Task 5.2

Bargaining models, the quality of work and rent-sharing

Leader: UNIPG, Contributors: IBS, KU Leuven

1. Task description

This task will analyse the role of wage bargaining models as moderators of the effects of megatrends on the quality of jobs. As in Task 5.1, the analysis will be carried out by subgroups of workers identified at higher risk and the role of the moderating factor will be identified by means of an interaction term between bargaining models indicators (at country/ sector level) and megatrends measures. The task will also deal with how megatrends impact the rent-sharing capacity of employees; this will be done by interacting a rent variable (profit/value added) with the context variables of interests. This analysis will be carried out at country/sector level (EU-KLEMS), with extensions to the firm level if possible.

2. Background / Setting

The recent surge of technological advancements related to the digitalisation has had varying impacts on the labour market, influencing employment and wages across different dimensions and for diverse groups of workers (Anzolin, 2021). However, what remains less explored is the effect of technological change on job quality, including part-time work, temporary work, seasonal work, self-employment, and homeworkers, and how this affects the distribution of economic rents among workers.

As digitalisation continues to evolve, it is crucial to understand its impact on the labour market beyond just employment and wages. The quality of jobs is equally important, as it affects workers' well-being and their ability to share in the economic benefits of technological progress. By examining the effects of technological change on job quality, we can better understand how to create a more equitable and sustainable labour market for all workers.

3. State-of-the-art

The impact of automation and digital technologies on the labour market has been extensively studied from various angles (see Dauch, 2018). In Europe, automation has led to a decrease in job separations, particularly in economies with lower labour costs (Bachmann et al., 2023). Similarly, evidence suggests that the use of artificial intelligence (AI) has resulted in faster employment growth in occupations that heavily rely on computers and are more exposed to this new technology (Georgieff and Hyee, 2021).

Innovation and technological advancements have also influenced how workers benefit from economic rents (Van Reenen, 1996). However, recent studies have shown that wages are becoming less responsive to rent creation (Bell et al., 2023), and economic rents are increasingly being accrued by top executives and workers at the upper end of the wage distribution (Kline et al., 2019).

Regular workers in particular appropriate a larger share of rents in sectors with higher growth rates in total factor productivity, and investment in ICT (Fukao et al. 2022). Rent-sharing are however influenced by labour market regimes. In Japan, a higher proportion of the rents accrue to regular workers in industries with a lower share of non-regular contracts, stronger union density and in productions where the accumulation of knowledge occurthrough experience and seniority. Conversely, in Germany, individual wages are less responsive to rents in industries with stronger union and in presence of industry-wide wage contracts (Guertzgen 2009). In Belgium, in decentralized industries where contract conditions are renegotiated at company-level, firms and workers always share production rents. In contrast, centralized industries only see wages positively correlated with firm profits when there is a complementary collective agreement at the company level (Rusinek and Rycx 2013). In Italy, female workers who switch from full-time to part-time contract regimes are found to earn more, likely due to the relatively higher protection accorded by unions and sectoral collective agreements (Devincienti et al. 2020).

The impact of digital transformation inter-plays with that of demographic change. Research suggests that an aging population and subsequent labour shortages have driven the adoption of automation in industrial processes (Acemoglu and Restrepo 2018; Abeliansky and Prettner, 2023). As the population ages, there is a growing demand for personal service and healthcare, sectors which typically employ more non-traditional workers and offer fewer opportunities for workers to negotiate better wages, due to a lower bargaining power of workers. Additionally, an aging workforce leads to decreased job mobility, prompting companies

to favour non-traditional contracts to maintain flexibility. This trend is likely to affect various sectors and could be particularly detrimental to younger workers (OECD 2019).

Another key force behind the transformation of the labour market is globalisation whose deepening has been strongly facilitated by the massive diffusion of new digital technologies and the rise of digital markets. Among the complex forces of globalisation, two of them are relevant for understanding the job quality, job security and the opportunities of rent-sharing: global value chain and migration.

Globalization is a significant driving force behind the transformation of the labour market. Its deepening has been greatly facilitated by the widespread diffusion of new digital technologies and the rise of digital markets. Among the complex forces of globalization, two stand out as particularly relevant for understanding job quality, job security, and opportunities for rent-sharing: global value chains and migration. The increasing international fragmentation of production and outsourcing practices has resulted in a significant increase in intermediate goods trade. This has led to intense competition among suppliers to reduce costs and ensure timely production. Consequently, local suppliers are under immense pressure to outsource and subcontract labour, often hiring workers for short periods of time on short-term contracts (Barriantes 2013; ILO 2016). On average, firms exposed to offshoring tend to have higher job separation, except than for young workers and those with tertiary education (El-Sahli et al. 2022). Krentz et al. (2021) study the interplay between production fragmentation and technological change, finding evidence reshoring in most OECD countries that is induced by automation. Reshoring is also found to be positively related to wages and employment for workers in professional occupations but not for workers with elementary-routine jobs. The impact of migration on job quality and worker gains is less clear, as natives and migrants cannot be often seen as substitute as they aim to respond to different types of labour demand (EIB 2016).

The impact of climate change on employment has become a topic of increasing importance in both policy and academic circles (EC 2014; ILO 2018). Climate change has a range of effects on the labour market, with extremely adverse atmospheric events reducing working hours and outdoor leisure (Graff Zivin and Neidell 2014). Pollution has also been found to reduce worker productivity, both in jobs exposed to natural events such as agriculture (Graff Zivin and Neidell 2012) and in jobs that are not, such as white-collar and service workers (Chang et al. 2019).

However, adaptation policies to climate change, developed after the signing of the Kyoto Protocol, are believed to have significant positive effects on employment and working conditions. These policies can

help to mitigate the negative effects of climate change on the labour market and create new opportunities for workers in emerging industries (EC 2019).

4. Advancement compared to the state of the art

We will study how the labour wage bargaining models do moderate the effects of technological change on the quality of jobs and the capacity of workers to appropriate rents. In particular, we will investigate how the latest wave of technology development affects the labour demand, by rising the employment of atypical job (mainly part-time and temporary workers) and how this trend differs in relation to the wage bargaining model in force at country level. We will also look at how rent-sharing between workers and entrepreneurs is affected by technological change and whether wage responsiveness to firm profits or value added is exacerbated or mitigated by the bargaining model.

5. Research to be done

This analysis will be carried out at country/sector level matching data from EU-LFS and EUKLEMS. We will consider various subgroups of atypical workers and assess their exposure to the adoption of the new technology and how this has affected their job opportunities. To measure rent-sharing we will relate wage dynamics of regular atypical workers to measures of industry profits or value added and technology adoption/exposure.

Technology will be measured in terms of task displacement of robot (TDA in Doorley et al. 2023). As an alternative, a similar procedure will be adopted to compute the exposure to computer software and database (source: EUKLEMS) and to AI adoption (source: data for a benchmark country available from German CIS 2018).

6. Methodology

Panel regression analysis, based on country-by-industry data, using a difference-in-difference (interaction variables) approach to identify how the advent of disruptive technologies shapes atypical employment

(temporary/part time contract, etc.) and rent-sharing mechanisms in relation to the wage bargaining models in force

The analytical framework that may be used considers the employment share of atypical workers as a function of industry-by-country fixed effects (α_{ic}), time dummies (α_t), a proxy for the technological threat (T) varying across industries, countries and time, the country-specific (time-varying) model of bargaining and the interaction between the latter two variables. The interaction term would capture whether the employment effect of technology is mitigated ($\alpha_3 < 0$) or exacerbated ($\alpha_3 > 0$) by the bargaining model and, if any, this effect of shows up above or below a given threshold in the diffusion of the new technology.

$$s_{ict} = \alpha_{ic} + \alpha_t + \alpha_1 T_{ict} + \alpha_2 BM_{ct} + \alpha_3 T_{ict} \times BM_{ct} + \mathcal{E}_{gict}$$

- A similar specification could be easily adapted to identify the effect of rent-sharing

7. Data sources

- EUROSTAT SES and LFS with a focus on the employment status (individual level)
- EUKLEMS/ OECD STAN/ OECD REGPAT/IFR for data on national accounts and megatrends with a focus on technology (country/industry-level data)
- OECD/AIAS ICTWSS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (country-level data)

References

Acemoglu, D. Restrepo, R. (2018). "Demographics and Automation". NBER working paper No. 24421

Abeliansky, A.L., Prettner, K. (2023). "Automation and population growth: Theory and cross-country evidence." Journal of Economic Behaviour & Organization 208, 345-358.

Anzolin, G. (2021). "Automation and its Employment Effects A Literature Review of Automotive and Garment Sectors" JRC Working Papers Series on Labour, Education and Technology 2021/16

Bachmann, R., Gonschor, M., Lewandowski, P., Madoń, K., (2023) "The impact of robots on Labour Market Transitions in Europe". IBS working paper 01/2023

Barrientos, S. (2013) "'Labour chains': Analysing the role of labour contractors in global production networks." Journal of Development Studies 49, 8 1058–1071.

Bell, B., Bukowski, P., Machin, S., (2023). "The decline in rent sharing". Journal of Labour Economics, forthcoming

Chang, T. Y., Graff Zivin, J., Gross, T., Neidell, M., (2019). "The Effect of Pollution on Worker Productivity: Evidence from Call Center Workers in China." American Economic Journal: Applied Economics 11 (1): 151-72.

Dauch, B. (2018). "The impact of new technologieson the labour market and the social economy." European Parliament IP/G/STOA/FWC/2013-001/LOT 8/C1,

Doorley, K., Gromadzki, J., Lewandowski, P., Tuda, D., Van Kerm, P. (2023). " Automation and Income Inequality in Europe". IBS working paper, mimeo

Devicienti, F., Grinza, E., Vannoni, D. (2020). "Why do firms (dis)like part-time contracts?" Labour Economics 65, 101864.

de Vries, G.J., Gentile, E., Miroudot, S., Wacker, K., (2020). "The rise of robots and the fall of routine jobs." Labour Economics 101885

EIB (2016). "Migration and the EU Challenges, opportunities, the role of EIB". European Investment Bank

El-Sahli, Z., Gullstrand, J., Olofsdotter, K. (2022). "The external effects of offshoring on job security in SMEs". Small Business Economics 59, 1613–1640

EU (2014). "Assessing the implications of climate change adaptation on employment in the EU". Triple E Consulting.

EU (2019). "Towards a greener future: employment and social impacts of climate change policies". European Commission, Brussels

Fukao, K., Perugini, C., Pompei, F. (2022). "Labour market regimes, technology and rent-sharing in Japan." Economic Modelling 112 105856.

Georgieff, A., Hyee, R. (2021) "Artificial intelligence and employment: New cross-country evidence", OECD Social, Employment and Migration Working Papers No. 265

Graff Zivin, J.,Neidell, M. (2012). "The Impact of Pollution on Worker Productivity." American Economic Review, 102 (7): 3652-73.

Graff Zivin, J.,Neidell, M. (2014). "Temperature and the Allocation of Time: Implications for Climate Change". Journal of Labour Economics, 32(1), 1–26.

Guertzgen, N. (2009). "Rent-Sharing and Collective Bargaining Coverage: Evidence from Linked Employer–Employee Data", Scandinavian Journal of Economics, 111(2) 323-349

Kline, P., Petkova, N., Williams, H., Zidar, O., (2019). "Who Profits from Patents? Rent-Sharing at Innovative Firms" Quarterly Journal of Economics 134(3) 1343–1404.

Krenz, A., Prettner, K., Strulik, H. (2021). "Robots, reshoring, and the lot of low-skilled workers." European Economic Review 136, 103744.

ILO (2016). Non-standard employment around the world: Understanding challenges, shaping prospects – Overview International Labour Office, Geneva

ILO (2018). The employment impact of climate change adaptation. International Labour Organisation. Input Document for the G20 Climate Sustainability Working Group,

OECD (2019). "Adapting to Demographic Change". Paper prepared for the first meeting of the G20 Employment Working Group under the Japanese G20 Presidency, 25-27 February 2019, Tokyo

Rusinek, M., Rycx, F. (2013). "Rent-Sharing under Different Bargaining Regimes: Evidence from Linked Employer–Employee Data". British Journal of Industrial Relations 51, 28-58.

Van Reenen, J., 1996. The creation and capture of rents: wages and innovation in a panel of UK companies.

The. Q. J. Econ. 111 (1), 195–226.