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INDUSTRIAL DEVELOPMENT ORGANIZATION

CCS-UN
Committee of the Chief Statisticians of the United Nations System

Second technical workshop on nowcasting in international organizations

25-26 May 2022, 14:00 – 17:00 (CET)

Virtual workshop (Zoom)

Connection link for Day 1

Connection link for Day 2

Programme

Day 1 - 25 May 2022

14:00 Opening remarks
Steve MacFeely, WHO
Fernando Cantu-Bazaldua, UNIDO

14:20 Nowcasting methodologies: Advances and practical resources
Daniel Hopp, UNCTAD
Abstract: This session will introduce and explore the LSTM neural network nowcasting methodology developed by UNCTAD, as well as the accompanying R and Python implementations. It will also examine a newly released UNCTAD research paper that benchmarks the performance of all common nowcasting methodologies. It will be shown how to use the open-source repository published alongside the paper to easily run any of the methodologies on your own dataset.

14:40 The Business Cycle clock: Coping with data uncertainty
Rosa Ruggeri Cannata, Eurostat
Abstract: The Eurostat Business Cycle Clock (BCC) is an online tool designed to represent the cyclical situation of the economy. Business cycle analysts have long studied fluctuations of the economy between periods of expansion and contraction. However, detecting turning points in the business cycle is not an easy task, which becomes more difficult during exceptional times. We will introduce some considerations on how the BCC performed during the COVID-19 pandemic. We will look first at the impact of the pandemic on its input variables, with some values several standard deviations away from usual ones, and then focus on the BCC cyclical indicators and on how well they performed. We will also show how the models underlying the BCC have been adapted to cope with those challenges, and the results obtained. Even if the impact of the Russian war of aggression against Ukraine on input data and on the BCC models is not yet clear, we will try to have a first look at this aspect too. Although the BCC currently indicates a positive outlook, signals have to be taken with some caution because of a higher volatility of data.

15:00 CO_2 emissions from air transport: A near-real-time global database for policy analysis

Daniel Clarke, OECD

Abstract: By moving goods and people over large distances, air transport facilitates international trade and tourism and thus contributes to economic growth and job creation. At the same time, it also comes with environmental challenges, largely related to air emissions and their impact on global warming. Air transport has been disproportionately negatively affected by the COVID-19 pandemic with associated reductions in air emissions. However, recent projections show that, in the absence of accelerated technological developments and more ambitious policy measures, aviation-related carbon dioxide (CO_2) emissions will grow again at a rapid pace after the pandemic. This paper describes a new OECD database providing near-real-time and global information on aviation-related CO_2 emissions, with allocations across countries following either the territory or the residence principle. This database provides a public good for both statistical measurement and environmental policy analysis. On the statistical front, it will facilitate the compilation of global Air Emission Accounts according to the System of Environmental Economic Accounting (SEEA), bring granular and timely information on a significant source of CO_2 emissions, and allow tracking their evolution during and after the COVID-19 pandemic. The comparison with official statistics that are available with a significant delay and at lower frequency demonstrates the accuracy of the OECD estimates. On the environmental policy front, it is expected that the OECD database will help monitor the impact of technological developments and policy measures to curb aviation-related CO_2 emissions in the future.

15:20 Consistent country-and regional-level nowcasts of industrial production

Fernando Cantu-Bazaldua, UNIDO

Abstract: UNIDO has a long tradition of publishing nowcasts of industrial activity, including key variables such as value added, output and employment, at a country-level, which are then aggregated to regional and global aggregates (bottom-up approach). Recent attempts at implementing other estimation methodologies have targeted the aggregates directly (top-down approach). This presentation will discuss some work-in-progress on applying a methodology for reconciling both approaches and producing consistent country- and regional-level nowcasts, focusing on automatic model selection and validation.

15:40 Full lifecycle of a nowcasting project: UNCTAD's work and experience

Daniel Hopp, UNCTAD

Abstract: This presentation will outline the process for producing a full nowcasting application from start to finish. A recent UNCTAD research paper on the feasibility of nowcasting SDG indicators will be used as an aid in examining the initial exploration, feasibility, and design phase, while UNCTAD's new, currently in development, interactive nowcasting website will be used to explore final presentation and dissemination methods and approaches.

16:00 Nowcasting global poverty

Daniel Gerszon Mahler, World Bank

Abstract: This presentation will compare different methods for nowcasting country-level poverty rates, including methods that apply statistical learning to large-scale country level data. The methods are evaluated by withholding measured poverty rates and determining how accurately the methods predict the held-out data. A simple approach that scales the last observed income distribution by a fraction of real GDP per capita growth performs nearly as well as models using statistical learning on 1,000+ variables. Hence, in this context the additional complexity introduced by

applying statistical learning techniques to a large set of variables yields only marginal improvements in accuracy.

16:20 Projecting extreme poverty by sex and age at the global, regional and country level

Ginette Azcona and Antra Bhatt, UN Women

Abstract: Measuring poverty accurately is a key element of development policy. The ability to identify the poorest in society enables governments and other actors to formulate interventions to reduce or alleviate poverty and to monitor and assess their effectiveness. Poverty has been conventionally measured using a monetary measure based on income or consumption and collected at the household level. Data are collected on the total consumption or total income of each household, not of each individual living in those households. Then, the household-level welfare estimate is attributed to all individuals living there. Due to the above shortcoming, household level measures alone may not reveal the extent to which women and men experience poverty differently on an individual level. Yet, even using the household level data, a life-cycle approach can help to reveal meaningful differences in the way women, men, girls and boys experience poverty. This is especially crucial in the context of the COVID-19 pandemic which has shown substantial gendered impacts. In our presentation, we will present key insights from joint work by UN Women, UNDP and the Pardee Center for International Futures on projecting poverty by sex and age at the global, regional and country level. The presentation, in addition to discussing the $1.90 poverty line, will discuss projections of poverty by sex at $3.20, $5.50 and national poverty lines which reveals interesting patterns.

16:40 Recent experiences with poverty nowcasting at the regional level

Xavier Mancero and Alvaro Fuentes, UN ECLAC

Abstract: ECLAC regularly produces poverty projections for Latin American countries based on microdata from surveys and GDP projected change. The presentation discusses alternatives to ECLAC standard methodology to make poverty forecasts, exploring strategies associated with machine learning techniques. Through a cross-validation exercise, the performance of different models between 2003 and 2019 for poverty and extreme poverty rates is evaluated. An additional analysis is performed to predict the poverty rates of particular population groups.

Day 2 - 26 May 2022

14:00 Using high-frequency data to track the impact of the COVID-19 pandemic on labour markets

Roger Gomis, ILO

Abstract: The impact of the COVID-19 pandemic resulted in unprecedented labour market disruption, triggering the most severe global crisis since records began. The speed and reach of the crisis rendered the gold-standard of labour market statistics, labour force survey data, unable to provide timely and informative data at the global level. At the same time, commonly used labour market indicators – such as employment or unemployment – were not adequate to track impact of the pandemic as they were greatly limited in terms of international comparability. In this context, the ILO nowcasting model was designed to produce estimates to track globally the disruption in the world of work caused by the pandemic. This required tackling the following challenges. First, fill data gaps in countries where regular labour statistics were not produced. Second, increase the timeliness of data in countries with regular labour statistics production. Third, focus on a labour market indicator with the largest degree of international comparability during the pandemic: hours worked.

The resulting estimates have become the backbone of the empirical strategy behind the *ILO Monitor: COVID-19 and the world of work* publication series.

14:20 Methods used for producing population estimates and projections

Vladimira Kantorova, UNPD

Abstract: The presentation will give an overview of the methods used by the Population Division of UNDESA to produce estimates and projections of total fertility, age-specific fertility rates and family planning indicators for all countries of the world, with special attention to current estimates and short-term projections. The presentation will include the application of methods for countries with varying levels of data availability and data from various sources.

14:40 Anticipating risk hotspots in the Sahel: The Sahel predictive analytics project

Jana Birner, UNHCR

Abstract: In support of the United Nations Integrated Strategy for the Sahel (UNISS) and the work of the UN Special Coordinator for Development in the Sahel, UNHCR is facilitating an inter-agency predictive analytics (PA) project in the Sahel to enhance coordination on data and strengthen preparedness for the growing and interconnected risks across the triple nexus (humanitarian, development, peace). The presentation will introduce the project process as a proof of concept next to some key challenges and findings.

15:00 UNHCR Nowcasting dashboard on cross-border forcibly displaced populations: Production and dissemination process

Giulia Del Panta, UNHCR

Abstract: This presentation will introduce the UNHCR Nowcasting dashboard which aims to publish monthly refugee and asylum-seeker estimates by country pair for every country. Official forced displacement figures are currently only published bi-annually with a lag of about six months. Having an up-to-date monthly estimate is therefore highly important to give an overview of the current situation and for effective decision-making. We will provide an overview of the project by introducing the different data sources and methodologies used for obtaining these estimates, which range from actual UNHCR registration data to estimates using traditional time series models and other models which are currently in progress.

15:20 Monitoring land use in OECD cities using satellite imagery and deep learning

Rudiger Ahrend, Paolo Veneri and Alexandre Banquet, OECD

Abstract: Over time, cities expand their physical footprint on land and new cities emerge. The shape of the built environment can affect several domains which are policy relevant, such as carbon emissions, housing affordability, infrastructure costs, and access to services. This study lays a methodological basis for the monitoring and consistent comparison of land use across OECD cities. An advanced form of deep learning, namely the U-Net model, is used to classify land cover and land use in EC-ESA satellite imagery for 2021. This complements conventional statistical data by monitoring large surfaces of land efficiently and in near real-time. In specific, following the availability of detailed data for model training, built-up areas in residential or business-related use are mapped and analysed for 687 European metropolitan areas. Recent urban expansion's speed and shape are explored, as well as the potential for assessing land use in cities beyond Europe.

15:40 Food price inflation nowcasting and monitoring

Christian Mongeau, FAO

Abstract: Timely knowledge on food price dynamics is an important part of the information set required by policy makers and analysts to monitor the health of an economy. The topic has gained much attention lately as inflationary pressures have been building over the last months all over the world driven by different factors. Given that food price indices compiled by NSOs are usually released with some delay, for filling the information need alternative data sources or modelling need to be employed. In light of this, FAO's Data Lab is contributing with: a) a model for nowcasting food price indices by using information that is available with much less delay (daily prices for a narrow subset of food items, exchange rates, oil prices, and a sentiment indicator from Twitter); b) a platform that aims to detect abnormal growth/acceleration in daily food prices on a basket composed of 14 commodities derived from a crowdsourcing platform. These tools are released on a public interactive dashboard that provide the information in a user-friendly yet powerful interface.

16:00 Estimating food price inflation from partial surveys

Bo Pieter Johannes Andree, World Bank

Abstract: The traditional consumer price index is often produced at an aggregate level, using data from few, highly urbanized, areas. As such, it poorly describes price trends in rural or poverty-stricken areas, where large populations may reside in fragile situations. Traditional price data collection also follows a deliberate sampling and measurement process that is not well suited for monitoring during crisis situations, when price stability may deteriorate rapidly. To gain real-time insights beyond what can be formally measured by traditional methods, this paper develops a machine-learning approach for imputation of ongoing subnational price surveys. The aim is to monitor inflation at the market level, relying only on incomplete and intermittent survey data. The capabilities are highlighted using WFP surveys in 25 fragile and conflict-affected countries where real-time monthly food price data are not publicly available from official sources. The results are made available as a data set that covers more than 1200 markets and 43 food types. The local statistics provide a new granular view on important inflation events, including the World Food Price Crisis of 2007–08 and the surge in global inflation following the 2020 pandemic. The paper finds that imputations often achieve accuracy similar to direct measurement of prices. The estimates may provide new opportunities to investigate local price dynamics in markets where prices are sensitive to localized shocks and traditional data are not available.

16:20 Predicting food insecurity globally: A deep dive into nowcasting, forecasting and demystification

Duccio Piovani, WFP

Abstract: Extreme weather events, economic shocks and conflict are three recognised key drivers of food insecurity. In this presentation we will outline our predictive model that takes as input data coming from these three dimensions to infer the prevalence of people with insufficient food consumption, based on the Food Consumption Score, and the prevalence of above crisis food-based coping, based on the reduced Coping Strategy Score. We will see how we used to nowcast and forecast food insecurity at a global scale.

16:40 Closing remarks

Fernando Cantu-Bazaldua, UNIDO