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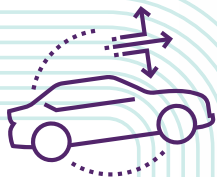
IMF Statistical Forum
WASHINGTON, D.C.

MEASURING ECONOMIC WELFARE IN THE DIGITAL AGE: WHAT AND HOW?



STATISTICS

Nov 19-20, 2018 | Washington, D.C. | IMF Headquarters



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The IMF Statistical Forum aims to facilitate global dialogue on cutting-edge issues in macroeconomic and financial statistics. It offers a platform to build support for statistical improvements from key stakeholders, including policymakers, data users, academics, compilers and data providers.

In its sixth year, the theme of the Forum is “Measuring Economic Welfare in the Digital Age: What and how?” The focus will be on the socio-economic implications of digitalization for welfare, a dimension that often escapes the standard macro-financial indicators, and what should be done to capture it in our statistics.

AGENDA

MONDAY

DAY 1

8:00 am **Registration and Continental Breakfast**

8:45 am **Welcoming Remarks, Louis Marc Ducharme**, Chief Statistician and Data Officer and Director, Statistics Department, IMF

8:50 am **Introduction to the Forum, David Lipton**, First Deputy Managing Director, IMF

9:15 am **SESSION I: FRAMEWORK FOR ECONOMIC WELFARE “BEYOND GDP”.
WHAT IS NEW IN THE DIGITAL AGE?**

Why do we need measures of welfare that is directly linked to economic progress but not captured by existing national accounts and price statistics? Has the need for indicators of whether growth has been inclusive become more urgent? What about household non-market production (e.g., housekeeping, child care, cooking and services of volunteers)? Has digitalization allowed welfare and non-market production to grow more than GDP?

Chair: **Louis Marc Ducharme**, Chief Statistician and Data Officer and Director, Statistics Department, IMF

Charles Hulten, (University of Maryland) with Leonard Nakamura, *Accounting for Growth in the Age of the Internet: The Importance of Output-Saving Technical Change*

Leonard Nakamura, (Federal Reserve Bank of Philadelphia) with Diane Coyle, *Towards a Framework for Time Use, Welfare and Household-centric Economic Measurement*

Lucas Chancel, (Paris School of Economics), with Facundo Alvaredo, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman, *The Elephant Curve of Global Inequality and Growth*

Questions from the audience

11:00 am **Coffee Break**

11:20 am

SESSION II: CURRENT STATE OF PLAY IN OFFICIAL STATISTICS FOR MEASURING ECONOMIC WELFARE

National Statistics Offices are already measuring some indicators of welfare beyond GDP and laying the groundwork to measure others. What are the recent successes and advances in developing supplementary measures of welfare? Given that there are limited resources, what are the priorities?

Chair: **Anil Arora**, Chief Statistician of Canada

Gabriel Quirós Romero and **Marshall Reinsdorf** with Jennifer Ribarsky (IMF Statistics Department), *Measuring Economic Welfare: State of Play and Priorities*

Rendra Achyunda, (Statistics Indonesia) with Silvia Arini, *Measuring Sustainable Economic Welfare in the Digital Era*

Peter Van de Ven, (OECD) *Measuring Economic Welfare: A Practical Agenda for the Present and the Future*

Questions from the audience

12:40 pm

Lunch

1:40 pm

SESSION III: WHAT IS THE VALUE OF UNPRICED SOFTWARE AND DATA? PLATFORMS AND MARKETS

Free software and free services supplied by platforms that collect users' data are prominent in the digital economy. Valuing open source software and the data of digital platforms at zero seems unsatisfactory even though in national accounts value is usually inferred from prices. On the downside, do platforms put a risk to growth and stability?.

Chair: **Kristina Kostial**, Deputy Director, IMF Strategy, Policy, and Review Department

Carol A. Robbins, (National Science Foundation (USA)), with Gizem Korkmaz, José Bayoán Santiago Calderón, Claire Kelling, Stephanie Shipp, and Sallie Keller, *Open Source Software as Intangible Capital: Measuring the Cost and Impact of Free Digital Tools*

Wendy Li, (U.S. Bureau of Economic Analysis), with Makoto Nirei, and Kazufumi Yamana, *Value of Data: There's no Such Thing as a Free Lunch in the Digital Economy*

Rana Foroohar, (Financial Times), *Platforms, Markets and Risks to Growth and Stability*

3:15 pm

Coffee Break

3:40 pm

SESSION IV: MEASURING WELFARE GROWTH: CASES OF NEW DIGITAL SERVICES AND PUBLIC GOODS

New and free digital products and unpriced public goods have important effects on welfare, but measuring these effects can be challenging. Can a conceptual framework and set of practical estimation techniques be identified for accounting for new and unpriced services in the digital and government sectors in measuring welfare growth and output growth?

Chair: **Jihad Azour**, Director, IMF Middle East and Central Asia Department

Kevin Fox, (UNSW Sydney), with Erik Brynjolfsson, Avinash Collis, Erwin Diewert, and Felix Eggers, *The Digital Economy, GDP and Consumer Welfare: Theory and Evidence*

Richard Heys, (Office for National Statistics (UK)) with Fred Foxtton, Joe Grice and James Lewis, *The Welfare Implications of Public Goods: Lessons from 10 years of Atkinson in the UK*

Questions from the audience

4:40 pm **Coffee Break**

5:00 pm **SESSION V: PANEL DISCUSSION:
FROM THEORY TO PRACTICE ACROSS DIVERSE COUNTRIES**

The panel will discuss what can be done, what are the priorities, and the challenges of national statistical offices to move beyond the current standard framework for macroeconomic statistics to develop indicators of economic welfare as discussed in this forum.

Chair: **Tao Zhang**, Deputy Managing Director, IMF

Feng Lyu, National Bureau of Statistics, China

Yemi Kale, Statistician General of the National Bureau of Statistics of Nigeria

Ian Goldin, University of Oxford

Questions from the audience

6:00 pm **Cocktail Reception, hosted by DMD Tao Zhang, IMF**

8:00 am **Continental Breakfast**

8:30 am **SESSION VI: WELFARE EFFECTS FROM E-COMMERCE AND FINTECH**

Online marketplaces and retailing have increased consumers' access to varieties and saved consumers time. Fintech has helped to make payment and credit services more widely available and lowered their costs. What are the welfare effects, and how can we measure them?

Chair: **Gian Maria Milesi-Ferretti**, Deputy Director,
IMF Research Department

Lizhi Liu, (Georgetown University) with Victor Couture, Benjamin Faber, and Yizhen Gu,
E-Commerce Integration and Economic Development: Evidence from China

Zhao Li Meng, (JD Finance Institute), *Opportunities and Risks to Economic Welfare from Fintech*

Peter J. Klenow, (Stanford University), with Liran Einav, Benjamin Klopach, Jonathan D. Levin,
Larry Levin, and Wayne Best, *Assessing the Gains from E-Commerce*

Questions from the audience

10:00 am **Coffee Break**

10:20 am **SESSION VII: IS ALL FOR THE GOOD IN THE DIGITAL AGE?**

Although digitalization has improved life in many ways, the digital age is also a time of growing polarization of income and wealth distributions, and of high levels of market monopolization in industries with strong network and scale effects. Technologies such as artificial intelligence could potentially have effects that exacerbate inequality and monopolization. Welfare can be negatively affected. What are the measurement implications, and what data are needed to support policy responses?

Chair: **Gerard Thomas Rice**, Director, IMF Communication Department

Ian Goldin, (University of Oxford), *Income and Development in a Digital Age*

Gillian Tett, (Financial Times), *From the Amazon (jungle) to Amazon (warehouses): How Anthropology Can Help Us to Rethink the Digital Economy*

Questions from the audience

11:35 am **Coffee Break**

12:00 pm **Keynote speech, Jim Balsillie**, Chair, Centre for International Governance Innovation, *Measuring Intangible Assets (IP & Data) for the Knowledge-Based and Data Driven Economy*

12:45 pm **ONE-ON-ONE DISCUSSION**

Jim Balsillie, Chair, Centre for International Governance Innovation

Christine Lagarde, Managing Director, IMF

Questions from the audience

1:30 pm **CLOSING REMARKS**

Louis Marc Ducharme, Chief Statistician and Data Officer, and Director, Statistics Department, IMF

FORUM ORGANIZING COMMITTEE

Gabriel Quirós Romero (*Lead*)

Nabila Akhazzan (*Coordinator*)

Ayan Qu

Brian Bowling

Djaima Costa

Haiyan Shi

Jennifer Ribarsky

Marco Marini

Marshall Reinsdorf

Sean Thomas

Susie Han

Tatiana Carandang

Theodore Bikoi

Thomas Alexander

Veronique Catany



SPEAKER BIOS

WELCOMING REMARKS

Louis Marc Ducharme



Louis Marc Ducharme was appointed Director of the IMF's Statistics Department on June 17, 2013 (his title was later changed to Chief Statistician and Data Officer, and Director). Before joining the IMF, he spent 30 years at Statistics Canada where he held various positions in the areas of economic statistics. His last position was Assistant Chief Statistician responsible for all economic statistics. During his career he provided extensive technical assistance to a number of countries in

Latin America on price indices and the operational organization of statistical activities. Between 2004 and 2010, he was the chair of the United Nations Voorburg Group on Service Statistics and contributed to the development of the work plan for the development of international standards for service statistics. He also taught macroeconomics at the Graduate School of Public and International Affairs at the University of Ottawa.

He has a D.Phil in Economics and science policy from the University of Sussex, United Kingdom, and both a master's and bachelor's degree in economics from the University of Montreal in Canada.

INTRODUCTORY REMARKS

David Lipton



Mr. David Lipton assumed the position of First Deputy Managing Director of the International Monetary Fund on September 1, 2011. On March 28, 2016, Mr. Lipton was reappointed for a second five-year term beginning September 1, 2016.

Before coming to the Fund, Mr. Lipton was Special Assistant to the President, and served as Senior Director for International Economic Affairs at the National Economic Council and National Security Council at the White House.

Previously, Lipton was a Managing Director at Citi, where he was Head of Global Country Risk Management. In that capacity, he chaired Citi's Country Risk Committee, worked for the Senior Risk Officer, and advised senior management on global risk issues.

Prior to joining Citi in May 2005, he spent five years at Moore Capital Management, a global hedge fund and, before that, a year at the Carnegie Endowment for International Peace.

Lipton served in the Clinton administration at the Treasury Department from 1993 to 1998. As Under Secretary of the Treasury for International Affairs—and before that as Assistant Secretary—Lipton helped lead the Treasury's response to the financial crisis in Asia and the effort to modernize the international financial architecture.

Before joining the Clinton administration, Lipton was a fellow at the Woodrow Wilson Center of Scholars.

From 1989 to 1992, he teamed up with Prof. Jeffrey Sachs then at Harvard University, working as economic advisers to the governments of Russia, Poland and Slovenia during their transitions to capitalism.

Lipton began his career with eight years on the staff of the International Monetary Fund, working on economic stabilization issues in emerging market and poor countries.

Lipton earned a Ph.D. and M.A. from Harvard University in 1982 and a B.A. from Wesleyan University in 1975.

Charles Hulten



Charles R. Hulten is Professor of Economics Emeritus at the University of Maryland, where he taught from 1985 to 2015. He is also a Research Associate of the National Bureau of Economic Research (1985 to the present) and Chairman of the Conference on Research in Income and Wealth (1985 to 2015). He is a member of the Advisory Committee of the Bureau of Economic Analysis. Before joining the University of Maryland, he was a Senior Research Associate at the Urban Institute and Assistant Professor of Economics at the Johns Hopkins University. He has an undergraduate degree in statistics from the University of California, Berkeley (1965), and a Ph.D. in

economics, also from the University of California, Berkeley (1973).

Research interests include productivity theory and analysis, and the empirical importance of innovation and capital formation in the process of economic growth and development. His research interests also include the measurement of economic depreciation and the impact of investments in public infrastructure capital on growth. More recent research includes work on the measurement of intangible capital and its effects on GDP and corporate wealth. Current and ongoing research projects include the impact of the digital revolution on U.S. GDP and economic welfare, as well as the study of the slowing trend in China's economy.

Leonard Nakamura



Leonard I. Nakamura is Emeritus Economist at the Research Department of the Federal Reserve Bank of Philadelphia. He has written numerous scholarly articles on real estate economics, banking, economic

measurement, and investment in intangible assets. He has given keynote addresses at conferences across the U.S. and the world, primarily on the measurement and economic impact of creativity. He is also on the editorial board of the Review of Income and Wealth.

Previously, Nakamura was Vice President and economist at the Federal Reserve Bank of Philadelphia, an economist at Citibank and a senior economic consultant for The Conference Board. He was previously a faculty member at Rutgers University, and has taught courses at Swarthmore College, Bryn Mawr, and the Wharton School. Nakamura received a B.A. in social sciences from Swarthmore College and an M.A. and a Ph.D. in economics from Princeton University.

Lucas Chancel



Lucas Chancel is an economist, with expertise in inequality and in environmental policy. He is Co-Director of the World Inequality Lab and of WID.world at the Paris School of Economics (PSE). He is also a

Senior Research Fellow at the Institute for Sustainable Development and International Relations (IDDRI) and Lecturer at Sciences Po.

Lucas has PhD in Economics (Ecole des Hautes Etudes en Sciences Sociales | PSL Research University), MSc in economics and public policy, Sciences Po Paris, Ecole Polytechnique, ENSAE, MSc in Sustainable Energy, Imperial College, London and, MSc 1 in European Political Economy, Sciences Po, London School of Economics.

SESSION II. CURRENT STATE OF PLAY IN OFFICIAL STATISTICS FOR MEASURING ECONOMIC WELFARE

Anil Arora



Anil Arora was appointed Chief Statistician of Canada in September 2016.

Mr. Arora has led significant transformational initiatives throughout his career, with experience and partnerships spanning all three levels of government, the private sector and international organizations, including the UN and the OECD. He has led projects on high-profile policy issues, legislative and regulatory reform, and overseen large national programs.

In 1988, Mr. Arora joined Statistics Canada where he served in several positions, including regional operations, corporate services and the redesign of the dissemination function. In 2000, he became Director of Census Management Office and subsequently the Director General responsible for all aspects of the 2006 Census. In this role, Mr. Arora led the most comprehensive redesign of the Program, including the introduction of an online questionnaire. Following the successful delivery of the 2006 Census he became the Assistant Chief Statistician of Social, Health and Labour Statistics from 2008 to 2010.

In 2009, Mr. Arora received the prestigious APEX Leadership Award in recognition of his exceptional leadership skills and management excellence.

In 2010, Mr. Arora joined Natural Resources Canada as Assistant Deputy Minister of the Minerals and Metals Sector, and in 2013 was appointed Assistant Deputy Minister of Science and Policy Integration. He moved to Health Canada in 2014, becoming Assistant Deputy Minister of Health Products and Food Branch and leading a complex organization overseeing regulation of food, drug and health products for Canada. He also served as chair of the International Coalition of Medicines Regulatory Authorities.

Mr. Arora attended the University of Alberta, where he earned a Bachelor of Science, followed by further education in computing science and management, including a graduate certificate in Advanced Public Sector Management at the University of Ottawa, and the Advanced Leadership Program at the Canada School of Public Service.

Gabriel Quirós Romero



Gabriel Quirós Romero is a Deputy Director at the IMF, Statistics Department. Gabriel leads the conceptual and research work in the department as well as the G-20 Data Gap Initiative; in the latter role Gabriel leads the work of the international statistical organizations through the Inter-Agency Group on Economic and Financial Statistics to overcome the main data gaps identified by the G-20 in the aftermath of the 2008 Great Recession. Before joining the IMF in May 2016, Gabriel worked at the European Central Bank, Frankfurt, in several positions, including Head of Division and Counsellor to the ECB Executive Board. Previously, Gabriel worked at the Central Bank of Spain in both the Economics and the Market Operations Departments. Gabriel started his career in the academia, teaching Economics in the universities of Valencia and Madrid. Gabriel gained a tenure of Associate Professor of Economics at the University of Valencia, in 1986. In his career, he has concentrated subsequently in three main areas: Macroeconomics, Monetary Policy and Financial Markets, and Statistics. Throughout his career Gabriel has contributed to many international initiatives and publications in those areas. Gabriel's main current research topics are on Digital Economy and Big Data.

Gabriel has been Chairperson of numerous international working groups and taskforces. Gabriel was awarded the Spanish National Graduation First Prize in Economics, in 1980. Gabriel holds a Doctorate in Economics by the College of Spain (Bologna, Italy) and a Master of Science in Economics by the London School of Economics (London, UK).

Marshall Reinsdorf



Marshall Reinsdorf has been a Senior Economist in the IMF Statistics Department since 2014. Currently, his work focuses on measuring the digital economy and other aspects of statistical methodology. Prior to joining the Statistics Department, he was chief of the national accounts research group at the US Bureau of Economic Analysis and did technical assistance missions on price statistics to many countries for the IMF. Marshall has also been an economic researcher at the US Federal Deposit Insurance Corporation and the US Bureau of Labor Statistics. He has published extensively on economic measurement methods and is president of the International Association for Research in Income and Wealth. He holds a Ph.D. in Economics from the University of Maryland.

Rendra Achyunda Anugrah Putra



Rendra Achyunda Anugrah Putra is a computational statistician at the Statistics Indonesia (BPS). He works principally in Directorate of Statistical Information System especially in Integration of Data

Processing. He plays a major role in designing master plan and developing systems and application of data processing for censuses and surveys. He is experienced in several socio-economic surveys, such as the cost of living survey, consumer price index survey and Consumer Tendency Survey. He is also an instructor of data processing training for several surveys that are conducted by Statistics Indonesia or collaborate in surveys with other government institution.

Peter Van de Ven



Peter van de Ven holds a Masters degree in macro-economics at the University of Tilburg, The Netherlands. In 1984, he started his career at Statistics Netherlands, in the area of National Accounts.

After various positions in the field of national accounts and government finance statistics, he was Director of National Accounts, from 2003 up to 2011. In 2011, he joined the Statistics Directorate of the OECD, as Head of National Accounts. In this position, he is responsible for (non-financial and

financial) national accounts, prices and Purchasing Power Parities (PPPs), environmental accounting and Composite Leading Indicators (CLIs).

Peter has always been heavily involved in international discussions on the enhancement of statistics more generally, and national accounts in particular. Amongst others, he was chair of the EU Committee on Monetary, Financial and Balance of Payments Statistics (CMFB), in 2009-2010, chair of the International Association for Research on Income and Wealth (IARIW), from August 2010 to August 2012, member of the Advisory Expert Group (AEG) on National Accounts from its start, and member of the UN Committee of Experts on Environmental-Economic Accounting. From September 2011 up to February 2014, he was also chair of the Inter Secretariat Working Group on National Accounts (ISWGNA), and from January 2014 up to February 2017, he was chair of the Inter Secretariat Working Group on Price Statistics (IWGPS). He is also highly involved in the work of the G-20 Data Gaps Initiative, in particular the compilation of institutional sector accounts, including distributional data for households. Peter was also the editor of the publication "Understanding Financial Accounts" (see <http://www.oecd.org/publications/understanding-financial-accounts-9789264281288-en.htm>) and the Special Issue van Review on Income and Wealth on the IARIW-OECD Conference on the Future of National Accounts (see <https://onlinelibrary.wiley.com/toc/14754991/63/s2>).

SESSION III. WHAT IS THE VALUE OF UNPRICED SOFTWARE AND DATA? PLATFORMS AND MARKETS

Kristina Kostial



Kristina Kostial is a Deputy Director in the IMF's Strategy, Policy, and Review Department.

She is currently overseeing the work on Fund governance, finance, and strategy, including on quota reform, IMFC relations, G20 work, and the work program. Prior to this position, she led the strategy unit in the department. Throughout her career in the IMF, Kristina has worked in various area and technical departments being involved in policy and operational work, including as a mission chief on Jordan, Lebanon, Rwanda, South Sudan, and Syria. She also worked during 2007-10 as the deputy head of the IMF's technical assistance office. Ms. Kostial holds a PhD from the European University Institute.

Carol A. Robbins



Dr. Carol Robbins is a senior economist in the Science and Engineering Indicators Program in NSF's National Center for Science and Engineering Statistics (NCSES). She is the lead author of a new

chapter for *Science and Engineering Indicators 2018*, on the topics of Invention, Knowledge Transfer, and Innovation. Her work at NCSES is focused on improving the data provided within the federal statistical system on the measurement of intangible investment and innovation. She also serves as an executive secretary to the National Science Board's Science and Engineering Policy Committee. Prior to joining NCSES, she worked for more than 10 years at the Bureau of Economic Analysis, where she played a leading role in the conceptual and empirical work behind the BEA-NSF R&D satellite account and subsequent inclusion of R&D as investment in U.S. national, industry, and regional economic accounts. Her areas of expertise include measurement and analysis of R&D expenditures, international flows of technology, patent statistics, innovation and regional economic activity. She has a B.A. in Economics from Bryn Mawr College and Ph.D. in Economics from the University of Delaware.

Wendy Li



Wendy C.Y. Li is a research economist at the U.S. Bureau of Economic Analysis. Her research focuses on R&D, intangible capital, depreciation of intangible capital, innovation, online platform, offshoring, and trade. She is currently the executive secretary of the Society of Government Economists. She received a Ph.D. in Economics from University of California, Los Angeles, a M.S. in Management Science and Engineering from Stanford University, a M.B.A. in Finance and Marketing from National Chengchi University, and a B.A. in Economics from National Taiwan University.

Rana Foroohar



Rana Foroohar is Global Business Columnist and an Associate Editor at the Financial Times. She is also CNN's global economic analyst.

Her book, "Makers and Takers: The Rise of Finance and the Fall of American Business" (Crown), about why the capital markets no longer support business, was shortlisted for the Financial Times McKinsey Book of the Year award in 2016.

Prior to joining the FT and CNN, Foroohar spent 6 years at TIME, as an assistant managing editor and economic columnist. She previously spent 13 years at Newsweek, as an economic and foreign affairs editor and a foreign correspondent covering Europe and the Middle East. During that time, she was awarded the German Marshall Fund's Peter Weitz Prize for transatlantic reporting. She has also received awards and fellowships from institutions such as the Johns Hopkins School of International Affairs and the East West Center. She is a life member of the Council on Foreign Relations.

Foroohar graduated in 1992 from Barnard College, Columbia University. She lives in Brooklyn with her husband, the author John Sedgwick, and her two children.

SESSION IV. MEASURING WELFARE GROWTH: CASES OF NEW DIGITAL SERVICES AND PUBLIC GOODS

Jihad Azour



Mr. Jihad Azour is the Director of the Middle East and Central Asia Department at the International Monetary Fund where he oversees the Fund's work in the Middle East, North Africa, Central Asia and

Caucasus.

Mr. Azour served as Lebanon's Finance Minister in 2005-08, during which time he coordinated the implementation of important reforms, including modernizing the country's tax and customs systems. Before and since his time as finance minister, he held a wide range of positions in the private sector, including McKinsey and Booz and Co. where he was a Vice-President and Senior Executive Advisor. Prior to joining the IMF in March 2017, he was a Managing Partner at investment firm Inventis Partners.

Mr. Azour holds a PhD in International Finance and a post-graduate degree in International Economics and Finance, both from the Institut d'Etudes Politiques de Paris. He also did research on emerging economies and their integration into the global economy as a post-doctoral fellow at Harvard. Mr. Azour has published several books and articles on economic and financial issues and taught extensively.

Kevin Fox



Kevin Fox is a Professor of Economics and Director, Centre for Applied Economic Research, at UNSW Sydney. He works primarily in the field of economic measurement, with a focus on productivity

and prices. His research on using scanner data has influenced the construction of price indexes in several countries, and his current research includes better measurement of the Digital Economy. He is a Fellow of the Academy of the Social Sciences in Australia, Fellow of the Society for Economic Measurement, and of the NBER-affiliated Conference on Research on Income and Wealth. He is also Treasurer and President-Elect of the International Association for Research on Income and Wealth. He has a career-long commitment to research-led public policy engagement, and is currently an Advisor to the Australian Treasury, member of the Australian Bureau of Statistics Methodology Advisory Committee and Productivity Measurement Reference Group, and Academic Representative for the Economic Data and Analysis Network Governance Committee, Australian Department of Industry, Innovation and Science.

Richard Heys



Richard Heys is the Deputy Chief Economist and Deputy Director for Economic Statistics Strategy, Research and Architecture at the Office for National Statistics UK. His responsibilities include the

improvement of productivity analysis and statistics as well as developing new data sources for economic statistics. Since joining the ONS in 2015, Richard has been very proactive in strengthening external partnerships including the ONS Fellows, Economic Experts Working Group and the Economic Statistics Centre of Excellence.

Previously, he has worked as a civil servant on roles for the Department of Education and the Ministry of Justice for over 10 years. He also worked as an economic consultant, advising various organizations including the UK Space Agency, the European Space Agency and the Department for Business, Innovation and Skills. He holds a Master's degree in Economics from the University College London as well as a BA in Economics from the University of Oxford.

SESSION V. PANEL DISCUSSION: FROM THEORY TO PRACTICE ACROSS DIVERSE COUNTRIES

Tao Zhang



Mr. Tao Zhang assumed the role of Deputy Managing Director at the IMF on August 22, 2016. He brings extensive international economic expertise and experience in policymaking, including with

international financial institutions, from his previous appointments as the Deputy Governor of the People's Bank of China and IMF's Executive Director for China from 2011 to 2015.

Prior to his position as the Deputy Governor, Mr. Zhang held a number of high-level positions in the People's Bank of China: Director-General of the Legal Affairs Department; Director-General of the International Department; and, Director-General of Financial Survey and Statistics Department. Mr. Zhang also worked at the World Bank from 1995 to 1997 and at the Asian Development Bank from 1997 to 2004.

Mr. Zhang holds an M.A. and Ph.D. in International Economics from the University of California, Santa Cruz, as well as a B.S. in Electrical Engineering and an M.S. in Finance from Tsinghua University in Beijing.

Feng Lyu



Mr. Feng Lyu, Director of Services Accounting Division of National Accounts Department of the NBS China, Senior Statistician. Mr. Lyu has been working in the NBS for more than 14 years since receiving

master's degree from Shandong University in 2004. His working experiences include GDP production accounting, regional GDP accounting, revision of Chinese System of National Accounts, historical GDP revision, seasonal adjustment, etc. Now, he is responsible for the satellite accounting of China, including new emerging economy accounting, culture industry accounting, tourism industry accounting and sports industry accounting. This year, he has led a research project of digital economy accounting, and made a trial estimation of China's digital economy value added for the first time in the NBS.

In 2011, Mr. Lyu worked for the UNSD as a fellow member for 6 months under a cooperation project between UNSD and NBS. During his stay in UNSD, his main job was to participate in the drafting of the 2008 SNA handbook-Financial Production, Flows and Stocks in the System of National Accounts. After he came back to the NBS, he continued to work as a member of the review group for the handbook. From 2013-2014, he has studied at Ritsumeikan Asia Pacific University (Japan) under a cooperation project between Chinese and Japanese government and received his second master's degree.

Dr. Yemi Kale



Dr. Yemi Kale, Statistician-General of the Federation and Chief Executive Officer of the National Bureau of Statistics, holds a B.Sc. in Economics (First class honours) from Addis Ababa University, Ethiopia, M.Sc. (with distinction) and Ph.D. in Economics from the London School of Economics and Political Science. An alumnus of the Harvard Kennedy School of Government, Dr. Kale worked as an equity analyst at Goldman Sachs and for several years as a quantitative analyst at Merrill Lynch Financial Services from where he became Group Head of Research and Investment Strategy at Investment Banking and Trust Company Plc. (now Stanbic IBTC Bank plc). Later, he held the position of Special Adviser to the Minister of Finance and subsequently, Technical Adviser to the Minister of National Planning. He was later

appointed Statistician General of the Federation and Chief Executive Officer of the Nigerian National Bureau of Statistics (NBS) in 2011 and became the first chief executive of the NBS to be reappointed for a second term when his tenure was renewed by President Buhari in 2016.

He is currently the chairman of the National Consultative Committee on Statistics (NCCS) and a member of the Economic Management Team (EMT) as well as the Central Bank of Nigeria's Monetary Policy Committee. He recently served on the Presidential Standing Committee on Job Creation, National Steering Committee on 2nd Peer Review of Nigeria. Dr. Kale is a fellow of the Royal Statistical Society (UK) and member of the World Economics Association, the Royal Economic Society (UK) and the Nigerian Statistical Association. He has written widely on fiscal and monetary policy, governance, finance and economic development in Africa.

Ian Goldin



Ian Goldin is the Oxford University Professor of Globalisation and Development, the Director of the Oxford Martin Programme on Technological and Economic Change and the founding Director of the Oxford Martin School. Ian previously was Vice President and Director of Policy at the World Bank, after serving as Chief Executive of the Development Bank of Southern Africa and Economic Advisor to President Nelson Mandela. Ian has served as Principal Economist at the EBRD and Director of Programmes at the OECD Development Centre. Ian has a BA (Hons) and BSc from the University of Cape Town, an MSc from the London School of Economics, and a MA and DPhil from the

University of Oxford. Ian has been knighted by the French Government and has published 21 books, including *Age of Discovery: Navigating the Storms of Our Second Renaissance*; *Development: A Very Short Introduction*; *The Butterfly Defect: How Globalisation Creates Systemic Risks and What to Do*; *Divided Nations: Why Global Governance is Failing and What Can Be Done*; *Exceptional People: How Migration Shaped our World and Will Define our Future*; and, *Is the Planet Full?* He has been a non-executive Director on numerous boards, the Senior Independent Director on CDC, is an honorary Trustee of Comic Relief and the Chair of CORE-Econ initiative to modernise the teaching of economics. His website is <https://iangoldin.org/> and @ian_goldin is his twitter address.

SESSION VI. WELFARE EFFECTS FROM E-COMMERCE AND FINTECH

Gian Maria Milesi-Ferretti



Gian Maria Milesi-Ferretti is Deputy Director in the Research Department of the International Monetary Fund. He supervises the department's work on multilateral surveillance,

including the World Economic Outlook and G-20 reports. He was previously a Deputy Director in the Western Hemisphere Department and IMF mission chief to the United States. He received his undergraduate degree in economics from Università di Roma La Sapienza in 1985 and his Ph.D. from Harvard in 1991. He joined the London School of Economics thereafter and moved to the IMF in 1993.

He has published extensively in refereed journals in the areas of international capital flows, international financial integration, current account sustainability, capital controls, taxation and growth, and political economy. Since 1996 he is a Research Fellow of the London-based Center for Economic Policy Research (CEPR).

Lizhi Liu



Lizhi (Liz) Liu is an Assistant Professor in the McDonough School of Business and a faculty affiliate of the Department of Government at Georgetown University. Lizhi's research interests

include political economy, e-commerce, Chinese politics and market reforms. Her research has been funded by various institutes including the Bill and Melinda Gates Foundation, Weiss Family Program Fund, the Clausen Center of UC-Berkeley, Stanford Center of International Development (SCID), and the Stanford Institute for Innovation in Developing Economies (SEED), among others. Lizhi was the Bradley Fellow and Huoshui Young Scholar of AliResearch.

Currently she is a guest researcher and the deputy director of the Alibaba Research Center for Rural Dynamics. Lizhi holds degrees in Political Science (PhD), Statistics (MS), and International Policy Studies (MA) from Stanford University and International Relations (LLB) from Renmin University of China.

Zhao Li Meng



Dr. Meng is a graduate of the National University of Singapore and has over ten years of research experiences in internet industry, fin-tech industry, telecommunication industry, and information systems.

Dr. Meng leads the project “Digital China Index”, which use billions of users’ real time data to measure the adoption of mobile internet in 31 provinces and 351 cities in China. She also leads “Internet +” project, which help many provinces and cities in China implement “Internet +” strategy.

In recent years, she has numerous research reports published in China Daily, the Harvard Business Review, and other notable publications. She has been featured in an exclusive CCTV interview (a top TV channel in China). Her book, Management Economics, has been used as teaching material by many of the top MBA programs. Prior to JD Finance Research Institute, Dr. Meng was the Chief Economist and vice dean of Tencent Research Institute, Deputy Secretary of Tencent Foundation. She also worked as the director of Deloitte TMT Center of Excellence, research leader of Accenture Institute of High Performance, chief researcher of Samsung Economics Research Institute, and assistant professor at the Renmin University of China.

Peter J. Klenow



Peter Klenow received his Ph.D. in Economics from Stanford University, where he is currently the Ralph Landau Professor of Economics and the Gordon and Betty Moore Fellow at the Stanford Institute

for Economic Policy Research (SIEPR). He is co-director of the National Bureau of Economic Research (NBER) program on Economic Growth and Fluctuations. He is a regular visiting scholar at the Federal Reserve Banks of Minneapolis and San Francisco, and a Special Sworn Status researcher at the U.S. Census Bureau. From 2000-2015 he had an ongoing Intergovernmental Personnel Assignment with the U.S. Bureau of Labor Statistics. He is currently co-editor of the American Economic Review: Insights, and was previously an associate editor for the Journal of Political Economy, Econometrica, the Quarterly Journal of Economics and the American Economic Review. He is a member of the American Academy of Arts and Sciences, and a fellow of the Econometric Society. Klenow specializes in macroeconomics, with emphasis on prices, productivity and economic growth.

Gerard Thomas Rice



Mr. Gerry Rice was appointed Director of the Communications Department (COM) at the International Monetary Fund in December 2011. Prior to his appointment, he served as Deputy Director for COM (2006-2011), formerly known as EXR.

As Director of the COM, Mr. Rice is responsible for IMF strategy on external engagements with media and the Fund's key stakeholders, including legislatures and parliaments, labor representatives, civil society groups, and academics, as well as the Fund's internal communications. The Director works closely with the Managing Director and senior Fund management on the communication of IMF operations, including policy and lending decisions.

Prior to joining the IMF, Mr. Rice had an illustrious 25-year career at the World Bank. Amongst other positions, he served at the World Bank as

Communications Director, where he managed all aspects of the World Bank's external and internal communications.

Over 1999-2000, Mr. Rice returned to his native Scotland to help with the international economic dimensions of the devolution project that was launched with the establishment of the first Scottish Parliament in 300 years. At that time, he published a book entitled "*Scotland's Global Opportunity*".

Mr. Rice earned his PhD in Modern History from Glasgow University and was a Kennedy Scholar at Harvard University. His PhD thesis on the establishment of the US Peace Corps was later published as *The Bold Experiment*. He is also a graduate of Harvard's Management Development Program and has served as Visiting Professor at Glasgow University.

Ian Goldin



Ian Goldin is the Oxford University Professor of Globalisation and Development, the Director of the Oxford Martin Programme on Technological and Economic Change and the founding Director of the Oxford Martin School. Ian previously was Vice President and Director of Policy at the World Bank, after serving as Chief Executive of the Development Bank of Southern Africa and Economic Advisor to President Nelson Mandela. Ian has served as Principal Economist at the EBRD and Director of Programmes at the OECD Development Centre. Ian has a BA (Hons) and BSc from the University of Cape Town, an MSc from the London School of Economics, and a MA and DPhil from the University of Oxford. Ian has been knighted by the French Government and has published 21 books, including *Age of Discovery: Navigating the Storms of Our Second Renaissance*; *Development: A Very Short Introduction*; *The Butterfly Defect: How Globalisation Creates Systemic Risks and What to Do*; *Divided Nations: Why Global Governance is Failing and What Can Be Done*; *Exceptional People: How Migration Shaped our World and Will Define our Future*; and *Is the Planet Full?* He has been a non-executive Director on numerous boards, the Senior Independent Director on CDC, is an honorary Trustee of Comic Relief and the Chair of CORE-Econ initiative to modernise the teaching of economics. His website is <https://iangoldin.org/> and @ian_goldin is his twitter address.

Gillian Tett



Gillian Tett serves as US managing editor, leading the FT's editorial operations in the region across all platforms. She writes weekly columns for the Financial Times, covering a range of economic, financial, political and social issues throughout the globe.

Tett's past roles at the FT have included US managing editor (2010-2012), assistant editor, capital markets editor, deputy editor of the Lex column, Tokyo bureau chief, and a reporter in Russia and Brussels.

Most recently in 2016, Tett received honorary degrees from the University of Exeter in July and the University of Miami in May. In 2015, Tett was given an honorary doctorate from Lancaster University in the UK, one of the top ten British universities. In 2014, she was named Columnist of the Year in the British Press Awards and was the first recipient of the Royal Anthropological Institute Marsh Award. Her other honors include a SABEW Award for best feature article (2012), President's Medal by the British Academy (2011), being recognized as Journalist of the Year (2009) and Business Journalist of the Year (2008) by the British Press Awards, and as Senior Financial Journalist of the Year (2007) by the Wincott Awards. In June 2009 her book *Fool's Gold* won Financial Book of the Year at the inaugural Spear's Book Awards.

Tett's latest book *The Silo Effect*, published by Simon & Schuster in September 2015, looks at the global economy and financial system through the lens of cultural anthropology.

KEYNOTE SPEECH

Jim Balsillie



Jim Balsillie's career is unique in Canadian business. He is a former Chairman and co-CEO of Research In Motion (BlackBerry), a Canadian technology company he scaled from an idea to \$20 billion in sales globally.

He is a co-founder of the Institute for New Economic Thinking based in New York City and the Council of Canadian Innovators (CCI) based in Toronto. He currently chairs the Board of Directors of Sustainable Development Technology Canada (SDTC) and CCI. He is also the founder of the Centre for International Governance Innovation, the Balsillie School of International Affairs and Arctic Research Foundation.

Mr. Balsillie was the only Canadian ever appointed to US Business Council and the sole private sector representative on the UN Secretary General's High Panel for Sustainability. He is the only Canadian member of the US Council on Competitiveness and an internationally renowned voice on innovation strategy, competitiveness and international economic policy.

His awards include: several honorary degrees, Mobile World Congress Lifetime Achievement Award, Time Magazine's World's 100 Most Influential People and three times Barron's list of "World's Top CEOs". In 2002, on the 50th anniversary of the founding of the U.S. National Security Agency, Jim was recognized by the NSA for his contributions to U.S. National Security.

Christine Lagarde



Born in Paris in 1956, Christine Lagarde completed high school in Le Havre and attended Holton Arms School in Bethesda (Maryland, USA). She then graduated from law school at University Paris X, and obtained a Master's degree from the Political Science Institute in Aix en Provence.

After being admitted as a lawyer to the Paris Bar, Christine Lagarde joined the international law firm of Baker & McKenzie as an associate, specializing in Labor, Anti-trust, and Mergers & Acquisitions. A member of the Executive Committee of the Firm in 1995, Christine Lagarde became the Chairman of the Global Executive Committee of Baker & McKenzie in 1999, and subsequently Chairman of the Global Strategic Committee in 2004.

Christine Lagarde joined the French government in June 2005 as Minister for Foreign Trade. After a brief stint as Minister for Agriculture and Fisheries, in June 2007 she became the first woman to hold

the post of Finance and Economy Minister of a G-7 country. From July to December 2008, she also chaired the ECOFIN Council, which brings together Economics and Finance Ministers of the European Union, and helped foster international policies related to financial supervision, regulation, and strengthening global economic governance. As Chairman of the G-20 when France took over its presidency for the year 2011, she set in motion a wide-ranging work agenda on the reform of the international monetary system.

On July 5, 2011, Christine Lagarde became the eleventh Managing Director of the IMF, and the first woman to hold that position. On February 19, 2016, the IMF Executive Board selected her to serve as IMF Managing Director for a second five-year term starting on July 5, 2016.

Christine Lagarde was named Officer in the Légion d'honneur in April 2012.

A former member of the French national team for synchronized swimming, Christine Lagarde is the mother of two sons.

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