Sessions for 2020 IARIW General Conference, Norway

1. "**Globalization, Trade in Services and Intangibles: Conceptual Challenges and Measurement Issues**" by Philippe Stauffer (FSO), Sanjiv Mahajan (ONS), Tanja Mucha (Destatis) and John Haas (STATEC)
2. "**The Potential and Challenges of Big Data and Other Alternative Data in Economic Measurement**" by Catherine Van Rompaey (Statistics Canada), Thesia I. Garner (BLS, US), and Mary O'Mahony (King's College, London)
3. "**Time Use, Welfare, and GDP**" by Diane Coyle (Cambridge University), Leonard Nakamura (Federal Reserve Bank of Philadelphia) and Kevin Fox (University of New South Wales, Australia)
4. "**Globalization and Inequality**" by Gaaitzen de Vries and Marcel Timmer (University of Groningen)
5. "**Economic Growth and Productivity with Special Emphasis on Developing Economies**" by Deb Kusum Das (Ramjas College, University of Delhi), Sabrina Wulff Pabilonia (BLS, United States), Wendy Li (BEA, United States), and Nick Oulton (LSE)
6. "**The Effects of Artificial Intelligence on Income, Education, and the Economy**" by Wendy Li (BEA,US) and Sabrina Wulff Pabilonia (BLS, U.S)
7. "**Online Platforms, Cloud Computing, the Value of Data and Intellectual Property**" by Daniel Ker (OECD), Wendy Li (BEA, US), Dylan Rassier (BEA, US), Catherine Van Rompaey (Statistics Canada)
8. "**Non-cognitive Skills: How are they Formed? What Are their Returns?** " by Anthony Lepinteur (University of Luxembourg)
9. "**Comparing Income and Price Levels and International Income Inequality**" by Robert Inklaar (University of Groningen) and Prasada Rao (University of Queensland)
10. "**Inequalities in Opportunity for Income, Education and Health**" by Nicholas Rohde (Griffith University)
11. "**Recent Experiences in Official and Academic Approaches to Measuring Poverty**" by Michael Wolfson (University of Ottawa) and Olga Cantó Sánchez (Universidad de Alcalá de Henares, Spain)
12. "**Measurement in the Real Estate Market**" by Robert Hill (University of Graz, Austria), Thesia Garner(BLS), Sofie Waltl (LISER), Alicia N. Rambaldi (The University of Queensland), W. Erwin Diewert (University of British Columbia), Tjeerd Jellema (European Central Bank), Chihiro Shimizu (Nihon University), Peter van de Ven (OECD), and Paulus Konjin (EuroStat)

1. **Globalization, Trade in Services and Intangibles: Conceptual Challenges and Measurement Issues**

Organizers: Philippe Stauffer (FSO), Sanjiv Mahajan (ONS), Tanja Mucha (Destatis), John Haas (STATEC).

In recent years, many countries experienced large swings in aggregates due to relocation of intangibles by multinational enterprises (MNEs). Some of these elements, like the well-known "Irish case", have been discussed in the international community. There is evidence that the array of factors is becoming more complex. For example Switzerland was recently confronted with large movements linked to international sports organizations and federations (FIFA, IOC, etc.), which represent a challenge due to their large and cyclical revenues generated by the organization of sports events. These revenues are getting large and volatile. Thus, official statistics are becoming more and more difficult to interpret for domestic policy purposes. Other countries are experiencing similar problems in flows related to the relocation of Intellectual property ownership. This session will examine globalization and trade in services and intangibles via case-studies and proposals for alternative treatments in theory and practice.

2. **The Potential and Challenges of Big Data and Other Alternative Data in Economic Measurement**

Organizers: Mary O'Mahony, King's College London and ESCoE), Catherine Van Rompaey (Statistics Canada), Thesia I. Garner (BLS, US).

Big data and other alternative data provide opportunities for greater insights, and improvements in the timeliness and granularity of economic statistics. Furthermore, increasing costs and reduced responses to surveys mean that alternative sources of data are needed.

Administrative data and business and consumer transactions data yield new sources for measuring prices, national accounts and economic well-being. Such data include tax and benefits records; trade data; scanner data from retail establishments; scanned data collected from households; financial data such as credit cards and information posted on-line by businesses. Also, satellite images might improve a diverse range of economic statistics. However, gaining access to administrative and big data, particularly from the private sector, and integrating them into economic statistics and measurement pose challenges to statistical offices. New theories and methods must be developed to integrate these new data sources into systems of economic measurement.

For this session, we seek submissions that develop novel applications of big data and other alternative data, as well as data science techniques, for the purposes of economic measurement. This can include how to integrate these data with existing measures, innovative uses that provide

information not available from standard sources, and development of new theories to address concerns not possible with representative agent models.

3. **Time Use, Welfare, and GDP**

Organizers: Diane Coyle (University of Cambridge, United Kingdom), Leonard Nakamura (Federal Reserve Bank of Philadelphia, United States) and Kevin Fox (University of New South Wales, Australia)

This session will draw together recent work on the rapid changes in time use due to digitalization. It will build on the nascent literature on time shifts across wage versus household production and across household production and leisure time (Coyle 2018), renewed interest and data in experienced utility and time use (Krueger et al 2009, Coyle and Nakamura 2018), and work that augments GDP with measures of welfare (Hulten and Nakamura 2017, 2018, Brynjolfsson, Collis, Diewert, Eggers and Fox, 2018).

Topics of interest for this session include:

- What is meant by economic progress and how should it be measured?
- Is it possible to obtain an alternative, holistic picture of the interaction between individuals and the economy to obtain a deeper understanding of economic progress?
- Digitalization and the blurring of boundaries between leisure, unpaid household contributions to economy activity, and paid work.
- The role of the Internet in opening up novel economic possibilities, for both businesses and voluntary household production.

4. **Globalization and Inequality**

Organizers: Gaaitzen de Vries and Marcel Timmer (University of Groningen)

Globalization has a major impact impact on income and wealth inequality both within and across countries. This can be through international trade of goods and services, as well as labour migration and cross-border flows of investment. For this session, we seek contributions that advance the conceptualization and measurement of globalization and its consequences for distributions of (factor) incomes and wealth. Potential contributions can be theoretical and empirical of nature, and both at the micro- (firm, individual, household) or macro-level (countries, regions and/or industries). We particularly invite contributions that bring together, and bridge, macro and micro perspectives on income and wealth inequality dynamics related to the forces of globalization.

5. **Economic Growth and Productivity with Special Emphasis on Developing Economies**

Organizers: Deb Kusum Das (Ramjas College, University of Delhi), Sabrina Wulff Pabilonia (U.S. Bureau of Labor Statistics, United States) and Wendy Li (Bureau of Labor Statistics, United States)

The slowdown in productivity growth in advanced economies continues to stimulate discussion and research on its causes and consequences. The question of whether there is really a slowdown or just increased mismeasurement is similarly debated in an era where novel (digital) products and innovations draw great public attention, and globalization and increasing importance of intangible capital make the location of production hard to pin down. At the same time, the last two decades have seen phenomenal growth in some developing economies, suggesting a possible productivity convergence. There is, however, little evidence on effects of the divergent productivity trends on several regions—Africa, South Asia,South America, East Asia and eastern Europe. The productivity decline in advanced countries could be a development challenge as many developing countries have strong economic and trading relations with the advanced regions. Understanding the slowdown remains central to the development agenda of many developing economies, as it affects jobs, health and human capital within their domestic frontier.

This session invites theoretical, methodological and applied papers that (1) address the measurement of productivity in our current digital, globalised world and the analysis of productivity trends in advanced economies and (2) examine and offer analytical insights on how developing and emerging market economies are facing the challenge of high growth in the context of global productivity slowdown. Finally, we especially welcome papers which offer the developing country perspectives from Africa, Latin America and Asia.

6. **The Effects of Artificial Intelligence on Income, Education, and the Economy**

Organizers: Wendy Li (U.S. Bureau of Economic Analysis) and Sabrina Wulff Pabilonia (U.S. Bureau of Labor Statistics)

Artificial intelligence (AI) is a new general purpose technology. We are interested in papers on the adoptions, applications, and/or impacts of AI on income, education, employment and production. For example, what will be the impact of AI on workers and the degree of its impact? Do we see the adoption rate of AI varying by industry and how does the variation affect aggregate as well as industry-level productivity? What role can government play in training students for jobs requiring AI-related skills or retraining workers? In addition, how is AI spurring innovation? Moreover, data is the key factor to develop good AI algorithms. Countries differ in their treatment of the ownership of personal data; examples are the EU's new data protection rule, the General Data Protection Regulation, and China's extreme openness of personal data. Additionally, the U.S. allows foreign firms to collect personal data in the U.S. but China prohibits it. How do the differences in data policy affect trade? Lastly, how can we

measure AI-related activity, such as robotics shipments, the intensity of roots per worker, and AI startups? Why are there differences across countries and will this lead to further inequality? What aggregate national-level metrics, such as the AI Index, can be used to track improvements in AI? How can we measure the deployment and use of AI and robotics in establishment-level surveys?

7. **Online Platforms, Cloud Computing, the Value of Data and Intellectual Property**

Organizers: Daniel Ker (The Organization for Economic Co-operation and Development), Wendy Li (U.S. Bureau of Economic Analysis), Dylan Rassier (U.S. Bureau of Economic Analysis), Catherine Van Rompaey (Statistics Canada)

Online platform companies, often with relatively few physical assets and important investments in intangibles, are transforming consumer behavior and reshaping competition across industries. Rapid development in the cloud computing services industry has enabled startups, including many online platform companies, to develop new business models and innovations and to accelerate the offline-to-online transition. New business models are increasingly data-driven, and the associated data collection increasingly exploited for other commercial purposes, such as targeted marketing and improved service delivery.

In the context of data-driven production processes, this session calls for papers on online platforms, cloud computing, intellectual property and the role and value of data in economic statistics. The scope of the session includes but is not limited to research that addresses the following questions: How does the rise of the cloud computing services industry affect the increase of startups, and do we see the variation of the increase across industries? How do we classify and measure the activities of online platforms and the related intangible assets and intellectual property? What role does data play in economic activity and how should it be measured and characterized in economic statistics? How do national policies affect the globalization of online platforms and their transformation across countries? What are the associated measurement implications?

8. **Non-Cognitive Skills: How Are They Formed? What Are Their Returns?**

Organizer: Anthony Lepinteur (University of Luxembourg)

Tthe literature in economicsis mainly focused on the determinants of cognitive skills. However, recent studies have shown that both cognitive and non-cognitive skills during childhood are strong predictors of adult outcomes such as labour market success (e.g. Heckman and Rubinstein, 2001; Heckman et al., 2006; Borghans et al., 2008; Kautz et al., 2014). The determinants of non-cognitive skills are the focus of a comparatively new field of research, with work underway to investigate the role of the family environment (e.g. family income, family size, sibling composition) as well as the impact of the school environment. Another strand of the literature builds on Heckman's work by assessing the impact of non-cognitive skills on adult outcomes such as the accumulation of income and wealth. This session seeks papers on the determinants and the returns of non-cognitive skills.

9. **Comparing Income and Price Levels and International Income Inequality**

Organizers: Robert Inklaar (University of Groningen) and Prasada Rao (University of Queensland)

Comparing countries by income level and tracking the degree of international income inequality are topics of enduring academic interest and of increasing statistical efforts. The global International Comparison Program (ICP) has become a permanent statistical program of the World Bank, and starting with the upcoming release of the results of the 2017 round of relative prices and income level estimates, ICP will publish estimates at an annual basis. These statistical initiatives will undoubtedly provide important new information and, like previous rounds, lead to new and pressing research questions. Broader questions about international income inequality remain important. For instance, what are the implications of new relative price and income estimates for comparing broader concepts of living standards and living standards at different parts of the income distribution? And what do the new estimates imply about relative productivity? Or about global, inter-personal income inequality?

Papers of a theoretical, methodological and applied nature are all very welcome for this session.

10. **Inequalities in Opportunity for Income, Education and Health**

Organizer: Nicholas Rohde – Griffith University.

Inequality of opportunity arises when a person's chances of economic success are in part determined by the birth lottery, or external factors in later life, rather than through their own personal efforts. This form of inequality is usually regarded as particularly socially corrosive – as well as being a source of injustice, it holds people back from realising their potential and from contributing fully to society.

A rapidly developing body of literature has focussed on identifying and measuring inequalities of in opportunity. Typically, this research uses microeconometric techniques to study the effects of an individual's background (e.g. their race, gender or the social class of their parents) on a monetary outcome such as their income or labor market earnings. Recent advances have pushed this literature in two important directions. Firstly, economists have noted that inequalities in opportunity are important in other domains besides income – in particular individuals have different abilities to access or make use of education, and also receive different returns to investments in their health. Thus, a spectrum of well-being indicators must be incorporated to properly study inequalities in opportunity. Secondly it is now apparent that individuals' inherited characteristics can interact with their abilities and motivation to exert effort. For example, children born into nurturing environments may develop a stronger sense of motivation, or may have genetic advantages that enhance their ability to work productively. The complications for measurement from these factors require exploration.

The goal of this session is to bring together recent work that presents either empirical or theoretical advances in the study of inequality of opportunity. Papers that address either broader baskets of welfare indicators, or issues related to the interaction between circumstances and efforts, would be especially welcome.

11. **Recent Experiences in Both Official and Academic Approaches to Measuring Poverty**

Organizers: Michael Wolfson (University of Ottawa) and Olga Cantó Sánchez (Universidad de Alcalá de Henares, Spain)

Countries vary widely in their approaches to official methods for measuring the prevalence and character of their poor populations. Some do not have official poverty lines. In those that do, the basic premises, definitions and methods vary substantially. There are also important differences between the official concepts and methods, and those most widely used in academic research. In the research literature, for example, there has been growing interest in multi-dimensional measures, and in measures with more complex underlying mathematical formulae.

The focus of this session would be on studies that review official poverty statistics in the light of the most widely used and / or the most interesting emerging measures in the research literature. A key question is to understand why there are disjunctions in some countries, and conjunctions in others. Papers are invited from both government – including national statistical agencies and policy departments – and from universities, and from collaborating authors from both settings. Among the aspects of poverty measurement that may be addressed are the way thresholds are set, which kind of "deprivation" is the main focus, how multiple deprivations are considered, the issue of aggregation versus a "dashboard" approach with multiple indicators, the extent to which thresholds are updated over time to reflect inflation or real per capita economic growth, and how the official measures are communicated to politicians, the media and to the general public.

12. Measurement in the Real Estate Market

Organizers: Robert Hill (University of Graz, Austria), Thesia Garner (BLS), Sofie Waltl (LISER), Alicia N. Rambaldi (The University of Queensland), W. Erwin Diewert (University of British Columbia), Tjeerd Jellema (European Central Bank), Chihiro Shimizu (Nihon University), Peter van de Ven (OECD), and Paulus Konjin (EuroStat).

Developments in the real estate market can have a large impact on the broader economy, affecting income, wealth, debt, inequality, and financial stability. Improved measurement of the real estate market is therefore important for fiscal and monetary policy, government regulation, financial markets, and households. This session will consider how to improve measurement of real estate prices and rentals over time or in cross-sectional comparisons and distributions, and related effects.

Some possible topics are:

1. Construction of price or rent indices for residential or commercial real estate
2. Owner-occupied housing in the CPI/GDP/interarea price comparisons
3. The impact of the real estate market on wealth, debt, inequality and/or financial stability
4. Detecting departures from equilibrium in the real estate market
5. Automated valuation in the real estate market
6. Taxation of real estate
7. Modelling the cross-section distribution of house prices or rents
8. Housing affordability
9. Spatial comparisons of house prices or rents