



# UNTANGLED

Newsletter Issue 5 / May 2022

## CONTENTS

From the editors 1

As uncertainty persists,  
UNTANGLED continues  
to adapt — *Untangled  
Coordination Team* 2

Where should companies  
innovate to boost productivity?  
— *Fabrizio Pompei  
& Francesco Venturini* 3

First UNTANGLED expert  
workshop 4

Get to know us 6

## FROM THE EDITORS

The first year of UNTANGLED was a tough one: we had to get the project off the ground without being able to meet in person, at a time when everyone was affected by Zoom fatigue – and of course by the underlying challenges of the pandemic. With that in mind, it's particularly impressive how much our team managed to achieve.

The hard work of that first year is beginning to bear fruit in UNTANGLED papers, and from here through the end of the project the pace will only accelerate. We'd like to call your attention to the interview in this newsletter with Fabrizio Pompei and Francesco Venturini of the University of Perugia about their recent paper showing the areas where companies should focus their innovation to boost productivity.

This issue of the newsletter also covers the first UNTANGLED workshop: our first in-person gathering since we launched the project. This event in Vienna brought together 21 experts specialising in labour economics, who presented and discussed papers dealing with how technological transformation, globalisation and demographics are changing labour markets in the EU.

Finally, don't miss the message from our coordination team, which will let you know more about what we've been up to since the start of the project, and lay out a road map for the coming months. Our world remains in a state of great uncertainty due to the war in Ukraine and a variety of other challenges, so to keep on top of our news, be sure to follow us on social media and subscribe to this newsletter.



## Upcoming events

**17 May** – UNTANGLED General Assembly Meeting  
**21 June, 16 CEST** – Open Virtual Expert Café

Follow us on social media or check [projectuntangled.eu](https://projectuntangled.eu) to make sure you don't miss out!



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## AS UNCERTAINTY PERSISTS, UNTANGLED CONTINUES TO ADAPT

Message from  
**Monique Ramioul**  
KU Leuven



**Prof. Dr Monique Ramioul**  
Project Coordinator

Monique teaches organisation sociology at KU Leuven and is Head of the Work Organisation and Social Dialogue Research Group at KU Leuven's Research Institute for Work and Society (HIVA). Her research interests focus on organisational change and changes in work, including those related to globalisation and technological change, and their impact on job and employment quality, including job content, working conditions, occupational health and safety, and voice and representation.

These are uncertain times. That is what we, the project partners, told each other when we finalised the proposal for the UNTANGLED project in 2020, in what would turn out to be just the early stage of the Covid-19 pandemic. A little more than a year later we launched UNTANGLED online, because we were still uncertain when we would return to the office. Since then, we have at least partly come back to our workplaces, and the first UNTANGLED in-person workshop took place in Vienna in March.

But of course, these are still uncertain times. The invasion of Ukraine has tragic consequences for millions of people, first and foremost Ukrainians. It is too early to assess the wider impact of the war, other than that it will be felt for years to come. Though the research planned in UNTANGLED is not affected directly, the war is a strong reminder of the increasing importance of UNTANGLED's three themes of technological transformation, globalisation, and demographic change in the coming years.

Just as the Covid-19 pandemic caused a rethinking of supply chains for medical equipment, so the war in Ukraine will alter supply considerations in Europe and beyond. Not only for gas and other forms of energy, but also related to food and fertiliser production. No doubt many European companies will also revisit their foreign investment strategies after analysing the consequences of the abrupt closure of the Russian market. In addition, Ukrainian refugees are already affecting demographics and the labour market in some EU countries.

We will have to think about these changes in the second half of the project later this year, as we develop integrated, model-based scenarios for the coming decades, both overall and for various subpopulations, sectors, and regions. Our events and communication with stakeholders should form a good starting point for exploring these emerging issues.

The first year of the project featured the online launch and stakeholder events, and two of our innovative UNTANGLED Open Virtual Expert Cafés. But the first 12 months were mostly devoted to the initiation of research cooperation in the different pillars, covering micro, meso and macro aspects of the impact on the labour market of the key trends of technological transformation, globalisation, and demographic change.

The second year of UNTANGLED will see an increasing number of research outputs appear on our website as well as events and workshops. Project partners will increase their dissemination efforts, and the Open Virtual Expert Cafés will continue. In the autumn, a mid-way conference is planned in Leuven. We will also soon launch our stakeholder forum, designed to further our integrated consultations and discussions. The second year of UNTANGLED is as busy and ambitious as the first. If you want to play a part – attend events, receive additional information, or participate in the stakeholder forum – do not hesitate to contact us.

**The UNTANGLED Coordination Team**

## WHERE SHOULD COMPANIES INNOVATE TO BOOST PRODUCTIVITY?

An interview with Fabrizio Pompei and Francesco Venturini of the University of Perugia about their recent paper *Firm-level productivity and profitability effects of managerial and organisational capabilities and innovations*, which showed that generating patents in the field of AI, and adopting new managerial practices, can boost productivity.



**Francesco Venturini**  
Associate Professor  
of Economics at the University  
of Perugia, Member of the  
Ifo-World Economic  
Survey expert group

**Industry 4.0 is revolutionising the way companies manufacture, improve and distribute their products. There are a lot of hopes that smart technologies such as artificial intelligence (AI), robotics, the Internet of Things (IoT) and cloud computing can help companies grow. How justified are they?**

*Francesco Venturini:* Studies have shown that companies innovating in new technological areas experience a larger expansion of sales, employment and productivity. We wanted to find out whether generating innovations in Fourth Industrial Revolution technologies (4IRs) has an impact on productivity. We analysed performance data from more than 800,000 companies from 16 European countries in 2011-2019, examining whether innovative companies, defined as those with at least one patent application in a set of 4IR technological fields, improved their productivity versus their non-innovating peers. And yes, I can confirm that generating patents in those areas does indeed boost productivity.

### **Any particular technology?**

*Francesco Venturini:* Generating innovation in AI is particularly promising. We found that productivity is 37% higher, and productivity growth 58% faster, at companies developing AI compared with peers that aren't innovating in this field. In practical terms, our finding means that to boost productivity, companies should shift their innovation focus to AI from other, less promising fields, even though this may not be easy.

### **Who can benefit most from innovations in AI? Any particular sector, or company size?**

*Fabrizio Pompei:* Our research suggests that innovating in AI creates an opportunity for laggard companies. Generation of AI technologies enables them to catch up with the productivity leader. If we look at AI inventions, one important implication is that the mass of firms operating in the ICT and computer equipment sectors can easily shift their production towards new lines of business related to machine learning, big data and other automation technologies. This in turn might create opportunities for new forms of employment and growth.

### **In addition to disruptive technologies, you also looked into whether improvements in managerial and organisational capabilities can boost productivity.**

*Fabrizio Pompei:* We looked at Italian companies which adopted the ISO 9001 standard, the world's most recognised quality management system, aimed at helping companies meet the needs of their customers and other stakeholders more effectively. We found that companies which adopted ISO 9001 for the first time between 2011 and 2019 more easily closed the gap with the best performers, not only in terms of productivity, but also in terms of profits and average wages. The introduction of ISO 9001 certification produces an immediate increase in productivity levels by 2.5%, and lagging positive effects of 4.9% in the first year and 7.6% in the second.



**Fabrizio Pompei**  
Associate Professor  
in Applied Economics,  
University of Perugia



## FIRST UNTANGLED EXPERT WORKSHOP

The first **UNTANGLED Expert Workshop**, *Global trends and variations: technological transformations, globalisation, demographics – varieties by regime, region, sector: disruption or reiteration?* organised by wiiw brought together 21 experts specialising in labour economics from research institutes, think tanks, EU bodies and international organisations.

### 1<sup>st</sup> UNTANGLED Expert Workshop



During the event, held on 25 March in Vienna, the participants discussed eight papers that delved into how these three megatrends are changing labour markets in the EU.

The majority of the presentations addressed the impacts of technology (robots, intangible capital, ICT investment) on various dimensions of inequality: makeup of the labour force; labour market transitions by age, gender and skill; and gender pay gaps. Additionally, the impact of ageing on job polarisation and capital formation was addressed.

The papers show that findings from the European economy are more diverse than from the US. We seem to need a great deal more research into intervening variables such as labour market institutions, production regimes and regional specialisation if we are to explain these differences.

## > FIRST UNTANGLED EXPERT WORKSHOP

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The lesson from the presentations is that indicators of exposure to technology, although nice and simple (especially IFR data on “robots”), only address a very specific use of technology. For now, they do not appear to be good at capturing networked or systemic effects of connected ICT or ICOT (information, communications, and operations technology). Other indicators such as ICT capital, although broader, also fail to cover all aspects of “digitalisation”. For the remainder of the labour market, adverse effects of technology exposure were found on gender pay gaps; employment shares of older workers, especially older women; and sometimes on the middle skill and income groups. Relations between types of technology investment also vary on the regional level.

The very unevenness of the findings, and in some cases the absence of significant relationships, may suggest that exposure to “robots” or investments into digital technology are actually embedded with all kinds of other, less circumscribed labour market dynamics and changes, as comparative technology and workplace studies do indeed suggest.

This unevenness also makes it difficult to draw conclusions and formulate policy advice. Still, participants made a valiant effort. So far, investment into training and retraining is still a good idea. It seems that such investments should be aimed not just at manual workers performing routine tasks, as in the past, but also at middle-income workers. Older workers in particular may need training. However, if labour market polarisation continues it will also be crucial to address such issues as in-work poverty and minimum incomes. Actions will be needed to create secure environments for workers to reskill.

One of the papers found that on the company level, adjusted gender pay gaps widen in the presence of performance-related pay, robots and a lower share of women employees. While adoption of robots boosted wages, men benefited more than women. Hence, neither technology nor incentive-based pay schemes appear to render payments more equal between the genders. However, if performance-based pay schemes accompany investments into a company’s economic competences, this narrows the gender pay gap, which may indicate the value of collective bargaining.

Looking at task groups, age groups and countries, the findings show that robots don’t directly replace workers. It seems that the effects of robot exposure vary with labour costs in each country, having the strongest stabilising effect on employment in countries with lower labour costs such as CEE economies. Again, it is not necessarily workers who perform predictable repetitive tasks, for instance those on production lines, who are at risk of losing their jobs, so (re-)training efforts should not necessarily focus on them. Rather, middle income groups face some effect – and as robot technology becomes cheaper and more widespread, stronger effects on this group may simply be delayed. The share of tech manufacturing in each country may also play a role. Finally “automation risk” appears to contribute to income inequality in many countries, although the effect varies.

## GET TO KNOW US

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### DPRU

**The Development Policy Research Unit (DPRU)** is one of Africa's premier economic policy think tanks. The DPRU aims to inform economic and social policy-making by specialising in academically rigorous research into various socio-economic challenges in South Africa and Africa in general; their causes in areas such as education, regulation and governance; and the consequences of these challenges for poverty and inequality at the country and regional level.

The DPRU is located within the School of Economics at the University of Cape Town, and has been actively engaged in policy-relevant socio-economic research for 30 years. The three core objectives of the Unit are to foster high-quality, policy-relevant research; train a new generation of research economists; and disseminate knowledge to decision- and policy-makers in government, the private sector and civil society.

The DPRU provides economic expertise in relation to research questions around labour markets, poverty and inequality dynamics. The bulk of its research derives from the analysis and manipulation of micro-level datasets, such as individual and household surveys, firm surveys, national censuses and increasingly, administrative databases.

**At UNTANGLED, the DPRU** is involved in WPs 1, 2, 3, 4, 7 and 8.

### People

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**Haroon Bhorat**  
Project Manager

## GET TO KNOW US



### WIIW

**The Vienna Institute for International Economic Studies (wiiw)** is an independent economic research institute with long experience in international economics as well as data collection and analysis. Wiiw research is focused on such areas as European integration, macroeconomic developments, structural change, labour markets, income distribution and regional and sectoral issues. Wiiw is committed to methodological plurality in its work. Methods range from purely descriptive analysis, quantitative and qualitative approaches, to econometric and modelling techniques.

**At UNTANGLED, wiiw** is leader of WP 4: Meso-level analysis, and is also involved in WPs: 2, 3, 4, 6, 7, 8 and 9.

### wiiw's team in UNTANGLED



**Mahdi Ghodsi**  
Economist



**Michael Landesmann**  
Economist



**Sandra Leitner**  
Economist



**Isilda Mara**  
Economist



**Roman Römisch**  
Economist



**Robert Stehrer**  
Economist  
wiiw team leader

## UNTANGLED PARTNERS

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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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