**BOOK OF ABSTRACTS**

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**ABSTRACTS**

**Permanent Versus Temporary Price Reductions**

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Downward price movements have attracted the interest of both economists and marketing scientists. In this paper we explore the scanner level weekly data on US retail prices, using the “IRI Marketing Dataset,” during a relatively low and stable inflation period. In an attempt to check the validity of the “PR” flag on price reductions to identify sales promotions, we explore the post reduction behavior of prices. Our data classification testing approach is inspired by the sales theory of Varian and the price undercutting theories of Bertrand and Edgeworth. The permanent price reductions are more in line with the Bertrand-Edgeworth model of price competition, while temporary price reductions are more in line with the Varian model of price discrimination. Our results provide crude estimates of the severity of possible Type1 and Type 2 errors with respect to the “PR” based classification of prices in this dataset.

 **Exploring the Performance of Categorical Data Tests of Independence**

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Testing of independence is widely and frequently used by the practitioners/researchers in every field of science. Some tests of independence are used for continuous and categorical data while there are some tests that can be used only for categorical data. For the continuous data there is a lot of literature on comparison of different measures of association, but for the categorical data we were unable to find any comparison of various measures of independence. This study compares four measures of correlation/tests of independence for categorical data, categorized into contingency table on the basis of size of test and stringency criterion. We found that Fisher’s exact test of independence (1934) is the robust and best test of all the four tests of independence/measures of correlation for categorical data. 22.

**Bridging the Gap: How Environmental Policies Drive Cross-Technology Spillovers Between Clean and Dirty Innovations**

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This paper investigates the dynamics of cross-technology knowledge spillovers between clean and dirty technologies and underscores the importance of these spillovers for comprehending the impact of environmental policies and regulations. By leveraging a comprehensive patent-based panel dataset encompassing 27 OECD countries from 2000 to 2020, we quantify innovations in both clean and dirty technologies. Employing a novel panel data vector autoregressive model (PVAR), we analyze the network of knowledge spillovers across these technological domains. Our findings reveal critical insights into the interaction between clean and dirty technological innovations, emphasizing the significant role of policies in shaping these spillovers. The study provides valuable implications for policymakers, suggesting that targeted environmental policies can enhance the diffusion of clean technologies and mitigate the persistence of dirty technologies.

**Keywords:** Cross-technology Spillovers, Clean Technologies, Dirty Technologies, Environmental Policies, Patent-based Panel Data, Panel Vector Autoregressive Model (PVAR)

**Treatment Effects with Causal Random Forests: An Application on the Association Between Education and Depression Prevalence in Türkiye Health Surveys**

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Health and education levels are both indicators of human capital, and they are also linked. Education is considered one of the most influential factors in the so-called “health – socioeconomic status (SES)” gradient. I apply the gradient for mental health by utilising Türkiye Health Survey 2022.

This study attempts to estimate depression probabilities to gauge the possible causality between an individual’s educational attainment and having depression by controlling region, cohort effects and social ties for men and women samples. The depression score is determined based on the questions which are consistent with patient health questionnaire (PHQ). This study provides a novel approach to addressing average treatments effects in the education gradient of health. Causal random forest technique is applied to predict depression prevalence. It is expected that education is negatively associated with depression symptoms, indicating a higher level of mental well-being.

**Keywords:** Social Determinants of Health, Education Gradient of Health, Causal Forest, Conditional Average Treatment Effects

**JEL Codes:** C18 , I10, I26

**Is There a Threshold on Money Growth?**

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The recent global surge in inflation has revived academic interest on broad money growth in its relation to nominal GDP growth, and hence inflation. In this paper, we explore the non-linearity of the relationship between broad money growth and nominal expenditure growth for the G20 countries. We focus on the 21st century data for the G20 countries with floating exchange rate regimes. We use an ARX model for nominal GDP growth, where the X variable is nominal broad money growth. We test the null of a linear model against the alternative of a threshold on money growth with an unknown threshold level, using the test and estimation method developed by Hansen (2017). Our results indicate a strong rejection of the null hypothesis of linearity and a presence of two different regimes for high and low money growth rates.

 **Measuring Centrality in Knowledge Graphs**

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A real world object can be important in different ways and for different reasons. Depending on the context, different criteria can be applied to measure the importance of a given object or a set of objects. Examining a large number of such criteria, in literature and in real life, it appears that one of the main reasons that make an object important is that it is in `the center' of something. For example, the main characters of a novel or a movie are important because they are in the `center' of the story, and an employee (not necessarily highly skilled) can be in the `center' of his/her company. This kind of importance corresponds to one of the meanings of the adjective `central' in common language: we say that a concept is central in some field or that a person has a central position in a group. This kind of importance is captured by the graph-theoretic notion of centrality. Real word objects can be defined as collections of facts. Some of these facts define properties of the objects, the others describe connections between objects. Putting together the facts defining a set of objects results in a knowledge graph.

There already exists an extensive literature on the subject of measuring centrality in graphs. This literature shows that measuring centrality is an essential part of the study of complex networks and their multiple applications in fields as diverse as biological systems, social networks, or bibliographic data analysis. Knowledge graphs enclose two complementary and inseparable kinds of information: structural information and semantic information. In this work, we first show that the centrality measures presented in the literature are not (or not sufficiently) semantically aware: they mainly consider structure of the graphs and not (or not sufficiently) the meaning of vertices and edges. Then, we introduce three new measures specifically designed for knowledge graphs, taking into account both kinds of information. These measures are based in particular on the strength of the relations connecting objects, i.e. on the concept of relatedness.

**Keywords:** Centrality Measures, Importance Measures, Knowledge Graphs, Relatedness

**Generative AI and Ethics: Examining the Intellectual Corpus Using Machine Learning Topic Modeling**

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This study comprehensively examines the ethical implications surrounding generative artificial intelligence (AI), leveraging a novel methodological approach to analyze academic discourse on the topic. The study methodically curates a corpus of literature of 364 documents from Scopus spanning 2022 to 2024, employing Term Frequency-Inverse Document Frequency (TF-IDF) and Structural Topic Modeling (STM) to quantitatively dissect the thematic essence of the ethical discourse in generative AI across diverse domains including education healthcare, businesses, and scientific research. The findings reveal a broad spectrum of ethical concerns, illustrating how generative AI impacts various sectors differently. In academia, issues of authenticity and intellectual property dominate, while in healthcare, the focus shifts to AI's implications on medical decision-making and patient privacy. The analysis further uncovers significant discussions on the ethical use of generative AI in educational and financial settings.

**Keywords:** Generative AI, Ethics, Structure Topic Modeling, Governance, Regulation

**JEL Codes:** I23, I31, O33, K11

**From Headlines to Trendlines: Leveraging Sentiment Analysis for Stock Market Predictions**

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In the dynamic realm of financial markets, the capacity to swiftly interpret and respond to news is pivotal for traders and analysts. This research investigates the use of sentiment analysis on financial news headlines to predict market movements and enhance trading strategies. The study utilizes advanced Natural Language Processing techniques, focusing on the VADER sentiment analysis tool, to assess the sentiment of news articles about major stocks such as Amazon, Tesla, and Google. Financial headlines were gathered using Python-based web scraping tools from reputable sources over a 30-day period. The data underwent preprocessing to ensure quality before applying sentiment analysis algorithms to generate sentiment scores. These scores were then analysed for their correlation with stock price movements to identify potential trading signals. The findings suggest that sentiment analysis can yield significant insights into market sentiment, emphasizing the potential of integrating qualitative news data into algorithmic trading models. This research highlights the critical role of real-time data processing in financial trading and addresses challenges related to data accuracy, processing latency, and regulatory issues. As the financial sector increasingly adopts big data and machine learning, sentiment analysis of news headlines presents a promising approach to enhancing predictive models and trading efficiency.

**Keywords**: Sentiment, News, Natural Language Processing, Stock Market Prediction, Machine Learning

**JEL Codes:** C53, G17

**Nickel-Powered Sustainability: Revolutionizing the Energy Economy Through Lithium Batteries**

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The world's energy landscape is changing fast, with a new industry emerging to reshape how we generate and use power. One big player in this shift is lithium batteries, which are becoming essential for storing energy sustainably. This paper looks closely at how nickel, a crucial ingredient in these batteries, is driving sustainability while boosting the energy economy. As societies worldwide aim to use cleaner, more sustainable energy sources, lithium batteries offer a promising solution. Nickel plays a vital role here because its unique properties make batteries better, lasting longer and working more efficiently. By understanding how nickel and lithium batteries work together, we can see how they're leading us towards a greener future. As the world moves towards using more renewable energy and electric power, the demand for high-performance lithium batteries is skyrocketing. This growing need for batteries isn't just about powering gadgets; it's becoming central to the economy. And nickel is key to making it all happen, supporting the growth of industries that rely on environmentally-friendly products and helping countries' economies thrive. Batteries are becoming as valuable as oil, driving efficiency and sustainability across various sectors like transportation and renewable energy. Countries like Indonesia, Philippines, Rusia, Australia dan Canada with the world's largest nickel industries, are experiencing significant economic growth as a result of this demand. This means we need to make sure we're getting nickel responsibly and using it wisely. By exploring new ways to mine and use nickel, we can minimize harm to the environment and make sure everyone benefits from its use. Ultimately, by harnessing nickel's power in lithium batteries, we can build a more sustainable future where the economy and the environment go hand in hand.

**Can Gold Serve as a Hedge Against Economic Uncertainty: A Nonparametric Quantile Assessment**

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Gold has long been regarded as a "safe haven" asset, particularly during times of economic turmoil and market volatility. This perception stems from its historical role as a store of value, a hedge against inflation, and a form of wealth preservation when other financial assets, such as stocks and bonds, experience downturns. Economic uncertainty, stemming from various sources, including political instability, fluctuations in global markets, changes in monetary or fiscal policies, natural disasters, or significant technological shifts, can have a profound impact on economic activities, influencing both short-term economic performance and long-term economic growth. This study extends the nonparametric causality-in-quantile test approach to multivariate settings that use bootstrapping to determine whether gold acts as a hedge against different forms of economic and financial uncertainty. While gold is recognized as a safe haven and considered a hedge against various financial asset risks, its effectiveness for hedging uncertainties appears ambiguous. Our study makes a significant contribution to the literature by providing robust results based on a diverse set of uncertainty measures.

**Keywords**: Gold, Economic Uncertainty, Safe Haven Asset; Nonparametric Causality-in-quantile Test; Bootstrapping
**JEL Codes**: C32, C53, G10, E60, Q02

**Utilization of Machine Learning and World Happiness Report Data to Understand Well-Being**

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The concept of well-being has long been a central concern for researchers, and policymakers, where the economics of happiness investigates the quality of life and happiness of individuals. In recent years, machine learning (ML) models have facilitated novel insights into the determinants of happiness and well-being, where predicting happiness trends has become increasingly relevant in social science research and policy-making.

This paper presents a synthesis of ML approaches applied to analyze the World Happiness Report (WHR) data, aiming to uncover nuanced patterns and relationships that contribute to subjective well-being. We discuss traditional metrics and indicators used in the WHR, highlighting their limitations in capturing the multidimensional nature of happiness. We then explore how ML techniques have been employed to extract valuable insights from the WHR datasets. These methods enable researchers to identify uncovered patterns, and predict future trends in happiness levels accurately. By leveraging ML models, we introduce policy recommendations tailored to specific socio-cultural contexts, with the aim of fostering sustainable happiness and flourishing communities. Additionally, we review the potential of various ML and Deep Learning algorithms in predicting future trends in well-being. We emphasize the importance of interdisciplinary collaboration between social scientists and computer scientists and to address these challenges effectively. Finally, we highlight future research directions and the potential implications of using machine learning for predicting happiness trends in diverse contexts.

**Key words**: Machine Learning Algorithms, Happiness Ranking, Well-being

**JEL Codes**: C10, I31

**Effects of the Covid-19 Process on the Informal Economy in Turkey: Oil Smuggling**

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The Covid-19 epidemic, which emerged at the end of 2019 and affected the whole world in 2020, and the subsequent quarantine process affected the economic agents and the implemented economic policies in many ways. The "negative globalization" phenomenon it created caused global trade to be disrupted and led to a major economic contraction in states that are closely connected to each other in terms of natural resources, raw materials and intermediate materials. Data indicate that the informal economy, which is an important problem especially in developing countries, continues during the Covid period. All kinds of economic transactions and activities that take place outside the control of public administrations constitute the informal economy. The informal economy can manifest itself in many ways, especially drug, weapon and fuel smuggling. Measurement of the informal economy is a subject that is intensively discussed in the literature, and data problems seem to be the most important part of this discussion. The data used in this study was taken from the Gendarmerie General Command database with special permission and the main purpose of the study is to examine the effects of the pandemic process on the informal economy in Turkey, specifically fuel smuggling. The results of the study show that, contrary to expectations, the amount of smuggled fuel seized in the relevant period increased, and the results were evaluated in terms of fuel smuggling, which has an
important place in the informal economy in Turkey.

**Keywords:** Pandemic, Economy, Informal Economy, Illegal Oil Smuggling

**Cost Elasticity of Firm Credits: Heterogeneity Across Firm Types**

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This study examines credit demand at the firm level, employing empirical analysis to uncover the determinants and implications of firms seeking external financing in Türkiye. Drawing on a comprehensive dataset of firms across diverse sectors, we investigate the factors influencing credit demand, including firm size, industry type, financial health, and economic conditions. Our findings reveal that credit demand is a multifaceted phenomenon, influenced by a complex interplay of internal and external factors. We find elasticity of credit demand becomes more flatter as the firm’s employment increases.

**Keywords**: Central Banking, Credit Demand, Propensity Score Matching, Heckman Selection
**JEL Codes:**G20, G21, O16

**Beyond the Virus: Rent-Price Ratios in Disadvantaged Rental Markets**

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In this study, I explore the impact of COVID-19 on the risk-return relationship within the US housing market. I utilize monthly house price data spanning from 2015 to 2023, analyzing 14090 postal ZIP codes across the country. Employing various analytical methods, including hierarchical clustering, I focus on a couple of issues. The first issue is how the “housing beta” changed in different ZIP codes in the US before and after the pandemic. Second, How did the COVID-19 pandemic change the rent/price dynamics in the housing market, especially within economically disadvantaged areas? The primary objective is to investigate whether the relationship between submarkets' exposure to fluctuations in the stock market and their returns experienced significant changes after the COVID-19 pandemic. The second objective is to determine if tenants in low-income districts are subjected to exploitation by being charged higher rents compared to other districts. This question mainly arises from the findings of (Desmond & Wilmers, 2019). Defining exploitation as being overcharged relative to the market value of a property, the authors find the exploitation of tenants to be highest in poor neighborhoods.

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Asgari ücret zammının belirlenmesinde çalışanların enflasyon karşısında ezilmemesi ve satın alma gücünün korunması temel tartışma konusudur. Enflasyon, ortalama bir tüketicinin yıl içinde kullandığı tüm mal ve hizmetlerin genel seviyesinde süreklilik arz eden fiyat artışı olarak tanımlanmaktadır. Yüksek enflasyon tüketim ve yatırım kararlarını olumsuz etkilediği gibi, satın alma gücünü azaltmakta ve gelir dağılımını da bozmaktadır. Diğer taraftan, Türkiye’de hanehalklarının yüzde 70’inden fazlası asgari ücretlidir ve asgari ücret ayarlamalarında geçmiş ve gelecek dönem enflasyon oranları temel ölçüt olarak alınmaktadır. TÜİK tarafından yayımlanan resmi enflasyon verilerine göre, Aralık 2023 itibarıyla Türkiye’de Tüketici Fiyat Enflasyonu (TÜFE) yüzde 64,8 seviyesinde olup 2024 yılı ortasında yüzde 70 düzeyini aşması beklenmektedir.3 Asgari ücret tarafında da, 2023 Temmuz ayında net asgari ücret 500 lira asgari ücret desteği ile birlikte 11 bin 402 lira olmuş, 1 Ocak 2024 tarihinden itibaren geçerli olmak üzere de 700 lira asgari ücret desteği ile birlikte 17 bin 2 liraya çıkarılmıştır. Diğer bir ifadeyle, net asgari ücrete önceki döneme göre yüzde 49, önceki yıla göre de birikimli olarak yüzde 100 oranında artış yapılmıştır. Türkiye geneli için belirlenen asgari ücret artışları gelire ve yaşanan şehir/bölgeye bağlı yaşam maliyeti farklılıklarını gözetmemekte, dolayısıyla çerçevesi yetersiz kalmaktadır. Asgari ücretlerin artışında belirleyici olan resmi enflasyon oranının ölçümünde “ortalama” bir tüketicinin mal ve hizmet sepeti baz alınmakta ve ilgili fiyat endeksi Türkiye genelini temsil etmektedir. Ancak, harcamaların dağılımı gelir düzeyine göre değişebildiği gibi mal ve hizmetlerin fiyatları da illere ve bölgelere göre farklılaşmaktadır.5 “Bölgesel Asgari Ücret” uygulamalarını da gündeme getiren söz konusu tartışma kapsamında, yaşam maliyetinin doğru ölçümü için hanehalkının gelir düzeyi, büyüklüğü ve yaşadığı il gibi kriterleri dikkate alan alternatif göstergelerin türetilmesi gerektiği belirtilmektedir. TEPAV’da il bazında geçinme endekslerinin hesaplanmasını amaçlayan bir veri çalışması başlatılmıştır. Projenin ilk aşamasını, tüketim harcamalarında yüzde 29’luk ağırlığı ile en belirleyici grup olan gıda kalemlerinin fiyatlarındaki değişimin hesaplanması oluşturmaktadır. Geliştirilen veri derleme yöntemi il ve semt bazlı alt endekslerin türetilmesine elverişli olup, projenin ilerleyen aşamalarında hesaplamalar konut, sağlık ve ulaştırma gibi temel harcama gruplarının da eklenmesiyle bölgesel geçinme endekslerine genişletilecektir. Bu çalışmada, TEPAV tarafından Türkiye geneli için geliştirilen gıda fiyat endeksinin (TEGE) yöntemsel açıklamaları yer almakta, TÜİK başta olmak üzere diğer kurumlar tarafından yayımlanan ve kamuoyu tarafından takip edilen diğer fiyat endeksleri tanıtılmakta ve TEGE ile karşılaştırılmaktadır. Son bölümde ise çalışmanın ilerleyen aşamaları hakkında bilgi verilmektedir.

**Intelligent Demand Forecasting and Optimization in the Automotive Aftermarket: Leveraging Advanced Machine Learning Techniques for Enhanced Inventory Management**

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In this study, historical sales data for BMW, Land Rover, Jaguar and BMW Motorrad spare parts is utilized to develop and evaluate machine learning models for demand forecasting. The dataset consists of information regarding spare parts sales, including part details, stock movements, and order histories. For regression models, the target column represents the total number of sales expected for each part within the upcoming prediction interval. Features extracted from data since 2019 include material number, previous order quantities and sales, dealer sales, average stock sales, variations in stock and dealer sales, days since last movement, frequency of movements, beginning-of-week stock, average and standard deviation of currency exchange rates, number of vehicles serviced, profit group, seasonal parameters based on current time, and the number of upcoming national holidays. For classification models, the target column indicates whether demand for each part will occur in the next prediction interval. Features extracted for prediction include recent order quantities, previous stock and dealer sales, frequency and maximum duration between movements, total cost in EUR over the last 3 months, number of vehicles serviced in the last 3 months and year, number of assets associated with the part over the last year, number of dealers the part transacted with in the last month, and the part type derived from its main data. Various machine learning algorithms, including LightGBM Regression, XGBoost Classification, and Prophet Time Series, are employed to predict future sales quantities based on past trends and patterns. Additionally, the use of ensemble methods and hybrid models combining different algorithms is explored to achieve better prediction results. Moreover, the paper proposes the integration of external factors such as economic indicators, weather conditions, and market trends into the forecasting models to capture additional sources of variability and improve prediction accuracy. By incorporating external data sources, the models can adapt to changing environmental factors and provide more robust forecasts. The results of the study demonstrate the effectiveness of the proposed machine learning models in accurately predicting spare parts demand and optimizing inventory management. The implementation of the intelligent forecasting system is projected to result in a 10% reduction in inventory costs and a 50% decrease in unfulfilled demand quantities.

**Keywords:** Spare Parts Management, Regression, Classification, Time Series Data Analysis

**Tail-Related Volatility Modelling for Heteroscedastic Financial Time Series Via APARCH-EVT: Models for the GCC**

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**Keywords:** Statistical/Econometric Modelling, Time Series Analysis

Market fluctuation continues to be one of the major factors to be considered when quantifying and managing financial risk. In light of this, many works tackling the issue of financial market volatility have been produced, the firsts of which are ARCH and GARCH models by Engle and Bollerslev respectively. More encompassing and market-based volatility models have been propounded since then including entirely novel ones and ones built upon from the ARCH and GARCH models popularly referred to as GARCH-type models. One worrying concern, however, is that the GCC has received very limited focus when it comes to financial engineering methodologies. Most works on GCC markets have been almost always focused on the petroleum and petrochemical markets, which has left a huge gap regarding other aspects of the Gulf markets to be filled in the literature. Given the recent economic diversification efforts of the Gulf-country governments such as huge investments in education, scientific research, and sports, this study serves to throw light on the general outlook of the financial stock markets of four Gulf countries namely Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates (Dubai). This study models the structure of the conditional volatility of the leptokurtic tails of four stock markets using extreme value theory incorporated with the APARCH-type volatility model. Two main approaches to the APARCH-EVT are to be presented in this study; firstly, the Block Maxima (Minima) (BM) approach of the Generalized Extreme Value Distribution (GEVD), and secondly the peaks-over-threshold (POT) technique of the Generalized Pareto Distribution (GPD) are to be empirically implemented on the four GCC financial stock returns. The aim of this study is to help researchers, analysts, and policy makers alike to better understand and prepare for future extreme market phenomena like the 2008 financial crisis and most recently, the Covid-19 pandemic, which may pose significant dangers for the Gulf economy.

**Keywords**: GARCH, GEVD, GPD, Peaks-Over-Threshold, Block Maxima

**Intergenerational Career and Income Mobility Dynamics in Türkiye: An Empirical Bayesian Approach**

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The literature on intergenerational mobility analysis has been relatively scarce compared to other developed countries. This article aims to reveal the patterns of intergenerational income/occupational mobility and how they vary by family income. Using the data from the Turkish Survey of Income and Living Conditions (SILC) from 2006-2021, we measure Intergenerational earning mobility and intergenerational occupational mobility in Turkey- also how do these relationships vary on different career levels of children and for diverse socio-economic background respectively. We have found a higher association in earnings between daughters-parents pair compared to sons-parents earning pair, also the association is higher when children are transitioning from beginning career level to the mid-career level. We have used Bayesian methodology and the Pseudo-panel fixed effect model to estimate the intergenerational mobility elasticity estimates in Turkey and Bayesian methodology for the rest of the paper. We find the same intergenerational mobility and occupational mobility trend in Turkey as in most of the developing countries, close to 0.5. Our results also reveal that given the higher income, children with higher family income are less likely to switch their occupations and would prefer to be in the same occupation as their fathers. On the other hand, children born in low-income families have higher occupational mobility and would switch careers.

**Keywords**: Intergenerational Economic Mobility, Income Inequality, Occupational Mobility, Household Income, Bayesian Modeling
**JEL Codes:** J62, D1, D3, C11

**Effects of Human Capital on Labor Productivity: EU Region-II**

**Spatial Econometric Analysis**

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Recently, there have been numerous articles on spatial effects in empirical growth specifications. Endogenous growth models, together with the arguments of the new economic geography, have led to the identification of spatial dependence with the existence of externalities that transcend regional boundaries. This article continues along the lines of this research. It provides new empirical evidence on the contribution of labor productivity, human capital and agglomeration economies to productivity differences in European Union regions. The article uses the spatial Durbin model, which has different weight matrices, to explain the relationship between labor productivity and human capital variables, and has the advantage that it allows the measurement of the effects of spatial externalities associated with human capital and agglomeration economies.

**Keywords:** Human Capital; Labor Productivity; Spatial Externalities; Regional Productivity; Spatial Econometrics

**JEL Codes:** C21; O18; O40; R11; R12