Lisa D Cook: Welcoming remarks - 5th Annual Conference on "Nontraditional Data, Machine Learning, and Natural Language Processing in Macroeconomics"

Welcoming remarks by Ms Lisa D Cook, Member of the Board of Governors of the Federal Reserve System, at the 5th Annual Conference on "Nontraditional Data, Machine Learning, and Natural Language Processing in Macroeconomics", Washington DC, 13 November 2023.

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Good morning, and welcome to the 5th annual conference on "Nontraditional Data, Machine Learning, and Natural Language Processing in Macroeconomics."[1] In a world with evolving data sources and significant advances in computing, it is important to constantly improve the conceptual framework that macroeconomic policymakers use to inform their critical decisions. This conference brings academics and practitioners together to think carefully about that framework and to push for advancements that could lead to improved economic outcomes.

The Federal Reserve hosted the inaugural edition of this gathering in 2019. Since then, the conference has evolved into an international partnership between academics, central banks, statistical agencies, and international organizations, with the Bank of Italy, the Bank of Canada, and the Swedish Riksbank hosting recent editions. The conference is also now jointly organized with the Central Bank Research Association and the Economics with Nontraditional Data and Analytical Tools program, which will further enhance its international scope.

We are grateful for the international and domestic partnerships that have emerged from this event and its predecessors. Today, we have about 90 in-person participants in attendance, representing 30 agencies and foreign central banks. As we continue to leverage new data and master emerging techniques, cooperation between those that provide the statistics, those that base policy upon them, and those that leverage the latest methodologies to understand them will be of paramount importance. Coordination between statistical agencies and policymaking institutions helps us achieve our shared goal-a better understanding of the economy.

From our own institutional perspective, the Federal Reserve uses a broad array of government and private-sector data to continually assess the state of the economy, inform our outlook for economic activity, and evaluate the risks around that outlook in pursuit of our dual mandate of maximum employment and stable prices. Not surprisingly, the emergence of nontraditional, high-frequency data was integral to better understanding the real-time effects of the COVID-19 pandemic and its economic consequences.[2] In the current environment, we employ a wide variety of tools and techniques to best distill useful signals related to inflation and the labor market from the vast array of information we have at our disposal. Of course, that includes the standard econometric toolkit. But we have also been increasingly relying on text analytics and machine learning.

As a result, this conference is highly relevant for us at the Federal Reserve, and likely those at other central banks as well. More timely and accurate information and improved methodological techniques permit Federal Reserve staff to produce better estimates of the evolving economic outlook, which allows policymakers to make more-informed decisions.

It is reassuring to know that the use of these nontraditional data and techniques for academic research and for policy is no longer in its infancy. The breadth and depth of studies captured in the agenda display the material inroads of these data and methods into economic research.

I am pleased to see colleagues and important contributors to this field on the conference program. Jed Kolko, Julapa Jagtiani, Arthur Turrell, and Hal Varian will discuss issues related to the opportunities and challenges for government and private-sector institutions in response to nontraditional data, machine learning, and artificial intelligence. Similarly, an academic panel with Jesus Fernandez-Villaverde, Sydney Ludvigson, Stephen Hansen, and Chiara Farronato will discuss how these data and methods have helped push the research frontier in subjects ranging from macroeconomic modeling to online markets.

As I noted in recent remarks, there has been a surge in excitement and trepidation about generative AI.[3] The range of social effects from this new technology could be broad. Jack Clark, one of the co-founders of Anthropic, will soon offer a keynote, and I am sure we are all looking forward to hearing his insights on the practical applications of this new AI technology and the potential use cases for economic research and policymaking. I am especially interested in seeing progress on "explainable AI," which can bridge the divide between the technical sphere and users. I am looking forward to any discussions on this area.

These generative AI tools could also have implications closer to home, as they may influence how we conduct central bank communications. There is a growing literature that uses natural language processing techniques to discern how communications by central bankers are perceived by the news media, and, in turn, how that influences financial markets. The presentations by Christopher Neely, Clara Vega, Xin Zhang, and Xu Zhang will discuss the state of the art on this subject, which is of material importance to us.

Social media has also affected the way we consume news and interact with each other. This medium is playing an increasingly important role in society and influencing macroeconomic and financial outcomes. As an example, Corbin Fox will present his work with coauthors tomorrow on the effect of social media on the bank runs that took place earlier this year.

On the methodological side, machine-learning techniques have also had a profound effect on how we think about modeling complex macroeconomic outcomes. This morning, Philippe Goulet Coulombe will discuss how neural networks help model the volatility of various macroeconomic variables, and Joël Marbet and Yucheng Yang will discuss how new methods are being used to solve models with heterogeneous agents, which are crucial to assess the distributional consequences of economic policies.

Advances in natural language processing and machine learning have also improved our ability to forecast and nowcast a wide range of macroeconomic and financial indicators, a topic that will also be covered in a few sessions tomorrow.

In closing, I hope you have many fruitful and informative conversations in this room and during breaks about the usefulness of nontraditional data and new techniques for macroeconomic analysis. I also encourage you to continue your discussions after the conference ends and to seek opportunities for joint work so that we can further develop our understanding of these exciting new tools.

Welcome to the Federal Reserve! I hope you enjoy the conference.

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[1] The views expressed here are my own and not necessarily those of my colleagues on the Federal Open Market Committee.

[2] See Tomaz Cajner, Laura J. Feiveson, Christopher J. Kurz, and Stacey Tevlin (2022), "Use of Nontraditional Data," in Wendy Edelberg, Louise Sheiner, and David Wessel, eds., *Recession Remedies: Lessons Learned from the U.S. Economic Policy Response to COVID-19* (Washington: Brookings Institution Press), pp. 315–46.

[3] See Lisa D. Cook (2023), "Generative AI, Productivity, the Labor Market, and Choice Behavior," speech delivered at the National Bureau of Economic Research Economics of Artificial Intelligence Conference, Toronto, Canada, September 22.