HUNGARIAN LABOUR LAW
E - J O U R N A L

Regulating (Un)Employment Effects of Automation

Challenges For Employee-Oriented Technological Transition

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1. Short historical excursus of automation anxiety.

The workman's fear of the technology taking his job could be easily perceived as an outdated commonplace from where we stand today, if only for technological capacity to simultaneously eliminate jobs and generate new professions. This paper will therefore specifically address the automation that eliminates human jobs, while also acknowledging the existence of job boosting technological innovations.

The questions about job deskilling and displacement caused by technology have been widely dealt with since the dawn of industrial revolution. Even further down the road of the history – in the ancient Greece and Rome – people were aware of the perils of introducing newer and cheaper industrial processes in the labour market. However, it was not clearly any machine or automated process that caused displacement of workers in ancient times, but rather the invasion of all economic fields by the work of slaves. Slaves were considered the living instruments of action[1], and as such the machines in flesh and blood. In Aristotelian point of view slaves could be seen as an alternative of non-existing technological support: "if […] the shuttle would weave and the plectrum touch the lyre without a hand to guide them, chief workmen would not want servants, nor masters slaves"[2]. In Roman Empire, the largest slave society in the history[3], the labour market was distorted in favour of enslaved population.

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1 "Now instruments are of various sorts; some are living, other lifeless; in the rudder, the pilot of a ship has a lifeless, in the look-out man, a living instrument, for in the arts the servant is a kind of instrument". Aristotle: *Politics*. Batoche Books, 1999. Book One, Part IV, 7.

2 Aristotle op. cit.

3 Walter Scheidel: *Slavery in the Roman Economy.* Standford University, 2010. 2.

Unemployment in Rome was a permanent condition, "the revenge of slavery upon the ancient world" as someone called it[4]. Some poor freeborn men even chose the voluntary enslavement so that they could achieve more secure long-term employment[5]. Despite obvious exaggeration in treating two very different phenomena as the same problem, something could be said about similarities in their effects and remedies. As well as contemporary use of technology aims to reduce the cost of labour[6], it can be positively affirmed the same about slave work in antiquity. The annual cost of a free labourer in the 4th century B.C. in Greece was approximately 540 drachmas as opposed to 270 drachmas for annual maintenance of a slave[7]. With regards to remedies, Julius Caesar tried to tackle high unemployment by introducing mandatory quota of free men to be hired in some economic fields. Peeking into the future, some authors suggest that governments will have to determine what jobs should be reserved to humans, either by creating a kind of 'human quota', or by using a softer approach and nudging employers to hire humans by creating 'made by humans' brand.[8] Gaius Gracchus introduced grain dole as a form of unemployment benefit and other measures such as extensive program of road building, and Augustus gave lands to ex-soldiers at risk of sudden unemployment in order to establish agricultural veteran colonies. Now, the grain dole operated as a distribution of grain to poor people of Rome at half price[9], whereas modern unemployment benefits work as a direct payment to a restricted category of recently laid off workers. Nonetheless, by lowering the cost of living of the Roman mob he partially freed them from the need of (already scarce) labour.

Despite reigning academic consensus[10] trying to calm down the excitement and fear brought by every potential technological change in the employment, the discussants in all generations were oftentimes stuck in repeating the recurrent pros and cons of new technologies in the world of work. Eventually, ongoing technological progress since nineteenth century lead inevitably into creating two schools of thought – first, rather obscure, started with extreme Luddite movement's 'rage against the machines'[11]. The second school of thought was represented by those who considered negative effects

4 Frank Burr Marsh: In defence of the corn-dole. *The Classical Journal*, vol. 22, no. 1, 1926. 25.

5 Peter Temin: The labor market of the early Roman empire. *Journal of Interdisciplinary History*, 2004.12.

6 In times of Covid-19 pandemic many companies turned to automation to deal with budget constraints. Cf. Angus Loten: Software bots multiply to cope with stretched resources. *Wall Street Journal,* 25 January 2021. https://www.wsj.com/articles/software-bots-multiply-to-cope-with-stretched-resources-11611615504.

7 John D. Forbes: *Some evidences of technological unemployment in ancient Athens and Rome*. Standford University, 1932. 13.

8 Gerlind Wisskirchen (eds.): *Artificial Intelligence and robotics and their impact on the workplace*. IBA Global Employment Institute, 2017. 40.

9 Burr Marsh op. cit. 23–24.

10 Cf. Miriam A. Cherry: Job Automation in the 1960s: A Discourse ahead of Its Time (and for Our Time). *Comparative Labor Law & Policy Journal*, vol. 41, no. 1, 2019. 197–220.; also Matthew W. Finkin: Technology and Jobs: The Agony and the Ecstasy. *Comparative Labor Law & Policy Journal*, vol. 41, no. 1, 2019. 221–234.; Valerio De Stefano – Antonio Aloisi: *Il tuo capo è un algoritmo. Contro il lavoro disumano*. La Terza, 2020.; Carl B. Frey – Michael A. Osborne: The future of employment: how susceptible jobs are to computerization? *Technological forecasting and social change*, vol. 114, 2017. On the contrary, for more deterministic economist approach cf. Erik Brynjolfsson – Andrew McAfee: *La nuova rivoluzione delle macchine. Lavoro e prosperità nell'era della tecnologia trionfante*. Milano, Feltrinelli Editore, 2019.

11 Full account on luddite fallacy and technological unemployment in general is given by Riccardo Campa: Technological unemployment. A Brief history of an idea. *Orbis Idearum*, vol. 6, iss. 2, 2018. 57–80.

of technology on work only temporary phenomenon, soon to be compensated by better opportunities it creates. J.M. Keynes optimistically believed in automation's positive effect on economy. It was him who coined the term technological unemployment, meaning "unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour"[12]. According to famous economist, machines would, indeed, replace humans, causing short-term technological unemployment of the masses. However, in the long run, thanks to machines standard of living would increase and it would eliminate, once and for all, the economic problem of humankind, i.e. having to work to earn a living[13]. Technological unemployment was a 'disease[14]', but the same virus causing it was considered a cure. It goes without saying that, so far, he was proven partially[15] right. In two hundred years of history there is no evidence of other than temporary joblessness, rather than structural technological unemployment. Even if some professions became inevitably obsolete, people were still able to work – so the lamplighters disappeared from the streets but new electricians could still make a living.

Although also the contemporary voices about the effects of automation are often discordant, they agree on one thing: there is no guarantee that the history will repeat itself once again. Firstly, new technology develops at a faster pace than before, leaving less time for workers and organisations to adjust, which can lead to widening gaps and increasing possibilities for technological unemployment[16]. Secondly, the technology itself is different. With the inception of 'second machine age[17]' the myth that technology, namely computers and digital technology, is capable of replacing humans only in mundane, simple tasks, has fallen[18]. Not long ago The New York Times featured an article called "The robots are coming for Phil in accounting" that underlined the reality of white collar automation as a result of robots' capability of complex decision making and how it is becoming less rare to build carrier path on a basis of scarse automability of chosen profession[19]. And last but not least, capitalism seems to be imploding. According to the Slovenian philosopher Slavoj Žižek "it is the very

12 John M. Keynes: *Economic possibilities for our grandchildren. Essays in Persuasion*. W. W. Norton & Co., 1963. 358–373.

13 Keynes op. cit. 358–373.

14 "We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come – namely, technological unemployment". Keynes op. cit. 358–373.

15 Keyness's other predictions – including the one where our generation was to live life without economic necessity and working just to avoid boredom – unfortunately has not come true (yet).

16 Brynjolfsson–McAfee op. cit. 192.

17 Term invented by two authors in the volume Brynjolfsson–McAfee op. cit. 13. According to the authors, the first machine age took place during the industrial revolution, when for the first time in history the human progress depended on technological innovations replacing muscular power. The second machine age generates the progress too, but contrary to the previous era new technology takes to uncharted territories and overcome our limits with regards to our mind and mental capacities.

18 According to previous theories, human brains, as opposed to computers, are especially good at recognising the patterns, i.e. taking in information via our senses and examining it for patterns. Cf. Frank Levy – Richard Murnane: *The new division of labor: how computers are creating the next job market.* Princeton University Press, 2005.

19 Kevin Roose: The robots are coming for Phil in accounting. *The New York Times*, 6 March 2021. https://www.nytimes.com/2021/03/06/business/the-robots-are-coming-for-phil-in-accounting.html

success of capitalism which produces unemployment, rendering more and more people useless"[20]. Despite the desire of capitalism for full automation, it still needs humans, if not as producers of value, but certainly as consumers of products. That is why the ones who are the most aware of the pitfall of technological unemployment are the big companies who would lose the consumers for their products. It is therefore not paradoxical at all that Silicon Valley entrepreneurs became the most ardent proponents of Universal Basic Income[21].

To sum up: as far as the issue of technological unemployment is concerned we are still moving on the quicksand of contradictory economical theories. Nevertheless, with all probability we will witness losing some jobs to automation in the years to come. What is more, some authors see the automation as the only solution for the demographic crisis in act: the older national populations grow, the more the gaps in the labour markets possibly need to be filled with AI and robots[22].

2. Worker's (individual) dismissal as a result of introducing new technology in the workplace

When dealing with a subject-matter of technological unemployment one has to pinpoint the legal issues of certain importance, as opposed to interminable social, philosophical and economic problems arising from it.

Two hypotheses can theoretically lead to status of technological unemployment. The first situation is a result of a dismissal from existing workplace, for the reasons concerning introducing new devices or technology capable to reduce costs of manpower. The other, less tangible one, occurs when particular sectors of economy undergo a wave of innovation leaving specifically qualified workforce out of job market. The first one is direct – termination of existing work relation due to technological transition in place, the other is indirect – not creating positions for human workers where they would have been otherwise employed.

Dismissal, both individual and collective, for economic reasons following technological innovation in the company, represents a legal tool for 'creating' technologically displaced workers. It is, nevertheless, a fully legitimate tool. In Italian legal system the dismissal for justified objective reason is established under the Article 3 of Law No. 604 of 1966, determined by reasons inherent to the productive activity, to the organisation of the work and to the regular functioning of it. The question is if introducing new technology in the company can fall under the scope of this provision. Although

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20 Slavoj Žižek: The revolt of the salaried Bourgeoisie. *London Review of Books,* vol. 34, no. 2, 26 January 2012.

21 Philippe Van Paijs – Yannick Vanderborght: *Basic income: a radical proposal for a free society and a sane economy*. Harvard University Press, 2019. Cf. also Jathan Sadowski: Why silicon valley is embracing universal basic income. *The Guardian*, 22 June 2016. https://www.theguardian.com/technology/2016/jun/22/silicon-valley-universal-basic-income-y-combinator.

22 Luca Tremolada: L'inverno (demografico) sta arrivando: perché servono velocemente più robot. *Il Sole 24 Ore*, 30 september 2022. https://24plus.ilsole24ore.com/art/l-inverno-demografico-sta-arrivando-perche-servono-velocemente-piu-robot-AEUtZi2B. See also Daron Acemoglu – Pascual Restrepo: *Demographics and Automation,* WP 24421, National Bureau of Economic Research U.S.A, 2018.

any hermeneutic operation is complicated by the reference to notions that are typical of the economic sciences and therefore do not have a content that can be identified exclusively on the basis of the words used by the provision[23], the interpretative solutions as to its scope were inevitably found by the jurisprudence.

Until the groundbreaking judgment of the Italian Supreme Court No. 25201 of 2016 it was believed that the dismissal for justified objective reason could be ordered only to deal with unfavourable economic situations, and could not be used as a tool aimed at generating an increase in terms of profit. According to this previous interpretation, entrepreneur's tool for *Rationalisierung* was turned into socially corrected 'appropriate' use of dismissal, in line with *extrema ratio* principle. Such interpretation represented the limitation of employer's freedom to enterprise pursuant Article 41 of Constitution, so that he was not at liberty to terminate individual employment relationships in favour of technological innovation for a sole purpose of increasing efficiency or profits. Furthermore, it was contrary to established principle (Article 30, paragraph 1 of Law No. 183/2010) that judge is excluded from possibility to control the entrepreneurial decision, which remains subject to legality review.

That was until the decision in question stated that "it is sufficient that the reasons inherent to the production activity and the organisation of work, among which it is not possible to exclude those aimed at a better management efficiency or at an increase in the profitability of the company, determine an effective change in the organisational structure through the suppression of an identified working position". As a consequence it paved the way for automation in a workplace.

Italian legal doctrine[24] has questioned the logic behind consolidated case-law stating unlawful termination when replacing costly employees with less expensive ones[25], and yet refusing to acknowledge identical motivation when it comes to introducing machines as an alternative. That means that in the light of current case-law interpretation, validity of dismissals motivated by purpose of cutting expenses depends on who or what substitutes the former employee in his job. In cases dealing with replacement by less costly human employees it is considered as compromising human dignity, intended as preservation of social respect deriving from 'owning' a job position[26]. Whereas no such concern exists in situations where a replacement is an outsourced self-employed worker or a technological device, even if, ironically, being replaced by a robot or a technology has the same, if not bigger, undermining effect on person's professional and social dignity.

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23 Valerio Speziale: Il giustificato motivo oggettivo di licenziamento tra 'clausole generali', principi costituzionali e giurisprudenza della Cassazione. *Giornale di diritto del lavoro e di relazioni industriali*, vol. 157, 2018. 134.

24 Pietro Ichino: Sulla nozione di giustificato motivo oggettivo di licenziamento. *Rivista Italiana del Diritto del Lavoro*, vol. 3, 1999. 479.; Valeria Nuzzo: *La norma oltre la legge. Causali e forma del licenziamento nell'interpretazione del giudice*. Satura editrice, 2012. 98.

25 Cass. 17 March 2001, No. 3899; Cass. S.U. 11 April 1994, No. 3353; and Cass. 14 June1983, No. 4088.

26 Marco Novella: Dubbi e osservazioni critiche sul principio di insindacabilità delle scelte economico-organizzative dell'imprenditore. *Rivista Italiana del Diritto del Lavoro*, vol. 2, 2004. 802.

For comparison, interesting yet isolated conclusion was drawn in a Spanish judgment concerning dismissing of an administrative employee so that her duties could have been taken over by computer software[27]. Court's opinion regarded the motivation of change in means or instruments of production as insufficient, since the human employee cannot be considered as such[28]. Automation as a technical cause of the objective dismissal, concludes the judge, "implies the contrast between the social rights achieved by employees, who are seen as an obstacle for achieving a more optimal business performance". Ultimately, through condemning the employer to pay conspicuous compensation to the ex-employee, the court expressly set the price tag to technological displacement of workers. Instead of privileged and inexpensive dismissal for objective reasons, it argues, only declaration of unfair dismissal can result in tolerable cost for such company.

In Italian interpretation of dismissal due to technological innovation, the opposite seems to be true. "It is up to the legislator to establish whether the social purpose to which economic activity, even private, can be coordinated or directed, in the choice between a more efficient business management and the sacrifice of a single job position, should follow the path of inhibiting individual dismissal, it being understood that those who legislate may otherwise believe that the collective interest of employment can be better pursued by safeguarding the management capacity of companies to cope with competition in the markets and that the current benefit for a worker to the detriment of production efficiency may rather translate in a future injury to a greater number of them. It is not up to the judge, in the presence of a formula such as that dictated by Article 3 […], subrogate in the choice, with reference to the individual dismissal appeal, also taking into account the lack of cognitive and predictive tools that allow you to assess what may be the best option for the company and the community"[29]. As far as Italy is concerned, automation is "an entirely lawful and almost unassailable way to avoid the costs of employing people"[30]. Consequently, at least when it comes to unlawful termination motivation, local jurisprudence seems to have washed its hands and conveniently left future legislator to decide if the issue concerns human and social dignity.

Luckily, a way around the harsh consequences of the automation could be found in the Civil Code's professional training obligation. Although generally the employer is not obligated to provide professional training to their employees to ensure proper work performance, in cases where an employee's skills are deemed outdated due to company restructuring, good faith and fairness principles[31] require the employer to not only consider re-employing the worker but also the possibility of providing professional

27 Juzgado de lo Social No. 10, Palmas de Gran Canaria 23 September 2019, No. 470/2019.

28 In Spain dismissal for objective reasons, unlike in Italy since 2016 judgment, is considered justified only when the employer is experiencing prior adverse economic situations: "this cannot be had as a just cause for an appropriate dismissal, because otherwise it would imply favouring, under the pretext of competitiveness, the underestimation and minimization of the Right to Work". Juzgado de lo Social No. 10, Palmas de Gran Canaria 23 September 2019, No. 470/2019.

29 Cass. 7 December 2016, No. 25201.

30 Cynthia Estlund: What Should We Do After Work? Automation and Employment Law. *Public law and legal theory research paper series,* New York University School of Law, Working Paper, No. 17-28, 2018. 34.

31 Cass. 7 January 2005, No. 239.

training to update their skills. The legal basis for this reasoning is traceable to the obligation of repêchage– i.e. obligation to consider re-employing – which is a result of decades long jurisprudence[32], together with the Art. 2103 of Civil Code that establishes the necessity to accompany the change of employee's job duties with the professional training. Some judges are already moving in this direction when dealing with cases of dismissal due to technological transition in the company, considering the sole limits of reasonable costliness for the employer, while tacitly avoiding the ideological threshold set out by the aforementioned Supreme Court ruling[33].

3. Collective redundancies for technological reasons

Question appears to be less complicated in a case of collective dismissals. Collective redundancies, as a result of technological reorganisation of the company, pass through the articulated and highly protective process. Here, the dignity of a worker is defended at various stages, through strong labour laws and involvement of trade unions. Their favourable influence when dealing with automation processes and their social implications is agreed upon even by most influent legal and economic scholarship[34]. Italian collective dismissal regulation, contained in the Law No. 223/1991, operates precisely in terms of major proceduralisation of employer's duties and trade union participation every step of the way: employers have a duty to provide immediate and analytical information to the trade unions and the competent public authority, in order to allow the former to request a potential consultation procedure.

European legislator goes even one step further as to solve the automation redundancies when they occur. According to Article 2 of the Directive 1998/59/EC (the collective redundancy directive) employers are to fulfil their consultation and information duties already at the preliminary stages

[32] A careful look at the most recent jurisprudential panorama reveals how the various legal issues pertaining to the problem of demonstrating the failure to re-employ the worker have always been the subject of tormented and opposing positions. Having first ascertained the objective limit for which the burden of repêchage cannot extend to imposing organisational changes on the employer in order to create new job position to safeguard the continuity of the employment relationship (Cass. 2 August 2013, no. 18535), the possibility of repêchage was later extended to lower job positions (Cass. 7 August 1998, no. 7755), the objective scope of application was designed (for the doctrinal orientation that extends the sphere of the test also to the other headquarters of the company see Cass. 10 May 2003, no. 7169, even abroad see Cass. 15 July 2010, no. 16579; for the more restrictive jurisprudence see Cass. 14 March 2003, no. 5496, Cass. 28 August 2000, no. 11275) and, almost simultaneously, the repêchage test was (re)distributed between employer and employee (for the orientation that requires the employee to present in court the possibility of his/her useful relocation in the corporate organization see Cass. 10 May 2016, no. 9467; Cass. 8 August 2015, no. 16512; Cass. 3 March 2014, no. 4920; Cass. 5 March 2003 no. 3245; Cass. 14 December 2002, no. 17928; Cass. 16 June 2000, no. 8207; Cass. June 3, 1994 no. 5401; against, the most recent jurisprudence which assigns the burden of proof to the employer Cass. 5 January 2017, no. 160; Cass. 22 March 2016, no. 5592; Cass. 5 March 2015, no. 2015).

[33] For the most recent ruling in this sense see Danilo Bellini: L'estensione dell'obbligo di repechage tra gli obblighi formativi e il principio di ragionevolezza. Brevi note alla sentenza del Tribunale di Lecco del 31 ottobre 2022, note to the ruling of Tribunale di Lecco, 31 October 2022. *Lavoro Diritti Europa*, no. 159, 1/2023. See also Cass. 7 May 2008, No. 11142.

[34] With regards to legal doctrine representatives see Valerio De Stefano: Negotiating the algorithm, Automation, artificial intelligence, and labour protection. *Comparative Labor Law Policy Journal*, vol. 41, no. 1, 2019. 43.; for economic scholarship see, for instance, Simon Deakin: The contribution of labour law to economic development and growth. *Centre for business Research, University of Cambridge Working Paper,* No. 478, 2016. 16–17.

of the collective dismissal process, when any such decision is being only contemplated[35]. Also the Directive 2002/14/EC foresees the possibility for the involvement of social partners in very early stages of automation, when the decision about it is to be made. Member states could, therefore, order information and consultation duties on "decisions likely to lead to substantial changes in work"[36]. In the case of Italy, such provision has been adopted with a Legislative Decree No. 25/2007 and concerns all the enterprises with at least fifty employees, while all the details concerning time, place, subjects involved and methods of union information and consultation are meant to be specified in the collective agreements.

Collective agreements represent thus a stronghold for the general discussion regarding company's economic performance and the resulting modifications or implications for employment levels. For example, the collective agreement for the metalworking and mechanical engineering industry[37] contains a duty for the employer to inform the unitary union representatives (so called 'RSU') and the territorial union organisations, whenever decisions leading to significant changes in the production systems that affect adopted technology, work organisation and employment are contemplated. Moreover, annual reports regarding any possible modifications in employment levels allows the trade unions to exercise their functions to the best of their abilities, including that of influencing the future managerial determinations and choices of the company, such as outsourcing or automation[38].

Collective dismissals' laws apparently represent solid starting point for legislators. Trade unions' involvement is a crucial feature for every lawmaking process aiming to either prevent or at least attenuate negative social impact of new technology in a workplace.

4. Social security tools in the technological perspective: corporate reorganisation and the key role of vocational training

So far, this paper has addressed the issue from an internal company point of view, through the legal instruments that can be used to deal with occupational transitions and possible unemployment effects of automation, in the light of the national and European case law.

35 Interpretation confirmed by a subsequent case law, e.g. Case C-188/03 Junk v Kühnel, 2005 (37).

36 Article 4 par. 2 lett. c) of the Directive 2002/14/EC of the European Parliament and of the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the European Community.

37 Contratto Collettivo Nazionale di Lavoro (CCNL) settore metalmeccanico per le lavoratrici e i lavoratori addetti all'industria metalmeccanica privata e alla installazione di impianti, 2021–2024.

38 In the ruling Trib. di Firenze from 20 September 2021, no. 1685/2021, the Italian Court confirmed that the employer's obligation to provide information is not limited to the communication of the decision taken but extends to the phase of formation of the decision itself, specifically based on some of the expressions contained in the collective agreement, such as 'predictable employment trends', 'forecasts of risk for employment levels', 'forecasts on employment dynamics also in relation to the trend of demand and consequent workload'; it can be inferred that the employer is required to share with the trade union not only company data (on market trends, production levels, and other factors), but also any evaluation made with regard to such data, whenever such evaluation involves a 'forecast of risk for employment levels'.

Actually, if we broaden the scope, we realize that the Italian social security might offer some interesting arrangements to face and regulate the technological redundancy of employees, for instance in case of company reorganisation. In order to be competitive on a national and, above all, international level, companies have to keep up with the times and experiment with new forms of work organisation, that frequently require the use of technological tools and the implementation of digitisation of production processes. In this perspective, the technological transition impacts on the corporate organisation and might affect employment levels.

Recently, the Italian Budget Law 2022[39] has introduced a new reason for intervention for the extraordinary wage guarantee fund[40], that is the "corporate reorganisation, also to implement processes of transition"[41]. This new formulation highlights the relevance of the processes of transformation and modernisation of companies in terms of eco-compatibility, digitalisation, and renewal of skills, that are the pillars on which the National Recovery and Resilience Plan (NRRP) is based[42].

The NRRP emphasizes the urgency of a digital transition, that might represent a valid driving force for recovery. The subsequent regulatory measures – in particular, the so-called decree 'GOL'[43] and the New Skills National Plan[44] – go exactly in the same direction.

As provided for by the paragraph 2 of the art. 21, the corporate reorganisation program must present an action plan aimed at managing not only the transition process, but also a substantial employment recovery, even in terms of professional retraining and skills enhancement.

Precisely the attention to the training of employees is in the spotlight and constitutes the bridge between active and passive labour policies[45].

The technological revolution underway involves the transformation not only of organisational models, but also of the concrete methods of carrying out work activities[46]. The disruptive and rapid technological progress requires, on the one hand, varied and increasingly specific skills, and, on the other hand, the ability to be adaptable to respond promptly to the needs of digitisation.

The pandemic experience has given a strong acceleration to the technological revolution, also demonstrating that – even with the same tasks – the concrete methods of carrying out the activities can change. From a negative point of view, this phenomenon risks translating into job insecurity and disorientation for companies and employees, but in a positive perspective the transformation opens

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39 Law 30.12.2021, no. 234.

40 In Italy it is known by the acronym CIGS (Cassa Integrazione Guadagni Straordinaria).

41 The art. 1, par. 199, lett. a), law no. 234/2021 has modified the art. 21, par. 1, lett. a), legislative decree 14.09.2015, no. 148.

42 For a more in-depth analysis, see Lucia Valente: Transizioni occupazionali, politiche attive del lavoro e ruolo del sindacato nell'era del Governo Draghi. *Bollettino Adapt*, no. 7, 21.02.2022.

43 It is a decree on the employability guarantee, issued by the Ministry of Labour on 5.11.2021.

44 It has been issued on 28.12.2021.

45 Lucia Valente: Politiche attive e passive del lavoro: dalla CIG al contratto di ricollocazione. *Diritto e pratica del lavoro*, no. 43, 2014. 2317.

46 According to the World Economic Forum, 42% of the central skills for carrying out professions are destined to change by 2030 and, consequently, around one billion workers will need reskilling. See Robert E. Moritz: How do we upskill a billion people by 2025? *World Economic Forum,* Jan 22, 2020. https://www.weforum.org/agenda/2020/01/2025-leadership-collaboration-skills-training/.

up to all the potential of a dynamic and constantly evolving job market. Therefore, to adequately guarantee both the maintenance of employment and the suitability for employability[47], greater attention to professional training[48] is necessary. Professional training should be considered at 360 degrees, both initial and permanent or continuous, the so-called lifelong learning.

Even the Italian Constitution, at the art. 35[49], states that the Republic takes care of the training and professional qualification of workers.

Despite the legislative interventions of the last twenty years[50], the care for the permanent training of workers[51] remains a weakness[52] for Italy and, more generally, for the countries of the southern Europe[53]. Consequently, this is an aspect to promote and valorize urgently[54].

Furthermore, considerable attention is also paid to the training issue by the NRRP, which reserves ample space and huge resources for investments concerning the fields of upskilling, reskilling, and employability, which are linked to each other and variously combinable.

Eventually, it is interesting to highlight that the implementing decrees of the so-called Jobs Act have introduced the conditionality principle[55]. Practically, the access to the salary integration treatment during employment[56] is subject to the participation in the training initiatives proposed by competent services[57].

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47 See Domenico Garofalo: *Formazione e lavoro fra diritto e contratto. L'occupabilità*. Bari, Cacucci, 2004.; Bruno Caruso: Occupabilità, formazione e "capability" nei modelli giuridici di regolazione dei mercati del lavoro. *Giornale di diritto del lavoro e delle relazioni industriali,* no. 1, 2007. 35.

48 Silvia Ciucciovino: Professionalità, occupazione e tecnologia nella transizione digitale. *Federalismi.it*, no. 9, 23.03.2022. 137.

49 Second paragraph.

50 Law 28.03.2003, no. 53; art. 4, par. 51, law 28.06.2012, no. 92; art. 1 legislative decree 16.01.2013, no. 13; National strategic plan for the development of skills of the adult population, approved by the Unified Conference on 08.07.2021.

51 For a more in-depth analysis, see Matteo Corti: L'edificazione del sistema italiano di formazione continua dei lavoratori. *Rivista Giuridica del Lavoro e della Sicurezza Sociale,* n. 1, 2007. 163.; Silvia Ciucciovino: *Apprendimento e tutela del lavoro.* Torino, Giappichelli, 2013.; Silvia Ciucciovino*:* Apprendimento permanente. In: *Libro dell'Anno del Diritto*, Enciclopedia Treccani, 2013.

52 Linda Gilli: Le professioni di domani tra nuove skill, digital e A.I. *Civiltà del Lavoro*, no. 2, 2021. 43.

53 Ari Antikainen: Is lifelong learning becoming a reality? The case of Finland from a comparative perspective. *European Journal of Education*, no. 3, 2001. 379.; Tarja Tikkanen – Barry Nyhan: Preface. In: Tarja Tikkanen – Barry Nyhan (eds.): *Promoting lifelong learning for older workers. An International overview.* Luxembourg, 2006. 19.; Tarja Tikkanen – Barry Nyhan: Introduction: innovative learning measures for older workers. In Tarja Tikkanen – Barry Nyhan: *Innovative learning measures for older workers*, Luxembourg, 2008. 5.

54 Massimo Roccella: Formazione, occupabilità, occupazione nell'Europa comunitaria. *Giornale di diritto del lavoro e delle relazioni industriali*, no. 1, 2007. 194.; Alberto Levi: La trasformazione digitale ed organizzativa del lavoro e il rilancio dei processi di apprendimento permanente del lavoratore. *Massimario di giurisprudenza del lavoro*, no. 3, 2021. 647.

55 See art 7 legislative decree 4.03.2015, no. 22; art. 8 legislative decree no. 148/2015.

56 Also the benefits given in the event of involuntary termination of the employment relationship, such as the so-called NASpI (new social insurance for employment).

57 As well as participation in work activation initiatives.

5. Occupational transition agreements and expansion contracts as tools to tackle technological unemployment

The Budget Law 2022 has introduced a relevant tool, named "occupational transition agreement"[58], which might be useful to face technological transitions. It involves companies with more than 15 employees, which have been affected by the extraordinary redundancy fund for corporate reorganisation and grants an additional salary integration for 12 months aimed at re-employment or self-employment, such as professional training and retraining through actions of upskilling and reskilling provided for by the Employability Guarantee Program. In practice, during the trade union consultation aimed at avoiding redundancies, the parties can conclude this occupational transition agreement.

The actions defined by the trade union agreement can be co-financed by the regions within the respective training and active employment policy measures.

If employees do not participate in the training initiatives due to their own responsibility, they lose the wage integration service[59]. This is one of the clearest signs of the conditionality principle[60]. Anyway, the training of employees is fundamental for a balanced occupational transition[61], as attested by the European Union strategy on the matter[62], which proposes ambitious digital transformation goals for enterprises by 2030[63].

Another interesting tool to analyze in the perspective of employee-oriented technological transition is the expansion contract, regulated by art. 41 of the legislative decree no. 148/2015. It is an experimental arrangement[64] that large companies can use in the reindustrialisation and reorganisation processes aimed at technological development. With this type of agreement, which involves trade unions and the Ministry of Labour, not only are dismissals avoided, but it is also possible to hire new professional figures through a reduction in working hours of the staff and the provision of a salary integration to compensate for it[65].

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58 Art. 1, par. 200, law no. 234/2021, which has introduced art. 22-ter in the legislative decree no. 148/2015, on the reorganisation of the legislation on social safety nets during employment relationships.

59 As provided for by art. 22-ter, par. 2, legislative decree no. 148/2015.

60 See also art. 25-ter legislative decree no. 148/2015.

61 The EU is facing a growing demand for digitally skilled workers across all sectors, with an estimated gap of one million digitally skilled workers required on the market. EU Member States aim to halve this figure by 2025 by improving digital education and workforce skills: see Michele Iaselli: Digitalizzazione: la strategia UE. *Altalex,* 7.04.2021. https://www.altalex.com/documents/news/2021/04/07/digitalizzazione-strategia-ue

62 See Decennio digitale europeo: obiettivi digitali per il 2030 . https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_it.

63 For instance, 75% of EU companies using cloud/AI/Big Data.

64 Initially planned until 2021, then extended until 2023, as proved for by par. 1 of the art. 41 legislative decrees. The so-called "milleproroghe" decree 2023, in process of approval, extends the possibility of expansion contracts until 2025.

65 See also INPS circulars 24.03.2021, no. 48 and 25.07.2021, no. 88.

The expansion contract involves only large companies, that is businesses with more than 1.000 employees[66]. It must contain the number of workers to be hired and an indication of the related professional profiles compatible with the reindustrialisation or reorganisation plans, as well as the average overall reduction in working time and the number of workers affected.

A particular discipline is laid down in case of older employees[67], that is workers who are no more than 60 months before obtaining the right to an old-age pension, and have got the minimum contribution requirement. In this case, after the agreed resolution of the employment relationship, the employer pays a monthly allowance until the pension entitlement is achieved[68].

The aim of this tool is to hire new workers in order to promote generational turnover in the company, since the technological transition brings out another critical issue: the age management. As a matter of fact, older workers may find it more difficult to engage in a digitized work organisation.

On the one hand, there is a cultural heritage whereby older employees are considered less productive[69], not flexible enough[70], unable to adequately use new technologies[71] and more exposed to occupational risks[72] or, at least, to a longer convalescence in case of injury[73]. Anyway, occupational health and safety legislation includes the age of the worker among the factors that the employer is required to take into consideration in the assessment of occupational risks[74].

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66 The "milleproroghe" decree 2023, not approved yet, expands the number of companies involved because it halves the employment threshold up to 500 employees.

67 See par. 5 of the art. 41 of the legislative decree no. 148/2015.

68 Specific economic benefits are provided up to the maximum spending limit established annually.

69 Hans-Peter Blossfeld – Sandra Buchholz – Karin Kurz (eds.): *Aging populations, globalization and the labor market. Comparing late working life and retirement in modern societies*. Edward Elgar Publishing, UK, 2011. 6. The authors underline the need for companies to keep pace with the rapid diffusion of communication technologies and to be flexible, adopting work organisation models in continuous and sudden transformation.

70 Generally older workers have professional qualifications that are difficult to adapt to the rapid changes imposed by technical and structural transformations.

71 Shinya Ouchi: Il trattamento dei lavoratori in relazione all'età nell'ordinamento giapponese. *Giornale di diritto del lavoro e delle relazioni industriali*, no. 4, 2005. 997. The author highlights how in the Japanese economy older workers are a 'burden' for companies, because productivity tends to decline in the last years of the working career.

72 See the statistical data in Fondazione Istud: L'epidemiologia e i costi degli infortuni e delle malattie delle risorse umane relativi alla incidenza del fattore anagrafico. *Quaderno di Ricerca,* n. 6, 2009. 19., in *www.istud.it*.

73 Sally Salminen: Have young workers more injuries than older ones? An international literature review. *Journal of Safety Research*, no. 35, 2004. 513.

74 See art. 28, par. 1, and art. 176, par. 3, legislative decree 9.04.2008, no. 81, the so-called Consolidated text on health and safety at work.

On the other hand, however, the premature expulsion of older workers from the labour market[75] has negative consequences both on the community[76], on the individual[77], and on the company itself[78]. Therefore, a balanced staff management requires particular attention to the so-called age management and the expansion contracts, used during technological transitions, might respond to these needs.

6. Critical issues and prospects for employee-oriented technological transition

Returning to the title of the paper, the question is: are these tools enough to fight the effects of technological unemployment? Time will tell for sure because there is not enough data about it yet. Indeed, the introduction of the occupational transition agreements is too recent, and the use of expansion contracts so far involves only a few large companies[79].

However, meanwhile, it is relevant to underline that there are encouraging signs of a new spring of social dialogue, as demonstrated by the growing involvement of trade unions on this topic. Occupational transition agreements and expansion contracts are clear indications in this perspective.

Moreover, in both cases there is also a public intervention: in the occupational transition agreements it is represented by the participation in the Employability Guarantee Program and the possible co-financing of the regions; in the expansion contracts there is the involvement of the Ministry of Labour for the authorisation and of the National Social Security Institution (in Italian, the acronym is INPS) for the activity management.

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75 Eurostat data shows that the employment rate of older workers (between 55 and 64 years) in Italy is equal to 53.4%, well below the European average of 60.5% and very far from northern European countries such as Iceland (80.2%), Sweden (76.9%), Norway (74.6%), Denmark (72.3%), Switzerland (72.3%), Germany (71 .8%), the Netherlands (71.4%): https://ec.europa.eu/eurostat/databrowser/view/tesem050/default/table?lang=en.

76 Not only "the economy will not be able to survive without the talents and experience of older workers" (Roger Blanpain: Le differenze di trattamento e la discriminazione connessa all'età: una società per tutte le età. *Giornale di diritto del lavoro e delle relazioni industriali*, no. 4, 2005. 944.), but not even without their effective contribution, except for the risk of a strong imbalance between the "active" population and the economically dependent one: see Adelaide Russo – Riccardo Salomone – Michele Tiraboschi: *Invecchiamento della popolazione, lavoratori anziani e politiche del lavoro: riflessioni sul caso italiano. Collana ADAPT,* no. 7, 2002. 12. The latest demographic report drawn up by the European Commission shows that the so-called old-age dependency ratio, i.e. the ratio between retired individuals and active workers, presents a strong imbalance, destined to double in 2070: see *The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019–2070)*. Brussels, European Commission – Directorate for economic and financial affairs, 2021.

77 The early inactivity of the workers involves not only the loss of the possibility of a further earning, but, above all, of an opportunity for personal fulfillment which has negative repercussions on both the physical and psychological health of the individual: on the point see Dragana Avramov – Miroslava Maskova: *Active ageing in Europe*. Luxembourg, Council of Europe Publishing, 2003. 96.

78 The company risks losing valuable expertise and loyalty: according to the report written by Fondazione Istud op. cit. 96, older workers are a wealth of "experience and attachment to the job and to the company and, for this reason, they represent a fundamental resource".

79 For instance, see expansion contract signed by Tim on 2.08.2019; expansion contract signed by Ericsson on 25.11.2019 and modified on 30.12.2020; expansion contract signed by Bricocenter on 3.11.2020; expansion contract signed by Eni on 1.04.2021; expansion contract signed by Stellantis on 22.09.2021. For a more detailed analysis, see Michele Dalla Sega: Per una storia della contrattazione collettiva in Italia/30 – Contratti di espansione: prime evidenze da 4 casi aziendali. *Bollettino ADAPT*, no. 16, 26.04.2021.; Michele Dalla Sega: Il contratto di espansione alla prova di maturità: dall' "oggetto misterioso" al caso Stellantis. *Bollettino ADAPT*, no. 36, 18.10.2021.

In light of the above we could say that the strengths of these legal instruments are precisely the attempt to protect employees through a worker-oriented technological transition, since both occupational transition agreements and expansion contracts are aimed at avoiding layoffs or even to increase the level of employment, despite the technological reorganisation of the company. Nevertheless, the limited and temporary nature of the available funds are obviously weaknesses, which prevent a complete and balanced management of the transition. As also noted in the historical excursus on automation anxiety[80], the technological transition is not a contingent phenomenon, but it is a road of no return, a sort of structural situation – albeit in continuous and multiform evolution – to face with adequate tools and a clear goal.

Although it is increasingly difficult to achieve, still today the goal is that "the technical-productive organisation of the company must be shaped on human being and not the other way around"[81].

80 See par. 1.

81 Luigi Mengoni: *Diritto e valori.* Bologna, Il Mulino, 1985. 379.