UNTANGLED

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FROM THE EDITORS

Europe has settled into its summer lull, but the UNTANGLED team is moving full speed ahead. As we move into the final six months of the project, we're busy writing papers, summarising the results of research, crafting policy recommendations and planning our final conference, set for 23 November. The conference will provide an opportunity to discuss labour market effects and social impact of technological transformation, globalisation, and demographic change.

In this issue we feature a deep dive into our latest paper, which shows that legal migration is helping address labour shortages in many EU economies. Migrants are filling positions in sectors that struggle to attract and retain local workers, and taking jobs that are less desirable to natives.

Over the last three months we've also been busy discussing our results and engaging in dialogue with the labour market community during two events: our workshop on skills organised by IBS, and the seventh edition of the UNTANGLED Open Virtual Expert Café. We had also chance to meet in Leuven, to talk about the progress made during the past two years of our project, reflect on the outcomes achieved and to strategise for the final phase of the project – which includes preparing policy briefs and organising our final conference.

We round out this issue of the newsletter by reporting on the activities of our researchers who presented findings from UNTANGLED at scientific conferences in Europe and the US.

Upcoming events

21 September   Eighth UNTANGLED Open Virtual Expert Café (2:00-3:30 PM CET)

24 September   Deadline for abstract submission for UNTANGLED final conference

23 November   UNTANGLED final conference: Labour market effects and social impact of technological transformation, globalisation, and demographic change

NEW UNTANGLED PAPER SHOWS MIGRANTS PLAY CRUCIAL ROLE IN MITIGATING EU LABOUR SHORTAGES

Legal migrants from both European and non-European countries are helping address labour shortages in many EU economies, filling positions in sectors that struggle to attract and retain local workers, and taking jobs that are less desirable to natives, according to a recent paper by Ronald Bachmann, Aya Elewa, Ludivine Martin, Isabelle Rabaud, Bertrand Verheyden, and Marcel Voia.

"Migration and the Evolution of Skill Supply and Demand" finds that migrants take up positions in sectors such as agriculture, construction, trade, and healthcare, and often have different occupational preferences from native workers. The authors delve into the disparities in education and age between migrant and native workers. The study also sheds light on how migrants are distributed across various sectors, occupations, and regions.

"On a labour market profoundly impacted by digitalisation, globalisation, and demographic changes, it is vital to identify recent trends in labour shortages and recognise which skills are requested" says Ronald Bachman, a labour economist at the RWI – Leibniz Institute for Economic Research. "Our study suggests that migrants are more willing to undertake jobs that may be less desirable to native workers, thereby addressing labour gaps in these occupations."

The study reveals that migrants are unevenly distributed across sectors, occupations, and regions. They are predominantly employed in medium- and low-skilled occupations, while high-skilled roles are primarily filled by native workers. However, North American migrants exhibit higher representation in high-skilled occupations, setting them apart from other migrant groups. The study also shows that about two-thirds of migrants lack a tertiary degree, particularly those from emerging and developing countries.

In 2021, migrants from Asia and Latin America were found to be more actively involved in wholesale and retail trade, as well as other service-oriented industries; those from North America are more active in financial and professional services, as well as in public administration, education, and the health sector; while migrants from Europe and Africa are much more dispersed across all sectors.

Shortages by occupation: the challenges in Germany and France

Researchers zoomed in on the characteristics of migrant employees and demand for labour in France and Germany, the EU's two largest economies. Their analysis shows that migrants were not evenly distributed across these countries. In France, they were primarily found in the region surrounding Paris (Ile de France), while in Germany they were concentrated in four regions: Baden Württemberg, Bayern, Nordrhein Westfalen, and Hessen.

In 2021, five high-skilled occupations, primarily in science, technology, engineering, and math (STEM) fields, were identified as facing shortages in both countries. At the top of the list of undersupplied occupations in Germany were medical doctors, followed by database and network professionals. Meanwhile, food preparation assistants and cleaning workers were the most oversupplied. In France, mathematicians, actuaries and statisticians, and legal professionals were the high-skilled workers who were hardest to find, followed by other health professionals. The research found that in 2021, Germany faced a higher number of occupations in shortage than France. However, the German labour market was successfully addressing these shortages through the presence of migrant workers from EU and non-EU countries. "To address these shortages, it may be necessary to increase domestic education in these fields or attract more skilled migrants," Ludivine Martin, a researcher at the Luxembourg Institute of Socio-Economic Research said. "In terms of the evolution of skills demand, we observe that the similarity of requested skills over the period 2019 to 2021 is higher for high-skilled occupations than for medium-skilled ones."

The authors have some recommendations on how companies can overcome the current labour shortages. They propose strategies such as training and education programmes for existing employees, and partnerships with educational institutions to develop a skilled workforce pipeline. Meanwhile, policymakers should address the challenges faced by highly-skilled non-European migrants in having their qualifications acknowledged in the EU.

Ronald Bachmann, Aya Elewa, Ludivine Martin, Isabelle Rabaud, Bertrand Verheyden & Marcel Voia (2023). *"Migration and the evolution of skill supply and demand"* (Deliverable 3.3). Leuven: UNTANGLED project 1001004776 – H2020.

UNTANGLED SEEKS PAPERS FOR ITS NOVEMBER CONFERENCE

Key Dates

24 September, 2023
Deadline for abstract
submission

6 October, 2023
Notification of accepted
papers

20 October, 2023
Registration deadline
for presenting attendees

12 November, 2023
Registration deadline
for all attendees

23 November, 2023
Conference at KU Leuven

Registration is live at this *link*

On 23 November the UNTANGLED project is holding its final conference, "Labour market effects and social impact of technological transformation, globalisation, and demographic change". The event will take place at Leuven on the Campus of Social Sciences, and we are accepting submissions of papers until 24 September.

Full papers or extended abstracts can be sent to Ilse Tobback at: **ilse.tobback@kuleuven.be.**

We invite contributions addressing the implications of technological transformation, globalisation, and demographic change on:

- Heterogeneous impacts of megatrends on labor market outcomes
- Work-related migration and skills
- Education and future skill needs, productivity growth
- (Regional / Rural-urban / EU) convergence/divergence, EU economic governance
- Developments in trade and global value chains
- Technology and human capital
- (Wage / regional) inequality
- Welfare states and social policy

Covering the combined impact of two or more driving forces – technological transformation, globalisation, and demographic change – is considered an added value.

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UNTANGLED WORKSHOP ON SKILLS FEATURES 10 PAPERS

A one-day UNTANGLED workshop brought together 23 labour market economists from European universities and research institutes to discuss and reflect on 10 papers on skill changes and the value of skills.

The event, organised on 15 June in Warsaw by UNTANGLED partner the Institute for Structural Research (IBS), consisted of four sessions devoted to the impact of technology on skills; worker flows; skills; and inequality. During the breaks, participants engaged in discussion with the authors of four posters: Honorata Bogusz (UW), Agnieszka Kasperska (UW), Zuzanna Kowalik (IBS), and Karol Madoń (IBS).

The day focused on technological progress and skills, and started with a presentation by **Terry Gregory** (LISER), on *"Task Shifts in the Fourth Industrial Revolution – Firm-Level Evidence"* (paper with Melanie Arntz, Sabrina Genz, Florian Lehmer, and Ulrich Zierahn-Weilage). The authors show that the decline of routine tasks in Germany is not linked to technology adoption within firms. Instead, de-routinisation can be explained by the scale and composition effects of firms adopting cutting-edge technologies such as artificial intelligence.

Myrielle Gonschor (RWI) presented a paper written with Ronald Bachmann, *"Technological Progress, Occupational Structure, and Gender Gaps in the German Labour Market"*. She showed that in recent decades, women have increasingly entered non-routine cognitive and interactive occupations at the higher end of the wage distribution scale. However, while the gender gap has narrowed in the median and lower percentiles, it did not in the best-paying occupations.

Anna Matysiak (Labfam, UW) also presented a paper focused on gender, *"Digitalisation, Changing Demand for Skills and the Gender Inequality in Earnings"*, written with Wojciech Hardy and Lucas van der Velde. The authors find that in European countries, women are overrepresented in occupations that require social outward tasks, but they benefit from a wage premium in occupations that involve social inward tasks.

Femke Cnossen (University of Groningen) presented her paper *"Learning the Right Skill: Vocational Curricula and Returns to Skill"*, co-written with Matloob Piracha and Guy Tchuente. She assessed to what extent basic and cross-functional skills are incorporated in Dutch vocational curricula and whether these skills can account for the wage differences among graduates. The paper shows that social and resource management skills are positively associated with earnings, especially in environments that require coordination, such as management-oriented occupations, large firms, and high-skilled service sectors. Meanwhile, basic content and technical skills are more important in low-skill services.

Several speakers discussed the impacts of the COVID-19 pandemic. **Duncan Roth** (IAB) presented the paper *"The Pandemic Push: Digital Technologies and Workforce Adjustments"*, co-authored with Christina Gathmann, Christian Kagerl, and Laura Pohlan. He argued that the pandemic triggered the diffusion of digital technologies in Germany. About two in every three firms invested in digital technologies to improve decentralised communication, management and coordination, as well as training. These investments shielded workers against the impact of the pandemic, as investing firms relied less on short-term work, and laid off fewer marginal workers. Male, younger and medium-skilled workers benefitted the most from the insurance effect of digital investments.

Sarra Ben Yahmed (ZEW) talked about how the pandemic influenced occupational mobility in Germany (paper with Melanie Arntz, Eduard Brüll, and Michael Stops). The initial findings indicated that workers shifted towards occupations of lower working quality, i.e. to less satisfying, more stressful, and more physically demanding jobs with longer working hours.

> UNTANGLED WORKSHOP ON SKILLS FEATURES 10 PAPERS

Two papers focused on worker flows in the context of decarbonisation. **Florian Lehmer** (IAB) spoke on *"Worker Flows in the Low Carbon Transition"* (study with Ronald Bachmann, Markus Janser, and Christina Vonnahme). He showed that in Germany, the growth rate of green occupations surpasses that of brown occupations, and brown occupations experienced a decline during the Covid pandemic. However, direct transitions from brown to green occupations are relatively limited, and worker upskilling from brown jobs could pose a significant challenge. **Ilse Tobback** (HIVA) studied a similar topic in Belgium (paper with Mikkel Barslund). Their research shows that the share of employees in brown occupations is declining, with some workers transferring to green occupations which offer earnings premiums.

Finally, two presentations discussed inequality. **Cristiano Perugini** (University of Perugia) presented a paper titled: *"Which Employers Share Rents? A Firm-level Analysis for Japan"* written with Kyoji Fukao, Kenta Ikeuchi, and Fabrizio Pompei. They demonstrated that rent-sharing in Japan is higher in companies with higher intensity of intangibles and digitalisation. However, it mainly benefits highly educated employees and hence contributes to wage polarisation. **Piotr Lewandowski** (IBS) talked about the impact of automation on household income inequality in Europe, an UNTANGLED study conducted with Karina Doorley, Jan Gromadzki, Dora Tuda, and Philippe Van Kerm. They find that robotisation widens wage inequality, but has a negligible impact on household disposable income inequality, as risk sharing in households and redistribution by tax-benefit systems cushion the negative effects of automation.

SEVENTH UNTANGLED EXPERT CAFÉ HOSTS FIVE PRESENTATIONS

The seventh edition of the UNTANGLED Open Virtual Expert Café brought together nine participants who discussed labour market and digitalisation issues, presented their work and shared information about new projects. The 25 May meet-up, organised by ZSI, hosted five presentations.

Francesco Venturini (University of Perugia) presented his paper titled "Unsliceing the Pie: AI Innovation and Labour Share in European Regions." The study investigated the impact of AI patents on the distribution of income between capital and labour, finding that in regions specialising in AI development, labour's share decreases. This supports the notion of a decoupling effect caused by AI. Additionally, Venturini found that a higher number of AI patents in a region has a negative impact on low-skilled workers' share of income. The presentation highlighted that the negative effects of AI are similar to those of other innovations.

Michela Vecchi (Kingston University) presented *a paper* co-authored with Mary O'Mahony and Catherine Robinson, examining the decline in the wage premium for highly skilled workers in Europe. Their findings indicate that both demand and supply factors contribute to the shrinking of wage premiums. On the demand side, the research shows that the association of technology and high skills has weakened, especially following the financial crisis. Additionally, they found the presence of intangible assets to be negatively correlated with the wage premium for skilled workers. On the supply side, the increasing number of workers with tertiary-level education has pushed down the wages of highly skilled individuals relative to those with lower skills.

Fynn Thjorben Semken (ÖSB Social Innovation) presented a research project titled *Health Sensor for Digital Work*, funded by the Austrian Chamber of Labour. This project aims to examine the effects on employee health of digital technologies that companies use to organise work. The primary objective is to develop a prototype tool that can assist companies in assessing whether health issues experienced by employees are linked to the extensive use of digital technologies in their professional lives. The project also aims to identify solutions to mitigate negative impacts such as digital stress. It involves companies, a tech provider and a consultancy. Final results can be expected in spring 2024.

Ludivine Martin (LISER) discussed her collaborative research with Kamil Filipek and Thiago Brant, which examines whether current typologies of digital skills are adequate to capture the evolving nature of work and to single out digital skills that are the most sought-after by companies. They analyse online job vacancies from Lightcast (formerly Burning Glass Technologies Europe) for 2021 from France, Germany, Belgium, and Luxembourg.

Stella Wolter (ZSI) presented *The Lost Millennials Project*, funded by an EEA and Norway Grant, which aims to enhance the integration of 25+ NEETs, i.e. people aged from 25 to 29 who are neither in employment, education or training, into the labour market or into learning. One of the ways of providing better support for them is to improve the evaluation practices of labour market initiatives targeting this group. Generally, the group of NEETs is found to be composed of different groups in different countries, and structured by gender (women and parents in unpaid care work); disability and other health conditions; the rural/urban divide; (lack of) education; and precarious employment opportunities in their respective labour markets. The project also aims to learn more about the effects of education and/or employment initiatives and to enhance stakeholders' capacity to carry out impact studies.

UNTANGLED RESEARCHERS DISCUSS PROJECT PROGRESS AND NEXT STEPS

The UNTANGLED researchers convened on May 17 in Leuven, Belgium, to discuss and summarise the progress made during the past two years of our project. The meeting provided an opportunity to reflect on the achieved outcomes and to strategise for the final phase of the project.

Mikkel Barslund (KU Leuven) provided a synthesis of the results from papers and reports that have been written thus far. The preliminary conclusion from our research demonstrates that digitalisation and robotisation do not seem to harm labour markets and globalisation does not pose a threat to jobs. However, it has become apparent that demographic changes present significant challenges within the three megatrends examined by UNTANGLED.

Next, we delved into the preliminary results of scenario projections, exploring how technological advances and globalisation influence inequalities, skills, and labour market outcomes. **Roberta Capello** and **Andrea Caragliu** (Politecnico di Milano) shared the results of simulating national and regional growth trajectories and labour market outcomes using the MASST model. **Michał Burzyński** (LISER) presented results based on a different model to simulate the matching of skills to tasks amid parallel changes in technology, globalisation, and skills.

To ensure that our research findings reach the appropriate audience, we divided into groups and discussed the approach to crafting policy briefs, which will be developed over the next few months. Each session focused on a specific brief, covering topics such as strengthening job creation and improving job quality; upgrading skills and fostering lifelong learning; tackling growing inequalities; supporting migration and labour mobility; as well as inclusive policies.

Lastly, we set the date for our final conference, which will take place on November 23. This event will serve as a platform to disseminate our findings, engage in discussions, and collaborate with experts from various fields. The event brought together 18 participants from 10 partner institutions.

UNTANGLED RESEARCH AT CONFERENCES

UNTANGLED PAPER PRESENTED AT SOLE CONFERENCE

Jan Gromadzki, a researcher from the UNTANGLED project at the Institute for Structural Research (IBS), presented a paper titled "Automation and Income Inequality in Europe" at the Society of Labor Economists (SOLE) Conference in Philadelphia on 12-13 May.

Jan Gromadzki

Co-authored with Piotr Lewandowski (IBS), Karina Doorley (ESRI), Philippe Van Kerm (LISER), and Dora Tuda (ESRI), the paper sheds light on the impact of robot adoption on wages and employment in Europe between 2006 and 2018. The findings indicate a significant reduction in both wages and employment due to automation. While wage inequality widened, household income inequality was minimally affected. Additionally, the UNTANGLED researchers discovered that risk sharing within households and redistribution measures helped mitigate the impact of automation.

During the conference, Piotr Lewandowski also presented an *experimental study* conducted in collaboration with Katarzyna Lipowska and Mateusz Smoter, which explored the mismatch between workers and employers regarding their preferences for remote work.

The Annual SOLE Conference showcased more than 300 papers covering various aspects of labour economics.

LUDIVINE MARTIN PRESENTS UNTANGLED RESEARCH IN STRASBOURG

Ludivine Martin of the Luxembourg Institute of Socio-Economic Research (LISER) presented an UNTANGLED paper titled "Gender differences in job tasks and skill mismatch: A European analysis" at the 39th Applied Microeconomics Days (Journées de Microéconomie Appliquée, JMA) in Strasbourg on 8-9 June.

Ludivine Martin

The paper, part of an UNTANGLED report titled: *Gender gaps in skills, tasks, and employment outcomes*, uses worker-level data from the European Working Condition Survey (EWCS) to examine gender gaps in tasks, both between and within occupations. The analysis reveals that from 2005 to 2015 over-skilling decreased, while under-skilling increased, for both men and women. These changes can be attributed in part to the expansion of non-routine cognitive occupations (analytical and interpersonal) driven by digitalisation. Furthermore, the study demonstrates that women who perform non-routine cognitive tasks, including analytical and interpersonal tasks, are more likely to be under-skilled and less likely to be over-skilled. In contrast, among men these patterns are observed primarily in non-routine analytical tasks.

Laetitia Hauret, Ludivine Martin, Piotr Lewandowski, Marta Palczyńska & Nela Šalamon (2023). "*Migration and the evolution of skill supply and demand*"(Deliverable 3.3). Leuven: UNTANGLED project 1001004776 – H2020.

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UNTANGLED RESEARCHERS CO-EDIT A BOOK ON EARNINGS INEQUALITY IN DEVELOPING ECONOMIES

UNTANGLED researchers contributed to a book on the main drivers of earnings inequality in low- and middle-income countries. The publication fills a gap in the literature on labour-market polarisation in developing countries by studying the role of skills, institutions, and occupational tasks in the evolution of earnings inequality.

Piotr Lewandowski

Kunal Sen

Tasks, Skills, and Institutions: The Changing Nature of Work and Inequality was co-edited by Piotr Lewandowski of the Institute for Structural Research (IBS) and Kunal Sen, a member of the Project Advisory Board. It also features a chapter on South Africa by a team from the Development Policy Research Unit (DPRU), led by Haroon Bhorat.

The book analyses 11 developing countries in Africa, Asia, and Latin America, testing the extent to which changes in jobs and wages polarise work and fuel inequality.

The country case studies demonstrate that work and earnings polarisation has been less common in low– and middle–income countries than in high-income ones. In developing countries, technological change does not have such strong effects on task transformation, so job deroutinisation is slower. Moreover, rising premiums associated with higher education contribute to inequality.

On the other hand, labour-market institutions such as the minimum wage have played an important role in limiting earnings inequality in developing countries. The authors argue that the importance of these institutions will increase when technology adoption accelerates and returns on skills rise further.

Tasks, Skills, and Institutions: The Changing Nature of Work and Inequality, edited by Carlos Gradín, Piotr Lewandowski, Simone Schotte, Kunal Sen, Oxford University Press, UNU-WIDER (2023).
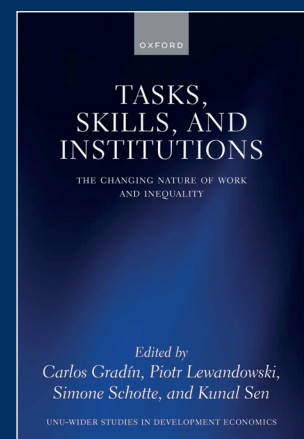DOI: 10.1093/oso/9780192872241.001.0001

You can access the publication *here.*

UNTANGLED RESEARCHER'S PUBLICATION
BOOK

Tasks, Skills, and Institutions: The Changing Nature of Work and Inequality

Carlos Gradín, Piotr Lewandowski, Simone Schotte, Kunal Sen

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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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