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C-FARE Holds Briefing on Public Data and Big Data

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The Council on Food, Agricultural and Resource Economics (C-FARE) hosted a congressional briefing on April 29 that explored the topic, "Increasing U.S. Agriculture's Competitive Edge: How Do Public Data and Big Data Fit?" The briefing was the inaugural Jon Brandt Policy Forum, an event series that will share economic research with private and public sector decision makers on issues important to agriculture, food, rural, environmental, and related societal issues. Senator Thad Cochran (R-MS) stopped in to thank the speakers and express his enthusiasm for the topics being discussed. He also spoke about the 2014 Farm Bill, which he praised as an example of bipartisanship and compromise, and which is already "doing its job."

J.B. Penn, Chief Economist for Deere and Company, delivered a keynote address that explored the connections between public-sector data and big data and the challenges faced by both realms. He observed that statistics are often taken for granted but are vital for decision making. Public sector data, which Penn characterized as a common good, faces continual pressures on its funding, which have already led some surveys to be scaled back. Penn remarked on the irony of these pressures becoming persistent at a time when technological advances make public data more valuable than ever.

On the big data side, Penn described what he termed "data-driven agriculture," or the technology-enabled use of data to assist in agricultural decision-making. Rather than being driven by one new technological breakthrough, data-driven agriculture represents the convergence of advances across many fields including computing, satellites, monitoring, sensors, and communications. Penn suggested that it has the potential to herald in a new era in agricultural production, on par with the transformations brought about by mechanization or hybridization. However, a number of issues remain to be worked through, including regulation, privacy and data security, rural broadband availability, ensuring data quality, and improving availability and compatibility of different systems

Perspectives on Agricultural Data

A panel, moderated by Sara Wyant, Agri-Pulse Communications, Inc., offered varying perspectives on the relationship between big data and public data. Mary Bohman, Administrator of the U.S. Department of Agriculture's (USDA) Economic Research Service (ERS), noted that ERS is both a producer and consumer of agriculture data. She explained that ERS is taking a "big tent" approach to new sources of data, which may include big data, data from other federal agencies, and data from the private sector. For example ERS is currently exploring the potentials of data from retail scanners and geo-referenced environmental data. As one of the principal federal statistical agencies, ERS's strengths lie in its ability to translate data into usable information for decision makers and to adapt measurements to a changing

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environment while maintaining their historical value. Bohman argued that private sector and big data are a useful tool, but a not a silver bullet; they require a lot of work to be made a representative sample, for instance. Resources are required to purchase the data, research it, work with it, and ensure that the end results are releasable.

Bob Young, of the American Farm Bureau Federation, observed that data collection and use are advancing faster than our ability to come to a consensus on how to handle the issues raised by these technologies. Some of these unresolved issues include: determining who owns the data produced, how to handle secondary and tertiary use of data, whether companies' "statements of principle" on data ownership are consistent with the contracts they make with farmers, who should set anonymization standards, whether data can be subpoenaed or requested through the *Freedom of Information Act* (FOIA), and how to handle the commercialization of data. Young suggested that USDA should play a role as a referee in some of these debates.

Mark Harris, Chair of the Agricultural Statistics Board of the National Agricultural Statistical Service (NASS), contrasted big data with the sorts of statistical reports produced by NASS. At its core, big data is simply a collection of records, he observed, whereas NASS reports must meet high standards of reliability and consistency and offer equal access. Utilizing big data presents a challenge; manipulating the data into something useable is resource intensive, the data may not be public, and different types of data may not equate.

Ted Crosbie, recently retired Distinguished Science Fellow at Monsanto, shared what he saw as the major knowledge gaps in the evolving realm of agricultural data. The first challenge is ensuring continued support for public data; the impacts of public data disappearing would be very serious, Crosbie explained. Second, the evolving world of data ownership represents uncharted territory. Crosbie explained that disputes can arise between landowners and renters over ownership of data produced on farmland. He also cautioned that data on its own is not intrinsically valuable; the value emerges from analysis. The final challenge to be overcome is rural data telemetry (the transmission of data to and from the farm). Rural bandwidth is currently hard to come by, but if we can find a way to make broadband access available in the field, exponentially more data could be collected. A related issue is that a number of competing private companies handle data telemetry, and their systems are incompatible, so the data is fragmented across different platforms. Crosbie suggested that the potential value of the private sector agreeing on one system and farmland being equipped with broadband would be tremendous.

Barry Goodwin, Distinguished Professor of Agricultural and Resource Economics at North Carolina State University, discussed big data analytics, which he explained are being driven by advances in computing power rather than progress in statistical analysis. He argued that innovation is inevitable and is outpacing our legal, ethical, and contractual practices. Analyses of agricultural data (including agronomic data, input usage, weather, logistics, and market signals) can serve descriptive, diagnostic, predictive, and prescriptive purposes. The government's role in all of this, Goodwin suggested, is to ensure privacy, provide data for public use, offer research funding, and regulate misuse of data.