Dr. Erhan MUGALOGLU

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08.01.2024   WOS: https://www.webofscience.com/wos/author/record/1228354
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AREAS OF INTEREST
Dynamic stochastic general equilibrium (DSGE) models
Business cycle implications of energy markets
Economic assessment of environmental degradation
Bayesian inference and stochastic finance
Wavelet analysis of financial time series

EDUCATION
Ph.D   : Economics, Erciyes University, Turkey, 2018
    Concentrations: Non-Linear Econometrics, Economic Dynamics, DSGE
    Dissertation: *The Impact of Renewable Energy Consumption on CO_2 Emissions: A Dynamic Stochastic Ecological Model Approach",*
    Dissertation Supervisor: Prof. Dr. Faik Bilgili

M.Sc   : Economics and Finance, Otto v. Guericke Uni. Magdeburg, Germany, 2008
    Concentrations: Financial Econometrics, Stochastic Calculus
    Thesis: *Pricing and Hedging of Oil Futures in A Stochastic Framework*
    Thesis Supervisor: Prof. Dr. Peter Reichling

B.A   : Economics, Istanbul University, Turkey, 2005

EMPLOYMENT
2022-   : Assistant Professor, Erciyes University, Faculty of Economics
2018 -2021   : Research Assistant, PhD., Abdullah Gul University,
                 Department of Economics
2015-2018   : Research Assistant, Abdullah Gul University, Department of Economics

TEACHING EXPERIENCE
Courses
2022/23   Macroeconomics (PhD)
2019/20/21   Time Series Financial Econometrics (M.Sc.)
2019/20/21   Numerical Methods in Economics and Finance (M.Sc.)
2020/21/22/23   Macroeconomics (B.A)
2022/23   Microeconomics (B.A)
2022/23   Statistics (B.A)
2017/18/19/20   Principles of Finance (B.A)
2018/19/21   Financial Derivatives (B.A)
2018/19/20   Financial Markets and Institutions (B.A)
2018/19   Financial Modeling (B.A)
2019/20   Global Issues (B.A)

WORKSHOPS AND TRAINING SCHOOLS

1- Participant; CEPR *The Macroeconomics of Climate Change'* taught by Professors John Hassler (IIES Stockholm University) and Per Krusell (IIES Stockholm University) online from 12/09/2022-14/09/2022.
https://eabcn.org/sites/default/files/event_report/call_for_applications_-_eabcn_hassler_krusell_2022_-_v2.pdf

2- Participant**; EABCN Training School Formulating and Estimating DSGE Models**, taught by Martin Eichenbaum (Northwestern University) and Mathias Trabandt (Goethe University Frankfurt) online from the 27/09/2021 – 01/10/2021.
https://eabcn.org/sites/default/files/event_report/eabcn_eichenbaum_trabandt_2021_0.pdf

3- Participant; **Modern Macro, Money and International Finance Training School** taught by Markus Brunnermeier (Princeton University). 7-23 June, 2021. Sponsored by Euro Area Business Cycle Network, EACBN.
https://eabcn.org/sites/default/files/event_report/eabcn_brunnermeier_-_call_for_applications.pdf

4- Participant; **The Zero Lower Bound and Secular Stagnation** taught by Gauti Eggertsson (Brown University), 24-28 May 2021, Sponsored by Euro Area Business Cycle Network, EACBN,
https://eabcn.org/sites/default/files/event_report/eabcn_eggertsson_2021.pdf

5- Participant; **Distributed Ledger Technologies for Central Bankers 2020**, organized by Bank of Ukraine, IMF and World Bank, Kyiv, 20-21 February 2020. (Sponsored by Euro Area Business Cycle Network, EACBN)
https://events.bank.gov.ua/cbdc2020/en/

6- Participant; **Dynare Summer School 2018**, organized and sponsored by Banque de France and CEPREMAP, Paris, France June 11th – 15th 2018.
http://www.dynare.org/events/dynare-summer-school-2018

PROJECTS

1- Researcher*, "Agent-Based Simulation Model with Artificial Intelligence-Assisted Learning, Forecasting, and Optimization Algorithms for Electricity Markets and Market Analysis"* (TUBITAK-3501 Project Number: 222M440, TRY608,100, Rated: A), 03/2023-03/2025. Project Coordinator: Saltuk Buğra Selçuklu, Ph.D.
Executive Summary: The electricity generation sector has a very high strategic importance for every country. It is necessary to produce sufficient, high-quality, continuous, low-cost, and environmentally friendly electricity. To achieve this goal, the sector has been restructured in many countries in the last 20 years and efforts have been made to establish competitive, financially strong, stable, and transparent electricity markets. With the restructuring in the sector, scientific studies on the modeling of electricity markets have started and have increased rapidly in the last ten years. The formulation and solution models of the electricity generation planning problem have changed and developed. Behavioral simulation methods have begun to replace optimization-based planning models. Machine learning models are frequently preferred in processes such as learning, forecasting, and strategy establishment in simulation

models. In this project, a simulation model will be built using modern methods for in-depth analysis and study of electricity markets. Using this model, critical features of electricity markets such as competitiveness, financial stability, and transparency will be analyzed in the light of economics. In this context, new techniques such as agent-based simulation and artificial intelligence will need to be learned. The project proposal is a synthesis of the disciplines of Industrial, Energy Systems, Computer-Software Engineering, and Economics. By this means, the project coordinator will also develop his interdisciplinary working skills. This project proposal will make an important contribution to the career of the coordinator by improving his previous works with modern techniques and making him able to respond to current and future problems from an interdisciplinary perspective.

2- Researcher, *"Assessment of the economic impact of Covid-19 outbreak with sectoral and overall uncertainty indices"*, The Scientific and Technological Research Council of Turkey (TUBITAK), (SOBAG-1001 Project Number: 120K554, TRY23.000, Rated: A), 07/2020-12/2020. Project Coordinator: Ali Yavuz Polat, Ph.D.

Executive Summary: Covid-19 pandemic is one of the biggest health crises that world faced in modern times. Particularly the economic crisis caused by the outbreak is expected to be much larger than the economic crises and disasters that have occurred in the last 40 years. It is widely estimated that global income will shrink more than %7 in the first half of 2020, which is approximately twice the contraction occurred during the global financial crisis. This decline in income would cause an increase in uncertainty, which affects the economic activity through expectations over investment and consumption expenditures. Besides more uncertainty leads an excessive volatility in commodity and financial markets. Thus, it is important to measure the level of uncertainty with a sensitive indicator. With this project, sectoral-based and general uncertainty indices will be created. These indices will be important indicators to monitor the state and the change of the economy. Then, using a (structural and/or unrestricted) Vector Autoregression (VAR) model, the damage caused by the Covid-19 outbreak will be analyzed through sector-based indices. Also, with the constructed VAR model, the interaction of sectors among each other will be examined. By this way, we will anticipate how specific financial aid packages impact different sectors. In this project, we will also use the business closure statistics in our model to understand the impact of the pandemic on the labor force on a sectoral and monthly basis. The sectoral and general uncertainty indices structured with this project will be a promising source for future projects and policies.

3- Researcher, *"The Impact of Renewable Energy Consumption on CO_2 Emissions: A Dynamic Stochastic Ecological Model Approach "*, The Research Fund of Erciyes University (Project Number: SDK-2017-7558, TRY17.500), 07/2017-10/2018. Project Coordinator: Faik Bilgili, Ph.D.

Executive Summary: This dissertation project formulates an environmental dynamic stochastic general equilibrium (DSGE) model with a relative disutility of atmospheric carbon dioxide (CO2) concentration in the United States' (US) households' utility function and a disaggregated energy production sector in US. Thus, households optimize the decision-making processes on the energy demand, which is an input of total production, taking into account the negative effects of environmental degradation caused by energy-related CO2 emissions. This environmental DSGE model examines the effects of renewable energy consumption on US CO2 emissions and global atmospheric CO2 concentration. According to the simulation results using Bayesian parameter

estimates, (i) that renewable energy production has sufficient substitute power in the US energy sector; (ii) the effects of positive fossil energy cost shocks are limited; (iii) Fossil-based energy production in the US is almost completely procyclical and (iv) although the share of renewable energy consumption in the US total energy sector is low, its emission reduction power has been found to be permanent and sufficient in the long-run. This work suggests the continuation of the US renewable energy production and investment tax credits and the project subsidies for the renewable energy production innovations and progress increasing the renewable energy cost competitiveness in the US energy sector. On the other hand, it warns policy makers about the duration of renewable transformation in global energy supply since the marginal cost of emission reduction policies must be higher during the upper environmental degradation levels.

PUBLICATIONS
Journal Articles

1. **Muğaloğlu, E**., Kuşkaya, S., Aldieri, L., Alnour, M., Hoque, M. E., Magazzino, C., & Bilgili, F. (2023). Dynamic regime differences in the market behavior of primary natural resources in response to geopolitical risk and economic policy uncertainty. *Resources Policy*, *87*, 104340. https://doi.org/10.1016/j.resourpol.2023.104340

2. Aysan, A. F., **Muğaloğlu, E**., Polat, A. Y., & Tekin, H. (2023). Whether and when did bitcoin sentiment matter for investors? Before and during the COVID-19 pandemic. *Financial Innovation*, *9*(1), 124. https://doi.org/10.1186/s40854-023-00536-9

3. Kuşkaya, S., Bilgili, F., **Muğaloğlu, E.,** Khan, K., Hoque, M. E., & Toguç, N. (2023). The role of solar energy usage in environmental sustainability: Fresh evidence through time-frequency analyses. *Renewable Energy*, *206*, 858-871. https://doi.org/10.1016/j.renene.2023.02.063

4. **Mugaloglu, E.,** Polat, A. Y., Tekin, H., & Kılıç, E. (2022). Assessing the impact of Covid-19 pandemic in Turkey with a novel economic uncertainty index. Journal of Economic Studies. https://doi.org/10.1108/JES-02-2021-0081

5. **Mugaloglu, E.,** Polat, A. Y., Tekin, H., & Dogan, A. (2021). Oil Price Shocks During the COVID-19 Pandemic: Evidence From United Kingdom Energy Stocks. Energy Research Letters, 2(1), 24253. https://doi.org/10.46557/001c.24253

6. Tekin, H., Polat, A. Y., & **Muğaloğlu, E.** (2021) *Küresel Finansal Kriz ve Nakit Tutma Ayarlama Hızı*. Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi, 9(4), 1099-1110. https://doi.org/10.18506/anemon.888504

7. Tekin, H., Polat, A. Y., Aysan, A. F., **& Muğaloğlu, E.** (2021). *Cash Management, Governance, and the Global Financial Crisis: Evidence From Developing Asia.* Asian Economics Letters, 2(4), 27135. https://doi.org/10.46557/001c.27135

8. **Mugaloglu, E.,** Kılıç E. (2021). *G7 Countries Unemployment Rate Predictions Using Seasonal Arima-Garch Coupled Models.* Journal of Yaşar University, 16(61), 228-247 https://doi.org/10.19168/jyasar.803807

9. Bilgili, F., Dundar, M., Kuşkaya, S., Lorente, D. B., Ünlü, F., Gençoğlu, P., & **Mugaloglu, E.** (2021). *The Age Structure, Stringency Policy, Income and the Spread of COVID-19: The Evidence from 209 Countries.* Frontiers in Psychology, 11, 4042. https://doi.org/10.3389/fpsyg.2020.632192

10. Bilgili, F., Kuşkaya, S., Toğuç, N., **Mugaloglu, E**., Koçak, E., Bulut, Ü., & Bağlıtaş, H. H. (2019). A revisited renewable consumption-growth nexus: A continuous wavelet approach through disaggregated data. *Renewable and Sustainable Energy Reviews, 107, 1-19*. https://doi.org/10.1007/s11356-016-7094-2

11. Bilgili, F., Öztürk, İ., Koçak, E., Bulut, Ü., Pamuk, Y., **Mugaloglu, E.**, & Bağlıtaş, H. H. (2016). The influence of biomass energy consumption on CO2 emissions: a wavelet coherence approach. *Environmental Science and Pollution Research*, 23(19), 19043-19061. https://doi.org/10.1016/j.rser.2019.02.017

Book Chapters
12. Bilgili F., **Mugaloglu E**., Koçak E. (2020). The Impact of Oil Prices on CO_2 Emissions in China: A Wavelet Coherence Approach. In: Shahbaz M., Balsalobre-Lorente D. (eds) Econometrics of Green Energy Handbook. Springer, https://doi.org/10.1007/978-3-030-46847-7_2

13. Bilgili, F., **Mugaloglu E**., Kuşkaya S., Bağlıtaş H, Gencoglu, P. (2019). Re-examining the Environmental Kuznets Curve through continuous wavelet coherence approach, in (Editors: Burcu Özcan, İlhan Öztürk) Environmental Kuznets Curve (EKC) with its all dimensions: A Manual, Elsevier S&T Books, Chapter 3.4: Most up-to date methodological approaches, https://doi.org/10.1016/B978-0-12-816797-7.00010-2

Conference Presentations
14. Edanur Polat, **Mugaloglu E,** Keskin Hazar, Selçuklu Saltuk Buğra (2023). Merit order effect of renewable energy sources in turkish electricity market. 10. Yildiz uluslararasi sosyal bilimler kongresi, İzmir, Turkiye,   21-22 December 2023

15. **Mugaloglu E,** Polat A (2022). The Impact of Climate Policy Uncertainty on the Financial Markets in the MENA Regions, IAAE 2nd IAEE MENA Symposium – 5th Annual Derasat Forum, Bahrain, 2-3 March 2022.

16. **Mugaloglu E,** Conagasi N., Turetmis A. (2021). What drives stock market index in the long and short-run: A structural model approach. Econtr2021 3rd International Conference on Economics, Başkent University, Ankara. September 02-04, 2021

17. **Mugaloglu E,** Conagasi N. (2021). Impact of COVID-19 pandemics on sovereign risk: Time-varying correlations of the CDS spreads in emerging economies. 7th International Conference on Economics of Turkish Economic Association (IceTea2021) April 09- 11, 2021

18. **Mugaloglu E.,** The Impact of Energy Price Shocks On the Turkish Stock Market (2020), 4th International Congress on Economics, Finance & Energy

(EFE'2020) titled 'Political Economy of Energy Revolution' , October 14-15, 2020, Turkey.

19. **Mugaloglu E.,** Kılıç E. Unemployment, Inflation and Electricity Prices in Turkey: A structural model approach (2020), 4th International Congress on Economics, Finance & Energy (EFE'2020) titled 'Political Economy of Energy Revolution', October 14-15, 2020, Turkey.

20. Kılıç E., **Mugaloglu E.,** G7 Countries Unemployment Rate Predictions Using Seasonal Arima-Garch Coupled Models (2020), EconTR2020@Eskisehir International Conference on Economics, 10-12 September, 2020, Eskişehir Osmangazi University, Eskişehir, Turkey.

21. **Mugaloglu E**., Bilgili F., The identification of negative effects of carbon emissions in utility function (2017), 3rd International Congress on Environmental Researches and Technology, 08-12 November, 2017, Belgrade, Serbia. ICERAT. https://www.icerat.gen.tr/sites/default/files/icerat_book_of_abstracts_v2.pdf

ONGOING PROJECTS
22. Faik Bilgili; **Erhan Muğaloğlu**; Sevda Kuşkaya; Javier Cifuentes-Faura; Kamran Khan; Mohammed Alnour (2024). The nexus between the financial sector and sustainable development pathway: Fresh evidence through time-frequency analyses. Submitted to Financial Innovation (revised and resubmitted in 2023)

23. Polat A.Y**., Mugaloglu, E**., Tekin H., Kılıç E. (2024). The impact of outbreak-induced sectoral uncertainty on disaggregated industrial production in Turkey. Submitted to Scottish Journal of Political Economy (revised and resubmitted in 2023).

24. Sevda Kuşkaya; **Erhan Muğaloğlu**; Cosimo Magazzino; Faik Bilgili; Mohammad Enamul Hoque; Seyit Önderol; Luigi Aldieri; Mohammed Alnour; Kamran Khan (2024). Transition of Electricity Net Generation from Non-Renewable Energy Sources to Renewable Energy Sources and Climate Change: Fresh Evidence from Time-Frequency Analyses. Submitted to Environmental Science and Pollution Research

Thesis Supervised
1) Gülcan Doğanay, 2020-2022, Master Thesis Project, "The Relationship Between Tourism And Carbon Dioxide Emissions: An Empirical Study On Most Polluting Countries" Turizm ve karbondioksit emisyonu arasındaki ilişki: Çevreyi en çok kirleten ülkeler üzerine ampirik bir uygulama, Erciyes University, MSc in Economics program.

2) Adem Alver, 2023- ongoing Doctoral Dissertation project. "Testing the Validation of Directed Technical Change for Green and Fossil Energy Inputs in EU Countries ". Yeşil ve Fosil Enerji Girdileri için Yönlendirilmiş Teknik Değişimin Geçerliliğinin AB Ülkelerinde Test Edilmesi, Erciyes University, PhD in Economics program.

RELEVANT SKILLS
Programming ability in **R** and **DYNARE** (MATLAB-based)
Extensive knowledge in STATA and E-Views econometric packages

Fluent in English (YDS:90 pts),
Intermediate in German (Mittelstufe2)

Reviewer for WOS Journals: The Energy Journal, Environmental Science and Pollution Research, The World Economy, Frontiers in Environmental Management, Singapore Economic Review, Studies in Economics and Finance, Natural Resources Forum.

WOS H index: 6   Scopus H index: 7

MEMBERSHIPS
IAEE (International Association of Energy Economics), Member (granted as a Reviewer) since 2020
EABCN (Euro Area Business Cycle Network), since 2018