



HHL

LEIPZIG
GRADUATE SCHOOL
OF MANAGEMENT

Chair Report

Chair of Macroeconomics

2021 / 22

PREFACE

"The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else."

John Maynard Keynes, 1936

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1. PHILOSOPHY

Over the past decades, trends like globalization and deregulation, especially of financial markets, have made the world increasingly interconnected and complex. Further challenges arose from digitalization and climate change. As a result, all subsystems in a modern society are closely intertwined. There is a strong mutual dependency of the economy, the public administration, political decision-makers and society. The actions of entrepreneurial leaders depend on framework conditions which have to be contextualized and reflected. Economists usually reduce this complexity by developing and analyzing models to convey the fundamental forces.

My chair, the Chair of Macroeconomics, aims to provide students with a thorough understanding of the methods and tools of economic reasoning and modeling in the field of macroeconomics, international finance and economic policy. The theoretical insights are then applied to current economic challenges. Our classes should enable students to see the broader picture when deciding on issues of strategic importance.

2. TEAM

2.1. Chairholder

Prof. Dr. Wilhelm Althammer

- Studied economics at the University of Regensburg
- Dr.rer.,pol. at University of Regensburg (1990), Habilitation at Europa University Viadrina Frankfurt (Oder) (1996)
- Worked as research associate and senior research associate at the University of Regensburg and Europa University Viadrina Frankfurt (Oder)
- Since 1996 Chairholder of the Chair of Macroeconomics at HHL
- Affiliate member of the Institute for Strategy and Competitiveness at Harvard Business School since 2007
- Expert member of the Commission on Determining the Concentration in the Mediasphere (KEK) since 2017



2.2. Postdoctoral Researcher

Dr. Erik Hille

- Since 2017, Assistant Professor in Economics
- Teaches various classes on international trade, managerial economics, statistical methods, and academic writing
- Work experience as a strategic business developer in the energy sector
- Ph.D. in Economics and M.Sc. in Management from HHL
- Study abroad inter alia at Harvard University



2.3. Research Associate

Cian Angerpointner

- Ph.D. Candidate at HHL
- M.Sc. in Economics from the Ludwig Maximilian University, Munich
- Exchange Semester at the University of Porto
- Previous work experience as a Student Research Assistant at the Ifo Institute and in the banking sector



2.4. Team Assistant

Beate Kanheißner

- Diploma program as certified teacher for adult education for English and Russian at Leipzig University
- Language teacher for students of journalism and business administration at Leipzig University
- Since October 1995 team assistant at several HHL chairs (Microeconomics, Business Ethics, Macroeconomics)
- Teacher of Business German at HHL ever since
- Manager of Dean's office for 4 years
- Team assistant to 4 Indian guest professors at HHL
- Contact person of Beta Gamma Sigma Chapter at HHL
- Manager of National Scholarship (Deutschlandstipendium) at HHL



3. RESEARCH

The broad research topic of the chair is competitiveness. On the one hand, we focus on the relationship between environmental regulation and trade patterns, the effects of policy on productivity, labor markets, and innovation. On the regional level we use advanced statistical methods to understand the regional effects and spillovers of climate policy. Furthermore, we analyse the determinants of and develop indicators for regional sustainable competitiveness. A further focus of research is more traditional macro and concerns the analysis of the European monetary union and the tension between criteria for optimal currency areas and endogeneity.

3.1. Environmental Regulation and Industrial Competitiveness

The debate about the potential impact on the competitiveness of environmental regulation has been ongoing since the first major policies were introduced in the 1970s. One of the main concerns of policymakers and businesses is that the implementation of stricter climate policies could hamper growth, increase production costs, and lead to layoffs, as differences in the stringency of environmental policies across countries could lead to the relocation of environmentally intensive production capacity to regions with less ambitious regulations. This has raised concerns, particularly in countries that are leading the way in combating climate change, as stricter environmental policy could put their carbon-intensive producers at a competitive disadvantage. Environmental regulations, however, may also be viewed as potential drivers of economic growth. For example, Michael Porter formulated the so-called Porter hypothesis, according to which stricter environmental policies might have a positive effect on the competitiveness of firms. More stringent environmental regulations can encourage cost-cutting efficiencies, lowering or entirely compensating for regulatory costs. In addition, such measures can foster innovation in new technologies, enabling companies to acquire international technology leadership and expand their market share.

These conflicting views and the growing importance of this debate among policymakers have led to a proliferation of studies attempting to quantify environmental regulations' impact on crucial aspects of competitiveness such as trade, industrial location, employment, productivity, and innovation. More recently, we focus in our research on the responses of firms to increased carbon abatement costs in developing countries, as previous research has predominantly specified the employment effects of environmental policies in general and climate policies in specific in developed countries.

Subtopics:

- _ The effects of green innovation on employment – investigating externalities of climate change mitigation
- _ Vietnam's economic performance and environmental regulation



HHL Academic House

3.2. Pollution Havens and Carbon Leakage

With inconsistent environmental regulation worldwide, the differences in carbon abatement costs across countries could shift the production of energy-intensive goods towards regions with less strict mitigation policies, creating so-called "pollution havens". This would lessen the environmental benefits of policy measures (carbon leakage) and potentially adversely affect the economy. The literature does distinguish between a pollution haven effect and a stronger pollution haven hypothesis. The pollution haven effect postulates that net exports of pollution-intensive goods from strongly regulated countries should decrease because more stringent mitigation policies cause a country to specialize in producing cleaner goods.

The second version of the theory, the pollution haven hypothesis, states that liberalization leads to a relocation of polluting industries from countries with relatively strict regulations to countries with comparatively lax regulations. Previous research on the impact of pollution regulations on trade has produced mixed results. While some support for the pollution haven effect has been found, no definite presumption on the existence of the pollution haven hypothesis can be established. Using international panel data and measures of pollution intensity and policy stringency to differentiate between pollution-intensive and less pollution-intensive sectors, our findings provide a broader view. Interestingly, we find a pollution haven effect that is also present in non-polluting sectors. Further, a more substantial effect is evident for carbon-intensive and emissions-relevant energy-intensive industries.

3.3. Drivers of Environmental Quality and Energy Transition

Since the end of the 20th century, the use of natural resources and the emission of pollutants have increased significantly around the world, leading to greater pressure on the environment. In our research, we aim at expanding the politico-economic understanding of determinants of environmental pollution and energy use to analyze challenges, such as the economy's decarbonization and energy transition. Using trade-environment and growth-environment models, we specify the role of technological change, (green) economic growth, environmental policy, and foreign direct investment. Given the relevance of regional elements in economic and environmental policies, we use spatial econometric approaches to consider spatial spillovers.

Subtopics:

- _ The role of innovation and the choice of policy instruments in the international expansion of renewable energy capacities
- _ China's climate policy and provincial carbon abatement costs: The relationship to innovation and socio-economic characteristics



3.4. Sustainable Regional Competitiveness

Despite its frequent use, the notion of competitiveness has an ambiguous character and lacks, therefore, a common operationalization and definition. The heart of the competitiveness debate, namely whether competitiveness should be measured with prices and costs, market shares or with productivity, has not fundamentally changed over time. However, there has been an increasing awareness that an evaluation of competitiveness should go beyond traditional economic indicators, including multidimensional goals such as a better environment or fighting against poverty and income inequalities.

At the national level, there exists a huge body of literature presenting different concepts and indices reflecting various facets of sustainability, sustainable development, and competitiveness. Even though many researchers argue for the special role of regions in competitiveness considerations, interestingly, the state of research at the spatial level in integrating social and environmental aspects into an evaluation of competitiveness is still in its infancy. So far, many studies have had a focus on measuring competitiveness at the European regional level, whereas only a few regional studies aim to integrate social and/or environmental aspects into an assessment of regional development.

3.5. European Monetary Integration

The Euro has been the subject of countless debates among economists before and since its creation over twenty years ago. Fundamental doubts about the sustainability of the common European currency by academics were particularly acute during the peak of the European Sovereign Debt Crisis. The European Central Bank's protracted monetary policy response in the form of one of the most extensive asset purchasing programs in central bank history has added to the skepticism about the long-term viability of the Eurozone. Aiming at contributing to this academic debate, the research topic will provide additional insights on existing monetary and economic theories of currency areas, which have been applied to the Eurozone over the past decades. The research will focus on enhancing empirical evidence regarding the question of the sustainability of the Euro within the framework of existing economic models. More specifically, the research topic aims at applying new data sets and new analytical approaches to the existing theories in order to discuss specific aspects of current challenges for the European monetary union.

4. TEACHING

4.1. International Macroeconomics (M.Sc. programs)

The course aims at conveying basic tools and models to enable students to understand macroeconomic reasoning and apply it to real-world economic problems in economics and international finance.

The course covers the following topics:

- Macroeconomic crises and macroeconomic policy
- The Great Recession: New challenges for monetary policy
- Open economy macroeconomics: Exchange rates and the balance of payments
- Open economy macroeconomics: Exchange rate regimes and the effectiveness of policy
- Monetary policy, inflation and unemployment
- The European Monetary Union and the theory of optimum currency areas
- Fiscal policy, fiscal discipline and the EMU crisis

4.2. Competitiveness (M.Sc. and MBA programs)

The course explores the determinants of competitiveness and successful economic development viewed from a bottom-up perspective. While sound macroeconomic policies and stable political institutions create the potential for competitiveness, wealth is actually created at the microeconomic level of firms. The sophistication and productivity of firms, the vitality of clusters, and the quality of the business environment in which competition occurs are the ultimate determinants of a nation's or a region's competitiveness. The course was developed by Michael Porter and his team from the Institute for Strategy and Competitiveness at Harvard Business School, where HHL (with Prof. Manfred Kirchgeorg and Prof. Wilhelm Althammer) is an affiliate member. It is primarily based on case studies and covers topics like

- Firms, industries, and cross-border competition
- Clusters and cluster development
- Cluster internationalization
- Organizing for competitiveness and institutions for collaboration
- Cluster policy on regional and national levels
- Economic strategy for cross-national regions

4.3. International Macroeconomics (MBA program)

The course aims at familiarizing the participants with the fundamental notions and methods of economic reasoning and its applications to the analysis of individual and interactive decision-making in various scenarios. It provides an overview of the fundamental principles of macroeconomics by explaining the meaning and drivers of important macroeconomic variables such as prices, interest rates, and exchange rates, which all crucially impact the business environment and managerial decisions. Aside from this, the course sheds light on topics such as the financial crisis, the responses of monetary policy to rising deflationary and inflationary risks around the globe, or the consequences of mounting protectionist tendencies on global welfare.

The course covers the following topics:

- The data of macroeconomics
- Savings, investment and the financial system
- The monetary system
- Open economy macroeconomics
- Aggregate demand and aggregate supply
- Monetary policy and fiscal policy
- Exchange rate regimes
- The trade-off between inflation and unemployment
- European monetary integration

4.4. Managerial Economics (Part-time MBA program)

The course aims at familiarizing the participants with the fundamental notions and methods of economic reasoning and its applications to the analysis of individual and interactive decision-making in various scenarios. The course covers topics from microeconomics and macroeconomics.

The macroeconomics part will provide an overview of the fundamental principles of macroeconomics, explain the meaning and drivers of important macroeconomic variables such as prices, interest rates, and exchange rates, which all crucially impact on the business environment and managerial decisions. Aside from this, the course will shed light on topics such as the financial crisis, the responses of monetary policy to rising deflationary risks around the globe, or the crisis in the European Monetary Union.

- Understanding the macro economy: Measuring national output, output growth, trade
- Money and monetary policy
- The role of expectations in macroeconomics
- Exchange rates and capital flows
- Optimum currency areas and the European Monetary Union
- The crisis and future of the EMU

4.5. Macroeconomics & The Global Economy (MBA program)

International economics has evolved as a specialized branch of economics because of the unique consequences for trade and capital flows arising from national sovereignty. The course studies the topics of international trade in goods and services as well as in productive inputs and their effect on income and welfare. Furthermore, it analyzes the internationalization strategies of firms and their consequences on economic welfare. This course develops and applies the basic principles of economics relevant to international trade.

The course covers the following topics:

- Labor productivity and comparative advantage
- Resource endowments, trade, and its effect on the income distribution
- Economies of scale and international trade
- Firms in the global economy: Outsourcing, off-shoring and welfare
- Trade policy and trade conflicts

4.6. Economics of Finance (M.Sc. programs)

The goal of the course is to familiarize students with the principles and methods of economic thinking and modeling in the field of finance. The content covers the role of financial intermediation by banks, the relationship between financial markets, asset prices and monetary policy, as well as basic notions and models for the economic analysis of international financial markets and financial crises. A special focus is on the changes in financial markets, in bank behaviour and in monetary policy through the digitalization of transactions and money.

The course covers the following topics:

- Banks and financial intermediation
- Financing investment: equilibrium in the bond and loan markets
- Bank runs, systemic risks and bubbles
- Modern banking, unconventional monetary policies and financial crisis
- Empirical analysis of financial markets

4.7. Econometrics (Doctoral program)

The course aims to provide an intuitive understanding and practical experience in regression analysis and related statistical concepts. Specifically, it covers topics such as classical OLS estimation, hypothesis testing, the choice of the functional form, as well as the correct specification of econometric models. This estimator and the statistical concepts constitute the basis for regressions analysis in almost every area of business and economic research. Among others, applications from marketing, finance, and economics are considered.

4.8. Methods of Multivariate Statistics (Doctoral program)

This course aims to convey an intuitive understanding and hands-on experience with multivariate analysis methods. In particular, multivariate methods are covered that are different from classical regression analysis, on which the elective course "Econometrics" focuses. The methods include factor analysis, principal components analysis, discriminant analysis, logistic regression analysis, and cluster analysis. These techniques are often applied in marketing research as well as other business and economic research areas. During the course, students can discuss the applicability of the methods presented concerning their particular research projects.

4.9. Management Research & Academic Writing (All programs)

This optional course makes students familiar with the core pillars of management research and academic writing. By doing so, students will learn to structurally approach scientific research questions with proper methodologies efficiently and formally correctly.

4.10. Supervision of Master Theses

- Foreign direct investment and environmental policy stringency in developing economies: A multinational study on the relationship and associated trends
- The relevance of cluster economics for the FinTech industry: Theory and evidence
- ReEnter - A job-placement platform to counteract the skill shortage in the German labour market
- Pricing carbon: Effects on competitiveness
- Climate change policies and distributional effects
- Zombie firms: Causes and consequences
- Enhancing debt sustainability in the Eurozone by sovereign bond design
- The economic benefits of power trading: A comparison of Europe and China

- _ Material flows and circular economy business models: An analysis for the EU and Germany
- _ Conflict resolution in the WTO: The role of the USA
- _ Carbon contracts for difference versus classical funding: Comparative analysis and suitability for the German cement industry
- _ Competitiveness and environmental policy: An analysis of the effects of environmental policy instruments on exports of renewable energy equipments
- _ How does demography impact the inflation rate?
- _ Secular stagnation: A Neo-Keynesian approach
- _ Voluntary carbon markets: The future role of voluntary carbon markets on the way to net zero – a key enabler or naive fallacy?
- _ Analysing the factors contributing to price development of residential estate
- _ A competitiveness analysis of the ICT cluster in Bangalore
- _ Does it pay to be good? An empirical analysis of ESG scores and financial performance of Exchange Traded Funds (ETF's)
- _ Redesigning the European Fiscal Framework

4.11. Supervision of Doctoral Theses

In 2021, Dr. Bernhard Lambernd received the doctoral degree for his dissertation "Korea's green growth strategy: The role of economic growth and innovation for province-level energy consumption and air emissions." The thesis consisted of three essays, which all were already published in international journals at the day of the oral defence. The titles of the articles are

- _ Any signs of green growth? A spatial econometric analysis of regional air pollution in South Korea
- _ Has Korean growth become greener? Spatial economic evidence for energy use and renewable energy
- _ The role of innovation in reducing South Koreas energy intensity: Regional data evidence on various energy carriers

Currently, the following topics for dissertations projects are being worked on:

- _ Carbon abatement costs, structural change and labour markets – evidence from lower-income countries (Cian Angerpointner)
- _ Essays on the economics of climate change mitigation (Thomas J. Oelker)
- _ Measuring environmental policy stringency of Chinese provinces using a shadow price approach (Feng Wang)
- _ The endogeneity of optimum currency areas in light of European intra-industry trade patterns and business cycle synchronicity (Niklas Steinert)

In 2021-2022, Prof. Althammer acted as the second supervisor in the following dissertation committees:

- _ Essays on the performance of higher-order and buy-and-build buyouts (Jonas Kick)
- _ Essays on the impact of institutional ownership on the market for corporate control (Ludwig Dobmeier)
- _ Essays on uncertainty and lead partner impact in the private equity industry (Norbert Wünsche)



5. TRANSFER

5.1. Student Consulting Project with ZENLOOP (2021): Developing an Internationalization Strategy

ZENLOOP is the leading Customer Experience Management Platform in DACH. The Software-as-a-Service solution automatically collects feedback through various channels along the customer journey, analyzes and clusters it and derives tailored measures to retain satisfied and win back churning customers. The ZENLOOP portfolio includes leading brands such as Westwing or HelloFresh. The company was founded in 2016 by the two former HHL alumni and Flaconi founders Björn Kolbmüller and Paul Schwarzenholz as well as Lukasz Lazewski and is based in Berlin.

ZENLOOP wanted to scale into further European countries. Therefore it required the preparation of a comprehensive GTM strategy. This contained, among others, a country prioritization, an analysis of the competitive landscape, and market research of potential (sales) partners. Based on the project results, the team derived recommendations on how to expand and conquer into an international environment.

5.2. Student Consulting project with OTTO (2022): Circularity in Retail - The (R)E-Commerce Potential for the OTTO Group

The OTTO Group is a worldwide leading retail and service provider. It runs Germany's largest online store for Home & Living, every second washing machine and every third television ordered online comes from OTTO. The OTTO GROUP has a strong commitment to sustainability, therefore, they regard it as their responsibility to achieve an incorporated circularity driven by transparency, innovation and collaboration.

The aim of the project was to provide insights into the Re-Sale potential for the Otto Group on the German market for three main assortments. The team conducted a competitor analysis, a customer analysis, estimated the market potential and developed scenarios for future regulations. Based on cost estimates, the team provided a specific recommendation for action.

5.3. Interviews/Publications in Media

- _ Interview MDR Aktuell, Was bedeutet Subventionsabbau, 18.10.2021
- _ Interview MDR Aktuell, Wie gefährlich ist die Inflation, 15.07.2021

6. TALKS/ PARTICIPATION AT CONFERENCES

2021

Dr. Erik Hille: 26th Annual Conference of the European Association of Environmental and Resource Economists, online, 23 June - 25 June 2021

Prof. Wilhelm Althammer: Ausschuss für Umwelt- und Ressourcenökonomie im Verein für Socialpolitik, Ausschusssitzung (Online), 17 September -18. September 2021

Dr. Erik Hille: 17th German Economic Association Workshop for Young Environmental and Resource Economists, Oldenburg, 14 October - 15 October 2021

Dr. Erik Hille: International Congress on Energy, Economy and Security (ENSCON), online, 13 November - 14 November 2021

Feng Wang: International Congress on Energy, Economy and Security (ENSCON), online, 13 November - 14 November 2021

Prof. Wilhelm Althammer: Workshop Microeconomics of Competitiveness, Harvard Business School, Institute for Strategy and Competitiveness, Boston (Online), 02 December - 07 December 2021

2022

Prof. Wilhelm Althammer: Ausschuss für Umwelt- und Ressourcenökonomie im Verein für Socialpolitik, Ausschusssitzung, Hamburg, 12 May -14. May.2022

Dr. Erik Hille: Conference on Sustainable Resource Use and Economic Dynamics (SURED), Ascona, Switzerland, 6 June - 9 June 2022.

Dr. Erik Hille: 27th Annual Conference of the European Association of Environmental and Resource Economists, Rimini, Italy, 28 June - 1 July 2022.

Cian Angerpointner: 27th Annual Conference of the European Association of Environmental and Resource Economists, Rimini, Italy, 28 June - 1 July 2022.

Dr. Erik Hille: 11th Congress of the Asian Association of Environmental and Resource Economics, Ho Chi Minh City, Vietnam, 18 August - 20 August 2022.

Prof. Wilhelm Althammer, Workshop Microeconomics of Competitiveness, Harvard Business School, Institute for Strategy and Competitiveness, Boston, 12 December - 14 December 2022

7. PUBLICATIONS

2021

Hille, Erik; Lambernd, Bernhard; Tiwari, Aviral K. "Any signs of green growth? A spatial panel analysis of regional air pollution in South Korea ", *Environmental and Resource Economics*, 2021, 80(4), 719-760. doi.org/10.1007/s10640-021-00607-4

Content:

Focusing on air emissions in South Korean provinces, we investigate whether economic growth has become greener since the implementation of the national green growth strategy in 2009. Given the relevance of regional elements in the economic and environmental policies, the focus lies on spatial aspects. That is, spillovers from nearby provinces are controlled for in a SLX model by means of the Han-Phillips estimator for dynamic panel data. Our results suggest mainly the existence of inverted N-shaped Environmental Kuznets curves for sulfur oxides (SOX) and total suspended particles (TSP). As the curves initially decrease strongly with increasing income, the main cleanup is achieved with the mean income level. However, abatement of the remaining TSP emissions only takes place at higher income levels. While the fixed effects estimations indicate that per capita SOX and TSP emissions have been significantly lower since 2009, the effects vanish once spatial interactions are taken into account and no evidence is found that regional economic growth has become greener. Apart from economic growth, population density and energy consumption are the main drivers of emission changes, with the latter having robust spatial spillovers. The respective spatial interactions decrease with increasing distance and become insignificant after 150 km.

Kumar, Satish; Tiwari, Aviral K.; Raheem, Ibrahim D.; Hille, Erik. "Time-varying dependence structure between oil and agricultural commodity markets: A dependence-switching CoVaR copula approach ", *Resources Policy*, 2021, 72(1), 102049. doi.org/10.1016/j.resourpol.2021.102049

Content:

We examine the energy-food nexus using the dependence-switching copula model. Specifically, we look at the dependence for four distinct market states, such as, increasing oil-increasing commodity, declining oil-declining commodity, increasing oil-declining commodity, as well as declining oil-increasing commodity markets. Our results support the argument that the crash of oil markets and agricultural commodities happen at the same time, especially during crisis period. However, the same is not true during times of normal economic conditions, implying that investors cannot make excess profits in both agricultural and oil markets at once. Furthermore, our analysis suggests that the return chasing effect dominates for all commodities on maximum occasions. The CoVaR and Δ CoVaR results indicate important risk spillover from oil to agricultural markets, especially around the financial crisis.

2022

Hille, Erik; Lambernd, Bernhard. "Has Korean growth become greener? Spatial econometric evidence for energy use and renewable energy ", *Annals of Operations Research*, forthcoming. doi.org/10.1007/s10479-021-04197-8

Content:

Using province-level data for South Korea, we analyze the dynamic relationship between economic growth and several energy parameters. Specifically, we decompose the growth effect into scale, composition, and technique effects, and control for regional spillovers through the use of a dynamic GMM estimator for spatial panel data models. The analyzed period, ranging from 2000 to 2017, allows us to look for changes in the regional growth effects following the implementation of the National Strategy for Green Growth in 2009. Our estimates show that the scale and composition effect tended to increase both per capita final energy use and energy intensity, outweighing reductions through the technique effect. In contrast, when considering renewable energy production, the scale and technique effect increased and the composition effect decreased the corresponding figures. Thereby, the technique effect was the main driver of increases in renewable energy production. Despite the larger, yet comparatively small share of renewables in Korea's energy mix, no considerable change of the growth effects can be observed since 2009. Therefore, to reduce the risks for the economy and achieve the political

objectives of the green growth strategy throughout the whole country and in a timely manner, a stronger commitment seems to be required.

Tiwari, Aviral K.; Jena, Sangram K.; Kumar, Satish; Hille, Erik. "Is oil price risk systemic to sectoral equity markets of an oil importing country? Evidence from a dependence-switching copula delta CoVaR approach ", *Annals of Operations Research*, forthcoming. doi.org/10.1007/s10479-021-04218-6

Content:

In this article, a dependence-switching copula model is used for the first time to analyse the dependence structure between sectoral equity markets and crude oil prices for India, one of the largest oil importing countries. Specifically, we investigate the dependence and tail dependence for four distinctive states of the market, i.e. rising oil prices—rising equity markets, declining oil prices—declining equity markets, rising oil prices—declining equity markets, and declining oil prices—rising equity markets. Our results reveal that the tail dependence is symmetric (asymmetric) in positive (negative) correlation regimes. Based on the copula results, we estimate the systemic crude oil price risk to different sectors using CoVaR and delta CoVaR. A fleeting positive sectoral CoVaR and delta CoVaR across all sectors implies a time-varying oil price systemic risk. Yet, little difference between CoVaR and VaR across the sectors reveals that a bearish oil market does not add additional systemic risk to a bearish sectoral equity market. The carbon sector is found to be the safe haven investment when both the equity and the oil markets are in a downward phase.

Wilhelm Althammer, "Corona Pandemie, Staasverschuldung und Inflation", in: Timo Meynhardt, Manfred Kirchgeorg, Andreas Pinkwart, Andreas Suchanek and Henning Zülch (Eds.), *Führen in der Krise. Neue Herausforderungen für das Leipziger Führungsmodell*, 132-139, Leipzig 2022

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