offers a fresh, updated view on the very technologically driven and essential economic process in every enterprise like sales, describing the peculiarities of AI implementation in the different stages in sales process.

RUTKOWSKA ANNA

IMPLICATIONS OF MAGNETIC RESONANCE IMAGING (MRI) FOR ECONOMIC RESEARCH AND THE DEVELOPMENT OF NEUROECONOMICS

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The syncretism of traditional economic theory based on hypothetical-deductive reasoning and contemporary behavioral economics that accounts for the psychological and social aspects of consumer behavior, and the application of experimental economic tools and modern neuroeconomics research methods contribute to a better understanding of the economic decision-making process.

The aim of this study was to determine the specificity and applicability of magnetic resonance imaging (MRI) as a tool for economic research and to define the role of neuroimaging in the development of contemporary neuroeconomics. The aim of the article is also to draw attention to the changing methodology of economic research and the use of more and more sophisticated research techniques, including those in the field of imaging diagnostics. The foundation of modern neuroeconomics is therefore an interdisciplinary research approach. The conducted analysis relied on an interdisciplinary approach, and an attempt was made to syncretize economic and medical knowledge. The physical principles of MRI were presented; an MRI examination was described, including medical indications and contraindications for the procedure, and the implications of MRI and functional MRI (fMRI) for economic sciences were discussed. The applicability of fMRI scans of brain structures for neurofinance, neuroaccounting and neuromarketing was analyzed based on a review of the literature. In view of the dynamic development of modern medical technologies, including innovative neuroimaging solutions, as well as the complex and dynamic character of economic processes driven by globalization, sophisticated competitive mechanisms, and service personalization, the use of an interdisciplinary approach in analyses of the psychological and economic underpinnings of market behaviors is fully justified. This article sets the foundations for a series of research studies dedicated to contemporary neuroeconomics.

XIANG WEIYI

THE IMPACT OF ENVIRONMENTAL REGULATIONS ON GREEN PRODUCTIVITY
— EMPIRICAL EVIDENCE IN 9 COASTAL DISTRICTS IN CHINA

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As an administrative tool to protect the environment by inducing the growth rate of energy consumption and environmental pollution, environmental regulation can also lead to increased productivity or more efficient resource allocation. However, the impact of environmental regulations on green productivity remains unclear.

The main goal of this paper is to analyze the question of how and to what degree the intensity of environmental regulations could affect green productivity. The paper reviews both theoretical and empirical research on the effects of environmental regulations and foreign direct investment on green productivity. Pollution halo and pollution heaven hypotheses have been proposed to explain the influence mechanism. Also, this paper concludes the pathways of environmental regulations on green total factor productivity. In addition, the Malmquist index and regression models in this paper are built based on previous research. An empirical analysis is then conducted using panel data from nine coastal Chinese provinces and cities between 2004 and 2019. In conclusion, the result shows the inverted U-shaped relationship between environmental regulations and green productivity. Meanwhile, the correlation between foreign direct investment and economic growth is more significant than green productivity.

In light of the findings, the following suggestions are given: developing differentiated and more accurate environmental regulation standards for different provinces and cities, encouraging consistent and strong environmental regulations for all provinces and cities, and focusing on the regulations' effects while the control variables have little effect.

Key words: Economic Growth, Environmental Regulations, Green Growth, Environmental Economics, Green Economics, Econometric Methods, Statistical Methods
JEL codes: O4, Q580, Q560, C100

YOUNESS MOHAMAD

THE IMPACT OF POLITICAL EXITS ON CAPITAL STRUCTURE POLICIES

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The paper addresses the impacts of political exits on capital structure policies, taking the impact of the Brexit deal on the UK's companies listed at FTES 100 as a practical case. The paper analyzes the political risk and uncertainty of Brexit and linked it directly to the capital structure policy of UK companies during the period (2010-2021).

The study divided into two periods, the first period before the Brexit deal (2010-2015) and the second period is after the Brexit deal (2016-2021). Data were collected from the annual reports of the companies and from FTSE 100 database. Moreover, Capital structure policies were studied by analyzing the determinants of capital structure such as LTD/TE, profitability, tangibility, liquidity, propensity to pay dividends, size, and political Factor – Brexit. A regression analysis was adopted to analyse and interpret the variables for the UK companies, and notice the impact of the Brexit deal on the capital structure policies.

Therefore, the results show that there is a direct relationship between political exits and corporate financial policies, especially capital structure. Also, the results show that the financial ratios have differed between the two periods (before and after) Brexit, where it seems that the capital structure variables were affected starting from mid of 2016 due to the Brexit referendum and then the political negotiations between the two parties during the period (2016-2021). In addition, the correlation matrix shows that LTD/TE has a negative linear correlation with profitability, liquidity, and political factors whereas it seems that LTD/TE has a positive linear correlation with tangibility, size, and paying dividends. Moreover, our results show that political shocks and instability were affecting on the FTSE 100 performance starting from 2016 but now it starts to recover especially after 2021.

SECTION 2: FINANCE

ALEKNEVIČIENĖ VILIJA, BENDORAITYTĖ ASTA

THE ROLE OF GREEN FINANCE IN GREENING THE ECONOMY: CONCEPTUAL APPROACH

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Green finance as a new financial concept attempts to join financial performance and positive environmental impact and can be seen as the economic system's adaptation to global environmental challenges. It is used to fund activities related to climate change mitigation, adaptation to climate change, and other environmental protection goals. Green finance links the worlds of finance and business with environmentally friendly behaviour. In principle, all strategic decisions made by the public, or business organisations must consider the potential impact on the environment, which means that value creation in the long term is integral to the well-being of current and future generations.

The aim of the study is to highlight the role of green finance in the environmental protection and development of the financial sector. The novelty of the research lies in the developed conceptual framework of the role of green finance in greening the economy. The conceptual approach covers three main elements of the green economy: the real green economy, green finance, and providers of green finance – the green financial sector and public funds. The tools and instruments used by investors, businesses, and public organizations are described in detail involving capital markets, sectors of banks and insurance, and government and multilateral funds. The conceptual approach is developed by applying the methods of content analysis and synthesis, comparison and logical modelling, model as a research design proposed by Jaakkola (2020), system test proposed by Arnold and Wade (2015), and the main features of the conceptual framework presented by Jabareen (2009).

Key words: green finance; green economy; environmental protection; green financial sector; green public funds
JEL codes: Q50, Q56

BANASZEWSKA MONIKA

SPATIAL INTERACTIONS IN LOCAL GOVERNMENT DEBT. EVIDENCE FROM POLAND

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Various causal mechanisms explain interactions among local fiscal policies in neighboring local governments (e.g., fiscal competition, yardstick competition, expenditure spillovers). There is a vast empirical literature that documents spatial interactions with respect to taxes and expenditures (a recent review: Agrawal, Hoyt & Wilson, JEL, forth.). At the same time, there are only a few studies on debt (Borck, Fossen, Freier & Martin, 2015; Balaguer-Coll & Toneva, 2019). This research gap necessitates further theoretical and empirical studies. One should not also ignore the fact that sustainable debt is key for the sustainability of local public finance.

The current study aims to verify whether there are positive spatial interactions with respect to debt among Polish municipalities. By doing so we add to the emerging strand of the empirical literature on spatial interactions with respect to debt. We also offer an extension to a preliminary analysis for Poland by Kopańska and Kopyt (2018).

We employ Dynamic Spatial Durbin Model with FE so that we are able to control for spatial and time lags of the dependent variable, spatial lags of the independent variables as well as unobserved individual and time effects. The panel consists of 2,442 Polish municipalities (out of 2,479 units, due to missing data) in the years 2004-2020. The variable of interest is expressed as per capita municipal debt at the end of the year in constant 2020 prices. We utilize three forms of spatial weight matrix: contiguity binary row-normalized weight matrix and inverse-distance row-normalized weight matrix (with cut-off: 20 km and 25 km, respectively). Spatial interactions in Poland go beyond tax policies. Interactions in space with respect to debt among Polish municipalities are statistically significant albeit smaller than those estimated for German or Spanish counterparts (Borck, Fossen, Freier & Martin, 2015; Balaguer-Coll & Toneva, 2019). An increase in debt in a given municipality by PLN 100 leads to an increase in the debt of neighboring municipalities by PLN 8-10. The results are robust to the form of a spatial weight matrix. Spatial coefficients in the current study are comparable to those estimated for car tax in Poland (Banaszewska, 2022). There is strong time persistence in debt levels. It is also found that in the short-run municipal debt increases with the share of young inhabitants and revenue capacity whereas decreases with the share of old inhabitants.

Key words: municipalities, spillovers, Dynamic Spatial Durbin Model, local public finance
JEL codes: H74

BANAŚ DAWID, KLIBER FILIP

CHANGE IN PAYMENT BEHAVIOUR DURING THE COVID-19 PANDEMIC, BASED ON THE EXAMPLE OF STUDENTS

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The main aim of the study was to show changes in payment behaviour before, as well as during, the COVID-19 virus pandemic, using the example of students at the Poznań University of Economics and Business (PUEB), who are categorised as generation Z. In addition, the authors of the publication, using this study, wanted to verify whether there is a difference in payment behaviour between students who studied only remotely, and those who studied "normally" within the walls of the university. Both students who studied the 1st and 2nd degree participated in the study. A breakdown based on the mode of study was also used: full-time and part-time, as well as demographic differences i.e., gender, and work activity.

The research consisted of two parts - theoretical and also empirical. In the theoretical part, the authors made a critical analysis of the literature on the subject, as well as reports on payments in Poland. On the other hand, for the empirical part, the author's survey questionnaire was used with the CAWI method on a representative sample of PUEB students. At the first stage, the results obtained were subjected to descriptive statistics analysis. Then, multidimensional scaling and principal component analysis were applied to show differences.

Payment habits are constantly changing and updating knowledge in this area is necessary for planning and carrying out activities related to the organization of money transactions. In addition, through the study, the authors wanted to show that the pandemic had an impact on the payment behaviour of young people representing the Z generation. The obtained results allowed to indicate that the offer of payment tools offered by banks should be adapted to the requirements of modern, dynamic customers.

Key words: payment behaviour, multidimensional scaling, COVID-19, generation Z
JEL codes: D14, G41, J33

BERENT TOMASZ, ŚNIECHOWSKI MACIEJ

CORPORATE SECTOR CASH HOLDING – OPTIMAL LEVELS, MACRO CONTEXT OR EXTERNAL SHOCKS?

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The objective of this paper is to validate the existence of a secular upward trend in corporate cash holding (heavily documented for the developed markets and tentatively implied for less developed economies). In particular, we provide evidence that the alleged trends do not actually exist either in the U.S. or in Poland (at least in the form proposed by the literature). We do this with the help of a new up-to-date set of data for Poland and a historic dataset for the U.S. market. For the latter, we review the data provided by the literature and, based on the same inputs, reach opposite conclusions. Rather than a secular trend, we view corporate cash holding as a period-dependent and GDP-driven phenomenon. In our paper, we do not concentrate on the (micro or macro) determinants of corporate cash holdings as viewed from the perspective of a single company. Instead, we focus on the aggregate changes in cash holding across the corporate sector. Such a time series is bound to depend not solely on firm characteristics, principle-agent considerations, or other factors typically described by behavioural finance. Macro context is an understandable addition.

As expected, the explanatory power of even our simplest models is many times bigger than that driven by company input. What contributes only marginally to the position of a given firm, proves to be a determining factor when averaged across the whole economy. Although macro context seems natural in explaining how much cash a company has/should have, it was not until recently that it was applied in corporate liquidity research. Although we limit our interest in macro variables to GDP alone, we believe it is sufficient to argue both our points: the importance of macro input and no existence of upward trends that persist over time. Last but not least, we argue for a new approach to research of corporate cash holdings. In this new approach, searching for firm-specific determinants of (optimal) cash levels is merely the first stage, which should be followed by the study of the broader macro context, shared by many companies (stage 2), as well as other liquidity (structural) shocks, originating e.g. from tax law, pandemics, or wars (stage 3). The structural change in the sample composition of companies in the market (e.g. Nasdaq effect) may also be viewed as a stage 3 effect.

Key words: cash, cash ratio, cash holdings, corporate liquidity, corporate cash reserves, cash management, liquid assets
JEL codes: E41, E60, G30, G32, H32, N1

BUBICZ MARCIN

LEGAL AND INSTITUTIONAL FRAMEWORK OF BANKING SUPERVISION IN POLAND. BACKGROUND, MICROPRUDENTIAL TOOLS AND REFORM ATTEMPT

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The aim of the research is to present the legal foundations of the financial market supervision system in Poland, with a particular emphasis on the banking sector. Another area of examination will be the institutional framework of the microprudential regulation – the Polish Financial Supervision Authority. For the holistic presentation of the aforementioned topic, there will be a short introduction into the genesis of microprudential regulation in Poland – the contemporary system, the system prior to the year 2006, and system prior to the adoption of the Constitution in 1997. The author will also present the supervisory tools used over the banking sector. Finally, the research will cover the issues related to the reform attempt, which aims mainly in the transfer of the supervisory powers over the baking sector from the Polish Financial Supervision Authority (KNF) to the National Bank of Poland (NBP). It is worth noting that NBP, as the Polish central bank plays a key role in macroprudential regulation in Poland, as the President of the National Bank of Poland, chairs the Financial Stability Committee (when it meets in the macroprudential format). The research based on the examination of the Acts and Regulations forming the Polish banking supervision system will be conducted in reference to the legal-dogmatic methodology. There shall also be references to the supervision systems functioning in well-developed free market economies as well as to the European Union standards adopted by its institutions (legal comparative methodology).

The literature of the subject of the research mainly focuses on the historical background of the financial market supervision system in Poland, which shall also be presented. However, there is little scientific literature on the reform attempt, that would focus on the consolidation of the micro- and macroprudential supervision system in Poland within one state institution – the National Bank of Poland. Furthermore, this research topic could partially fill that void. The author's master dissertation on the subject of the consolidation of the supervisory powers, including those over the banking sector within the NBP was granted 1st Prize in the contest for the best economic dissertations in Poland of the year 2021 (Contest for the Prize of the President of the NBP).

Key words: Financial supervision, banking supervision, central bank, microprudential regulation, macroprudential regulation, the National Bank of Poland, The Polish Financial Supervision Authority
JEL codes: G1, G2, K2

CYWIŃSKI ŁUKASZ

BLOCKCHAIN TECHNOLOGY AND SUSTAINABLE TOURISM INDUSTRY

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The article explores the use of blockchain technology and cryptocurrencies in the tourism industry. One of the problems associated with cryptocurrencies is that they consume a lot of energy, and thus they are not a suitable medium of exchange for sustainable tourism. It is however possible to organize the technology so that it is still extremely counterfeit resistant but at the same time less energy demanding.

The main motivation for this research is associated with the fact that there is already a lot of evidence that companies from the tourism sector already accept or experiment with existing cryptocurrencies. This however might be very dangerous, because it is very doubtful that cryptocurrencies have all the necessary functions of money (store of value, unit of exchange, and unit of account).

The article contains evidence that cryptocurrencies are already in use in the tourism sector. It also contains a brief description of how the technology works based on the first cryptocurrency, which was Bitcoin. One of the aims of the article is to discuss if cryptocurrencies can be a useful tool for sustainable tourism. The arguments for and against the use of cryptocurrencies in such a way have been collected based on the SWOT analysis and desk research.

The results indicate that adopting Bitcoin or similar cryptocurrency tokens is a bad idea if anyone aims at sustainability in the tourism sector. The proof of work algorithm waists an incredible amount of energy to maintain so-called trust based on consensus. On the other hand, the technology itself can be organized in such a way that it is more sustainable and perhaps less ridiculous when it comes to the amount of cryptographic difficulty that is applied to maintain it.

Key words: finance, cryptocurrencies, blockchain technology, sustainability
JEL codes: G29, Z39, O17

FRYDRYCH SYLWIA

THE IMPACT OF THE CREDIT RATING OF THE ESG DEBT INSTRUMENTS' ISSUER ON THE COUPON RATE

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The increase in the issuance of ESG instruments, resulting from the increased interest in sustainable, socially, environmentally, and climatically stable development of the economy, has become the reason to consider the impact of the issuer's creditworthiness assessment on the coupon interest rate of issued ESG debt instruments. In other words, does the issuer's compliance with the criteria related to environmental, management, or social relations have an impact on the amount of credit rating. Moreover, does the higher number of ESG issuer credit ratings, which is associated with higher costs, result in a lower cost of debt.

The aim of the study is to assess whether the fact that issuers of ESG instruments have a credit rating from more than one rating agency has an impact on the coupon rate of the issued debt instruments. This goal was achieved through the process of analyzing credit ratings assigned by selected major rating agencies (S&P, Moody's, and Fitch). Due to the complexity of the data, mixed research methods such as observation, analysis, and inference were used. The study used data from the Eikon Refinitiv database. The ratings of issuers announced on the issue date were analyzed. The study covers the years 2012-2021. In the analyzed period, 43.91% of issuers of ESG debt instruments had credit ratings from rating agencies such as S&P, Moody's, and Fitch. As 42.56% of debt instruments are issued in EUR and USD, only these currencies are included in the study.

The results of the conducted research indicate that the credit ratings of the issuer of ESG instruments have an impact on the cost of debt financing. Having a creditworthiness rating from more than one rating agency by issuers of ESG debt instruments contributes to a lower cost of obtaining financing. In USD, the lowest coupon rate applies to debt instruments whose issuers have a credit rating of the three above-mentioned rating agencies. For debt instruments issued in EUR, it is sufficient for the issuer to have a credit rating from two agencies. The conclusions of this study can be used in the process of obtaining financing from capital markets for projects related to environmental, management, or social relations. The theoretical and empirical literature does not contain indications regarding the impact of the issuer's credit rating on the success of debt issuance, related to meeting the criteria for environmental, governance, or social relations.

Key words: sustainable financing, credit rating, ESG
JEL codes: G12, G15, G24

HĘĆKA-SADOWSKA ALEKSANDRA, ŁYSKAWA KRZYSZTOF

CYBER RISK AND CYBERSECURITY IN THE INSURANCE COMPANY

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Cybersecurity has become one of the greatest challenges in today's post-pandemic, digital and interconnected world, and also a subject of strategic importance for the insurance industry. There is no doubt that the advance of technology and the increased use of big data and cloud computing set up an opportunity for the insurance business, but their also expanded insurance companies' vulnerabilities towards cyber risk. As insurers collect a large amount of confidential data, including protected personal sensitive information, they are a natural target for cyber-attacks.

This paper aims to broaden knowledge within cyber risk as a part of insurers' own operational risk and methods of its management in selected business areas. After a general review of cyber risk based on recent branch reports and surveys results, the authors identified its global economic impact with particular regard to financial institutions, and also insurers' exposition and perception of cyber risk and cybersecurity spending. Moreover, insurance companies' examples of cyber incidents, jurisdiction, and administrative decisions issued by the President of the Personal Data Protection Office were examined with a deeper dive into underwriting, selling, administration, and claims handling processes.

The results of the literature study show that cyber risk is recognized to be one of the most significant non-financial risks (operational risk) for insurers and that many proactive security measures can be implemented. However, due to the high vulnerability to leaks of confidential personal and financial data or unauthorized system access, which may cause not only financial loss but also business interruptions and reputational damages, in the authors' opinion loss prevention and reduction is insufficient. Thus, both insurance and non-insurance methods of financing cyber risk results were investigated. On this basis, cyber insurance is considered by the authors to be the best tool provides both prevention and financial compensation in case of a cyber incident. Due to the dynamics of digital transformation, researches in that field should be updated constantly.

Key words: cyber risk, operational risk, insurance company, risk management, cybersecurity, cyber insurance
JEL codes: G22, G32

IWAŃCZUK-KALISKA ANNA, KOTLIŃSKI GRZEGORZ

CASHLESS ECONOMY IN PRIVATE ENTERPRISES IN POLAND – BASED ON QUALITATIVE RESEARCH

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In Poland, as in other countries, a digital revolution is taking place. One of its main features is the rapid development of the cashless economy. Different groups of stakeholders are involved in this process. The motives and effects of their activities are studied by specialised research institutes. However, in the opinion of the authors of this study, private enterprises, i.e. those identified mainly with small and medium-sized enterprises, are particularly important in that matter. Due to their number and their share in GDP, they dominate the Polish economy and it is worth investigating how they contribute to the development of the cashless economy. On the basis of extensive literature studies, it was found that no such attempts have been made in the economic literature so it was decided to bridge this gap through qualitative research.

The aim of the paper is to present the results of the qualitative studies among small and medium enterprises that were active in the Wielkopolska region in Poland in 2022. The authors believe that these enterprises play a particularly active role in the development of the cashless economy. Owners and managers of this type of entities, i.e. the main decision-makers in general, can have a significant influence on the quantitative and qualitative development of this area. The answer to the question about the mechanism of this impact may be provided by qualitative studies demonstrating the motivations and beliefs of decision-makers on their actions in the field of cashless operations. The method of in-depth interviews allows understanding of the detailed aspects of the subject studied but does not guarantee the objectivity of the conclusions. Therefore, it remains the intention of the authors to support the results of qualitative research with the results of parallel quantitative studies.

Crucial to the originality of the forthcoming study is that it includes the views on the cashless economy presented not only from retailers' perspective but different groups of enterprises, involved as both recipients and payers. The research also provides insights into the functioning of cash in enterprises and the role of banks in their transition to a cashless economy.

Keywords: cashless economy, private enterprises, cashless payments
JEL codes: G23, G35, O33

KACZMAREK PATRYK TOMASZ

CENTRAL BANK DIGITAL CURRENCY – POTENTIAL CONSEQUENCES FOR FINANCIAL MARKET

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The aim of the article is to present possible scenarios of introducing the central bank digital currency and their possible consequences for the financial market. In particular, the presentation of digital currency models, and the significant effects that its introduction may have on the existence of giro money - and the entire commercial banking sector. The thesis of the article is that the introduction of central bank digital currency may threaten the stability of the two-tier banking system model. The research methods used in the article, including literature review, financial analysis, as well as statistical methods, enable initial validation of the presented models.

The first part of the article presents the evolution of payment instruments - from commodity money to fiat money. The following section presents the consequences of the parallel existence of different payment instruments - central bank money and commercial bank money - taking into account fundamental differences in the architecture of the banking system. The next part of the article presents possible scenarios for the introduction of digital currency - both from the point of view of models distinguished in the literature and trying to propose the most important advantages and disadvantages of the two most probable scenarios.

In the next part of the article, an attempt was made to estimate selected financial indicators in the case of introducing the discussed models in order to validate them. The applied research methods and the structure of the work are adapted to the purpose of the article, which is to present the most important consequences for the financial system related to the introduction of the central bank digital currency.

Key words: central banking, money, currency, monetary policy

KOŁODZIEJCZYK HANNA

POLISH CAPITAL MARKET EFFICIENCY BEFORE AND AFTER THE OUTBREAK OF THE COVID-19 PANDEMIC

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The outbreak of the COVID-19 pandemic had a negative impact both socially and financially. In many countries, there was a noticeable response from equity markets happening at the time of the official announcement of the pandemic. The aim of the article is to compare the level of information efficiency of the Polish capital market before and during a pandemic.

The subject of the study is therefore the Efficient Market Hypothesis in its weak form. The scope covers the daily quotations of the WIG20 stock exchange index between 2017 and 2020. The study was carried out in two steps: the first was the identification of structural changes in the time series, assuming that the date of the change is unknown. Then, tests of the random walk and long memory hypotheses were performed. The study expands the knowledge on the consequences of the outbreak of the pandemic on the capital market in Poland. It allows to assess whether and how the effectiveness of the Polish capital market changes in situations of sudden turbulence.

The most important conclusions of the analysis include the following observations: both before and during the pandemic phenomena contradicting the hypothesis of weak efficiency of the market could be observed on the stock market; the outbreak of the pandemic was accompanied by a structural change, and this appears to be a direct reaction to local events rather than those on a global scale, as it occurred days later than similar changes in major European markets; in the period before the pandemic, the phenomenon of persistence in returns could be observed on the market, while during the pandemic, the behavior of the market was reversed, which was statistically manifested in the phenomenon of a return to the average; this may be due to the market's tendency to overreact to both good and bad news.

Key words: capital market, market efficiency hypothesis, structural changes, COVID-19 pandemic
JEL codes: G01, G14, I19

KLINKOWSKA OLGA, ZHAO YUAN

PERFORMANCE AND FLOW OF SRI MUTUAL FUNDS AND INVESTORS SOPHISTICATION

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In this paper, we provide a comprehensive analysis of the performance of US SRI mutual funds as well as its relation to the flow of new money that those funds experience in the context of investors' sophistication. In particular, we compare the performance of SRI retail and institutional share classes and we analyse flow-performance and performance-flow relation for those classes.

Our paper provides new insights into the role of the investors' sophistication for those relations in the presence of sustainability preferences. We find that SRI mutual fund sector earns positive abnormal returns before expenses and retail SRI funds outperform their institutional peers both, before and after fees. Moreover, we find a positive flow-performance relation which is convex for SRI retail funds and linear for the SRI institutional ones. Finally, we cannot confirm the smart money effect for SRI retail funds, instead, we find a dumb money effect for SRI institutional funds.

Key words: SRI investment, retail funds, institutional funds, flow-performance relation, smart money, dumb money
JEL codes: G10, G11, G23

KROPIŃSKI PAWEŁ

DOES ECONOMIC POLICY UNCERTAINTY AFFECT CENTRAL AND EASTERN EUROPEAN MARKETS? EVIDENCE FROM TWITTER-BASED UNCERTAINTY MEASURES

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After a period of relative stability in the last two decades, Central and Eastern Europe (CEE) has become exposed to a new wave of adversity, and economic and social uncertainty. The post-COVID reality promptly crashed with an outbreak of war in Ukraine and the resulting humanitarian crisis. This paper empirically investigates interdependencies between the main stock market indices and uncertainty measures for five Central and Eastern European economies quantified by Twitter messages.

I applied a bivariate VAR model to five economic, political, natural disaster, recession, and fiscal measures and the value of the stock indices of the five Central and Eastern-European markets. After establishing the optimal number of lags based on the Bayesian Information Criterion, I performed the Granger causality test checking uni– and bi-directional causality. Despite the low popularity of the Twitter platform in non-English speaking countries, I found that certain measures Granger-cause changes in the stock index of analysed countries with some evidence of bidirectional relationships for selected measures. To the best of the author's knowledge, this is the first study in the literature to examine the proposed five indices in Central and Eastern Europe (CEE). Furthermore, this paper is the first study on the Granger-causality of Twitter messages on fluctuations in the respective CEE main financial index that can give a glimpse into the predictive value of social media in that region indicating that investors can limit their portfolio exposure and hedge against uncertainty shocks.

LISICKI BARTŁOMIEJ

INTERVAL EFFECT DURING THE COVID-19 PANDEMIC ON THE CASE OF THE WSE

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The process of beta coefficient (β) estimation is related to numerous difficulties, including. One of them is indicating the interval for measuring the return necessary to calculate it. That difficulty was often mentioned in previous research in the field of economics and finance. Using various time intervals (from daily to several years) to calculate β, significant differences in estimates were noticed. The occurrence of these differences in the values of the β was called the interval effect or the intervalling effect.

The aim of this study is to determine whether the occurrence of the interval effect also occurred among shares in Warsaw Stock Exchange Index (WIG) during the COVID-19 pandemic. Pandemic circumstances observed since the first half of 2020 creates research motives that can be used to discover new dependencies in capital markets. These undoubtedly include the attempt to verify the occurrence in the present reality of the interval effect noticed already in the 1970s.

The author of this article intends to check whether in the years of the spread of the COVID-19 pandemic (2020-20201) it was possible to observe other levels of the β of companies from the WIG in the situation of a different approach to estimating returns on their shares (daily, weekly, biweekly and monthly). β coefficients will be calculated by using the ordinary least squares method (OLS) on the research sample issuers grouped in the three main WSE indices: WIG20, mWIG40, and sWIG80. The values of the β coefficients, calculated based on the abovementioned time horizons of the returns, were characterized by significant differences. It is worth adding that these differences were statistically significant for pairs of β calculated on the basis of daily and weekly/biweekly/monthly returns, as well as for weekly and biweekly ones. Moreover, it was noted that the interval effect is invariably stronger to companies with lower capitalization.

Obtained results indicate that the COVID-19 pandemic did not influence on the occurrence of the interval effect observed on the polish capital market earlier, but only slightly changed some of its detailed characteristics. Conducting research on the occurrence of the interval effect during the COVID-19 pandemic on the Warsaw Stock Exchange (WSE) will allow to deepen the knowledge of capital market participants in the scope of the possibility of using the β to measure systematic risk in times of instability on capital markets.

Key words: interval effect, beta coefficient, COVID-19, Warsaw Stock Exchange, shares
JEL codes: C20, G11, G12, G17

LIZIŃSKA JOANNA, KUBIAK JAROSŁAW, CZAPIEWSKI LESZEK

ARE VALUE MIGRATION FACTORS IN THE IT INDUSTRY UNIQUE? EVIDENCE FROM CENTRAL EUROPE

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The main determinants of the new economy, which are knowledge, computerization, and globalization, significantly affect the process of creating and measuring the value of a company. The new economy determines the need to take into account changes in risk factors in the process of creating corporate value. One of the most important sectors of the digital economy is Information Technology (IT). The main objective of this research is to assess the differentiation and importance of financial factors of value migration for public companies listed on Central European (CE) stock markets. The research applies the approach of Slywotzki (1996) concerning the migration of values and the approach of Rappaport (1995) concerning value drivers.

The data cover firms listed on exchanges in CE countries from 2016 to 2020. We focus on firms belonging to the largest economic sectors To evaluate the migration of value between industries we have calculated the share in the industry migration balance. To determine the economic and statistical significance of the value drivers in the value migration process, we calculated their averages in three industry terciles and compared them using both parametric and non-parametric tests. The boundaries of terciles were set on the basis of the change in Market Value Added (MVA) to equity ratio.

This empirical research contributes to the area of finance. In particular, the research results help to discuss the changes that are happening in the IT sector in the area of value migration and value drivers. The increase in return of sales and increase of sales promote the growth of MVA in the IT sector to a greater extent than in the other economic sectors. On contrary, factors connected with investing and financing activities did not seem to explain value creation in both IT and other Central European sectors. There are several areas of contribution. First, recognizing value migration factors may be useful for investors in the decision-making process. It is also essential for managers when building business strategies. A comparison of value migration processes over a longer period of time, as well as across different industries, can be also important from the perspective of market regulators attempting to mitigate the effects of financial turbulence.

Key words: value migration, value drivers, new economy, Covid-19, MVA
JEL codes: F65, G15, G32

PEREZ KATARZYNA, VAN HORNE RICHARD

SEVEN DECADES OF THE EQUITY MUTUAL FUND PERFORMANCE

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2022 marks the seventieth anniversary of Modern Portfolio Theory by Harry Markowitz (Markowitz, 1952). That pioneering portfolio theory has become an inspiration for other scientists such as William Sharpe (Sharpe, 1964, 1966), Michael Jensen (Jensen, 1968), Eugene Fama and Kenneth French (Fama & French, 2015, 2018) or Mark Carhart (Carhart, 1997), all of whom have successfully moved the portfolio analysis into the practical ground of mutual funds. During these seventy years, the active mutual fund industry has gone through many changes and has faced many challenges, including notably the recent rising competition from passive funds and then the advance of the exchange-traded funds. In this article, we summarize seventy years of active mutual fund performance as measured by risk-adjusted return.

We look at actively managed equity mutual funds in the USA across the seven decades in 10-year increments (i.e., 1952-1962; 1962-1972; etc. until 2012-2022). We measure Alpha in a Fama-French-Carhart 4-factor model. We find that the vast majority of mutual funds have Alpha that cannot be distinguished from zero in a statistical sense (at the 95% confidence level) with a few funds producing positive Alpha and a cohort of funds with statistically significant negative Alpha (i.e., funds that destroy investor value through active management). We fail to find significant patterns in the results that could shed light on characteristics that would distinguish "positive Alpha" funds from "negative Alpha" funds or from "no Alpha" funds or that could explain how these dynamics may change over time. We mention some lessons for investors that can come out of this analysis of the history of Alpha over the past seventy years.

A novel aspect of our work is that we attempt to identify "closet index" funds among the actively managed cohort and then examine the performance characteristics of these versus "truly active" funds.

Key words: equity mutual funds, mutual fund performance, Jensen's alpha, active portfolio management, index closet
JEL codes: G12, G23

POPŁAWSKI PAWEŁ

THE TRANSMISSION OF NON-STANDARD MONETARY POLICIES TO AGRICULTURAL COMMODITY MARKETS

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Non-standard monetary policies may involve quantitative easing, negative interest rates, forward guidance, or collateral adjustments. Not only has the deployment of said measures in the USA, Eurozone, and UK since 2008 reshaped the capital markets but also affected commodity markets. Market digitalization and the financialization of the non-financial business economy further catalyzed the process.

The study explores the effects of particular policy tools on agricultural commodity markets and the sensitivity of agricultural commodity prices to specific monetary policies, depending on the channels of transmission to the markets. To this end, it assesses the differences between distinct non-standard monetary policies adopted after the 2008 financial crisis, and the measures included in economic relief programs during the pandemic of COVID-19. The primary analyses compare price dynamics for agricultural commodities, natural resources, consumer goods, equities, fixed-income assets, and cryptocurrencies.

Agricultural commodity prices largely depend on the demand for commodity-backed derivatives. The peak price levels correspond to the commodity boom of the 2000s/early 2010s and the period since 2021. Furthermore, data for agricultural commodities, natural resources, and fixed-income assets before the COVID epidemic seems to challenge the quantity theory of money. Post-COVID stimulus programs, however, have increasingly directed capital flow to the agricultural commodity markets; at the same time, the correlations between commodity and consumer goods prices increased. Monetary policy transmission mechanisms thus remain relevant, insofar as they spur demand. Whether this demand is consumption-driven or due to financial market phenomena, coordinated actions of governments and central banks show the potential to intercept market downturns. With the emergence of new asset classes, the intricate links between different financial markets keep expanding. While equity markets tend to absorb the effects of quantitative easing and negative interest rates, the establishment of digital trading platforms makes equity valuation increasingly susceptible to speculative actions. This boosts the relative attractiveness of commodity derivatives, particularly for risk hedging. Finally, the integration and digitalization of financial markets also make the non-financial sectors more vulnerable to systemic risks, e.g., sudden stops and capital outflow.

REMLEIN MARZENA, JASTRZĘBOWSKI ARTUR, OBRZEŻGIEWICZ DAWID

THE APPLICATION OF ROBOTIC PROCESS AUTOMATION IN THE FINANCIAL ACCOUNTING IN POLISH COMPANIES

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Modern accounting is undergoing a transformation that is a consequence of the increasingly common use of information technologies. Digital transformation is seen as one of the key drivers in changing the way businesses create value and gain competitive advantage.

The aim of the research is to investigate the level of Robotic Process Automation's (RPA) application in the area of financial accounting in Polish companies. Quantitative research in the form of a questionnaire was used, which was carried out on the basis of the deliberate selection of a sample of respondents. Taking into account the nature of the questions and scales included in the research tool, descriptive statistics measures were used in the data analysis in the study. 112 enterprises were selected to participate in the research for which there was a chance for them to use RPA. The respondents were people working in managerial positions in the finance and accounting departments (in particular, financial directors, chief accountants, managers of accounting departments, and people in similar positions).

The research showed that among entities that use RPA in Poland, robotization is mainly used in the area of financial accounting. Further analysis indicated that robots are implemented mainly either in processes with a high volume of transactions (like sales or purchases) or in processes determined by internally generated data (month-end closing, financial reporting). It also shows that entities that implemented RPA mainly have a long history of operation and are large corporations employing over 1,000 employees. The results of the research give a clear direction both for the companies that are at the initial stage of implementing RPA and those that are considering expanding its application.

The research covers the current and relatively little-known area of contemporary financial accounting. The literature review, especially the Polish literature, indicates that the area of applying RPA in accounting is a new topic. This study is one of the first to present the results of research conducted among entities operating in Poland.

Key words: Robotic Process Automation, financial accounting, automation, robotization, enterprise, IT technologies
JEL codes: M40, M41, M49

SCHNEIDER FABIENNE

ON-THE-RUN PREMIA: LOCK UP, INVENTORY UNCERTAINTY, AND CENTRAL BANK ACCESS

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Off-the-run Treasuries are locked-up in buy-and-hold portfolios. Their limited availability makes them less appealing than their on-the-run equivalents, leading to a premium on the latter. I examine this frequently discussed hypothesis. My theoretic results confirm the lower number of off-the-run Treasuries on the market, but the on-the-run premium arises due to a different reason. Uncertainty about the stock of assets left in inventories is higher for off-the-run assets as they are longer on the market. This implies more frequent settlement fails, which lead to a preference for on-the-run assets and the premium. I add on the results by Vayanos and Weill (2008) by providing the missing dynamics to answer the question.

Given the rise of intermediation by non-bank financial institutions on the government bond market and the related discussion of who should have access to the central bank balance sheet, I subsequently analyze in my set-up the impact of giving all intermediaries (e.g., non-banks) access to a central bank deposit facility. Especially after the COVID-19 turmoil in the Treasury market, the question of access turns out to be crucial in the discussion of how to restructure this market. I show that central bank facility access does not benefit the ones granted access but the primary dealers. Nevertheless, trade is stimulated, and Treasury inventories are offloaded faster to their final holders. The overall price level increases in contrast to the premium's reaction.

Key words: on-the-run premium, buy-and-hold portfolios, Treasuries, central bank facility access
JEL codes: G12, G14, G23

SCHMIDT-JESSA KATARZYNA, STRADOMSKI MACIEJ

CONSUMER AWARENESS AND ACCEPTANCE OF DIGITAL- ONLY BANKS

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The main objective of the study was to verify the level of acceptance of digital-only banks by identifying potential opportunities and barriers to the development of this type of institution within the Polish market as well as verifying the state of knowledge and awareness regarding such banks.

To realise the paper's main goal, a Computer-Assisted Web Interview (CAWI) survey was conducted. The participants of the survey were adult Polish residents. The data was gathered from 515 respondents in March 2022. The knowledge and awareness as well as the innovativeness of the respondents have a significant impact on the propensity to use digital-only banking services. The higher the knowledge and awareness as well as the innovativeness, the greater the willingness to use a digital-only bank. No direct relationship was found between location and the use of stationary branches nor between education and the propensity to use modern technological solutions.

There is an opportunity for the development of a new model of banking that is digital only. However, customers must clearly see the advantages as well as the level of security. Therefore, there is a need for education that will raise this awareness among customers. Digital-only banks are still new institutions that require special attention because their banking model differs from traditional banks. There is still not enough research that focuses on FinTechs that possess a banking license.

SKWAREK MATEUSZ

IS BITCOIN AN EMERGING MARKET? A MARKET EFFICIENCY PERSPECTIVE

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Market efficiency is an important global problem because growth in market efficiency may lead to a better allocation of capital (both from the global and individual investors' perspectives). Previous studies found that Bitcoin and most emerging markets have become more efficient over time. Thus, there may be some similarities between Bitcoin and emerging markets. Besides, researchers refer to cryptocurrencies as an emerging market. However, in the existing research, there is no clear evidence of the "emerging" nature of the cryptocurrency market efficiency.

Thus, the main purpose of this study is to compare the dynamics of market efficiency between Bitcoin and the emerging stock markets. This allows to indicate whether Bitcoin has the characteristics of an emerging market. Based on recent research, I hypothesize that Bitcoin market efficiency follows the efficiency of emerging markets.

The study uses daily prices for the MSCI Emerging Markets Index and Bitcoin during the period 2011 - 2022. The Hurst exponent is calculated using rescaled range analysis (R/S). What more, the rolling window of 512 data points with one day step is used to show the dynamics of market efficiency. Finally, the comparison of market efficiency results is conducted by applying the Chi-Square test of Independence, Pearson, and Spearman correlations. Results indicate that in the first half of the study period, the Hurst exponent shows the trend toward an efficient market (0.5) for both the MSCI Emerging markets index and Bitcoin. What more, it can be noticed that the behaviour of the Hurst exponent at some subperiods seems to be similar for Emerging and Bitcoin markets. I also find that changes in Bitcoin market efficiency are not independent of emerging markets' efficiency during the pandemic period. Thus, from a market efficiency perspective, in a period of market stress Bitcoin may be more related to emerging stock markets than in the whole study period.

To the author's best knowledge this is the first study to examine the dynamics of market efficiency of Bitcoin compared to emerging markets. The results could be used by investors and portfolio managers in constructing better investment strategies.

SOBIK BARTOSZ

CLIMATE RISK IN THE ENERGY SECTOR

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The ongoing energy transition is irreversibly changing the nature and functioning of the energy sector and emerging new types of risks, with climate risk standing out in particular, being a result of the EU's energy and climate policy as well as global trends related to sustainable development. The materialisation of climate risk gives rise to a number of mutually interpenetrating new types of risk, among which financial, regulatory, and social risks can be distinguished. Climate risk also manifests itself in the performance of the EU ETS CO2 emissions trading scheme, as well as in weather risks.

The purpose of this presentation is to define accurately the types of risk affecting the activities of energy companies and to indicate the impact of risk on the decisions made by energy entities and their competitiveness. The methods used in this research are literature review, data analysis, and case study. Climate risk is therefore an accelerator of new risks in the electric power sector and should therefore be duly taken into account and mitigated, as ignoring it can have serious consequences. Thus, climate risk management is becoming one of the key elements of risk management across the energy sector. Decisions made by energy companies in line with the sustainable development paradigm will catalyse their growth and allow them to increase their value.

Key words: climate risk, climate finance, sustainability, risk, climate action, energy market.
JEL codes: Q40, G32

SZPERNALOWSKI MARCIN

THE USE OF NFT TOKENS IN EVERYDAY LIFE - TRIUMPH OF FORM OVER CONTENT?

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The purpose of the article is to discuss the applications of NFT tokens. The technology, which is just gaining in popularity, is already causing considerable controversy in technological, economic, and ecological matters. In particular, the use of NFT tokens in the everyday life of an average person was analyzed.

The basic question that guides the considerations here relates to sustainable development: is the use of NFT tokens in everyday life an excess of form over content, and the cost and effects of their production are disproportionate to the function they perform? When attempting to answer this question, the attention was drawn to the added value that they bring for their users, but are they fully safe for them, their property, and the environment?

Key words: blockchain, NFT tokens, cryptocurrency, technology
JEL codes: O39

SZYMCZAK WERONIKA, MANIKOWSKI PIOTR

INSURABILITY OF CRYPTOCURRENCIES

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With the growing dissatisfaction of residents with the actions of governments and central banks as well as growing fees for monetary institutions' services, there was a growing need of many to create a more borderless, decentralized, and digital currency that would keep up with the extremely high development rate of the internet solutions. That is why in 2009 a developer Satoshi Nakamoto introduced a fully virtual, secured-by-cryptography, cryptocurrency called Bitcoin. Since it all started many years have passed, and currently, it is estimated that the cryptocurrency market capitalization is around 1 trillion US dollars. Is it a number that the modern world can still ignore? Neither European Union nor a single country has developed a firm way to approach this novelty from a governmental, institutional and legal point of view.

The topic of this article concerns the possibilities of insuring cryptocurrencies using various assumptions and characteristics of perfectly insurable risk based on Rejda's and McNamara's book Principles of risk management and insurance. The main research aim is to develop a way to insure a part of cryptocurrencies risk which concerns cryptocurrencies wallets. The Authors introduce cyber risk, and its characteristics and further explain cyber risk perils, insurance availability, and coverage. Subsequently, cover characteristics of cryptocurrency wallet risk as well as discuss the insurability of cryptocurrencies by comparing the traits of both the crypto and cyber industry. The analytical work in the article was the Authors' research and comparison of available cyber risk insurance and its coverage on the Polish insurance market as well as the development of methods to fulfill insurability principles concerning cryptocurrencies. Both of these investigations are concluded by the development of the Authors' own cyber wallet risk insurance coverage for professional crypto brokers. Summing up, the research leads to finding cyber risk perils application in cryptocurrencies and designing specific insurance that could be provided to the market with existing technological and legal environment.

The novelty of this paper is not only the idea of insuring crypto wallets and assessing the criteria of insurability, but also comparing existing cyber risk insurance to the crypto wallets' risks and finding similarities that can be applied to the common insurability principles.

Key words: risk, insurance, cyber, cryptocurrencies, insurability, coverage, wallets
JEL codes: G22, E42, E59

WARCHLEWSKA ANNA

BUY NOW, PAY LATER (BNPL) – KEY PLAYERS IN THE POLISH MARKET

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Buy Now, Pay Later (BNPL) is a FinTech product provided at the point of sale providing consumers the option to pay for their purchase at a later date in one or more interest-free installments. BNPL lenders are a third party separate from the retailer. Consumers are looking for new ways to manage and control their own finances. This includes a long-term shift away from traditional credit products, embracing greater flexibility in spending patterns, and adopting new technologies to help manage their budgets. The BNPL loan allows consumers to take instant possession of a purchase, with or without a down payment, while often committing to future payments until the item is paid for in full.

The purpose of the article is to analyze how financial turbulence in the economy associated with high inflation is related to the BNPL market. The research question is if consumers are willing to borrow from the BNPL market during difficult financial times. The paper is based on secondary data from 2019-2022 obtained from databases and secondary research.

Data from the BNPL polish sector shows a very different picture of the market than that of traditional lending companies. First of all, it records very high year-on-year growth (+85% in the value of financing granted and +104 in the number of loans granted). This is the result of a rather low base from the beginning of the market's development, but dynamics at such a high level mean very intensive development.

Key words: BNPL, LendTech, Modern Financial Technology, Personal Finance
JEL codes: G21, G23, O33

WIŚNIEWSKI MARCIN, NOWAK KAROLINA ANNA, LITWIŃSKI MICHAŁ

IS IT WORTH INVESTING IN TOKENS? INVESTMENT PERFORMANCE OF DIGITAL TOKENS FROM FINANCIAL AND AXIOLOGICAL PERSPECTIVES

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Are digital tokens worth considering when diversifying a portfolio? What is the axiological motivation for a decision to issue or purchase a token? The purpose of the article is to examine the investment performance of certain types of digital tokens. Our own classification of the latter - according to the types of assets they represent (taken as an expression of certain worldview beliefs) - is the basis for the study of digital token types in terms of their profitability, risk, and effectiveness.

The investment performance of different types of tokens was juxtaposed with stock market indices and commodities prices. The empirical source of information is data from the coinpaprika stock exchange from January 2018 - July 2022. The rationale for selecting the research period is that cryptocurrencies "solidified" on the exchange in early 2018. It occurs that digital tokens demonstrate, on average, lower investment performance than traditional instruments. However, there is a wide group of the former that can be included in the portfolio as their investment performance is higher than the one represented by stock market assets.

Our contribution comprises, first, the extension of existing research on tokenization and tokens to include the investment aspect. Second, we develop and apply the original proposal of token classification, which takes into account the hitherto neglected aspect of the worldview valuation of a given token type by market participants. Finally, we assess the investment performance of tokens (both in terms of our proposed classification and in the context of stock market indices). We also formulate recommendations for investors.

Key words: digital token, investment performance, world-view beliefs
JEL codes: G11, O33, Z10

WOJCIECHOWSKA EDYTA

IMPACT OF THE PANDEMIC CRISIS ON THE BANKING SECTOR IN POLAND ON THE EXAMPLE OF BANKS LISTED ON THE WARSAW STOCK EXCHANGE

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The spread of the SARS-CoV-2 virus has led the World Health Organization to declare a pandemic state on March 11, 2020. This has revolutionized the functioning of all humanity in many aspects of daily life to date. Both from the perspective of health and life risks, changes in learning and working patterns, and restrictions on leisure activities. COVID-19 has affected both individuals and collectivities. It has also affected financial markets and disturbed the stability of the economy, which has motivated scientific research in this area, including this research paper.

This study addresses issues related to the performance of the banking sector in Poland. The main objective of the study is to verify to what extent the performance of commercial banks listed on the Warsaw Stock Exchange reflects the impact of the COVID-19 pandemic on the banking sector in Poland. The adopted research period (2015-2021) covers the years before and during the COVID-19 pandemic. The subjects of the study were 12 banks listed on the Warsaw Stock Exchange. The considerations in the article attempt to answer a number of questions, including: was the profitability of banks under liquidity restrictions been disturbed by the pandemic, and how did banks in Poland cope with the crisis at that time?

The research hypothesis was that banks listed on the Warsaw Stock Exchange responded to the negative effects of the COVID-19 pandemic to a greater extent than the banking sector in Poland as a whole. This relationship was also indicated in the 2021 NBP report (NBP, 2021, p. 43). The purpose of this study is to fill the research gap relating to the comparison of the condition of the banking sector before and during the pandemic crisis, as well as to highlight the changes that occurred in it. Observation of the banking sector in Poland during the pandemic crisis prompts us to look for correlations between crisis situations and the functioning of these entities.

Key words: COVID-19, banking sector, profitability
JEL codes: G21

SECTION 3: MANAGEMENT

CHOLEWA-DOMANAGIC ALEKSANDRA

IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY IN TRACEABILITY REPORTING RELATED TO THE EAST AFRICAN CONFLICT MINERALS

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Investment in mineral resources holds great potential for generating income, growth, and prosperity. However, a significant share of critical resources is in conflict-affected and high-risk areas, where their development may contribute, directly or indirectly, to armed conflict. Those areas are known under the CAHRA name – Conflict-Affected High-Risk Areas. Minerals extracted in those areas are known under the common name: conflict minerals. They include the metals: tantalum, tin, tungsten, and gold. Downstream companies refer to the extracts of these minerals as 3TG. Conflict minerals are present in DRC and neighboring countries in East Africa. Their extraction and processing were sources of finance for armed groups that are committing human rights abuses while causing environmental destruction.

Considering the growing importance of raw materials necessary to ensure EU raw material security, especially in terms of critical metals, as well as the strategic importance of tin metal for the future green energy revolution, it is necessary to verify the application of new technologies, such as blockchain, for the management of the responsible supply chain. Earlier scientific studies on the blockchain method, in non-fiscal applications, focused mainly on the technological part and modeling of business processes. The process of designing and verifying a holistic blockchain solution and its integration with the company business strategy for the management of the responsible supply chain needs to be added.

The scientific objective of the conducted research is to fill the research gap related to the usage of the blockchain method in the framework of a responsible supply chain on the example of a vertically integrated project - the LuNa Smelter Ltd. – a tin metal smelter in Rwanda. Research is conducted within the application Ph.D. run at the Doctoral School of the University of Szczecin, in cooperation with ReAlloys, a member of the Luma Holding Group. There are no projects with results that could be considered scientifically relevant and therefore reliable. The conducted research should fill in the existing theoretical and empirical gap in this area, with particular emphasis on the development and implementation of tools appropriate for the application of blockchain technology within the responsible supply chain. Without a proper scientific study, considering the strategic importance of the metal in question, the research problem will increase.

Key words: blockchain, CAHRA, conflict minerals, responsible supply chains
JEL codes: F51, L61, L72, M14, 014, 031,032, 035, Q34, Q55

GNUSOWSKI MAREK, ŁAWRYNOWICZ MACIEJ, DURCZAK KRZYSZTOF

VALUE PROPOSITIONS OF LEGALTECH COMPANIES IN RESISTANT MARKETS

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As digitalization continues to change professional work across various sectors, many lawyers rely on proven ways of doing business and are resistant to implement technological novelty. This, however, does not discourage LegalTech providers from offering novel solutions that seek to improve and automate the delivery and use of legal services, but also extend the law services onto the new domains. Given, that service innovation comes down to new value propositions that advance existing practices and resources, create new ones or integrate them in a novel way, we believe that market context can shape value propositions. As such, we posit that the countries on the outskirts of the global legal market, where the law is practiced in local languages other than English require additional efforts in adopting novel value propositions. Hence, despite the enormous promise these efforts hold, it's still ambiguous whether LegalTech companies will succeed in creating value for law firms.

We address this research question by discursive analysis of value propositions on the websites of LegalTech providers who operate on the Polish market. The data is complemented by interviews with the members of the LegalTech Poland Foundation and participant observation during regular LegalTech Meetups from April 2020 to September 2021. We employed thematic analysis as an appropriate method to analyse both companies' textual and visual data in distilling value propositions.

Preliminary results are being processed, identifying how LegalTech companies provide value propositions for legal services using the case of a relatively resistant market. As the such study has the potential to contribute to the literature on service innovation. Furthermore, given the professional distinctiveness of legal services and their inherent locality this study can serve as food for thought when considering problems of glocalization. Practically, the findings offer data-driven recommendations for managers of law firms and LegalTech companies.

Key words: Service Innovation, Digitalization, Value Propositions, Thematic Analysis, Legal Services
JEL codes: O31, O33, M31

HĄZŁA MARCELI, MICHOWSKA KAMILA, ŚLIWIŃSKA MAGDALENA

LIMITING MEAT CONSUMPTION - A STEP TOWARDS SUSTAINABLE DEVELOPMENT?

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The global economy is facing major challenges in addressing the need for sustainability, both in terms of environmental and social concerns. One of such issues is the topic of overconsumption of meat and its impact on both the environment and human health. Due to the need for taking into account the principles of sustainable development, it seems particularly important to study the level of awareness of the younger generation, which in the near future will have a key influence both on political choices and the shaping of relevant legislation.

The aim of this study is to investigate the attitudes of students of Poznań universities towards limiting meat consumption and to characterise the level of their knowledge regarding the consequences of excessive meat consumption. Therefore, the study formulates sub-objectives consisting of: determining the respondents' level of reduction in meat consumption, identifying the differences in the level of reduction in meat consumption among students of different universities, different genders and from towns of different sizes, identifying the main reasons for respondents limiting their meat consumption.

The survey was conducted in the form of an online questionnaire (CAWI), addressed to students of Poznań universities. 873 respondents took part in the survey, including 575 (65.9%) women, 287 (32.9%) men, and 11 (1.2%) others/did not wish to specify. They belonged to seven universities, which in 2021 were attended by a total of 75.3% of all Poznań students. The survey showed that Poznań students limit their meat consumption to a greater extent (56.8%) than the national average (39%). The size of the town of origin was not crucial in this respect. On the other hand, large gender differences could be observed - as many as 66.4% of women limited their meat consumption, while among men it was only 31.9%. Declarations also differed between universities - among students of the University of Technology, only 39.7% limit their meat consumption, while among students of the University of Arts as many as 80.5% did so. The most important reasons for limiting meat consumption by Poznań students were a concern for the environment (52.7%) and the desire to reduce animal suffering (49.0%).

The main novelty of the study encompasses surveying respondents on issues relating to both human health, the state of the environment, and ethics, as well as taking into account their interests and predispositions, represented by their university choice.

INGALE KAVITA, MUKHERJEE SONIA, BHATTACHARYA NAIRITA, MURUMKAR TANVI

FORECASTING THE TREND OF INDIAN ORGANIC FARMING SECTOR- GEARING FOR SUSTAINABLE TOMORROW

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The agricultural sector has witnessed an era of change from importing food grains into the country to the green revolution which brought in some prosperity to the agricultural economy and led to exports being made from India to the world. However, the rapid change that was brought about by the green revolution is now showing it's after-effects through desertification. Soil fertility has substantially reduced and has also been eroded. In the agronomic activities of the green revolution, the soil is used that its erosion is unavoidable. Desertification, soil erosion and land degradation are intertwined. As a result of soil erosion, and land degradation, natural systems also become victims of desertification. In recent years, this sector has witnessed a reverse order of change. Many people have realized the aftermath of the green revolution have sought to improve the state of farming within the country and have gone back to traditional methods of farming and have embraced organic farming. They have indulged in the practice of regenerative agriculture. The state of organic farming in India has seen a lot of development over the years. Within less than 10 years from 2014 – 2020, the total area under organic cultivation has more than doubled. Not only this, but the government has initiated various schemes to promote organic farming. Furthermore, it is also an essential part of rural upliftment and community building. The practice of organic agriculture also promotes sustainable practices which is a need of the day. Contribution to organic agriculture and development within the same would ultimately contribute to India's share of sustainable development as well through the means of SDG Eight: Decent Work and Economic Growth, SDG Eleven: Sustainable Cities and Communities, SDG Twelve: Responsible Consumption and Production. Collaboration with international markets along with opening the market to foreign investments for the development of agriculture would contribute to SDG Seventeen: Partnerships to achieve the Goal.

Against this backdrop, this study intends to underline the significance of the organic farming sector in the attainment of sustainable development goals. aims to determine trends within the organic farming industry in the upcoming years. The main objectives are: to conduct a sectoral analysis of the organic farming industry in India; to determine trends within the organic farming industry over the years; to forecast retail sales and exports within the organic farming sector in India up to 2027; to study the avenue of organic farming as a part of a circular ecosystem leading towards a sustainable economy. The data forecasts are done using through Autoregression (AR) and Moving Average (MA) models on EViews software. Data visualization was done through checking of correlograms and spreadsheet graphs. Data for total organic exports and total retail sales is from the year 2002 – 2020. Furthermore, data for the amount if organic land cultivated and the number of organic producers is from 2000 – 2020. The sources of data are the official websites of the Government of India. The study reveals that although the sector is still in a nascent stage and has many challenges to tackle, the overall future outlook of the same is very positive It will not only create community upliftment and generate better avenues of income but also will enhance the trade scenarios on a macro level. It will provide a premium market niche for higher price segments and hence will generate incentives to every member of the supply chain along with benefitting the ecosystem as a whole.

Key words: Sustainable development, organic farming, sustainable practices, agriculture, forecasting
JEL codes: Q01, Q11, Q19, Q32

JURCZAK MARCIN

DIGITAL PUBLIC TRANSPORT IN NEW ECONOMY – CONTEMPORARY MOBILITY TRENDS

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Transport is commonly believed to be the "litmus test" of the economy. Public transport is treated as a nerve of all city systems. Changing cities need proper transport – contemporary trends play important role in the development of public transport in a requiring environment. In particular, the development of public transport means today phenomena such as IT systems, big data, alternative energy sources, autonomous mobility, transport effectiveness, sharing economy, and personal mobility (micromobility).

The Author presents contemporary trends that affect the way people move around cities and metropolises. He wonders how mobility trends are changing our lives and its quality. The macroeconomic context was also taken into account – the COVID-19 pandemic, high inflation, as well as migration trends. Changes in the demand and supply of transport services have become one of the challenges for cities in the new, digital, post-pandemic perspective.

The purpose of this article is to review current trends in public transport development and mobility changes. The article is an attempt to answer the questions: what is the impact of digitization and technology development on the development of public transport? How are contemporary social, economic, and political problems, and are they strongly changing public transport? An article is based on critical analysis of literature and selected case studies. The result of the research work is the indication of the most important directions for the development of public transport and the related risks and opportunities.

Key words: public transport, IT systems, digitalization, autonomous driving, sharing economy, micromobility
JEL codes: O18, R41

KOWALCZYK ELŻBIETA

HOUSTON, WE'VE HAD A PROBLEM: CHANGES IN THE MENTAL MODELS OF ACADEMICS DURING THE COVID-19 PANDEMIC

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Doyle and Ford (1998) have noticed that although the concept of mental models (MMs) frequently appears in literature, there are surprisingly few explicit definitions of them. However, MMs are relatively often defined as mental constructs describing the knowledge a person has about a particular domain of the world. On the one hand, they represent the operation of cognitive processes, but they are also their results (Hemforth & Konieczny, 2006). They are subjective (Pauen, 2006), do not require direct experience (van Ments & Treur, 2021), and create a map of an object's relationship with the environment (St.Amant, 2021). The research problem concerned the nature of changes in the MMs of academic teachers in the area of online education during the COVID-19 pandemic announced by the World Health Organization in March 2020. The global lockdown limited the economic functioning and influenced the education process, also in Poland. At that time, teachers' digital competencies proved to be an important element in enabling them to work remotely. The pandemic had a modifying effect on the use of information and communication technologies – during lessons, teachers used smartphones more often and also visited websites and used applications (for example on a computer) unrelated to lessons (Ptaszek et al., 2020).

Empirical research was conducted three times in: March 2020 (wave I of the pandemic – MMs largely based on imaginations), October 2020 (wave II - MMs modified with direct experience) and April 2021 (wave III – as in wave II). The research was carried out with a specially constructed eight-dimensional tool using the Osgood semantic differential (Heise, 1969) and ten five-point Likert scale questions. The research involved the teaching staff of Poznań universities. The first group (March 2020) had a total of 98 people, the second group (October 2020) consisted of 245 respondents, while the third (April 2021) included 263 teachers. In order to identify MMs, a two-step cluster analysis was performed using the method of checking the distance between logarithms. The scale was based on eight dimensions. The Silhouette method measuring cohesion and separation indicated the correct clustering (the average Silhouette value = 0.3) and it was established that there were three types of models: enthusiastic, neutral, and reluctant. To determine the nature of the differences between the MMs, an analysis was carried out using the Kruskal-Wallis test. The Bonferroni-Dunn test was used for a post hoc analysis. During the pandemic, increasingly more teachers had reluctant MMs and the number of enthusiasts decreased. In order to compare the distinguished MMs in terms of the professional functioning of academic teachers, an analysis was carried out using the Kruskal-Wallis test. The differences between the clusters proved to be statistically significant in the sphere of individual functioning and related to the assessment of student behaviour, which was confirmed by the Bonferroni-Dunn post-hoc test. However, the supportive activities of the organisation otherwise perceived by teachers are not related to the type of MMs developed by teachers. Thus, a key task for educational institutions should be to modify factors that adversely affect the perception of organisational support.

SINANSARI PUTI

CIRCULAR BUSINESS MODEL INNOVATION: A LITERATURE REVIEW

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The business model is s representation of how an interrelated set of decision variables is transformed into corporate strategy. The business model evolves from the linear flow, that only considers raw materials to finished goods, to become a circular flow that greatly utilizes waste. The shifting was affected by an innovation process led from environmental problems that pushed the company to slowly move into the circular flow. From this explanation, we can see that business models have a big role in a company's decision to work using a circular flow. Business model as a strategic tool to implement a circular economy in the company and increase the company's value.

The purpose of this research is to identify the relationship between the business model and a circular economy theoretically. The literature review study was taken from wide journal sources and then analyzed with VosViewer to look for the relationship between existing papers about business models and circular economy. The results show that there is a positive relationship between the business model and the circular economy, and provide literature recommendations about the opportunity of a new economic system that still has profit for business but also has a positive impact on society and the environment.

Key words: business model, circular business model, circular economy
JEL codes: M21

SKOWRON-MIELNIK BEATA, WOJTKOWIAK GRZEGORZ, GOŁEMBSKI MARCIN

EMPLOYEE SATISFACTION AND ENGAGEMENT - EXPERIENCES FROM FORCED REMOTE WORKING

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The aim of this article is to identify the factors that shaped employee satisfaction and engagement in forced remote working and to formulate recommendations for managers of remote working in situations other than the pandemic. The rationale for addressing this issue is the development of current hybrid working and its use of pandemic experience. The beginnings of remote working in a pandemic were not easy for anyone and, regardless of the conditions for working away from the organisation's premises, due to the widespread feeling of insecurity, it does not have a positive connotation. For this reason, it was decided that the information on job satisfaction needed for the analysis of enforced remote working should be collected at a later stage in order to be as objective and less emotive as possible.

Hence, the first stage of the research was carried out between 8 and 2 July 2021 and involved online CAWI interviews with employees who had worked remotely between March 2020 and July 2021 due to the COVID-19 pandemic. The second stage of the research was interviews with 13 managers, which were conducted in late 2021 and early 2022. The aim of this study was to obtain the managers' views on the subjective evaluations of employees and the changes observed from their point of view in their approach to work performance and the organisational solutions used.

As a result of the research and analysis carried out, three areas for building satisfaction and involvement of remote workers were identified where action can be taken on the part of the organisation: work intensity, work innovation, and work atmosphere. An interesting observation was that employees emphasised the importance of the so-called hard elements of work organisation – the number of tasks, workload, and necessary innovations in the organisation of their own work. On the other hand, psychosocial elements such as perceived stress or deterioration of relationships were less important to their satisfaction and involvement. This was undoubtedly influenced by the timing of the research - after the peak of the pandemic, when the situation was already less tense - but this makes the findings more applicable to current organisational conditions.

Key words: enforced remote working, employee behaviour, job engagement, job satisfaction
JEL codes: M12, J24, J28

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THE HETEROGENEITY OF EMPLOYEES AND THE DIFFERENCES IN THE PERCEPTION OF THE INFLUENCE OF TRANSFORMATIONAL LEADERSHIP ON TEAM COMPETITIVENESS AMONG EMPLOYEES – MULTIGROUP LATENT CLASS ANALYSIS

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Nowadays, the global economy is moving toward appreciating organizational knowledge as an essential resource (Hermans 2010; Kwon et al. 2010), and employees capable of extending the knowledge of organizations are perceived as valuable assets (Lin, McDonough III, Yang, and Wang, 2017). This puts extreme pressure on leaders who are supposed to focus not only on organizationally recognized values such as employee performance but also on employee wellbeing, commitment, and satisfaction (Dwyer, Bono, Snyder, Nov, and Berson, 2013). The leadership style plays an important role in this aspect (Paais and Pattiruhu, 2020). The conscious choice of how leaders manage their teams is of special attention, and it is believed that transformational leadership is, in most cases, one of the best styles to drive organizational and individual results (Wang, Oh, Courtright and Colbert, 2011). However, we are convinced that employees in the team might respond differently to the leadership style depending on their age, gender, educational background, professional experience, team leader experience or team size (Tavitiyaman, Weerakit, and Ryan; 2014). This, in turn, may affect the team's performance. In the paper, we aim to show how different characteristics of employees influence the perception of the leadership style and how the leadership style impacts team performance in different groups of employees.

Our analysis is based on data from 164 recruiters from one of the largest recruitment companies in Poland. The data were gathered in 2017/2018 by the electronic survey administered to employees and their supervisors. To measure transformational leadership, we used the questionnaire proposed by Carless, Wearing, and Mann (2000). Team competitiveness was assessed using measures based on a comparison of the team competitiveness with other teams within the organization and in comparison, to main market competitors. To reach our purpose, we employ multigroup latent class analysis, treating transformational leadership and perceived team competitiveness (as an indirect measure of team performance) as latent variables.

Results show that three classes of employees are discernable in the studied organization. We labeled the groups as follows: "experienced employees with an experienced leader", "women under 40", and "experienced employees with an inexperienced leader". Multigroup class analyses with latent variables reveal that there are minor differences in terms of the influence of the perception of leadership on team competitiveness. However, experienced employees with experienced leaders working in any team, on average, indicate a positive relationship between transformational leadership and team competitiveness. In two other groups of employees, "women under 40" and "experience employees with an inexperienced leader," the relationship between transformational leadership and team competitiveness was insignificant. The paper underlines the necessity to choose the leadership style based on employee characteristics. It also highlights that transformational leadership is not always efficient because of different perceptions and depends on age, gender, overall and in-company experience, team size, and leader's experience. The paper finishes with implications for theory and practice and future research directions.

Key words: heterogeneity, employee characteristics, transformational leadership, latent class analysis
JEL codes: M50, M12

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