

# Editorial

## Artificial Intelligence for Economic Research

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In order to understand economic phenomena, traditional economic research has been primarily grounded on statistical analysis, as well as mathematical and econometric models. However, the rapid development of Artificial Intelligence (AI) in the last two decades, along with the Fourth Industrial Revolution driven by Big Data, cloud computing, 3D printing, cybersecurity, Internet of Things, integrated systems, simulation, robots, augmented reality and, last but not least, AI, has created new possibilities and tools for researchers studying topics related to economic sciences. The advancement of AI is quickly being consolidated in various aspects of human life, such as economy, society, environmental issues and even politics. In the case of research, in particular, AIs are valued as advanced tools in developing research proposals, processing large amounts of data, identifying complex patterns and making more accurate forecasts. These capabilities have enabled economists to approach economic issues in their vast complexity, aiming to formulate more objective results and more precise proposals for understanding and addressing such matters efficiently, equitably and effectively.

AI has been applied in various areas of economic research. Its most notable contributions include the capability of organizing bibliographic revisions in scientific databases, chat bots that behave as research assistants and programmers, citation and reference managers, text writers and copywriters, real-time analysis of large data sets, economic evaluation, forecasting and scenario simulations, among others. These tools not only enhance productivity in research processes but are also useful for decision-makers to design more effective economic policies. AI integration in economic research offers great benefits in searching scientific literature, processing data, programming and modeling, analyzing non-linear complexities and improving data-based decision-making. However,

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at the same time, ethical and technical challenges arise, including high-tech plagiarism, limited interpretation of results based on algorithms, data privacy concerns, the need to mitigate algorithmic biases, among others.

Just to mention some research related to the implications and limitations of AI in economic research, it is convenient to refer to [Korinek \(2023\)](#), who describes how large language models (LLM) such as ChatGPT have the potential to revolutionize research in economics and other fields, describing its capabilities as research assistants and tutors: ideation, redaction, background research, data analysis, coding and mathematical derivations. There are, however, more critical perspectives as those raised by [Noam Chomsky \(2023\)](#), who claims AI tools like ChatGPT can be used to avoid scientific misconduct such as high-tech plagiarism and to avoid learning.

Similarly, [Kuan \(2023\)](#), [Hill Yardin et al. \(2023\)](#), [Manohar & Prasad \(2023\)](#), [O'Connor \(2023\)](#) and [Cotton et al. \(2023\)](#) claim that the use of AI in research poses diverse issues such as the generation of false or incorrect information, inadequate citation suggestions, and the use of limited language and outdated information. Therefore, they invite an objective debate on its ethical implications and those related with good scientific practices, given that their continued use poses a threat for academic integrity. In consequence, they encourage universities and research communities to take immediate action to update their policies and normative frameworks, aiming to protect academic integrity and foresee academic and scientific malpractice. Lastly, they point out the need to qualify teachers and researchers on the adequate use of AI in education and research.

The future of economic research supported by AI seems promising. As algorithms evolve and become more sophisticated, their capabilities to understand and model complex economic phenomena are expected to improve. In addition, collaboration between economic experts and AI developers will be fundamental in ensuring relevant and ethical applications of these technologies.

AI supported economic research has transformed the way in which economists approach economic challenges. The benefits are evident in the improvement of research processes and methods, forecast accuracy, identification of hidden patterns and real-time analysis capabilities. Nonetheless, it is crucial to address the ethical and technical challenges related to AI to ensure these tools remain valuable and reliable assets in the field of economic research.

Among the possibilities offered by AI for economic research we can find wide array of new applications, like Machine Learning in economic prediction based on Artificial Neural Networks (ANN) or Support Vector Machines (VSM). The former is capable of identifying complex patterns in large sets of data and are, therefore, used to predict economic tendencies, growth rates and market behavior. The latter can be used to analyze nonlinear relationships in data, which results beneficial for predicting changes in financial markets and evaluating economic risk.

We may also consider sentiments and opinion analysis based on Natural Language Processing (NLP), where certain algorithms are used to assess text in social media, news and online commentary to evaluate market sentiments, consumer perception and reactions to economic events. It also includes real-time opinion analysis, a set of tools that process online commentary to evaluate public opinion on specific economic topics, rapidly providing information on general perception. On the other hand, investment Robo-Advisors incorporate financial advising algorithms, as well as automatic learning algorithms to analyze investment profiles and offer customized suggestions, optimizing portfolios and adapting to market changes.

Another relevant application is the simulation of economic scenarios through Generative Adversarial Networks (GAN), which enables researchers to project economic scenarios and to assess the potential impact of specific policies prior to implementation, allowing for better informed decision-making. For their part, Anomaly Detection algorithms can be used to detect frauds and money laundering by identifying unusual patterns in financial transactions, which contributes to economic integrity and stability.

Federated Learning, for its part, allows different entities to share learning models without directly publishing data, facilitating collaboration between economic research institutions without compromising data privacy. In addition, optimization and efficiency models based on linear and nonlinear algorithms are used to optimize resources, assign budgets and economic planning, allowing for more efficient management of resources. Finally, dynamic real-time indicators include algorithms that gather information from various international and local indexes aiming to create more comprehensive and multi-disciplinary maps to analyze local, regional and global inequality.

**Table 1** presents some of the AI's that can be implemented on economic research nowadays.

Table 1.

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*Artificial Intelligence for economic research*


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IA	URL
BIT.AI	<a href="https://bit.ai/">https://bit.ai/</a>
RESEARRABBIT	<a href="https://www.researchrabb.it/">https://www.researchrabb.it/</a>
SEMANTIC SCHOLAR	<a href="https://www.semanticscholar.org/">https://www.semanticscholar.org/</a>
SCISPACE	<a href="https://typeset.io/">https://typeset.io/</a>
ELICIT	<a href="https://elicit.com/">https://elicit.com/</a>
SCITE.AI	<a href="https://scite.ai/">https://scite.ai/</a>
CONSENSUS	<a href="https://consensus.app/">https://consensus.app/</a>
TRINKA	<a href="https://www.trinka.ai/">https://www.trinka.ai/</a>
SCHOLARCY	<a href="https://www.scholarcy.com/">https://www.scholarcy.com/</a>
TABLEAU	<a href="https://www.tableau.com/es-mx">https://www.tableau.com/es-mx</a>
OPENREAD	<a href="https://www.openread.academy">https://www.openread.academy</a>
CHATPDF	<a href="https://www.chatpdf.com">https://www.chatpdf.com</a>
JENNI.AI	<a href="https://jenni.ai">https://jenni.ai</a>
HEYGEN AI	<a href="https://www.heygen.com/">https://www.heygen.com/</a>

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