UNTANGLED

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FROM THE EDITORS

The past three months have been busy as we enter the second half of our three-year project and our research output begins to ramp up. During the past quarter, we published three papers:

— Maciej Albinowski and Piotr Lewandowski identified the demographic groups most vulnerable to technological disruption

— Robert Stehrer and Maryna Tverdostup examined the impact of ageing of Europe's society on the growth potential and automation of economies

— Cecilia Jona-Lasinio and Francesco Venturini looked at how companies' approaches to upskilling affect wages

We also held three events to share our insights with stakeholders and get their feedback. The fourth edition of the Virtual Expert Café attracted the highest number of participants so far. ZSI organised a workshop in Vienna focused on the use of data and research by policymakers, while LISER held a workshop on the tensions on European labour markets.

The pace will remain fast during the November-January quarter, with more papers in the pipeline, and our Midterm Conference. We'll be gathering in Brussels on 9 November for presentations of papers and a keynote address by Anna Salomons, Professor of Employment and Inequality at Utrecht University.

Upcoming events

9 November – UNTANGLED Conference: *Labour market effects and social impact of technological transformation, globalisation and demographic change*

15 November – next UNTANGLED Open Virtual Expert Café (2-3:30 pm CEST)

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UNTANGLED PAPER IDENTIFIES DEMOGRAPHIC GROUPS MOST VULNERABLE TO TECH DISRUPTION

Maciej Albinowski

Piotr Lewandowski

Robotisation and adoption of Information and Communication Technologies (ICT) affect demographic groups of European workers differently, with women over 60 and men aged 30-49 more prone to layoffs than other cohorts, a study by Maciej Albinowski and Piotr Lewandowski of Poland's Institute for Structural Research (IBS) finds.

Albinowski and Lewandowski analysed demographic and industry-level data in 14 European economies between 2010 and 2018, finding that robotisation and ICT have altered the demographic structure of employment. Among those benefitting from the digital revolution that's reshaping economies, young and middle-aged women (20-49 years old) are the biggest winners.

"We found that technology adoption has significant effects on the employment shares of various demographic groups, while the impact on wages is statistically insignificant," said Maciej Albinowski. "Investment in ICT played a visibly larger role than robot adoption in explaining changes in the demographic structure of employment in Europe."

The study's findings are important for calibrating public policies, including support for lifelong learning and the design of pension systems, as the digitalisation of European economies accelerates. Thus far little has been known about the impact of technological disruption on various gender and age groups, even as the value of ICT capital per worker in Europe increased by 91% from 2000 to 2019, while robot exposure, measured by the number of industrial robots per 1,000 workers, jumped by 140%.

The two types of technology affected demographic groups differently. ICT investments endangered the jobs of women employees over 60, while robots ended up taking jobs from male workers aged 30-49. "The negative effects of ICT investments on older women may be explained by lower IT literacy in this group," Lewandowski said. "Meanwhile, the negative employment effects of robot adoption are concentrated among men aged 20-49 performing routine manual tasks. Fortunately, the overall effects of technology adoption on men aged 20-29 are neutralised by the fact that they manage to find employment in other types of occupations."

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STEHRER AND TVERDOSTUP FIND THAT AGEING POPULATION SLOWS GROWTH IN THE EU

Robert Stehrer

Maryna Tverdostup

Robert Stehrer,
Maryna Tverdostup (2022).
Demography, capital accumulation and growth
(Deliverable 3.2)
Leuven: UNTANGLED Project
1001004776 – H2020.

Robert Stehrer and Maryna Tverdostup from the Vienna Institute for International Economic Studies (wiiw) found that Europe's ageing population is hampering economic growth. Despite the growing share of older workers, adoption of automation is not accelerating and may even be slowing down.

In their article "Demography, capital accumulation and growth" Stehrer and Tverdostup looked at how an ageing population affects the growth and automation of the economy in the EU27.

With a median age of 44.1, Europe is now the region with the oldest population in the world. Between 1995 and 2021 the share of people aged 50-64 rose substantially in the majority of the EU's 27 member states, with the highest increases registered in Austria, Belgium, Italy, the Netherlands, Poland and Spain. Europe will be challenged further by demographic changes over the next few decades, even under favourable assumptions about fertility and migration, and the economic effects are not yet fully understood.

"On the one hand, there is the theory that a demographic time bomb is ticking in Europe, leading to a period of slow growth," says Tverdostup. "On the other hand, there are also a number of studies which show that countries with a more rapidly ageing population grow faster and invest more in automation. We wanted to check which of these is true for the EU."

In their key findings the authors conclude that the relationship between population ageing and annual economic growth, measured by growth in GDP as well as GDP per capita, shows a weak negative correlation.

"This means that the ageing of the population in the EU could contribute to weaker growth," says Stehrer, pointing out that a similar negative relationship between the ageing of the labour force and economic growth has been found in several US states.

Robotisation depends on development, not ageing

While many propose the introduction of new technologies as a solution to the "silver tsunami" of ageing societies, the researchers found no significant link between robotisation and ageing.

"Our results suggest that the level of robotisation is largely dependent on the level of economic development and other absorptive capacities," says Stehrer.

The authors analysed national data, Eurostat figures on the capital stock by asset types, the EU Labour Force Survey and data from the International Federation of Robotics (IFR).

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EUROPEAN COMPANIES THAT INVEST IN TRAINING PAY MORE, UNTANGLED STUDY FINDS

Cecilia Jona-Lasinio

Francesco Venturini

Workers at European companies that provide training earn on average 9% more than their counterparts whose employers do not invest in upskilling their workforce, a recent paper by Cecilia Jona-Lasinio and Francesco Venturini finds. For IT employees the gap widens to 17%.

Jona-Lasinio and Venturini sought to measure the extent to which wage dispersion, where workers who do similar jobs are paid differently, is caused by firms' propensity to invest in upskilling. The authors analysed spending both on general training and on IT-specific courses.

"Training is seen as a tool for improving employees' opportunities and working conditions, and for increasing company productivity," Cecilia Jona-Lasinio said. "The need for training increases with the pace of technological change. With adoption of new technologies and acceleration of automation, formal education and experience are not sufficient, so new competencies are required."

While previous studies showed 16% of European workers are exposed to skill-displacing technological change, the paper from Jona-Lasinio and Venturini shows that the adverse effects of digitalisation can be also tackled at the company level through training policies.

The authors analysed data from 112,000 companies, employing between 10 and 999 workers, from 12 European countries, and found that 65% provided general training, with the highest proportions observed in France (84%) and the lowest in Bulgaria (26%). One-third of the companies also offered training in advanced digital skills, with the highest number in the UK, Norway, Germany and Denmark.

Data show that firms which invest in training tend to be bigger. The highest wages are paid by organisations where the spending on upskilling is the highest, and where the largest share of the workforce is trained. In terms of the type of training, i.e. internal or external offered by a specialised institution, the combination of both yields the best results, as it gives employees a mixture of company-specific skills and more general ones.

"On an individual level our study shows that people who want to earn more should be ready for lifelong learning, and search for employers who offer training," Francesco Venturini says. "Our study also suggests that the wage differences across firms might widen if laggard companies were unable to systematically organise training. We should keep this in mind when designing policies on innovation and support for companies."

UNTANGLED FOURTH VIRTUAL CAFÉ ATTRACTS SPEAKERS FROM EU, COLOMBIA, SOUTH AFRICA

More than 20 participants from three continents came together online to discuss labour-market issues during the fourth edition of the **UNTANGLED Open Virtual Expert Café** on 31 August. Attendees were drawn from academia, research institutes and social partners, including presentations from Colombia and South Africa.

The August meet-up hosted eight presentations:

Laurène Thil of HIVA KU Leuven discussed the challenges posed by the recent European Working Conditions Survey (EWCS) 2021 for Belgium, stemming from changes to the questionnaire that have made it impossible to analyse certain topics.

Irene Provvidenza of Wise Town, a division of TeamDev software house, presented a set of applications designed to enhance and optimise the use of city data. TeamDev's Thematic Dashboard allows users to monitor, analyse and visualise a wide range of topics such as migration, urbanisation and social and economic values.

Cristina Fernandez of Fedesarrollo presented research on measuring informality in the Colombian economy. Informal businesses and workers are found through combining business, household and structural surveys. While the informal sector contributes to the labour market considerably, stronger enforcement of labour market regulations reduces informality.
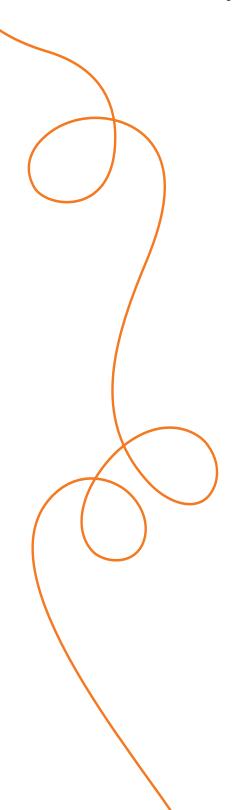
Myrielle Gonschor from the RWI – Leibniz Institute for Economic Research discussed a paper she wrote together with Ronald Bachmann, Piotr Lewandowski and Karol Madoń as part of UNTANGLED, showing that the rise in robot installations in European economies increased employment in 2004-2018. The study also found that while the general impact of robotisation on employment was positive in the EU, it was stronger in countries with lower labour costs.

Klavs Ciprikis of ESRI presented preliminary results of a case study performed within UNTANGLED, and focusing on the blockchain sector in Ireland. The study explores inequality, employment and skill patterns in this sector and finds a disconnect between the blockchain sector and higher education institutions, as well as a gender gap.

Caitlin Allen Whitehead at the University of Cape Town's Development Policy Research Unit presented preliminary results of a case study performed for UTANGLED on policies implemented in South Africa to stimulate the growth of the business sector, which is well positioned to create inclusive growth. With the right policies and training in place, the sector can absorb young, inexperienced workers and help them acquire transferable skills.

Andrés García Suaza, Universidad de Rosario, presented his research on the impact of immigration from Venezuela on the Colombian labour market, showing that 1.8 million migrant workers are mainly employed in the informal sector.

Isabelle Rabaud of Université d'Orléans presented tentative results of her study on migration and skill supply, carried out as part of UNTANGLED. On the supply side she found that migrants coming to the EU typically are in their late 30s and 40s, and do not have higher education; they mainly find employment in medium-skilled occupations. At the same time demand for digital skills, management skills and some soft skills is growing in Germany and France.

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UNTANGLED WORKSHOP SEEKS TO EASE USE OF RESEARCH BY POLICYMAKERS

Researchers and representatives of social partners and public bodies came together at the second UNTANGLED expert workshop for a candid discussion of their experiences commissioning, using and absorbing research, and recommending ways to make it easier for policymakers to use the results.

The event, titled *Data and knowledge sources: how to put the evidence to work?* and organised by ZSI, was held on 21 and 22 September in Vienna and began with a look into a series of research methodologies and examples to explore their practical uses. Fabrizio Pompei (University of Perugia) presented a study on "Managerial practices and their effects on productivity", and Irina Vana (Austrian National Public Health Institute) and Nela Šalamon (ZSI) discussed "Building and using indicators for gender equality" in the city of Vienna. Mikkel Barslund (KU Leuven) explored the expectations and limitations of mobilising expertise and experience to achieve societal impact through research.

Continuing the theme, Ursula Holtgrewe (ZSI) looked into the possibilities for comparative case studies to understand trends in various institutional and organisational contexts, and presented work in progress from Project UNTANGLED. Martina Pezer (Institute of Public Finance, Croatia), Maja Jandrić (University of Belgrade) and Robert Stehrer (wiiw) presented possible formats for interaction between policy and research. On the next day, Ann Coenen (FOD Werkgelegenheid, Arbeid en Sociale Overleeg, Belgium), Viktor Fleischer (Industriellenvereinigung, Austria), and Michael Soder (Austrian Chamber of Labour) reflected on public bodies' and social partners' experience in commissioning dedicated research and identifying relevant insights.

Constraints on such interactions lie in the specific logic of the research and policy systems. Specialisation directs researchers and scientific journals towards "depth" and details, while limited data availability and timeliness often hinder the development of solid evidence. On the policy side, while some research fills an immediate need (such as microsimulations of taxes and benefits), other data and analyses translate into recommendations less easily. Also, commissioning research or showcasing indicators may take the place of actual policy efforts: demonstrating awareness of inequalities, for example, is certainly easier than finding viable ways of redressing them. Participants agreed that open-ended and curiosity-driven research remains indispensable to provide the grounds on which more targeted and application-oriented research can build. Research formats that directly address policy and practice, such as policy evaluations, can also initiate further exchange beyond delivering immediate results.

Presenting "readable results" requires dedicated formats and some know-how, which in many academic contexts remains unrecognised. While media provide enormous support for disseminating results, they also exert their own pressures for quick, simple figures that may obscure more subtle insights. Informal contacts and meetings (or even "safe spaces") provide good opportunities to exchange views and mutually adjust expectations. Successful interactions require skilled people, dedicated spaces and times, and recognition of the specifics of various research, policy and practice fields, as well as patience and persistence.

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UNTANGLED WORKSHOP TACKLES MEGATRENDS AFFECTING EU LABOUR MARKETS

The **UNTANGLED Expert Workshop** *Tensions in Europe's labour market triggered by globalisation, digitalisation and demographic changes* brought together 25 labour economists, policymakers and labour market practitioners.
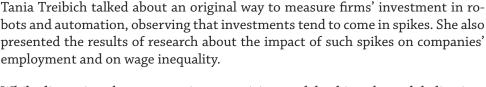

The event, organised by LISER on 20 October in Luxembourg City, featured presentations by Inès Baer, head of Data, Analytics and Labour Market Studies at the Luxembourg Employment Agency (ADEM); Ludivine Martin, a LISER researcher and member of the UNTANGLED project; and Tania Treibich of the University of Maastricht, a member of PILLARS and the GROWINPRO Project.

Inès Baer talked about the challenge ADEM faces, with a comparable number of job vacancies and job seekers at the same time. She also shared her thoughts on the difficulty of obtaining accurate data for both the supply and demand sides of the labour market, as well as from curriculum content at the local and the European level.

Ludivine Martin discussed the labour shortage identified on the German and Luxembourg labour markets. She also presented the risk of automation associated with occupations facing shortages, along with the skills that are currently in demand, and how the picture has evolved in recent years.

Tania Treibich talked about an original way to measure firms' investment in robots and automation, observing that investments tend to come in spikes. She also presented the results of research about the impact of such spikes on companies' employment and on wage inequality.

While discussing the presentations, participants delved into how globalisation, digitalisation and demographic changes are reshaping EU labour markets. They discussed countries' efforts to improve the quality of labour market data, and highlighted the challenge of getting accurate data at the European level.

Participants also discussed the specific context of the cross-border regions of Luxembourg that have shortages in similar occupations on their labour markets. These trends should result in increased competition between territories to attract talent in the coming years, and drive further efforts to train, reskill and upskill students, workers and job seekers.

Finally, participants shared ideas on existing actions and recommended policies to protect workers from the adverse impacts of the three megatrends.

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UNTANGLED PARTNERS

UNTANGLED is a three-year interdisciplinary Horizon 2020 research project that seeks to examine the interconnected trends of globalisation, demographic change and technological transformation, and their effects on labour markets in the European Union and beyond. By engaging a broad range of stakeholders, including companies and civil society organisations, we will develop practical policy proposals to help governments cushion the negative impacts of these trends and ensure their benefits are enjoyed fairly across regions and sectors.

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