



**Growing Inequality:**  
a Novel Integration of  
transformations research



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## **D9.3 GI-NI Scientific Conference Report**

# **The impact of the global transformations on inequality**

**25 May 2023 – University of Agder, Norway**

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# 1. Overview

The GI-NI Scientific Conference "The impact of the Global Transformations On Inequality" was held on 25 May 2023 at the University of Agder in Norway.

Over the past decades, inequality within populations has widened in most countries, regarding many dimensions of life. This has become of central concern for both policymakers and researchers alike. To formulate remedies, we must have an integral understanding of the drivers of such widening inequality and their interactions. In addition, we must understand the strengths and weaknesses of our current institutions to deal with these issues. The purpose of this conference was to bring together researchers from different disciplines to share and discuss their recent findings related to widening income inequality, living standards and prosperity more broadly.

Researchers from all fields of economics, political science and sociology were invited to present new research results and discuss possible directions for future research activities. We welcomed the submission of papers with an empirical, theoretical, and/or policy orientation focusing on micro- or macroeconomic aspects of inequalities linked to globalisation, migration, and technological change. The analysis focused on Europe or related to it.

The conference took place in a hybrid format. Besides the onsite event, it was also live-streamed to reach a wider audience. In total, 66 participants joined in-person, and 111 participants joined the conference online.

## Scientific Committee of the Conference

- Hans-Christian Garmann Johnsen | University of Agder (Norway)
- Steven Dhondt | TNO/UK Leuven (Netherlands)
- Cinzia Alcidi | CEPS (Brussels)
- Egoitz Pomares | University of the Basque Country (Spain)
- Ulrich Zierahn | University of Utrecht (Netherlands)
- Emilie Rademakers | University of Utrecht (Netherlands)
- Bart Los | University of Groningen (Netherlands)
- Marcel Smolka | University of Flensburg (Germany)
- Balász Reizer | Centre for Economic and Regional Studies/Corvinus University Budapest (Hungary)

- Majda Seghir | CNAM-CEET (France)
- Leire Aldaz | University of the Basque Country (Spain)

### **Organising Committee of the Conference**

- Miriam Høgseth Joakimsen | University of Agder (Norway)
- Asier Lakidain (University of the Basque Country (UPV/EHU) (Spain)
- Astrid Klein | TNO (Netherlands)
- Basak Van Hove | CEPS (Belgium)
- Veselina Georgieva | CEPS (Belgium)

## **2. Outline**

The main objective of the conference was to promote the exchange of knowledge and ideas in the field of economics and social sciences. The GI-NI Scientific Conference was structured as follows:

- Plenary sessions by Prof. Dr. Alexandra Spitz-Oener and Prof. Dr. Simon Wiederhold.
- Parallel sessions by researchers with the latest research were presented. Researchers from the GI-NI team chaired the sessions.
- A panel discussion moderated by Dr. Cinzia Alcidi, which included an open dialogue with researchers.

The Scientific Conference opened with an address by Hans Kjetil Lysgård, Vice-rector of the University of Agder. The Keynote Speakers, Prof. Dr. Alexandra Spitz-Oener and Prof. Dr. Simon Wiederhold, provided deep insights into the interplay between labour and technological change, which were echoed throughout the day.

The Parallel Sessions hosted 17 presentations spanning over three hours of research debates. Researchers from 10 nationalities covered multiple relevant topics for the GI-NI project and those interested in analysing socioeconomic inequalities, such as gender, robots and automation, and global trade. Finally, as part of the panel discussion, Professors Jon P. Knudsen, and Marcel Smolka, together with Professor Alexandra Spitz-Oener explored how different disciplines and perspectives can be brought together in the context of rapid transformations in the European Union and beyond. In conjunction with Dr. Cinzia Alcidi, a moderated debate took place.

## CONFERENCE PROGRAMME 25TH MAY 2023

8:00-08:30	Registration		
8:30-9:00	Opening and welcome	Hans Kjetil Lysgård, Vice-rector, University of Agder Steven Dhondt, Scientific Coordinator of the GI-NI Project	
9:00-10:00	Key Note Speech Plenary session	Workers Aren't Machines: They Adapt! Prof. Dr. Alexandra Spitz-Oener, Humboldt-Universität zu Berlin	
10:00-10:30	Coffee Break		
10:30-11:45	Parallel Session 1	<b>Digital Technologies and Innovation</b> Chair: Bart Los Room: B1 006	<b>Inequalities and gender</b> Chair: Majda Seghir Room: B1 007
		Innovating for the good or for the bad. An EU-wide analysis of the impact of technological transformation on the labour market, <b>Ylenia Curci, FEMTO-ST/RECITS, UTBM, Cnam-CEET and Silvia Napolitano, Cnam-Lirsa, Cnam-CEE</b>	Inequality Perception and Preferences Globally and Locally - Correlational Evidence From a Large-Scale Cross-Country Survey, <b>Gáspár Attila, Centre for Economic and Regional Science and University of Padova</b>
		Advanced Digital Technologies and Investment in Employee Training: Complements or Substitutes?, <b>Patricia Wruuck, European Investment Bank</b>	How can culture and institutional arrangements mitigate the unintended effects of global events on inequality? <b>Jon P. Knudsen, University of Agder</b>
		The Pandemic Push: Digital Technologies and Workforce Adjustments <b>Duncan Roth, IAB</b>	The Role of Flexible Wage Components in Gender Wage Differences, <b>Balázs Reizer, Centre for Economic and Regional Studies</b>
11:45-12:45	Lunch at the University of Agder Canteen		
12:45-13:45	Key Note Speech Plenary session	The Value of Early-Career Skills Prof. Dr. Simon Wiederhold, Halle Institute for Economic Research (IWH) and Martin Luther University Halle-Wittenber	
13:45-14:00	Move to parallel sessions		
14:00-15:15	Parallel Session 2	<b>Robots and automation</b> Chair: Marcel Smolka Room: B1 006	<b>Skills and training</b> Chair: : Leire Aldaz Room: B1 007
		Implications of robots and AI on wage inequality <b>Florenca Jaccoud, UNU-MERIT</b>	Migration and occupational skill shortage in western EU countries, <b>Majda Seghir, CNAM</b>
		Robots, meaning, and self-determination <b>Milena Nikolova, The University of Groningen, IZA, Brookings, Bruegel, and GLO</b>	Productivity growth and demand for apprentices: How does catch-up to the productivity frontier influence an establishment's demand for apprentices? <b>Pardesi Mantej, Maastricht University</b>
		Resilience to Automation: the Role of Task Overlap for Job Finding, <b>Emilie Rademakers, Utrecht University</b>	Training, digital skills, and the adaptability to technological change <b>Yuchen Guo, Catholic University Eichstätt-Ingolstadt, ifo Institute</b>
15:15-15:45	Coffee Break		
15:45-17:00	Parallel Session 3	<b>Trade</b> Chair: Balázs Reizer Room: B1 006	<b>Regional effects and inequalities</b> Chair: Steven Dhondt Room: B1 007
		Accounting for Changes in Employment Levels in an Interconnected World: The Relative Importance of Technological Change and Trade <b>Bart Los, University of Groningen</b>	The Future of EU Cohesion: Effects of the Twin Transition on Disparities across European Regions, <b>Thomas Schwab, Bertelsmann Stiftung</b>
		Algorithmic management in the traditional labour market: an exploration on policy implications, <b>Djurre Das, Rathenau institute</b>	The effect of FDI on Skill Return and within firm inequality: outsourcing and the Return to Tasks in Hungary <b>Rita Pető, Centre for Economic and Regional Studies</b>
		Global Value Chain Perspectives on the Impact of Trade on the Gender Employment Gap (2000-2014) <b>Xianjia Ye, University of Groningen</b>	Adapting to Import Shocks: The Labour Market Outcomes of Workers Moving into other Regions or Business Functions <b>Robin Konietzny, University of Groningen</b>
17:00-17:15	Short break		
17:15-18:15	Panel discussion	<ul style="list-style-type: none"> <li>• Prof. Dr. Alexandra Spitz-Oener</li> <li>• Prof. Jon P. Knudsen, University of Agder</li> <li>• Prof. Marcel Smolka, University of Flensburg</li> </ul> Moderator: Dr. Cinzia Alcidi, CEPS	
19:00-22:00	Conference dinner / Scandic Kristiansand Bystranda hotel, Restaurant Sand		

The detailed agenda of the conference can be found on: [https://gini-research.org/wp-content/uploads/2023/05/GINI\\_Conference\\_Brochure\\_FV.pdf](https://gini-research.org/wp-content/uploads/2023/05/GINI_Conference_Brochure_FV.pdf).

A book of abstract was published gathering all the responses to the call of abstract. The compilation can be found at the following link: [https://gini-research.org/wp-content/uploads/2023/05/GINI\\_Conference\\_Booklet\\_FV.pdf](https://gini-research.org/wp-content/uploads/2023/05/GINI_Conference_Booklet_FV.pdf)



A summary of each session can be found below.

## **2.1. Keynote speech “Workers aren’t machines: they adapt” Prof. Dr. Alexandra Spitz-Oener (Humboldt Universität zu Berlin)**

The keynote speech highlighted and shared the insights on the labour market response to technological changes, and on how workers redefine their task inputs. It presented the result of a study based on the task-based approach covering the period 1979-2018. The task-based approach has become popular in the past years, and it has helped to address the impact on jobs that are

susceptible to automation. The analysis is based on individual level panel data set with task information. Occupation mobility is an important element of task input redefinition in the context of technological changes. The study also introduces the concept of the 'resilient worker' defined as workers who has only short non-employment spells because of technology-driven adjustment shocks.

Overall, the study concludes that technology and automation do not remove work but change its nature, demanding higher degrees of adaptability from workers. The findings suggest that workers' task inputs change towards tasks that are complementary to the capabilities of technologies. For example, technology complements the creative, interpersonal, and analytical capabilities of workers and reinstates new tasks. When subject to the same technology shock, resilient workers are found to be less likely to switch to a different occupation; resilient workers also experience larger shifts in tasks away from routine tasks, and larger shifts towards technology-complementary tasks.

## **2.2. Parallel session: Digital Technologies and Innovation Chair: Bart Los (University of Groningen)**

### **2.2.1. Innovating for the good or for the bad. An EU-wide analysis of the impact of technological transformation on the labour market Ylenia Curci (FEMTO-ST/RECITS, UTBM, Cnam-CEET) and Silvia Napolitano (Cnam-Lirsa, Cnam-CEE)**

The authors investigate the links between technological change and the labour market (job polarisation and unemployment). They adopt a view in which investment in tangible and intangible capital yields innovation output and innovation output causes effects on labour market outcomes. These labour market outcomes relate to substitution of some kinds of labour by e.g., computers. Each technological revolution, however, also generates new goods and services, which can elicit demand, create new jobs that use new skills. This paper offers an empirical analysis that exploits an innovative EU-wide dataset that aggregates data at the country-sector level to combine employer and employee-level sources. Therefore, the paper adopts a framework in which technological transformation is analysed by means of three types of indicators: i) a direct measure of investments in technology adoption and use that takes into account the diversity of ICTs and digital technologies as well as their continual renewal; ii) a measure of the learning capacity of organisations; and iii) an extended measure of innovation that includes both technological and non-technological innovation.



Investments into the learning capacity of the organisation lead to more innovativeness and improved labour market outcomes. Digital technology adoption also has a direct effect on innovativeness. Sectors with a high level of digital technology adoption and use experience lower unemployment rates. Higher digital intensity adoption and use is also associated with occupational upgrading, more precisely with a within-sector shift of the structure of occupations from the middle to the upper part of the wage hierarchy. The innovation strategy adopted by firms plays a crucial role in mediating the effect of investments in learning capacity and digital technology adoption and use: Product innovation makes the relationship between learning capacity and digital technology and labour market outcomes in a positive sense, while investment in marketing innovation makes it less positive.

### **2.2.2. Advanced digital technologies and investment in employee training: Complements or substitutes? Patricia Wruuck (European Investment Bank)**

The pandemic has accelerated digitalisation. Digital firms fared better than non-digital firms did in the pandemic. They tended to experience weaker reductions in sales and used the crisis more often as an opportunity to adopt digital technologies. Yet, this deployment of digital technologies comes with potentially far-reaching implications for jobs and inequalities across firms and workers. This paper analyses whether the adoption of advanced digital technologies and employee training are complements or substitutes. Theoretically, digital technologies can be complements or substitutes to labour, with training affecting the nature of this relationship and hence the firm-specific and overall economic effects on employment and inequality. Firms are key actors in the provision of training in Europe, but whether the companies adopting digital technologies also train more is not clear. On the one hand, technology adoption may create retraining needs. On the other, as some work is being automated and production processes are changed, firms' training needs and expenditures may fall.

The authors find that digital technology use and employee training are substitutes in production. This implies that an increase in the use of digital technology negatively affects the marginal productivity of training and that a decline in the cost of introducing digital technology reduces the investment of employers in training per employee. This is not just related to (potentially) lower costs of training but could also be due to the changing nature of tasks for which workers are responsible after the introduction of new technologies (these might e.g., require more capabilities related to social interactions, which tend to be obtained via informal learning).

### **2.2.3. The pandemic push: digital technologies and workforce adjustments Duncan Roth (IAB)**

Based on a unique survey and administrative employer-employee data, the authors show that the COVID-19 pandemic acted as a push factor for the diffusion of digital technologies in Germany. The survey data (gathered after about one year of restrictions) contain information on whether establishments had recently invested in eight types of digital technologies: hardware, software for communication, software for collaboration, remote access, faster internet, data protection and cyber-security, IT personnel and other technologies. The survey also asked establishments about their training needs and firm-provided training, their economic situation and how much they relied on working-from-home. The authors merged this information to administrative data on the workforce and wages, industry and location of the firms.

Almost 70 per cent of firms invested in digital technologies, hardware and software to enable decentralised communication, management, and coordination. The investments encouraged additional firm-sponsored training despite pandemic-related restrictions indicating that investments in digital technologies and training are complements. The additional investments helped firms to insure workers against the downturn during the pandemic. Firms that made additional investments relied less on short-time work, had more of their regular employees working normal hours and had to lay off fewer workers. Male, younger and medium-skilled workers benefitted the most from this 'insurance effect' of digital investments.

## **2.3. Parallel session: Inequalities and Gender Chair: Majda Seghir (CNAM)**

### **2.3.1. The role of flexible wage components in gender wage differences The gender wage convergence slowed down during the last two decades. Women are less likely to enter high paying firms and they earn less after entering Balázs Reizer (Centre for Economic and Regional Studies)**

The authors test the hypothesis of flexible wage components as the main driver of this gap in the Hungarian context using matched data between the Hungarian Structure of Earnings Survey and administrative social security data over the period 2003-2017.

Firm-specific wage premium of women is lower than the wage premium of men in firms with performance and overtime payments in comparison with firms with no performance payments. These differences are mainly driven the fact that women are less likely to work in firms

that offer either payments or overtime payments. Policies restricting flexible payments may then decrease gender gap.

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### **2.3.3. How can culture and institutional arrangements mitigate the unintended effects of global events on inequality Jon P. Knudsen (University of Agder)**

Formal institutions, as represented by laws, regulations and written codes, structure the political, economic, and social interaction. In the context of negative shocks, institutions play a key role in shaping the policy response to absorb such shocks. Although the institutional responses widely differ according to the context, to be successful formal institutions must realign with informal institutions to be legitimate. Informal institutions are the prevailing norms, habits, and cultural codes.

The author proposes to rely on the typology of Variety of Capitalism which differentiate between liberal market economies and coordinated market economies, to investigate the European policy response to growing inequality and, more generally, to negative shocks.

## **2.4. Keynote Speech “The Value of Early Career Skills” Prof. Dr. Simon Wiederhold (Martin Luther University Halle- Wittenberg and the Halle Institute for Economic Research)**

The keynote speech focused on the returns of early career skill investments, looking at what the apprenticeship schemes provide as result. The return of cognitive skills is rising over the years. Returns to social skills are also positive, but for digital skills, the returns are the strongest. The image is that investment in digital skills is likely to happen later in life.

The paper derives a detailed and comprehensive classification of workers’ early-career skills based on apprenticeship curricula in Germany. Apprenticeships providing higher cognitive or social skills are associated with significantly higher wages in the short and long run.

The study also shows that higher digital skills are not systematically related to higher wages early in the career, but to faster wage growth over long-run horizons. Additionally, increasing trend is observed in the labour-market returns to cognitive, social, and particularly digital skills over the last three decades.

## **2.5. Parallel Session: Robots and Automation Chair: Marcel Smolka (University of Flensburg)**

### **2.5.1. Implications of robots and AI on wage inequality Florencia Jaccoud (UNU-MERIT)**

The paper tackles the question of how robots and artificial intelligence (AI) impact labour markets and especially wage inequality. The research is motivated by the accelerating use of robots in the production process of firms, as well as the rising adoption of AI applications in recent years.

Previous work in this area has mostly focused on the impact of automation, rather than AI, on inequality. Automation changes the demand for certain skills affecting relative wages between different occupations; it also changes the demand for certain tasks affecting the distribution of wages within occupations. The focus of the paper here is on identifying the channels through which robots (and AI) exposure affect wage inequality in Europe.

To address this question, the paper uses household data from 2002 to 2018 from the Structure of Earnings Survey (SES) in 19 European countries. These data are then complemented

with robot and AI exposure information from Webb (2020). A first glance at the SES data shows that the bigger share of overall inequality is explained by within-occupation inequality rather than between-occupation inequality. This holds true in virtually all countries considered. The data also reveal that the degree of inequality varies considerably across countries, with Spain, France, and Portugal displaying the highest overall degree of inequality in 2018 and Finland, Sweden, and Belgium showing very modest degrees of inequality.

Interesting patterns emerge when considering who exactly is exposed to robots and AI, respectively. It turns out that those at the top of the wage distribution are only marginally exposed to robots, while those at the bottom are exposed heavily. The complete opposite picture appears when considering exposure to AI rather than robots: top earners are exposed the most, low-wage earners the least.

These patterns are reflected in the results deriving from a fully-fledged econometric analysis of the data. Specifically, and perhaps surprisingly, robot exposure decreases wage inequality, while AI exposure increases wage inequality. These results are consistently found for wage inequality between as well as within occupations.

### **2.5.2. Robots, meaning and self determination**

**Milena Nikolova (University of Groningen, IZA, Brookings, Bruegel, and GLO)**

This paper investigates the relationship between automation and job satisfaction. The point of departure is the fact that new technologies can replace, augment, and create tasks. This has the potential to affect workers, not just in terms of their wages and employment through changes in labour demand, but also in terms of how they perceive their jobs and work.

The paper investigates two specific perceptions of workers: meaningfulness and self-determination. Meaningfulness is about whether workers perceive that they do useful and fulfilling work; it matters greatly for worker effort and motivation. Self-determination, on the other hand, is about autonomy, competence, and relatedness (feeling support from colleagues); it is often seen as a pre-requisite for meaningfulness. The two types of worker perceptions are elicited from the European Working Conditions Survey (EWCS) for 2010, 2015, and 2021.

The key question the paper brings to the data is how job satisfaction responds to industrial automation. To identify this relationship, the paper exploits variation in the pace of robotisation across industries (computed from data from the International Federation of Robotics). Overall, the paper finds that (aggregate) measures of job satisfaction do not vary strongly over the period considered (2010 to 2021). By and large, this holds true regardless of industry affiliation. However, when exploiting individual-level variation in job satisfaction through an econometric analysis, the paper finds that both meaningfulness and self-determination are impacted negatively by industrial

automation. Importantly, negative effects are found for all dimensions of self-determination. While the effect sizes are relatively small, the paper demonstrates empirically that automation has the potential to erode job satisfaction in various dimensions.

### **2.5.3. Resilience to Automation: the Role of Task Overlap for Job Finding Emilie Rademakers (Utrecht University)**

New technologies like digitisation or automation are changing the occupational structure of labour markets. This has distributional effects, e.g., through the displacement of heavily exposed workers. However, the distributional effects can be mild, when workers reallocate easily to other jobs, or they can be severe when reallocation options are limited.

The paper asks whether task-based reallocation affects the distributional effects of automation. The basic idea is that some jobs are more like one another than other jobs, because they share a lot of identical tasks. The key question then is whether exposed workers face lower reallocation cost if their jobs are "task-similar" to a lot of other jobs.

The paper brings these ideas to the universe of newly unemployed individuals in Flanders (Belgium) covering several months in 2021. The paper first shows a positive link between unemployment duration and routine task exposure. This finding is in line with a task-based view of the effects of automation, which substitute labour in routine rather than complex tasks. The paper then shows that the link between unemployment duration and routine task exposure is, perhaps surprisingly, largely invariant to accounting for "task similarity" of jobs.

To explain this finding, the paper documents that routine and non-routine jobs are largely segregated, in the sense that routine jobs display strong task similarity with other routine jobs and weak task similarity with non-routine jobs. Hence, the fact that some jobs are more task-similar to other jobs provides little relief from exposure to routine task automation.

## **2.6. Parallel Session: Skills and Training**

### **Chair: Leire Aldaz (University of the Basque Country UPV/EHU)**

#### **2.6.1. Migration and occupational skill shortage in western EU countries Majda Seghir (CNAM)**

The objective of the presented paper is to analyse the impact of immigration on skills shortage in Western European countries over the period 2004-2019, as migration can be a solution for skill shortages.

There is a growing concern in Europe about supply of skills and it is driving debate around labour force, education, and migration policies. The main arguments for this are future employees' skills gap, professional skill shortages, and skill mismatch. The causes of skill shortages include the increase in labour demand, the decrease in labour supply due to workers' mobility and the ageing population, and wage rigidities.

In this paper, they identify if there is evidence of skill shortages, in which occupations, and how to address it in the future since immigration could overcome this issue.

Immigrants' impact depends on the skill structure of immigrants. They can be perfect substitutes for immigrants who have a longer stay in the host country and are imperfect with natives, there can be complementarity by specialising in different tasks, and the wage effect depends on the degree of substitution between immigrants and natives.

Many occupations are in surplus. However, there are shortages in occupations such as teaching and other high-skilled occupations. Health professionals, for example, were in shortage in 2012, and even though it decreased in 2019, shortages continue to exist. There is not much difference between 2006 and 2010. Therefore, there are persistent shortages overtime. In addition, there has been an increase on the share of immigrants in all European countries.

Increasing the share of immigrants in all occupations reduces shortages, but the effectiveness of migration policies depends on the underlying reasons for the shortages. We need more evidences on how the shortages occur to provide effective solutions and address these problems.

### **2.6.2. Productivity growth and demand for apprentices: How does catch-up to the productivity frontier influence an establishment's demand for apprentices?** **Pardesi Mantej (Maastricht University)**

The goal of both countries and firms is to achieve a sustained productivity growth. Nevertheless, there are persistent differences in productivity between firms because of systemic reasons for divergence, technological change, and industry regulation, among others.

The productivity levels and growth rates are different depending on the firm. To attain convergence to the frontier, innovation is needed, with the aim of increasing productivity, which requires complex tasks, and hence, high skilled workers. As a result, this phenomenon of converging to the frontier affects skills demand.

The literature tells us that if productivity increases, the labour demand also increases, which requires more apprentices. However, the demand increases for high skilled workers above medium and low skilled, and for works that cannot be routinised.

Results: An increase in the industry position decreases the demand for apprentices, and the closer the firm is to the productivity frontier, the more intensely the demand for apprentices' decreases.

The reason for this phenomenon is that, if the skill composition of the firm changes, the demand for apprentices will change. For a firm that has more medium-skilled workers, the demand for apprentices' decreases, while in the case of firms with more unskilled workers, there will be more demand for apprentices. When the skills requirements change, the demand for apprentices changes, which is influenced by disembodied (Total Factor Productivity) and embodied technological change (Labour Productivity).

### **2.6.3. Training, digital skills, and the adaptability to technological change**

**Yuchen Guo (Catholic University Eichstätt-Ingolstadt, ifo Institute)**

Technology changes the demand for certain tasks; specifically, it decreases demand for routine tasks. Some occupations have higher risk of automation: the occupations with manual routines.

The questions are the following: Does training enable workers in the same occupation to perform tasks less at risk of automation? Does training equip workers with the digital skills needed for task upgrading?

Training is negatively associated with automation risk in all countries, that is, training decreases automation risk. Those who receive training improve their digital skills and it enables people to upgrade their tasks. Regarding age, older workers benefit equally from training in comparison to younger people. In relation to gender, women generally perform tasks with higher risk of automation, and the effect of training in women's wages is higher than males.

## **2.7. Parallel Session: Trade**

**Chair: Balázs Reizer (KRTK)**

### **2.7.1. Accounting for Changes in Employment Levels in an Interconnected World: The relevance of Technological Change and Trade**

**Bart Los (University of Groningen)**



There are important structural changes in production which changes employment worldwide. First, technological progress decreases the employment requirement of production. Second, the emergence of global value chains (GVCs) made production international and firms relocate some stages of production to low wage countries. Finally, the technological progress and GVCs decrease product prices thus increases demand. This “consumption effect” can counterbalance the employment effect of the technological progress and GVCs.

The paper measures the relative importance of these three channels using information on trade and employment across sectors and countries.

The technological progress decreases employment in all country to a large extent. The reallocation of activities affected employment negatively for “old” EU-members and affected positively for “new” EU-members. The employment increase caused by global consumption growth can counterweight the negative employment effects except for the employment of fabrication workers.

### **2.7.2. Algorithmic Management beyond the platform economy Djurre Das (Rathenau institute)**

Algorithmic Management means that managerial decision-making is made based on automatically collected data and pre-defined software algorithms. The algorithmic management can increase the efficiency of the decision-making at the cost of more detailed data collection and the surveillance of the workers. Originally, algorithmic management was used in the platform economy. Now, algorithmic management is spreading in traditional sectors of the economy as well. Still, we have limited knowledge on the prevalence of algorithmic management.

The paper uses the Dutch National Working Conditions Survey to describe the importance of automatic management.

34 percent of the workers experienced changes in the technology they use and 27.6 percent of them felt that the surveillance and control is increasing at their workplace. At the same time a large share of the workers reported that they were not informed about the change of surveillance at their workplace. The paper concludes that exact rules are needed about what kind of data can be collected and what not, and how the employees must be informed. Finally, the enforcement of these rules is crucial.

### **2.7.3. Global Value Chain Perspectives on the Impact of Trade on Gender Employment Gaps, 2000-2014** **Xianjia Ye (University of Groningen)**

The female employment gap is decreasing in almost every country. There are many channels behind this positive trend. For example, technological change increased the demand for skills and tasks in which women have a comparative advantage. It is an open question whether women gain or lose because of trade-induced relocation of activities.

The paper uses information on global value chains from the World Input-Output Database and industry-gender level employment in EU countries from the Labour Force Survey to magnify the effect of trade on the gender employment gap.

International trade increases the relative employment of women. Trade decreases the employment for males and females alike for the “old” EU members, but the drop was larger for men. In contrast to this, trade increases employment for the “new” EU members but the increase was larger for women.

## **2.8. Parallel Session: Regional effects and inequalities** **Chair: Steven Dhondt (TNO)**

### **2.8.1. The future of EU cohesion: Effects of the Twin Transition on Disparities across European Regions** **Thomas Schwab (Bertelsmann Stiftung)**

Over the past decades, each EU region has gained in income, and the Lorenz curve has lowered. It seems as if we can talk of upward convergence. The EU is in a better position and more equal in the last 30 years. The question is if the green transition will support this convergence. He shows in his presentation that all signs show that this is not the case. It will require tailored policies to make the changes positive for all. The issues are that the regions that need to do the most, have the least means and the worst problems.

The results suggest that difficult times lie ahead for regional economic cohesion in the EU. High income EU NUTS-2 regions exhibit the highest potential for economic growth in the twin transition while low-income regions exhibit the lowest. Thus, there is an underlying trend towards economic divergence across the EU.

Additionally, the results have direct implications for European cohesion and cohesion policy. In the context of the twin transition, reducing existing regional disparities will become

even more difficult in the years ahead. Thus, even more so than in the past, EU cohesion policy must overcome the economic forces that favour a growing agglomeration of high-value economic activities in urban and industrial centres if the Union wants to maintain its goal of economic, social, and territorial cohesion as enshrined in the Treaty.

### **2.8.2. The effect of FDI on Skill Return and within firm inequality: outsourcing and the Return to Tasks in Hungary** **Rita Pető (Centre for Economic and Regional Studies)**

This paper focuses on novel task-based approach to estimate inequality. Abstract tasks are done by highly skilled workers, easy to outsource, and hard to automate. Routine tasks are done by low-skilled workers, easy to outsource and automate. Face-to-Face tasks are hard to outsource or automate. The paper also investigates possible mechanisms.

Internationalisation increases GDP. The mechanism is sorting. The main literature focuses on across firms' effects. It seems as if FDI leads to more investment in abstract tasks. This is needed to deal with processing parent technology. There is less investment into own R&D. This makes the FDI also more risky for the country: if FDI stops, nothing remains. Future research is focused on product innovation.

The main results suggest that foreign acquisition increases the return to abstract tasks only and the return to face-to-face tasks, while routine tasks do not change. These changes in task returns increase wage inequality as high-paid workers do more than average abstract tasks. The paper finds that one standard deviation increase in abstract tasks increases wages by 1.8 percent while the return to face-to-face skills does not change. The results are qualitatively similar if there is restrict attention only to firms which switch ownership, and in the service and manufacturing sectors.

After presenting the main results, the paper turns to the possible mechanisms. Most importantly, an event study approach is used to show that firms conduct product and process innovation right after FDI, while they do not do more R&D activities than firms which are not acquired. This result provides suggestive evidence that acquired firms implement the technology of the parent firm.

### **2.8.3. Adapting to import shocks: the labour market outcomes of workers moving into other regions or business functions** **Robin Konietzny (University of Groningen)**

This paper assesses whether and how imports exposure affected German workers' regional mobility and job switching between 2000 and 2011. It also explores the wage and job satisfaction

consequences of moving to another region and job switching following a trade shock. The paper looks at the exposure of workers in global value chains and what that does for mobility.

The findings show that more intense regional trade shocks made workers more likely to move to another region and switch their functions. In the most exposed regions, the probability that fabrication workers moved to another region more than doubled compared to the baseline probability. The probability of switching functions as a result of increased trade exposure increased by about 50% compared to the baseline. However, workers' probability of switching their functions following a trade shock increased only after a lag, likely because individuals need time to acquire new function-specific knowledge and skills. Moreover, the paper reveals that workers who chose to move to another German region following a trade shock could offset the negative impact on their earnings and job satisfaction. In fact, moving resulted in higher wages and greater job satisfaction compared to staying behind. Workers who switched to a new function also increased their earnings but did not improve their job satisfaction compared to those who remained in the same function.

## 2.9. Panel Discussion

### **Participants:**

Prof. Dr. Alexandra Spitz-Oener, Humboldt-Universität zu Berlin

Prof. Dr. Jon P. Knudsen, University of Agder,

Prof. Dr. Marcel Smolka, University of Flensburg,

**Moderator:** Dr. Cinzia Alcidi, CEPS

The panel discussion wrapped up some key messages from the conference. The focus was on digital transformation and the opportunities and challenges digital transformation would bring.

Alexandra Spitz-Oener highlighted the significant opportunity of digitalisation in the context of demographic change as labour scarcity will become more critical in the future. Technological advancements can help the labour market transition positively, so horror scenarios should be transformed into positive ones. To ensure that workers can work with machinery, investing in them is recommended. Also, she raised the question of how and in which environments to retrain. Regarding skills, she stressed the importance of dual apprenticeship systems, and added that the skills of the future are far from what companies need.

Marcel Smolka argued that firms should merge needs with task-based approaches. The organisational dimension is significant as only a minority of firms adopt these technologies. One of the key challenges is using the productivity-improving technologies. Despite the same occupations

being unequal between firms, technological advances explain the differences. It is a necessity to observe that technologies need to shift to more companies.

Related to AI concerns, Marcel Smolka suggested focusing on the facts rather than just public debate. He also suggested seeing technology as an opportunity to create productivity improvement more than doomsday scenarios (wage decrease, work force diminish etc.).

In his presentation, Jon P. Knudsen stressed the need to strengthen vocational training and the new context for skill needs. There is a struggle with the skills turn and attention should be given to potential challenges associated with the impact of the green transition on skills issues. Also, he mentioned that universities are slower to adapt their trainings to technological changes, adding that people in the workforce require ongoing training.

Cinzia Alcidi pointed out that the policy debate and attitudes towards skills are changing. There is a shift from tertiary education to skills education. This is also reflected at the policy level, as 2023 is the European year of skills to address skills shortages in the EU. A workforce with more skills is desirable, but more concrete policies should be developed to achieve that.

As a conclusion, the speakers stressed the importance of empowering individuals to embrace technological changes. Besides, it is highlighted that to cope with rapid technological changes, a new distribution system should be considered. The goal should be to reduce inequalities in the functioning of the labour market. Taxation of capital is a simplistic model of the welfare system, and the labour market remains the main method of redistribution.

# GI-NI PROJECT IDENTITY

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## **Coordinator**

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## **Consortium**

CNAM - CEET, Centre d`études de l`emploi et du travail (France)  
University of Groningen (Netherlands)  
Centre for European Policy Studies (Belgium)  
University of Adger (Norway)  
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**Growing Inequality:**  
A novel integration of  
transformations research

[www.gini-research.org](http://www.gini-research.org)