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# **ROBOTIZATION AND WELFARE SCENARIOS**

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## ROBOTIZATION AND WELFARE SCENARIOS

Luis Moreno\*

### Abstract

This paper contributes to the ongoing discussion about the impact of robotization on welfare democracies. It advances conjectures on possible future scenarios following the examination of past trajectories. The context of analysis is that corresponding to welfare capitalism in the Western hemisphere. An historical examination of the three Ages of Welfare (Golden, 1945-75; Silver, 1976, 2017; and Bronze, 2008--?) provides the historical bases with the purpose of pondering prospective scenarios. Arguably, the structural economic overturn brought about by robotization and related technologies will challenge substantially the provision of social welfare as we have known it until now. Among the various shocks induced by industry 4.0, robotization they will have far-reaching implications for labour markets, employment and welfare arrangements. Neo-feudalism practices and the eventual implementation of minimum income schemes are identified as contrasting future trends.

### Key words

Ages of welfare, job substitution, labour markets, guaranteed minimum income, neo-feudalism, technological change.

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## 1. Introduction

The relentless process of the robotization in the new context of Industry 4.0 is already bringing about deep transformations in welfare democracies. This fourth technological revolution driven by the generalization of internet and automation is intensifying new applications of artificial intelligence (AI) (Schwab, 2015, Lorentz et al., 2015; OECD, 2017). Computing allows the development of functionalities comparable to human performance, even in activities where humans were thought to have a permanent cognitive advantage over machines (Elliott, 2014). Composing original music or beating chess grandmasters are cases in point.

For the sake of parsimony, in this paper robotization is referred to include processes of computing, digitalization, automation, artificial intelligence, big data and, in general, those inter-related applications of information and communication technologies (ICT) (Moreno & Jimenez, 2018). Note, for instance, that modern social robots such as Pepper or NAO<sup>1</sup> are equipped with AI. However, AI can run most outlined operations independently of a body. With the use of big data, the processing of millions of data of easy access and treatment allow all kinds of work, for example, on social networks and demography based on the content of millions of records.<sup>2</sup>

Arguably, the ongoing robotization could make the need for a large part of human paid work superfluous (Rodman, 2013). Despite contrasting developments of job creation or replacement, a general observable able trend seems to indicate a gradual but accelerated transition towards a robotization of economic activities capable of incorporating efficient automation processes. This is to follow the paramount criteria of maximizing profitability in the present configuration of globalization.

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<sup>1</sup> Pepper is a semi-humanoid robot designed with the ability to read emotions. It is currently being used as an office receptionist and is able to identify visitors with the use of facial recognition, send alerts for meeting organisers and arrange for drinks to be made. Likewise, Nao robots have been used for research and education purposes in academic institutions worldwide. Service robots may be virtually represented (e.g. Alexa) (Wirtz et al., 2018; Gonzalez-Jimenez, 2018)).

<sup>2</sup> In the field of sociological research, for example, this is already having a great impact. Sociologists Mike Savage and Robert Burrows called early attention to these consequences in their much-referenced work, 'The coming crisis of empirical sociology' (2008).

In recent decades, the worldwide spread of a type of ‘casino capitalism’ (Strange, 1986), sponsored by financial deregulation during the years of Alan Greenspan as governor of the US Federal Reserve US (1987- 2006), facilitated a type of growth where the avid enrichment prevailed over any other consideration, be it the creation of employment or the reduction of social inequalities. Gradually, but significantly, the balance of economic authority had already been slanted before the start of the Great Recession of 2007-08 towards the side of international financial preponderance to the detriment of national state authority (Fligstein, 1996). Although the ‘casino capitalism’ model has been identified as the main responsible for the financial excesses and the global economic turbulence after the *crack* of 2007, the recipes at the end of the crisis have continued to forecast ‘more-of-the-same’. Individual actions taken by governments of EU Westphalian nation-states have been belittled by the actions of international capitals and the influence of multinational corporations. In the US, the financial economy without regulation, together with the interests of the political-financial elite of investors and rentiers, has prevailed over the general interest (Chomsky, 2017).

For the purposes of reviewing the historical background, the following section of this article deals with the evolution of welfare states in the Western hemisphere. Three distinct Ages of Welfare are identified: (a) Golden Age, which started after WWII and ended in the mid-1970s; (b) Silver Age, which ran from the 1970s until the unleash of the Great Recession in 2007, and (c) the ongoing Bronze Age. The third section discusses technological change with regard to robotization and related technologies. Concerning labour markets, observable trends appear to be detrimental to the maintenance of long-term jobs. This trend is not necessarily leading to job substitution and could well be interpreted as encouraging the increase of short term or ‘mini’ jobs.<sup>3</sup> However, the discussion on job replacement between human and artefacts provide the framing of subsequent discussions in the fourth section on the rise of neo-feudalism and the eventual implementation of minimum income schemes of social protection for the jobless. Concluding remarks point to the need of engaging in more interdisciplinary research to tackle these issues. A reference is made to the possible implementation of taxation on robots so that welfare states could be sustained financially.

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<sup>3</sup> Mini job is an expression coined in Germany characterized as part-time with a low wage (e.g. €450 with income tax exempted). Already in March 2009 there were close to 5 million people in Germany on €450-a-month tax-free ‘mini jobs’ (Hinrichs & Jessoula, 2012).

## 2. Ages of welfare and the Bronze period (2008- ?)

The welfare state (WS) can be defined as a complex of state institutions which provide social policies aimed at improving citizens' living conditions and to facilitate equal opportunities. Social policies are interventions carried out by state public bodies to cover citizens' life risks, mainly in the realms of education, employment, health, fiscal transfers and social security. Social expenditure in matured WS ranges between a fifth and a third of those countries' GDP, and accounts for between half and two thirds of their total public spending. These features typically characterize the post-WWII welfare states.<sup>4</sup>

During the second half of the twentieth century, and with high degrees of legitimacy, the WS made possible citizens' aspiration for improving living conditions. In retrospect, it can be established that the *Trente Glorieuses*, as the period of the Golden Age of European welfare (1945-1975) is called, was succeeded by a Silver Age (1976-2007) that maintained a high resilience in the face of persistent adjustments to contain social expenditures and to avoid setbacks in welfare provision. Ten years after the Great Recession triggered in 2007-08, the question to ponder is whether the present Bronze Age of *welfare* (2008-?) could be able to maintain the welfare achievements of the second half of the twentieth century. In this section, we turn to the allegory of the mythological ages of Gold, Silver, and Bronze to review welfare development since the end of the Second World War.<sup>5</sup>

Throughout the Golden Age of welfare development (1945-75), the systems of social protection in Western Europe based their expansion counting on the high rates of male

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<sup>4</sup> According to Peter Flora (1993), those lower and higher percentages of social expenditure show the distinctive maturity and generosity of the various welfare systems. If tax breaks and the panoply of 'hidden' fiscal subsidies are taken into account, France reached in 2001 a percentage of welfare spending close to 29% of GDP, which compared to 26 % in Denmark and 17 % in the USA (Esping-Andersen & Palier, 2008).

<sup>5</sup> Allegory made by the ancient Roman poet Ovid (43 BC – 17 AD). The sequential Era replacement had already been suggested by the ancient Greek poet Hesiod (around the seventh century BC) in his celebrated poem *Works and Days*. On the various welfare ages, cf. Esping-Andersen, 1994; Taylor-Gooby, 2002 and Moreno, 2016.

labour employment, and on the complementary action deployed by families. Within the latter, the unpaid household work carried out by women was indeed crucial (Lewis, 1992). Equal access to mass consumption also contributed to strengthening internal added demand and, consequently, to a sustained economic growth. A combination of social policies, Keynesianism, Taylorism and gender segregation facilitated the generalization of a type of “affluent worker” (Goldthorpe et al., 1969), which was representative of the practical totality of the male salaried labour force of professionals and skilled workers. Governments were able to ‘command-and-control’ national economies with a high degree of relative autonomy and implemented social programs to cover human risks and needs that markets and families could not cope with (education, health, pensions, social services and housing, among others). Fiscal consequences for such welfare provision were legitimated by the political support of wide inter-class coalitions (Flora, 1986/87).

Little before the occurrence of the oil crises in the mid-1970s, James O’Connor (1973) had warned about the fiscal crisis faced by the budgetary burden produced in those democracies in the Western hemisphere with an ever-growing expenditure on welfare policies and services. Both (neo) Marxists and (neo) liberals thinkers shared analogous analytical views about the difficulty of reconciling both rationales of expanding the activities of the welfare state and securing capitalist growth. The former was instrumental to guaranteeing societal stability despite the unequal distribution of wealth. The latter struggled to maximize high levels of profitable returns to investments. The welfare state began to make visible the inherent dichotomy between the promotion of citizens’ social rights and the erosion of the means of capitalist accumulation.

After the oil crisis of the mid-1970s, and during the Silver Age of welfare (1976-2007), the maintenance of the emblematic values of liberty, equality and fraternity -- foundational tenets of Western political modernity-- came to be reinterpreted in a framework where liberty (of those stronger) prevailed over other considerations. In some majoritarian democracies “winner-takes-all” politics resulted in a widening of income disparities and a further disproportion of fiscal responsibilities. Developments in the USA in the last decades illustrated such effects (Hacker & Pierson, 2010).

Initiating in the Anglo-Saxon countries, and subsequently expanding its influence all around the world, a neo-liberal ideological offensive challenged during the 1980s and 1990s the tenets and legitimacy upon which welfare states had previously developed. Its discourse elaborated on the effects that processes of globalization of the economy and industrial transformation had had on the national labour markets. In parallel, deep structural modifications had taken place as a consequence of the ageing of population, the increasing participation of women in the formal labour market, and the re-arrangements occurred within households as producers and distributors of welfare. In sum, fiscal crises and the erosion of the ideological consensus, which had articulated the “Mid-century Compromise”,<sup>6</sup> gave way to the recasting of welfare states in Europe (Ferrera & Rhodes, 2000).

Despite institutional specificities, the adaptation of the European labour markets to global competition produced a degree of welfare convergence. After the implementation of the Stability Pact and Growth of 1998, and the introduction of the Euro currency, which began to circulate in 2002, the concern of the European countries to contain public expenditure further intensified. However, and despite the policies put in place aimed at the containment of public expenditure, social spending as a share of GDP maintained its levels in most European welfare states (see Table 1).<sup>7</sup> In sum, the Silver Age of the welfare state showed limitations but also a high degree of resilience in resisting pressures of a diverse nature.

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<sup>6</sup> By which there was a compromise between a primary framework of property ownership and social rights in advanced industrial countries representative of welfare capitalism (Crouch, 1999).

<sup>7</sup> The Post-communist welfare regime is not included. It remains to be seen whether the various national trajectories could possibly converge in a distinctive regime. Two sub-types of welfare regimes could have developed features along the lines of those corresponding to the Anglo-Saxon/liberal and the Continental/Bismarckian (Deacon, 2000; Potucek, 2008).

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Table 1: *Social spending as percentage of GDP in European welfare regimes (EU-15)*

	1980	1990	1995	1998	2002	2005
Continental	28.1	29.6	30.1	28.8	29.3	29.5
Nordic	25.6	28.1	32.1	30.1	28.8	28.2
Mediterranean	15.0	18.0	22.2	23.7	24.6	24.1
Anglo-Saxon	21.5	24.3	27.7	26.8	27.6	26.8
Average EU-15	N.A.	N.A.	27.7	27.1	27.4	27.8

*Note:* Unweighted averages.

**Continental Europe:** Austria, Belgium, France, Germany, The Netherlands; **Nordic countries:** Denmark, Finland, Norway, Sweden; **Mediterranean:** Greece, Italy, Portugal, Spain; **Anglo-Saxon:** United Kingdom

*Source:* Eurostat (database)

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The growth to limits and the maturation of public welfare policies covering ‘old’ social risks (e.g. illiteracy, old-age, sickness or unemployment), had brought to the fore during the Silver Age of welfare new proposals for articulating a private-public *welfare mix*. This was regarded as highly functional for the procurement of people’s well-being and, thus, extending social benefits and services covering new social risks (NSR). These related mainly to four societal transformations associated with: (1) higher participation of women in the formal labour market; (2) an increase in the numbers of frail and dependent elderly people; (3) the rise of social exclusion for workers with poor education; and (4) the expansion of irresponsible private services and the de-regulation of their public counterparts (Taylor-Gooby, 2004; Bonoli, 2005).

Prior to the transition to the Bronze Age of welfare (2008-?), neoliberal globalization had sponsored self-interest and the individualistic *hybris* as main codes of social life. Not surprisingly, the uneasy compatibility of both welfare and capitalist logics was put under further strain by the effects produced by the crisis. A look at Table 2 on the levels of public social protection expenditure in the years before the outbreak of the Great Recession is

illustrative of the current difficulties that EU welfare states faced in keeping up their spending commitments.

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Table 2: *Public social protection expenditure (mid-2000s) (% GDP)*

Countries and zones	Social expenditures (public)	Health expenditures (public)	Total social protection expenditures
China	4%	2%	6%
USA	9%	7%	16%
EU-27	17%	7%	24%
World	9%	5%	14%

*Source:* Moreno, 2015.

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With the outbreak of the 2007-08 Great Recession, welfare states initiated a Bronze Age confronting new scenarios of austerity aggravated by economic policies favouring fiscal consolidation, together with the eruption of NSR. The latter were associated mainly with societal changes in households and the labour market, together with shifts from bureaucracy to post-bureaucracy, informal to formal work, non-commodified to commodified work, or Fordism to post-Fordism in a globalized world (Esping-Andersen et al., 2002; Williams, 2007).

The European socio-economic model has been challenged by an increasing and fierce competition in the global markets put forward by strategies of both the Anglo-North American model of “casino capitalism” and re-commodification, and the so-called “neo slavery” mode of production induced by emergent economies, such as those of China and India. Both strategies had been geared at gaining competitiveness and a position of economic global prevalence disregarding social policies (Berlinski, 2010; Bales, 2004).

Challenging the positive vision of globalization, which had prevailed during the years around the turn of the millennium, the 2007-08 financial crack introduced in the public and political agendas the debate on the future of the Western societies and their welfare systems. Effects of the Great Recession 2007-08 financial crack have been far-reaching

and its economic impacts have been more pathological than those produced by the 1929 crash.<sup>8</sup> The EU as a whole reached the pre-crisis GDP level only at the end of 2014, something that the USA did in mid-2010. As a consequence, spending containment has affected a number of welfare policies, particularly in the EU.

Despite that advancing social citizenship in the ongoing Bronze Age of welfare remains as a legitimate goal in “post-industrial” democracies, both welfare producers and consumers have had to adapt their roles and functions to the changing scenarios brought about by the new global (dis) order. A highly contested issue during the Bronze Age of welfare is whether the welfare state --as we have known it until now-- could be sustainable in the future. The very linearity implied in the sequence of the Ages of Welfare seems to indicate an irreversible trend to its reconversion or eventual disappearance (Lindbeck, 2006; Hemerijck, 2013).

### **3. Living among robots, neo-feudalism and minimum income**

The coexistence between robots and humans is a fact nowadays. It does not happen only in clerical environments of mechanical and repetitive work production. By means of sophisticated pre-programmed instructions, for example, algorithmic trading also advises the wealthy where best to invest funds and savings. Robots or AI systems can choose entertainment with suggestions of leisure. They can also diagnose and optimize our health well-being through the so-called eHealth.<sup>9</sup> Such coexistence between humans and robots implies great changes in our social life. This is best exemplified by the substitution of jobs performed up to the present only by humans. In general, semi-skilled jobs of a routine, repetitive and encodable nature are the ones subject to increased robotization (Autor et al., 2003).

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<sup>8</sup> The GDP growth of an advanced industrial democracy such as Italy had persistent negative growth rates after 1929. The country needed five years to reach the same GDP level in 1934. During the period 2008-2015, Italy has seen its GDP diminished in -8.5%.

<sup>9</sup> According to some studies, there is growing evidence that AI and related technologies may become critical for health and longevity. AI startups are the largest group among all industries to date (Carlsson & Jönsson, 2017).

Arguably, on the two ends of the skills spectrum, both high-skill cognitive jobs, involving complex cognitive tasks, and low-skill service jobs, involving physical or non physical unstructured tasks could be maintained in a complementary mood with robots and other artificial intelligence (AI) applications. As concerns social policy provision, the jobs to be preserved with greater citizen appreciation are those related to personal and primary care many of which had traditionally been provided *gratis and amore* by women inside households (Lewis, 2001).

How many types of jobs will disappear with the expansion of productive robots? The issue is of crucial importance as welfare democracies are based on wage labour.<sup>10</sup> The study by Frey and Osborne (2013) through innovative research methods examined the characteristics of more than 700 occupations in the USA in the year 2010, which were targeted as being automated and robotized in the course of the next decades. Their calculations and estimates raised up to 47% the number of jobs potentially replaceable by robots or digital applications of artificial intelligence, or Big Data. Naturally, the jobs that were candidates to disappear more quickly were those middle- and low-skilled (e.g. assembly-line or bank clerk jobs<sup>11</sup>). Only those based on ‘expert thinking’ about solving problems for which there are no fixed or predetermined solutions, would be safe and would be needed in ever larger quantities (Levy & Murnane, 2004).

Indeed, uncertainty is an important role in driving business cycles. In past situations, uncertainty shocks typically led to drops of about 2.5% in GDP, with a sharp drop, quick recovery, and then continued sluggishness in output (Bloom et al., 2018). In the case of robotization, and if the projections of job substitution put forward by Fry and Osborne were to materialize, the emerging situation for welfare democracies would be one of an economic overturn rather than of a cycle downturn.

However, there is no agreement on the timing and proportions of job substitution induced by robotization and automation. Using the same methodology of Frey and

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<sup>10</sup> The 1948 Italian Constitution, for instance, explicitly proclaims that “Italy is a democratic Republic founded on labour”.

<sup>11</sup> In May 2019, the *Banco Santander*, one of the leading clearing Banks in Europe, announced plans to the trade unions to make redundant 3,713 employees and to close down one in four of its street bank agencies. A few months earlier, and after having taken *Banco Popular*, some 1,100 employees had already been dismissed.

Osborne in the case of the United Kingdom, the auditing and consultant company Deloitte offered an alternative reading of the available data. In a subsequent investigation --with a retrospective and not a future outlook-- the consultant company concluded that between 2001 and 2015 four times more jobs had been created than those that had been lost due to the influence of technology in general (not only by robotization) (Deloitte, 2015). Some other opinions argue that the single biggest economic challenge facing advanced economies is not too much labour market churn, but too little, and thus too little productivity growth (Atkinson & Wu, 2017).

Building on the assessment carried out by Frey and Osborne, another study estimates the risk of automation for the 32 OECD countries that have participated in the Survey of Adult Skills (PIAAC). It concludes that 14% of jobs in OECD would be highly automatable (i.e., probability of automation of over 70%). This is equivalent to over 66 million workers in the 32 countries covered by the study. In addition, another 32% of jobs have a risk of between 50 and 70% pointing to the possibility of significant change in the way these jobs are carried out as a result of automation --i.e. a significant share of tasks, but not all, could be automated, changing the skill requirements for these jobs (Nedelkoska & Quintini, 2018).

Other productivity estimates assume that people displaced by automation will find other employment (Manyika et al, 2017). The anticipated shift in the activities in the labour force is of a similar order of magnitude as the long-term shift away from agriculture and decreases in manufacturing share of employment in the US, both of which were accompanied by the creation of new types of work not foreseen at the time. In other words, according to this view jobs are changing because robotization and automation but they are not necessarily replaced. Thus, replacement would be close to zero (Dauth et al, 2017).

In the US, manufacturing is already in a race between human capital and technology. Some companies seek to robotize almost every facet of production, but many other companies are less eager to invest in robotics. A big barrier for them to commit wholeheartedly is that robotic machines are very expensive. Besides, businesses subject to seasonal or cyclical downturns worry about the costs of idle robotic machines,

whereas with human workers, employees can be let go during production downturns. There is also a debate among business people and economists as to whether robots actually can deliver their supposed productivity gains (Acemoglu & Restrepo, 2017; West, 2018).

It is estimated that spending on robotics was about US\$90 billion in the US in 2018, mostly for manufacturing. Although it amounted to ‘only’ 3% of the total US\$3 trillion of capital investment, it clearly indicates a trend which can only intensify. Worldwide, and after growing during 2010-15 at a compound rate of 17 per cent a year, the robot market will be worth US\$135bn by 2019, according to estimates by IDC (2017).

In the case of the EU, and based on extensive firm-level analyses of data from the European Manufacturing Survey 2012, other study shows that the use of industrial robots does not have any --neither negative nor positive-- direct effect on firm-level employment. Hence, this study does not provide any evidence for the often referred to image of industrial robots as “job killers”. It just emphasizes the achievement of higher levels of productivity in their manufacturing processes. In sum, companies using industrial robots in manufacturing and production achieve higher labour productivity (Jäger et al, 2016).

Arguably, job replacement occurs fundamentally at the task level, rather than the job level, and for “lower” (easier for AI) intelligence tasks first. The progression of AI task replacement from lower to higher intelligences (mechanical, analytical, intuitive, and empathetic) results in predictable shifts over time. According to this view, analytical skills will become less important, as AI takes over more analytical tasks, giving the “softer” intuitive and empathetic skills even more importance for service employees. Eventually, AI will be capable of performing even the intuitive and empathetic tasks, which enables innovative ways of human–machine integration for providing service but also results in a fundamental threat for human employment (Huang, & Rust, 2018)

Other than job substitution, the technological change is expected to affect the structure of employment even more than the level of employment, something that would create a more polarized labour market between highly qualified and low-skilled occupations. As

a result, there would be more significant wage inequalities between both poles. A main challenge for the future of work lies in coping with rising inequality, as technological change creates both winners and losers and an increase of the working poor (Goos et al., 2014; Arntz et al, 2016). Some studies suggest that technology may be the single largest contributor to the increase in inequality of income. This arises because companies adopt technologies at a different pace and have differing degrees of success with their AI and robotic transformations. At the same time, the automation of workers' activities in favour of capital drives down the labour share of income (Bughin & Manyika, 2018).

Both 'optimistic' and 'pessimistic' perceptions on robotization concerning job replacement are very much in contention. In this paper the focus is primarily put on the 'pessimistic' trend and its impact in social and welfare arrangements. This is not to uncritically accept a general scenario of growing scarcity of paid jobs in the Western hemisphere. However, our inquiry is on scenarios where job substitution would be the driving structuring force of welfare adaptation. Already in 2013, and according to Autor & Dorn (2013), the decline in the cost of computerizing routine tasks was met by both computer capital and low-skilled employees in the production of goods. Computers and robots are increasingly substituting workforce in routine and clerical tasks.

Beyond subjective perception of uncertainty, objective measures of tasks substitutability now seem to point to the rearrangement of social and industrial relations in line with the assumption that exposure to automation is correlated with a growing perceived risk of technological unemployment. Furthermore, higher levels of perceived "routine-task" replacing technology significantly correlate with support for unemployment protection, most notably with the implementation of guaranteed minimum income schemes (Sacchi et al, 2018). In the following section, the focus is geared to the socio-economic implications of robotization, particularly as it affects welfare arrangements and social policy. Attention is paid, in the first place, to the transition to a new feudal order and the

### *New corporate lords and servants of the glebe*

An emerging neo-feudalism can be regarded as a system in which corporations and

financial conglomerates control individuals, cultures and governments, leaving the poor and subordinates at the mercy of their vested interests. Already John Maynard Keynes alluded to the unfolding of new feudal phenomena meaning the process by which the distribution of wealth would produce a greater chasm between rich and poor and could cause an extreme disparity between upper class / lower class, entrepreneurs / workers, north / south, or elite / mass. The current situation reminds feudal societies of other times. Now the distances between the haves and have-nots not only remain at the global level but have increased even more: the 1% of 'super-rich' coexists with 99% of the new 'servants from the glebe'.<sup>12</sup>

In 1980, the US and Western Europe had a similar population, average income and level of inequality. While the richest 1% captured 10% of the national income, the poorest 50% captured 20%. Just forty years later, the situation has changed significantly, showing a clear divergence on both sides of the Atlantic. Now the 1% of 'super-rich' in Europe takes 12%, while in the US their share has increased up to 20%. The poorest 50% in Europe have seen their share of national income increase --even slightly-- to 22%, but in the US it has been reduced by half, that is, to 10%. Despite that Europe and the US have had an analogous exposure to the shocks and economic events produced by global markets and new technologies, the social effects have been of a different nature.<sup>13</sup> These figures pre-determine trends to unfold in the next future to come in the US and Europe.

As a case in point, demographer Joel Kotkin (2014) draws attention to the evolution towards neo-feudalism in California. The Golden State, with a population of 38 million inhabitants, has often been considered a model of a 'mesocratic society' in the US with a very large middle class. According to recent developments, four differentiated classes have been taking shape: (a) the oligarchy of the super-rich, especially in finance and IT; the intellectual elite (*clerisy*), like academics, (b) media professionals or public decision-makers; (c) the middle class (*yeomanry*) of professionals and small proprietors;

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<sup>12</sup> Already in 2017, and according to Oxfam International, 8 out of 10 US\$ generated by the new wealth went to the hands of the 1% super-rich. Likewise half of the world population had not seen any increase in their income (Kottassová, 2018)

<sup>13</sup> Labor markets have been friendlier with employees in Europe than in the US, where the minimum salary has decreased in real terms by a third since the 1970s, which contrast with the situation in France where they have quadruplicated (Chancel, 2018).

and (d) the serfs, represented by the ‘working poor people’ and those dependent on subsidies and government aid. According to the findings of Kotkin, the once ample middle class had been ‘guttled’ and California has entered into a neo-feudal era, while the oligarchs and the intellectual elites has gained more power and the serfs has multiplied everywhere.

Polarization has widened, although as stated earlier on there is another side to this narrative. Automation and digital technologies more generally will enable small players, including individuals and small companies, to undertake project work that is now before were carried out within bigger firms. The growth of very small and very large companies could create a barbell-shaped economy, in which mid-sized companies could lose out. It remains to be seen whether automation could heighten competition, enabling firms to enter new areas outside their previous core businesses, and creating a growing divide between technological leaders and laggards in every sector (Manyika et al, 2017).

Neo-feudalism also indicates that multinational corporations have appropriated so much public and institutional power that employees have become more dependent on corporate interests. The actions of these big firms are often more powerful and effective than government interventions. As a result of the globalization of the economy, multinational corporations are like new fiefdoms with their owners and executive managers as corporate sirs at the top of the social pyramid, and with workers as servants of the glebe in the broad base of it (Whitehead, 2013). Perhaps because of its reminiscences of servility, the concept of neo-feudalism has been nuanced and taken with a certain caution in its meanings and interpretations, highlighting or eliminating some misunderstandings. It is qualified that neo-feudalism implies a new order that, nevertheless, must take into account public institutions and stakeholders. As a final result of the future concurrence between both, and only if the private interests were to be prevalent, one could speak more accurately of a new feudal situation (Moreno & Jimenez, 2018).

The very nature of global capitalism is to be conditioned, and even altered, by this expansive type of neo-feudalism. In the US, Nick Hanauer, member of the exclusive club of the 1% of American super-rich, warns that the problem of inequality may have

already reached record highs. According to him, if health, power and income continue to be concentrated at the top of the pyramid, society will move from a capitalist democracy to a rentier society like that of the 18th century in France (Liu & Hanauer, 2011). Industry 4.0 has strengthened the autonomy of corporations and has empowered technostructure. In the future, there could be a consolidation of an oligopolistic situation in which public authorities are just accepted as subsidiary actors. They could be expected to maintain those social parameters which allow the activity of the new corporate feudal lords without major obstacles or dysfunctionalities (contributing, for example, to control inflation and to accept the philosophy of unlimited economic growth). In a re-commodified new-feudal world, it is argued, government monitoring would not necessary for the expansion and maximization of markets. Despite some potential and recurring problems such as fraud, the private governance of transactions among citizens could be more effective and orderly being carried out by private groups (Stringham, 2015).

Private governance predominates when for-profit corporations --and other non-governmental institutions, NGOs-- generate rules and standards of coexistence that imply the quality of life not only of the directly stake-holding participants, but of the social whole. It is a situation where private entities implement public policies. Such actions are illustrated by the activities, sometimes invisible, of the insurance companies. These offer pension and protection services against social risks that are bought by those citizens who can afford the premium involved or those who have the corporate backing of their new feudal lords. It is, thus, an understanding of public policy as a form of private intervention with the same purported effects (Hall & Biersteker, 2004).

The new feudal lords are members of the economic elites with the capacity to increase their channels of influence in order to maximize their income accounts by grabbing tax breaks and taxpayers' moneys. Already in 1995 it was estimated that \$8,500 billion of public money were received by corporations and plutocrats from the US government through all sorts of subsidies, handouts, deductions, tax loopholes, or simply rip-offs and scams (Zepezauer & Naiman, 1996). Policies and practices relating to corporations (corporate welfare) are labelled *wealthfare*, which translates into an extra source of enrichment for the already well-off. More money goes to the hands of the same people,

who take advantage of their ability to influence and practice corporate homogeneity. This development contrasts sharply with the situation of the working poor and the unemployed.

In comparative terms, it may appear that the impacts of robotization in global capitalism are to have little variance. It does not seem necessarily to be the case concerning the European socio-economic model, where the provision of an adequate level of public protection to workers during the impacts of unemployment shocks is paramount. However, and unlike developments in the US, where freedom (of the strongest) has prevailed over other considerations, in Europe its own model of welfare capitalism has encountered increasing difficulties. The effects of the Great Recession on unemployment speak for themselves. According to Eurostat, in July 2017 there were 19 million of unemployed workers, affecting 8% of the active working population. Let us examine new policy proposals for jobless protection.

#### *Unemployment and guaranteed minimum income*

In the robotic future, education focus on different subjects should aim to create more balance in skills among the human workforce. In parallel, the coverage of social risks for the unpaid workers would need the solidarity of the population at large, if both citizens' entitlements and duties could be accomplished. Demographic changes are also to be taken into account, particularly concerning important areas of social policy as pension reforms. Social actors as trade unions are reluctant to extend working lives for the sustainability of contributory systems, while other economic actors prioritize increasing productivity. This paper has elaborated analyses concerning a situation where decent and well-paid jobs for everyone could be dwindling with the intensification of automation

This paper puts forward a conjectural scenario where decent and well-paid jobs for everyone are susceptible to be restructured with the intensification of automation. In such a scenario, the best alternative for the welfare states to offset workers' uncertainty is to fortify minimum income guarantees in order to make social citizenship effective.

This seems to be a plausible course of action in mature European welfare states as they have already experienced a panoply of ‘safety net’ policies of social protection for the jobless (Standing, 2003; Frazer & Marlier, 2016).

In the US, societal changes brought about by increasing neo-feudalistic practices which highly influence governmental action are somewhat reluctant for the implementation of “safety nets” programmes. These are often dismissed as mere “welfare hammocks” for lazy people, so that market rationale should prevail for matters concerning living conditions and people’s well-being. As an illustration of this, let us remind Obamacare’s attempt to provide poor wage-earners (“working poor”) and precarious citizens with essential health resources. The Patient Protection and Affordable Care Act, was aimed to provide health coverage to 30 million of Americans without medical insurance. Large medical insurance companies, which criticized the supposed “socialist” orientation of the Obamacare legislation contrary to the “capitalist” tenets of American democracy, exerted great pressure against it. Not surprisingly, and considering that for-profit private sector is predominant in the US health system, the offer made by President Trump in June 2019 to create a “phenomenal” commercial agreement with the UK after Brexit had the proviso that the continuity of the British public National Health Service was to be negotiated.<sup>14</sup>

Providing income support to jobless citizens’ has been a long-standing commitment in welfare democracies since the times were programmes to combat the ‘old social risk’ such as unemployment were implemented. The traditional assumption of such policies was that, after a period had elapsed in searching a new job, the worker would become an active employee again. This process of labour adjustment appears not to be self-evident anymore. As a consequence of job substitution induced by robotization, discussion about providing money support to “replaced” workers is gaining momentum in the public eye. Yet, the idea is to gain transversal social consensus.

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<sup>14</sup> However, the reactions in Britain to such proposals were generally refractory. The British Medical Association (BMA) issued a statement, urging all the contenders in the Tory leadership race --after the resignation of Theresa May as Prime Minister-- to commit to excluding the NHS from any post-Brexit talks. Jonathan Ashworth, the Labour shadow health secretary, said US corporations taking over the NHS: “... is a nightmare scenario. If our NHS is taken over by US corporations, it will undermine it as a free, universal public service” (*The Independent*)

Critics holding diverse ideological beliefs warn about the possible dysfunctional effects that providing money without working could create.<sup>15</sup> After all, access to employment as the means for social inclusion is the option preferred by a majority of the people in (post) industrial societies. Research and studies demonstrate that giving cash payments to the poorest helps improve their lives and does not increase wasteful spending or laziness (Pavanelli, 2019). Notwithstanding, at the core of this debate lies the axiological mismatch between the general assumption that workers ought to have a salaried job in order to make a living and the general aim of welfare states to provide protection to all citizens (Glazer, 1988).

Guaranteed minimum income (GMI) implies the distribution of a modest but sufficient amount of money for individuals to live with dignity in their places of residence. Such income would cover the basic necessities of life and would guarantee legal residents their effective right to social citizenship. In order to enable the application of this new social contract induced by robotization, an active redistributive policy based on progressive taxation ought to collect sufficient resources for its financing. Income redistribution in advanced welfare systems is reflected in their systems of redistributive tax progressivity aiming at greater equality and cross-sectional societal well-being. Without the greater contribution from the wealthier it would not be possible improving the material well-being of all citizens (Atkinson & Pickett, 2009).

Among the various options to make GMI effective for working poor and unprotected unemployed, the one related to the so-called negative income tax can be regarded as most appropriate. Accordingly, a minimum amount is to be quoted fiscally and if the taxpayer's income is below such threshold the citizen gets the differential. In other words, if the income of a person does not reach the minimum fiscally exempt, then moneys would be provided to reach the minimum. Among other advantages, the management of tax collection via personal income tax and the application GMI would allow: (a) to avoid mismatches between income and expenses; (b) to apply the generalization of the citizen's right to an income guaranteeing the net progressivity of the fiscal system; and (c) to make administrative management simpler and more

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<sup>15</sup> See BIEN for a comprehensive bibliography on the basic income, and Ortiz et al. 2018 for a review of proposals for a Universal Basic Income according to ILO standards.

transparent via the annual income tax statements. In the case of countries with large tax-free economies, this arrangement would also help to combat fiscal evasion in the lower echelons of society.

The policies of the GMI could be based on the reciprocity of the contribution of beneficiaries to the well-being and cohesion of their societies. Therefore, the essential requirement for their perception would be conditioned on the ‘justification’ by the beneficiaries in the engagement of community activities. These could be many and varied, from own personal training to activities of social volunteering or family care, to name but a few. Detailed implementation of such programs would require, in any case, the political consensus of multilevel governance at the central and sub-national levels responsible for GMI implementation.

A casual relationship between perceived labour uncertainty because of robotization and the implementation of schemes of GMI can be established. According to the evidence provided by recent studies in Italy, a subjective measure based on individuals’ assessment of their occupational risk, is correlated with objective indicators based on task substitutability. As a consequence, technological unemployment risk significantly reduces opposition to the introduction of some sort of minimum income protection (Sacchi et al, 2018).

Income support programs have undergone major changes in most OECD countries, wherever they had been institutionalized. The worsening situation for unemployed and working poor with the emergence of NSR is reflected in the increasing number of low-income households. The austerity measures geared to achieve fiscal consolidation have provoked welfare losses to recipients of “safety net” benefits of social assistance (Ayala & Bárcena-Martín, 2018). In the case of the EU, all-round institutionalization of the minimum income idea would require just an unanimous if ‘soft’ recommendation by the EU authorities. This already happened with the initiative by the European Commission (2018) on access to social protection for workers and the self-employed. However, the advocacy of EU Commission, Council and Parliament should avoid being regarded as a ‘command-and-control’ top down plan imposed upon long-term practices of poverty

alleviation developed locally and nationally in the various tiers of multilevel governance in Europe.

#### **4. Concluding remarks**

Which directions the conjectured scenarios previously analysed are to take? What kind of governing bodies or task forces dealing with robotization and related technologies could be put in place? Answers are open for assessment and further consideration. However, and facing the effects of the ongoing and future technological change, a general concluding remark is the need for more interdisciplinary research and teams to tackle these issues. The focus of research and public policy should not be simply regard technology as a scapegoat for welfare retrenchment, but as facilitating anticipatory scenarios for socio-political renewal (Bughin et al, 2019). Certainly, for policy makers an embrace of automation could be accompanied by measures to raise skills and promote job creation. By rethinking income support and social safety nets, new welfare arrangements are also to be rearranged (Moreno & Jimenez, 2018).

As concerns the analytical context of this paper, the implications of robotization for job substitution and the related socio-economic revamp need to be given further and deeper attention, as industry 4.0 has further enhanced the maximizing paradigm of capitalist production. This process is bringing with it a number of uncertainties to labour markets. This paper has elaborated assuming the “hypothesis” that jobs will disappear. Fears of technological unemployment driven by large-scale automation of higher cognitive tasks may or may be not justified. Our understanding is that for the “man-in-the-street” citizen, they are real and provoke mistrust and increasing populism (Gardels & Bergrruen 2019).

Unquestionably, tasks and jobs have already gone primarily within the services sector. They concern a type of salaried work of average qualification and routine nature and correspond to the type of work which traditionally required assistance of a semi-skilled professional. The disappearance of clerical jobs of an interpersonal nature is unlikely (e.g. catering, nursing or outside entertainment). The same applies to those related to

scientific research or expert knowledge. Nor this occupational overhaul will swiftly affect those jobs involving personal and direct care to children, elderly or disabled people.

Some final remarks concern taxation, an issue not yet fully incorporate in the political debate on robotization. If robots contribute to the generation of income like humans, it is argued that they should also become taxpayers. Companies profiting from the work of robots could become unfair competitors of ‘traditional’ workers. These would progressively lose track in keeping pace with the skills and applications in the automated future of the robots. In line with this argument, robots should pay taxes to create funds that could help those employees replaced by them. Robotic taxation could also finance those minimum income schemes implemented for the displaced employees. As a result, robotics and the new productive technologies could be seen as benefitting the whole of society. It is little plausible to think of a Luddite alternative despite some initiatives in this respect.<sup>16</sup> Thus, robots would pay taxes in the same way that workers have done until they have been replaced by them.

Last but not least, global harmonisation and cooperation concerning corporate taxation appears to be is crucial for social welfare in a digitalised world. They relate to profit shifting, tax competition and, more fundamentally, the allocation of taxing rights across countries. Indeed, digitalisation poses big challenges as, for example, goods can be exported, and services provided, to a country in which an enterprise has no physical presence --and under current rules this does not create a right for that country to tax the associated profits (IMF, 2019).

The increasing use of digital technologies throughout business and the rise of new business models is exemplified by a few well-known firms heavily dependent on digital technologies. Many of them provide a service without charge and, despite they are highly profitable, they pay in many cases little tax anywhere. In particular, the situation is potentially damaging for welfare development in low income countries (LICs), as they are especially exposed to ‘unfair’ tax competition and have limited alternatives for

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<sup>16</sup> The term Neo-Luddism has been used to describe opposition to multiple forms of technology, such as automation and robotization (Sale, 1997).

raising revenue. In sum, only with appropriate revenues from tax collection could social services, a better education or unemployment protection be financed on a sustainable basis.

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