



## DIVERSITY CHALLENGES AND OPPORTUNITIES IN FINTECH

17 May, 11 a.m.

CONFERENCE:

## Methods and Models for Financial and Technological Inclusion

CHAIR: Prof. Francesco Palumbo, University of Naples Federico II



### 1 A first step towards financial inclusion: assessing the role of digital payments during the pandemic using single item latent trait response models

A. Di Iorio (Bank of Italy), M. Iannario (University of Naples Federico II), A. Nobili (Bank of Italy), G. Rocco (Bank of Italy)

In Italy, the COVID-19 pandemic has fostered the adoption of cashless instruments making economic activity more resilient to adverse shocks. This study investigates whether the increased use of more innovative instruments has favoured the reduction of gaps in payments behaviour of vulnerable groups. Indeed, previous survey data show a general lower adoption of alternative instruments in the centre-south, by women, young people and those with lower education. Data from a survey conducted by the European Central Bank in July 2020 to measure the impact of the pandemic on payment habits (IMPACT) have been analysed through the main statistical models used for the analysis of ordinal data. The assessment of cumulative link models describes the dependence of observed ordinal items on subjects' covariates by taking into account the latent trait (payment attitudes) of respondents.

### 2 The inclusion of explainable AI approaches for well-being – theory and applications

M. Hudec (University of Economics, Bratislava)

#### People

The first approach examines the problem with the financial literacy and how it influences quality of life expressed by emotional features. Moreover, the result is explained linguistically by short-quantified sentences of natural language.

#### Inclusion of AI approaches to diverse users' categories

Explainable AI should empower human beings and not replace them. People with no statistical or informatics background and lack of trustworthiness have problems with inclusion of AI in their tasks due to black box models and solutions explained statistically. These solutions are understandable for people having a certain level of statistical literacy. Next, explainable AI solutions should be less data and energy demanding.

### 3 A Bayesian network approach to statistical measuring and prediction of gender gaps

P. Vicard (Roma Tre University), L. Giammei (Sapienza University), F. Mecatti (Milano Bicocca University), F. Musella (Link Campus University, Rome), S. Romio (Milano Bicocca University)

Composite indicators are the most popular choice for synthesizing an overall complex usually latent phenomenon. They have been grown in popularity and are applied in many fields from social aspects to environment, passing by the gender equality analysis whose increasing interest is justified also by the Goal 5 of the UN Agenda 2030. As a gender index may be poor although easy to read, the potentiality to monitor the gender gap by using Bayesian networks (BNs) is discussed. This multivariate statistical tool is useful for describing variables relationships and their influence on the men-women distance. BNs are powerful tools for developing scenarios of sex-balancing and, thus, fruitful for decision-makers in orienting policies activated in different fields (i.e. economic, social and health) but simultaneously impacting on the gender gap. An example, carried out on Italian gender data at province-level is shown.

### 4 AI: why diversity matters for an inclusive future

R. Johri (Head of R&D at HSBC & Founder of London Women in Machine Learning)

AI and more specifically machine learning is now prevalent in almost every sector. Data by nature is biased and a machine learning model learns from patterns it finds in the data. If the data is biased, the model will be biased. Moreover, a study via AI Now indicated that female researcher representation in google and facebook is 10 and 15% respectively. This number drops lower when we deep dive into minority representations including people of color. There is a similarly low representation in academia. This implies that our models are being built in an environment that is not representative. Ironically you would not train a model without a representative sample, yet we accept a non representative environment. It is extremely important to incorporate views from diverse researchers, engineers and create a human centric feedback loop to ensure our data and hence models are not biased.

### 5 Financial knowledge and the use of old and new financial instruments

M. Albanese (University of Naples Federico II), V. Vitale (University of Naples Federico II)

The diffusion of the use of innovative instruments of payment and finance are one of the most important challenges of recent years, but a large part of population has difficulties due to lack of financial alphabetization. This study investigates the levels of financial knowledge in Italy considering the gaps in terms of gender, age and education analysing data from a survey conducted by the authors. A probability's investment in financial instruments index is calculated in terms of use of old and new financial instruments like crowdfunding, but the survey could be a starting point to analyse the role of economic, educational and cultural obstacles to the future financial challenges and the related development processes.