Acta Univ. Sapientiae, European and Regional Studies, **17** (2020) 103–117

DOI: 10.2478/auseur-2020-0005

Taxation and Humans in the Age of the Fourth Industrial Revolution – Financial and Ethical Comments

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Abstract. In our study, we focused on the fourth industrial revolution, which is the revolution of machines at the same time and which affects the world of worthy human work significantly. Let us examine the reasons behind the machine wrecking in the modern era and the technophobia, the negative and positive outcomes of additional spare time, and the state of unemployment. We touch upon the historical antecedents of modern machine wrecking and its present situation. We briefly draw possible alternatives as regards the subthemes. In this study, ethics is ascribed a focal attention since we approach the trends that affect the world of work and have an economic significance in the context of the fourth industrial revolution. We examine the process of Industry 4.0, which has led to a significant transformation of production processes from the aspect of taxation – for example, how the automation of the production processes influences the transformation of the tax system, where humanity is in the changing financial world, or which aspects of the tax system change in the age of the Fourth Industrial Revolution.

Keywords: Industry 4.0, alternative taxation, tax system, machine work, human labour, human dignity, economic ethics

1. Introduction

This publication examines the process of the Fourth Industrial Revolution from the work side with an ethical eye. In our world, we find that replacing human labour with machine work is becoming more and more important, and its effects become more and more sensational. According to our hypothesis, this process becomes a positive effect if the work of human dignity is not compromised or associated with it. Another hypothesis is that automation does not improve the competitiveness of workers but that of employers since the cost elements that are built on labour have been rid of businesses, but the competitiveness of human labour decreases with machines, which can exacerbate social tensions.

Our next premise is that the burdens of open or covert unemployment resulting from the release of mechanical work, which are usually mechanically human, will have to be tackled in the future with alternative solutions, for example, with the creation and possible countervailing of new types of tax revenue. These new taxes will not be burdened with human labour but will either give rise to a new consumption tax burden or some kind of taxation of the automation process. Thus, it is possible to increase the level of human labour by getting rid of the tax burden, thereby increasing its competitiveness.

Our essay is based on the nature of the work. Human work is in close connection with our view of human dignity, social justice, and the concept of human-centred farming. Although from an economic point of view work is called 'work' by a person (and/or machine) by means of energy (effort), which is usually useful for paying services, it is important to emphasize that work is a purposeful activity, such as creating, that the resulting goods are used by humans or other benefactors, utilized, consumed, and so on. It is a definite sign that the nature, framework, and efficiency of work have changed constantly throughout history, which is why it is to be found that man is trying to work with less effort and is therefore more concerned with the production of tools that reduce or eliminate the physical, tiring nature of the work. However, during technical development, mechanization should not undermine the creative processes of human free will, which is also the basis of our dignity. In the light of the foregoing, our hypothesis also suggests that during the Fourth Industrial Revolution work should have four essential objective components. On the one hand, it is a work-oriented and conscious form of activity, while, on the other hand, this activity, that is, the work, has an object that can be labelled as a target. Thirdly, work always has some means, whether it is man's bare hands or a sophisticated technical device or even a machine. Fourthly, we can say that work is in any case embedded in society and is not just an individual or community but also a social activity. Thus, through work, man not only assures his subsistence but, through his transformational activity, he also transforms the world into his own image.

2. Literature Overview

As for ethical topics, our work contains a historical overview, the logical basis of which is the processing of problems in the area. The history of work is also the social evolution of mind and body. Work has determined a person's life from the beginnings. All civilizations have been built up through human work, and therefore its racing with machine work is of utmost importance for the future of civilizations.

Tomaš Sedlácek is fond of drawing parallels between greed and work, which shows in his chapter entitled *The Struggle of Greed: The Story of Consumption and Work*, where we come back to the most ancient myths, in which work as the original vocation of man is featured as pleasure and later (as a result of our impotence) as a curse. God or the gods are cursing the work (the Book of Moses, Greek myths) or cursing too much work (Gilgames) – writes the author (Sedlácek 2012). If we follow Sedlácek, the advancement of machine work is man's liberator. This thesis is reinforced by Emőke Török, who, following Hesiod, quotes the following:

> First of all the deathless gods who dwell on Olympus made a golden race of mortal men who lived in the time of Cronos when he was reigning in heaven. And they lived like gods without sorrow of heart, remote and free from toil and grief: miserable age rested not on them; but with legs and arms never failing they made merry with feasting beyond the reach of all evils. When they died, it was as though they were overcome with sleep, and they had all good things; for the fruitful earth unforced bare them fruit abundantly and without stint. They dwelt in ease and peace upon their lands with many good things, rich in flocks and loved by the blessed gods. (ll. 109–120)

According to the Greek view, labour is punishment, compulsion, not a work and action worthy of man (Spaemann 2001). Work closes man. Similarly, Emőke Török notes on Aristotle that work was not among the Greek virtues; it was not worthy of the free citizen, as Aristotle wrote: The most perfect city state does not make a craftsman a citizen. The civilian virtue we are talking about cannot be attributed to everyone, even to the free ones, but only to those who are free from forced labour (Török 2011). If we were to capture this concept, then we could say that machine work is the 'golden age' of mankind, but the work of the human spirit is not necessarily supplemented by the technical achievements of the 4th Industrial Revolution, so we have to make a qualitative distinction between the competitive situation of physical and mental work. Human physical work is the work that creates opus. The mental work is only the intellectual activity that does not involve physical effort. For example, Antonina De Gerando notes with an elegant style that Rome conquered the world and starved to death because only work sustains life, but Rome despised work (De Gerando 1880). In this context, the authors (Cocon–Brocker–Oexle–Török)

cite Cicero and his work *De officis*. They note that Cicero himself illustrates general and public perceptions. In Cicero, as in Seneca, *amicizia*, *vir bonus*, *pietas*, *societas*, and other similar terms are lacking in work since real physical human work is not the basis of a life-cycle associated with mental activity, and it is therefore low-priced (Szekeres 2010). It could therefore be a substitute for the use of the workforce because machines perform physical work more efficiently. The historical examples will be further elaborated in support of each of the arguments, but we anticipate that societies cannot do without work (Sik 1999).

During the literature review, we were careful to compare and evaluate different, or contradictory, results, observations, and theories based on the examined works. In addition, the analysed literature should not be one-sided, and the sorting should not show a particular tendency.

It is worth noting that there is a vast literature on economics as well. Keynes is talking, for example, about 'technological unemployment' if the tools we have developed for saving the labour force outweigh the potential of our job creation tools (Kerekes 2017). Technological unemployment is mainly observed in transport logistics and office workplaces. In addition to these areas, the field of robot technology, particularly the development of drones (the automation of a waiter's job), extends to difficult services.

3. Methodology

In accordance with the generally accepted rules of international literature, we list the materials under examination and show their object. Since the nature of our work does not allow us to apply extensive statistical methods or calculations because of its ethical aspects, we point out that the work presents representative results. However, considering the lack of government budgets as a result of the advancement of machine work and the reduction of human labour, we made some calculations for taxes.

Theoretical work consisted of the conceptual definition and the clarification of the concepts. In the logical system, we included the main definitions of the subject.

4. Results

4.1. The Theme Underlying Assumptions, Basic Concepts

Industry 4.0 refers to the Fourth Industrial Revolution. We consider two multi-dimensional definitions for the 4th Industrial Revolution:

> Industrie 4.0 is a broad term that encompasses different perspectives, industries, corporate functions, technologies and fields. The experts interviewed in the study considered its holistic conceptual basis to be one of its key strengths. As a rule, the concept was understood and had been successfully exported across the globe. Industrie 4.0 serves as an important model to companies around the world for the vertical integration of smart machines, products and production resources into flexible manufacturing systems and their horizontal integration into cross-industry value networks that can be optimised on the basis of different criteria such as cost, availability and resource consumption. (Kagermann et al. 2016: 19)

> Recent concepts such as the Internet of Things, Industrial Internet, Cloud-based Manufacturing [4] and Smart Manufacturing address this vision of future digitally enabled production and are commonly subsumed by the visionary concept of a Fourth Industrial Revolution or Industry 4.0. (…) Lean management as a learning topic has clearly dominated the scene in the last decades. However, for future production scenarios in the sense of Industry 4.0 also other competencies need to be addressed that enable future managers and workers of a factory to deal with the challenges of an increasingly digitalized production system. (Erol et al. 2016: 13)

This process will bring about a complete transformation of our economic life, the ever closer interconnection of information technology and automation, resulting in a radical transformation of production methods. With machine-to-machine technology (M2M), machines can also control more complex processes based on the ability to communicate with each other without human intervention. Productivity can thus be significantly increased. Automation will take on almost the entire spectrum of economic processes.

All this raises the question as to what the human workforce will be relieved of by machine work. The process and the issue are not new; they can be repeatedly found in history. The revolution of the mechanical labour force in the first industrial revolution and its antecedents brought about movements that aimed to protect human labour and workers' interests. These were the 18th- and 19th-century machine-breaking movements. This is typical of the beginnings as well as of our time; machine-breaking movements can be divided into two types: one is protecting workers' livelihood against wage cuts or rising prices, while the other one is protecting livelihood against the perceived or real threat of machinery.

4.2. The Social Effects of Work and of Competition between Machine and Human Work

Based on Antonina De Gerando's statement mentioned above with regard to the social utility of work, it can be concluded that the social projection is of paramount importance in the competition of human labour and machinery. De Gerando draws attention to this:

> But if there were glossy, irrefutable proofs to recognize the truth that the welfare of nations was solely work alone, it would in any case be Spain's example. From 1500 to 1702, this country won fifty-four billion francs without any work and effort, and not only did it have no trace of it, but it has become the most damaging consequence of developing an intentional inactivity tendency in the nation. It is a work that teaches us to honour and appreciate it, and we can see it from the example of working countries that a real worker is usually a good husband and a father, and as such he is trying to be a saviour. (De Gerando 1880)

However, John Locke described human work as the basic concept of society. In the following century, Immanuel Kant made similar ideas in a more radical way. On the social level, Friedrich Schiller made the approach to work more valuable – in his view: Work is an ornament of the citizen, the price of his effort is blessed. This should continue to apply today. In the old (bourgeois) individualist values system, where work and the everyday activities are at the basis of daily life, there are many examples showing that the moral norms of old civic values are still relevant today in a changing mechanized world since economy is also the material sphere of society as the sum of the phenomena and interactions associated with the production, distribution, circulation, and consumption of goods and services.

The technical processes of automation cannot be discussed in detail in this publication, but it is worth pointing out that automation is implemented through the M2M information channel, the Internet of Things (IoT). This is a network of machines communicating with each other separately, the world of artificial intelligence that relies heavily on big data files. Information society – mainly through its marketing and software development activities – generates a huge amount of data, which is often uncontrolled and uncontrollable. Large data traffic is provided by cloud-based services. During this process, data are stored on a local media device rather than on a provider's device, so-called cloud. This activity also raises important security issues.

This machine-to-machine communication process requires an information channel, which is called the Internet of Things (IoT) because it is not a network of people but of machines. These processes create large files. Due to availability in the network, their storage space is accessible from anywhere – it is a cloud-based

technology, which means databases with strict access to the Internet but from any physical location over the Internet. These data and any other information, such as sales statistics (which are available immediately and in large quantities due to barcode systems), are analysed by marketing specialists or data science engineers. The latter one is a new type of job generated by this development process and shows that a lot of workforce is relieved. Kevin Kelly, who also made a presentation in Hungary in 2017, said that in 20 years' time the development of artificial intelligence (AI) would reach the level that most automated workforce can do jobs requiring more design work, resulting in more jobs becoming redundant. He analysed 12 types of work categories (Kelly 2016).

Unlike the 'predecessors' of Industrial Revolution 4, this will not only make workers more productive but will replace dozens of jobs in their entirety. However, as new jobs are emerging, countries will succeed or fall depending on the extent to which they are able to help the newly unemployed workers integrate into new, higher-added-value work processes. Work processes that are most vulnerable to robotization are repetitive, monotonous activities that the least require innovative, creative human capabilities. Since these routine activities are typically carried out by low- and medium-skilled workers, it is a key issue to develop employee skills whether they are related to information technology, languages, or very narrow areas of expertise. Education that meets the requirements of the labour market is thus even more valued in future economic development. If the liberated labour force is not absorbed by other areas, employment will begin to decline. The problem can be mitigated by increasing the adaptability and flexibility of employees, which poses great challenges to the education institutions that are operated to expand lexical knowledge. Automation in Europe and the United States also threatens 50-60% of the existing jobs, while in less developed regions the numbers may be even higher (World Bank 2016). Undoubtedly, those professions are the most safe that can hardly be compressed into a single algorithm, require unique thinking, skilfulness, social skills, and 'humanity'. In this regard, a real-life example is worth mentioning. An interesting incident happened in 2016, when an S-Series Tesla crashed into another car. Bőgel explains who drove the car: the driver or the computer. The car manufacturer, Tesla, was not convicted during the official investigation, which concluded that the line driver should have supervised the computer system. Bőgel actually examines the ethics of the programmer – in our view, quite flatly, as he asks the question: 'When can a machine be considered a moral actor?' (Bőgel 2017: 5). However, this question is not answered in his study. Brad Keywell, founder and leader of Uptake, says the world will always need human genius, resourcefulness, and human abilities. Technology may be able to amplify, expose human imagination and creativity (Keywell 2017). This can also be a good opportunity for developed regions, such as the US and Europe, to compete with low-income developing countries through capital-intensive, more efficient production.

Table 1. *Probability of computerization and robotization*

Automation degree	Occupation	Automation degree	Occupation
4.7%	Mathematicians, florists	90%	Roofers
5.7%	Travel guides	91%	Railway engineers
5.9%	Sociologists	91%	Geological and mineral engineers
6.9%	Financial managers	92%	Fence erectors, helpers–carpenters
7.4%	Musicians, singers	94%	Accountants
8.2%	Graphic designers	95%	Farmers
8.4%	Babysitters	96%	Surveyors and cartography technicians
10%	TV and radio announcers	97%	Dental technicians
11%	Hairdressers, air operators	98%	Drivers/sales workers
17%	Firefighters	99%	Watch repairers

Source: C. B. Frey & M. A. Osborne, 2013
https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

4.3. Automation Can Save You Workload and Other Tax Effects

In this section of our publication, we estimate the reduction of workload as a result of automation. The starting data, however, can only be considered with highly uncertain forecasts in terms of actual data, the degree of automation, and its economic impact. It should be noted that automation reduces the amount of workload, but its wage bill is not up to the more sophisticated, better-paid jobs. For this reason, e.g., the Hungarian tax system has moved rightly towards turnover taxes because these encourage individual work performance and, on the other hand, if there is a lower level of labour input, the state should have sufficient income. Furthermore, by widening the circle of taxpayers (tax burden), advanced technicians, who are now in the forefront, become taxed, thereby bringing prosperity for the state's revenue (Lentner 2017). The transformation of the tax system in Hungary after the crisis in 2008 was achieved by the tendency of reducing the tax burden on labour (Bozsik 2014).

Table 2. *The direct public burden of human work in Hungary (2015)*

No.	Description	Amount (billion HUF)
1.	Social security income	4,489
2.	Personal Income Tax	1,689
3.	Tax on income and payroll tax	200
	Total	6,378

Source: own calculation based on HCSO data

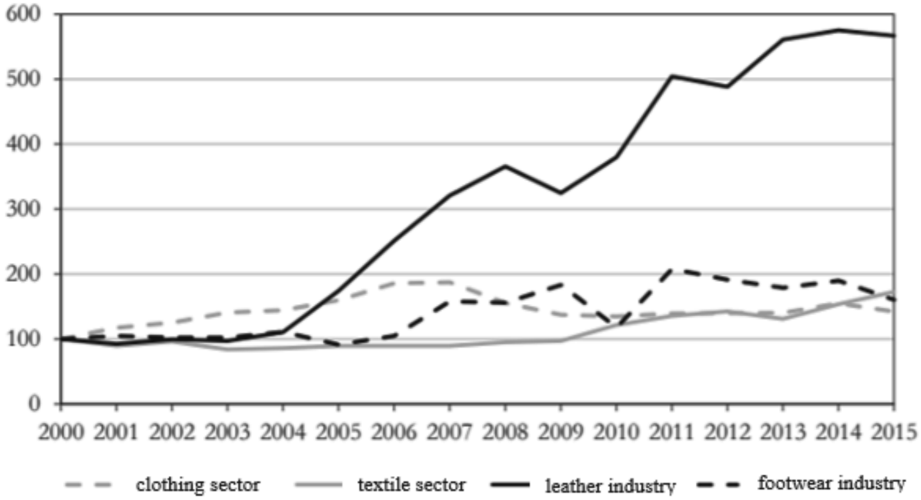
According to the data of HCSO (Hungarian Central Statistical Office), the amount of social security revenue in Hungary was HUF 4,489 billion in 2015 (*Table 2*). This amount can be used as a basis for workload. To this must be added the amount of personal income tax, which is HUF 1,689 billion, the revenues of the central budget (2005) and the amount of the tax and statutory tax levied on the total wage bill, which is HUF 200 billion. Thus, the total amounts to HUF 6,378 billion as a direct burden on the workforce, which was almost 20% (18.5%) of GDP (34.324 billion HUF) in 2015.

To this amount, we can add as the indirect burden of human work the amount of leave (machines do not need a rest), the amount of sick pay (machines do not get sick; if they break, their repair can be performed quickly applying the right technique), and family support amounts. In detail: the amount of leave; the sum of the first 15 days of sick pay; 1/3 of the sickness sum of the first 15 days after the first 15 days; the amount of invalidity pensions. As an essential element of the macro-level, we can conclude that Hungarian tax changes in 2016/2017 significantly contributed to reducing the tax burden on GDP and to reducing the rate of labour taxes. In the future, the volume of work-related taxes may fall below the ratio of turnover-wealth taxes. Wage processes should be supervised in a stronger state co-ordination in the post-crisis period (e.g. wage agreements). To operate a more advanced technology, the state must supervise and regulate the processes (Lentner-Parragh 2017). All this reduces products' connection with human work and helps the advancement of machine work, which we note as a positive effect.

Thus, it can be stated that based on the direct costs of the HUF 6,378 billion human workload in Hungary in 2015, almost one third of this, i.e. HUF 2,105 billion, will be generated. This is a nearly 6% reduction in the workload of the 2015 GDP. With respect to 2019, as outlined above, this new trend requires an appropriate new tax base, revenue source. In addition, automation reduces the unit cost of products. This entails a reduction in the amount of value added tax due if the sales price of the products is reduced. The burden of open or covert unemployment, which can be replaced by machine labour and is usually created by the release of mechanical human labour, can and should be offset by creating new types of tax revenue opportunities in the future. These new taxes will not impose a burden on human labour but will either create a new tax burden on consumption or turnover or somehow tax the automation process.

In contrast, the central budget included HUF 125,747 million in income support and supplementary social benefits in 2015, which did not increase until 2019 as the same amount was planned, which meant an actual expenditure of HUF 428,620 million by August. As can be seen from the above, in Hungary, with the decline in tax revenues from labour and employment, the costs of the central budget are increasing due to the aging society. However, the labour force needed to increase production is not being replaced, for example, by demographic decline.

It is a general principle that the tax rate on labour is high and automation reduces the amount of human labour. In this case, the tax base is automatically reduced, and so is the tax itself. As an example, perhaps easy-to-automate jobs could be mentioned, e.g., work performed next to the assembly line. Following the example of Hungary, the productivity of labour-intensive sectors is growing at a rapid rate: on average, one and a half to two times, which can be even six times in the leather industry. Consequently, much less labour is required. This is illustrated in the figure below:



Source: own editing based on the data of the Hungarian Central Statistical Office (HSCO)

Figure 1. *Productivity changes in labour-intensive branches in Hungary (total net revenue per employee as a percentage of the value in 2000)*

Concerning the fourth industrial revolution, it is important to examine the sustainability of the process. For the following period, a number of interconnected transformation processes are expected. The new economy will have a low-carbon and cyclical economy, and the workforce will have a new role; due to the automated activities, the employment capacity of production activities will be radically reduced. New employment areas will be needed for the 'bored' citizens (Kerekes 2017).

It is not a novelty but a fact that with the proliferation of automation the proportion of the workforce is reduced to a predictable degree of predictability. As a result, in countries where a high tax burden on labour is involved, the tax burden will be greatly reduced by the decline in the volume of work. An interesting question is whether the budgeting resources that can be lost due to robotization can be offset by a special form of environmental taxation, an ecological tax reform. The underlying idea was primarily centred around promoting cleaner technologies and employment, but in the context of robotization the mechanism of action

could also be able to mitigate the government deficit resulting from a reduction in labour intensity. Most of the tax revenue is collected by the state through beneficial activities, in particular by items in work, some of which could be offset by the taxation of polluting, environmentally-damaging activities. As a result of this process, positive-minded activities would expand, while the burden on the environment would fall and innovative and cleaner technologies would spread. The dual effect of the intervention is called double dividend. The implementation of the ecological tax reform is typical of countries with developed economies and environmental policies such as the Scandinavian countries, the Netherlands, Germany, the United Kingdom, Switzerland, and Austria. Although the idea of a tax reform is very promising, its initial commitment to it has dropped considerably over time due to the further extension of environmental taxes. Since the basics of these tax elements are mainly energy carriers, the burdens imposed on them are opposed by all economic sectors as they consume energy in some form (Kiss 2010).

The dissemination of the environmental tax reform is therefore dependent on the extent to which the economic and household resistance can be overcome against the environmental tax reform that directly or indirectly exacerbates energy consumption, which exemption or compensation can be granted to those concerned, and ultimately on the extent to which the competitiveness problems occur for advanced companies that use a lot of energy for their production. However, due to worsening environmental problems and persistent unemployment, the idea does not lose its actuality and even grows (Kiss 2010).

5. Conclusions

During our study, we tried to cover three major issues concerning the effects of the 4th Industrial Revolution on the essence of work, focusing on the increase in machine labour and the reduction of human labour.

In the context of the advancement of machine work, we refer to the Universal Declaration of Human Rights, which includes elements of dignity in the world of work such as the law and the social and world view system of developed countries, as its Article 23 says:

> 1. Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.
> 2. Everyone, without any discrimination, has the right to equal pay for equal work.
> 3. Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

> 4. Everyone has the right to form and to join trade unions for the protection of his interests.

Then, Article 24 supplements it as follows: 'Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.' As stated above, decent work, adequate relaxation, working time constraints, health and accident protection are the basic requirements. From a moral point of view, among others, it must be stated that man is not for the economy but for the mankind and that man is not a means of work but a goal and a purpose. Therefore, from a moral point of view again, the noblest purpose of all work is to improve human life and to approach social justice more and more. The priority of capital-based work in modern conditions is also a fundamental principle to prevail (Alford–Naughton 2009). Therefore, apart from the release of free time, the state must also provide meaningful, valuable, and dignified human activity to spend 'free time', so that it does not become 'empty time'. There is also this man about whom otherwise old Platonic philosophers have often said that he can only live if he finds something outside his own existence for his struggles (Kisléghi 1930).

According to our point of view, it is a man's dignity to make his own existence difficult in his circumstances and in the meantime to overcome himself to create and retain for himself and others the economic prerequisites of human culture. Mechanical work is, of course, useful in so far as it reduces difficulties and generates leisure time, but the existence of man and the spirit of fighting cannot be jeopardized. Imre Madách's last sentence of the *Tragedy of Man* – one of the greatest Hungarian literary works – says: 'O Man, strive on, strive on, have faith; and trust!' (transl.: J. C. W. Horne).

Our conclusion is that in the world of work man is not a resource and a non-manageable tool as it is. We, therefore, consider it useful to apply alternative solutions in a bid to compensate for the tax burden on human labour. In addition, human capital, the local community labour force, and not the automated and vulnerable, has a priority status (Kocsis 2002). Furthermore, economy is influenced not only by the price mechanism of the market but also by the economic and social processes (Machan 2010). Human will is the most influential factor; man is based on the economy, the market, and work. In this way, we believe that economic growth cannot lead to the misery of public health, and so it is essential to carry out efficiency calculations with human capital in order to enforce the principles of good and fairness.

We join the Buddhist P. A. Prayudh Payutto's thoughts as the Thai Buddhist monk and philosopher finds authentic Buddhist sources saying that the most important difference observed and highlighted by the Oriental Buddhist view of Western economic work regarding human labour lies in the latter's separation of work (which is a constraint for living) and leisure (which is the time of self-

fulfilment and happiness); the former argues that work can be satisfying and unsatisfactory depending on desire, and so it can directly contribute to well-being (see Payutto 2014). Amartya Kumar Sen, a Bengali-born economist, also approached the question morale philosophically and worked out the views contrary to the principle of Pareto efficiency, which perceived work as leading to welfare society through the fulfilment of human capabilities (Pataki 2002). Although the principle of Pareto efficiency is not to be called into question, in our modern-day life, which is pervaded by technology, we find that while technology makes our work easier, there is still a powerful content behind everything. Working as a moral being, the framework of our work is filled by our moral being – not as a tool and subject of work but as the focus and purpose of the work. These serve the development of the individual and the sustainable development of society as a whole. That is why modern management and economy must be regarded as such a human work.

In the light of the above, we can conclude that the increase in the proportion of machine labour and the reduction of human labour can improve the quality of life of the world's population provided that alternative solutions and the fundamentals of moral origin are included. At the same time, Klaus Schwab, founder and leader of the World Economic Forum, draws attention to economists Erik Brynjolfsson and Andrew McAfee, saying that automation is a substitute for human labour and can create inequalities in the world economy with regard to the labour market. This inequality and disruption can upset the order of creating capital gains and create a gap (Schwab 2016). In contrast to the opinion of renowned economists, in our view, the replacement of man's work, the rearrangement of capital income, the advancement of machine labour, and the increase of free time can have a positive impact on human civilization if processes are kept on the right course.

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