



INSTITUTE
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Czech Republic – Country of Robots

Future of Work, Economy and Society

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Executive Summary

- The challenges of automation for European economies are often underestimated. **Czech Republic may become a model country** for the whole Europe in finding the right answers for them. Government shall therefore embrace automation, especially in the SME sector, and apply bold policies in education and social systems.
- AI and automation will impact not only low and mid-level jobs, but **all types of employment**. In the future, workplace will be characterized by intense collaboration of human beings with machines. Digitization, robotization and automation will create **new opportunities and new types of jobs**. However, professions will change, and **new skills will be required**, making it necessary for everyone to adapt. **Bridging the skills gap**, access to technology and unemployment will be the main political concerns.
- Technology-driven changes in labor market and whole society may cause a **definitive shift of economic power from labor to capital and a rise in all forms of inequality**. They may result in a **fundamental political transformation and instability**.
- To prevent political disruption in Europe, **educational and reskilling systems** as well as the **concept of social state** need to be readjusted.
- The Czech Republic will be among the countries **significantly impacted by AI**, especially in its employment structure. According to a governmental analysis in the **five-year horizon** technology will be able to **replace more than 50 percent of skills** in 11 percent of occupations. In the **30-year horizon**, automation can **replace over 50 percent of skills** in the vast majority of current professions.
- Professions with middle-level qualifications and income face higher risk of replacement. This can lead to a **deepening of economic inequality in the Czech society**.
- The systems of **education, lifelong learning and reskilling** need to be adapted to the changing demand of workforce skills. **Social security system** and safety net need to be strengthened and made more flexible to become a “**social trampoline**.” That includes the protection of a growing number of self-employed people (gig work) and adjustments in the labor law.
- Therefore, the **government has to play an important role** not only in reshaping the educational system, but also in supporting the adaptation of workers and businesses to new conditions. It shall therefore **field-test and implement best practices** in education as well as social systems. They shall include bold ideas that can be initially unpopular or difficult to implement but may create significant competitive advantage for the whole economy in the long run.

... How I Learned to Stop Worrying and Love the Robot

Policy Paper – Jan Klesla, March 2019

A specter of AI is haunting Europe. German Chancellor, French President and European Commissioners united their efforts to push the EU forward in the global race with the USA and China for the primacy in AI. What is of utmost importance in the field of Artificial Intelligence are investments in research and development as well as regulation and ethical guidelines. Another often stressed factor are the upcoming challenges posed by automation and digitization of economy. However, the equally important question of the **Future of Work is overshadowed by the continuing economic boom** and minimal unemployment rates in many European countries, including the Czech Republic.

The debate on the expected disruptive impact of AI technologies on the labor market is often reduced to **empty threats of job losses**, and the whole issue is therefore often underestimated. Nevertheless, companies all over the world are spending billions to transform their businesses into lean, highly automated operations to stay ahead of their competition. Digitization, robotics and AI in general - often diminished to a joint term “robots” - will impact not only low and mid-level jobs, but practically all types of employment and will cause rise in all forms of **inequality** (*Chapter 1*).

Technological developments will almost certainly create new opportunities and **new types of jobs**. However, professions will change, new skills will be required (*Chapter 2*) and it will be absolutely necessary to adapt educational and social systems. Otherwise, changes in the labor market and whole society may cause a **definitive shift of economic power from labor to capital**. The resulting fundamental political transformation and instability may not be obvious at a time of economic boom, but in the near future it may **hinder and even destroy the European project** (*Chapter 3*).

In April 2018, the European Commission launched the "Artificial Intelligence for Europe" initiative to ensure a coordinated EU approach to support the use of AI throughout the economy and to prepare the continent for wide-ranging socio-economic changes. The **Czech Republic has a unique position to become a model country for the EU** in finding the right answers to these challenges. It is one of the most industrialized countries in Europe with more than 51 percent of jobs that will be affected by automation in next five to ten years (*Chapter 4*).

First, companies operating on the Czech market desperately lack workforce, especially for manual and unskilled positions, and the cheap labor from the eastern non-EU countries is more and more attracted by Germany. Second, automation can be a way to replace the missing human workforce caused by the unfavorable demographics in developed countries, as is often pointed out by Chancellor Angela Merkel. The potential for automation in the Czech economy is therefore high, especially **in the SME sector**. Third, there is also almost no fear of job loss induced by automation among employees thanks to the current economic growth and record-low unemployment. Robotization and AI do not have a negative public perception and can be presented as a **way to achieve higher productivity and wages** that are still beyond European average.

To achieve these goals, the Czech **government shall endorse and support automation and deploy specific liberal solutions** in education (*Chapter 5*) and social system (*Chapter 6*) to tackle potential threats. It needs **specific projects with an implementation time between one to three years**. The inspiration can be found in countries like the United States, Switzerland, Denmark, Norway, Sweden or even Dubai. Formulating the right policy proposals is the main objective of the newly established Future of Work working group at the Institute for Politics and Society¹.

To become economy of the future, the Czech Republic **shall put people to the forefront**, helping them improve their skills and qualifications (*Chapter 7*). Although digitization is generally perceived positively, as skepticism increases with age, older people shall be supported even more. New technologies shall be used for administrative and repetitive tasks, creating space for more meaningful work, and freeing human resources for more creative activities with a higher value added. The word *robot* itself, as invented by the Czech liberal writer and political philosopher Karel Čapek, has its roots in the Latin word for *labor*. His successors now can prove that robots and AI shall not be feared but embraced exactly because of their impact on labor. In this sense Czech Republic shall truly become the **Country of Robots**.

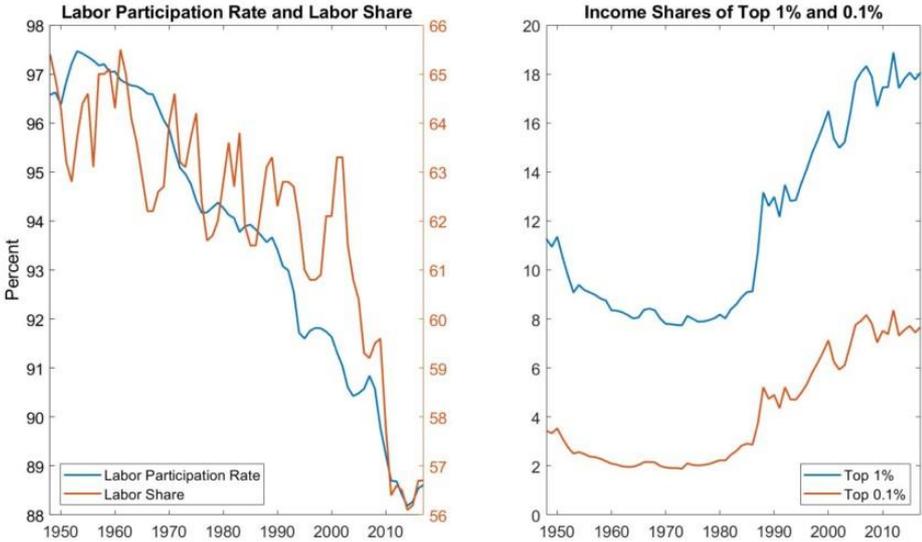
¹ The main aim of this paper is to provide background information for the discussion at the Ralf Dahrendorf Roundtable on Future of Work organized by the European Liberal Forum and Institute for Politics and Society.

1. Future of Labor and Inequality

One of the most unexpected hotbed of labor market disruption is the fabulous Las Vegas, a city full of low-wage, low-skill work. According to the recent report by the Bertelsmann Foundation, hundreds of thousands of jobs in Sin City are threatened, among them cooking, cleaning, selling and dealing cards. Casinos are already using gaming machines and equipment that allows blackjack dealers to serve dozens of gamblers. Hotels on The Strip are installing automated check-in, room service, housekeeping and even robotic bartenders. Up to 65 percent of Vegas jobs have a high chance of being automated away, comparing to 25 percent of all jobs in the US that are often seen as a model country for the Future of Work.²

The global capital of entertainment is a very colorful example of the near future for workers not only in the US, but elsewhere in the world. The low skilled and low paid workers will be replaced by smart machines to allow their employers to compete with cheaper services to more customers. Certainly, more common than roulette droids will be delivery robots replacing humans in take-out and dropping off groceries from market right to the kitchen. Just like Amazon Scout, new six-wheeled autonomous delivery robot built to withstand the sidewalk. The retail behemoth announced its testing in Snohomish County in Washington.

The stakes are high not only in Vegas. Advances in automation and digitization threaten labor market disruptions and social rifts. As new Economists for Inclusive Prosperity initiative warns - income and wealth disparities in the United States have risen to heights not seen since the Gilded Age. Median wages for US workers have stagnated for nearly fifty years and fewer and fewer younger Americans can expect to do better than their parents. Digitization and rise of superstar firms are just the beginning of a larger wave of technological progress that will center on AI. Addressing these issues will require a broad and deep public discussion of new policy ideas.³



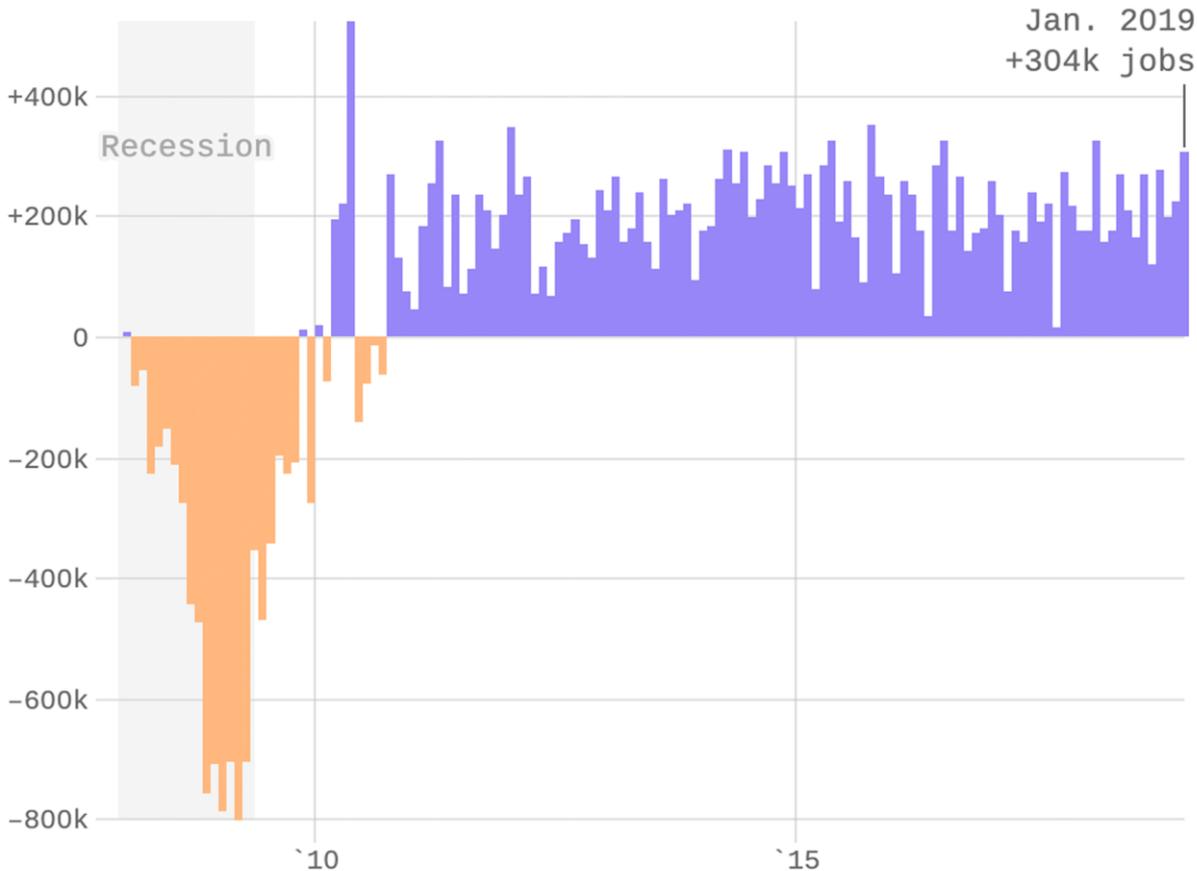
Labor and Income Shares in the USA (US Bureau of Labor Statistics, 2018)

² Las Vegas: From Booms and Busts to the Future of Work (Bertelsmann Foundation, 2019)

³ Suresh Naidu, Dani Rodrik, and Gabriel Zucman: Economics for Inclusive Prosperity (February 2019)

The United States economy is usually perceived as a laboratory for the future of work. They share the biggest problem of western economies - relatively low productivity and wages growth despite the rise in automation, low unemployment and economic boom. The US labor market is also very flexible due to lack of social state and worker protection laws. Impacts of AI and robotics are therefore visible without these distortions. For instance, January 2019 was the 100th straight month of job growth according to Bureau of Labor Statistics. That makes by far the longest streak since the number has been tracked in the 1930s. The wages also started to grow by 3.2 percent after 35 years of essentially flat progress. It is the biggest increase since 2009 and a full 1.2 percent higher than inflation. These developments also started to worry economists that expect Fed to raise interests' rate in fear of accelerating inflation. This clearly illustrates the influence of public policies on the future of work issues.

Seasonally-adjusted U.S. non-farm payrolls



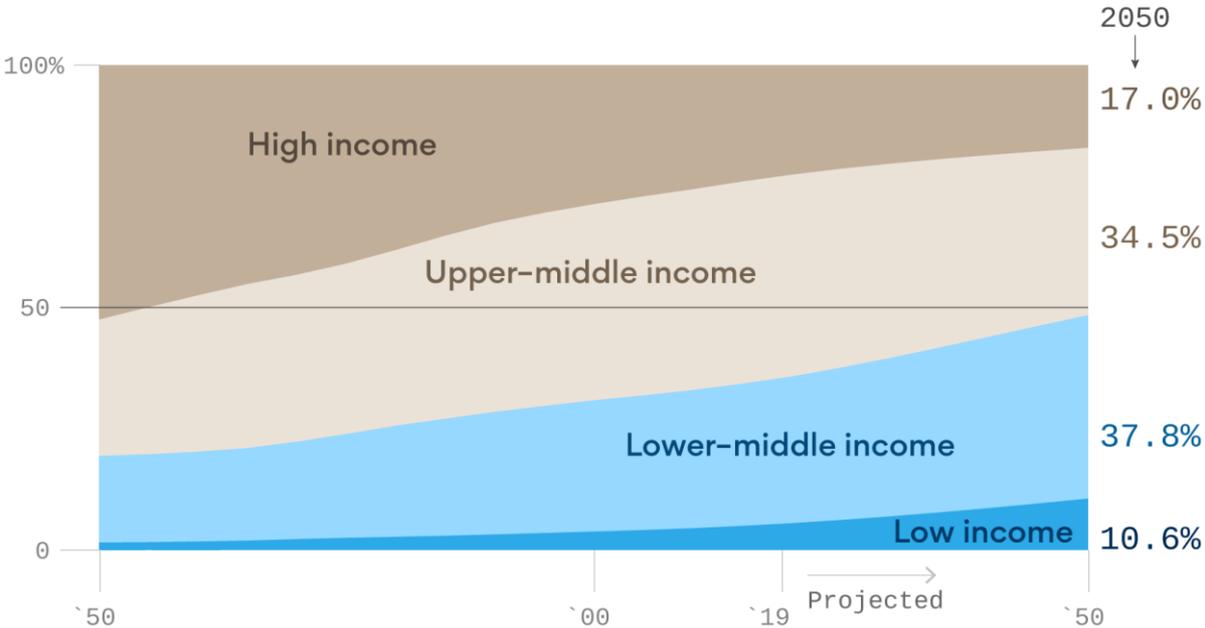
(US Bureau of Labor Statistics)

The US can also show the impact of technological disruption on labor market. The last wave in the 1980s known as the IT revolution created new jobs, but the largest impact on jobs and wages was in the high and low ends of the labor market. The middle-wage and middle-skill jobs in manufacturing, largely in the middle of the USA, were automated away or sent abroad to cheaper countries. However, the new wave of automation and AI is projected to hit high- and low-paying jobs in addition to middle-income jobs. The next vulnerable jobs include middle-wage occupations like trucking and administrative office work as well as lower-wage jobs like waiting tables and farming.

This results in growing inequality. The bottom 90 percent of US population has only 20 percent of wealth, while the top 1 percent has upped its share to 40 percent. This can be illustrated in the retail sector. Discretionary income is shrinking, income levels are not substantially increasing even as more expenses cut into monthly budgets. People are spending extra money on smartphones, data plans and Netflix subscriptions instead of clothes, toys and books. The digital economy is getting bigger slice of pie without providing for wealth rise for everyone. This can be seen as typical monopoly situation with wage-setting power enjoyed by large companies.

This is not just the case of the US economy, poorer countries around the world are starting to look for other routes to economic growth in the era of rapid automation. However, it is not yet clear that they can achieve the same economic record as in the past based on traditional low-wage manufacturing jobs.

Share of world’s urban population by country’s income level, 1950–2050



(United Nations Department of Economic and Social Affairs)

Technology is shifting manufacturing away from humans and toward machines, and the need for massive labor pools in emerging markets is slowly disappearing. It is not necessarily bad news, as long as poor countries can find different way to fuel economic growth. According to World Bank, two countries stand out in their departures from the usual route: Malaysia, which is building a service-based economy, and the Philippines, which dumped factories in favor of call centers.

The McKinsey Global Institute research shows that even in a world with enough work overall, it is needed to draw additional attention to concerns about the coming workforce transitions as a result of automation.⁴

⁴ AI, automation, and the future of work: Ten things to solve for (McKinsey Global Institute, 2018)

- Some occupations with a higher density of automatable activities will decline (jobs lost), while others grow (jobs gained), millions of workers will need to change occupational categories. These occupational transitions are already underway.
- Given the occupation mix shift, there could be pressure on wages. Many occupations that may decline tended to have middle-wages while many of the growing occupations were historically paid less.
- The other concern on is around partial automation. While there will be many cases where humans and machines each perform value-added work and wages rise, there may be cases where the value-added portion of a job may be automated, leaving the less skilled work for humans.
- Workplaces and workflows will also need to be redesigned to better accommodate human-machine collaboration (the concept of so called “centaurs”).
- Workers’ skills will need to shift as employers seek more technological and social and emotional skills, with less demand for physical and basic cognitive skills, though these will continue to dominate for some time.

2. Future of Jobs and Skills

"Yoshihisa Ishikawa's one-night stay at a robot-staffed hotel in western Japan wasn't relaxing. He was roused every few hours during the night by the doll-shaped assistant in his room asking: 'Sorry, I couldn't catch that. Could you repeat your request?' By 6 a.m., he realized the problem: His heavy snoring was triggering the robot."

This anecdotic story opens the Wall Street Journal report on more than 100 hospitality robots being fired in Japan after deemed more trouble than they're worth. Not a long time ago, bots staff a buzzy Japanese chain called Henn-na. They appear at the concierge desk, the bellhop stands and the bar, and perform a welcome dance in the lobby. However, the presence of the human employee proved necessary in quite a short time. The workplace, in the future, will be associated with close collaboration of a human being with machines.

Technology will shape the work process to such extent that employees, in order to remain competitive in the job market, will have to educate themselves all the time. The evidence from US indicates that the automation will probably not cause tectonic shifts on the labor market, workers will be more probably caught in a gradual revolution, in which jobs are transformed continuously as machines grow more capable. The new “jobs of the future” already occurs as the report from company Cognizant shows — 50 occupations like cyber calamity forecaster, career counselor and solar engineer jumped 68 percent in 2018, outperforming the market as a whole.

The rise of technology will most certainly lead to the creation of new jobs, but they will demand different skills, and a different education. The companies, governments and individuals need to prepare for that change. For instance, IBM CEO Ginni Rometty said she wants to see the development of a new education and career model - not blue collar or white collar, but new-collar job. This means investing in skills development and responding in real time to the changing skills demand. It also means breaking free from traditional models of recruitment based predominantly on degrees.

The skills gaps in workforce is already shifting. Those needed for the workplace of tomorrow are changing, by some estimates, one third of the skills required by employers will be entirely new by 2020. There will probably be no single “skills gap”, but rather a number of gaps influenced by a wider spectrum of factors. Tech skills are the most discussed, but soft skills like oral communication, leadership, and time management are among those with the biggest gaps in the US according to LinkedIn report. It reveals that some cities have a certain set of skills in surplus, and others in deficit.

The other widely opening gap can be found in the uneven distribution of economic benefits among groups defined by social class, education, gender, race and age. Analysis from the Brookings⁵ suggests that less economically secure workers lose out. The transition will be manageable for those with at least a bachelor's degree. The most affected groups by disruption in the US will be young, Hispanic, and black workers.

It also estimates that men will suffer more changes to their work than women - 43 percent of an average male worker’s job could be automated by 2040, compared with just 40 percent for the average woman’s job. On the other hand, recruiting women into technical roles is still a huge problem. The gender imbalance in AI needs to be fixed as it will also make machines learn more efficiently. AI itself could also magnify inequality as algorithms reflect the implicit biases of their creators.

The five significant trends for the future of jobs has been formulated by the World Economic Forum expert group:

- AI and robotics will ultimately create more work, not less.
- There won’t be a shortage of jobs but a shortage of skilled talent to fill those jobs.
- Learning new skills will be an ongoing necessity throughout life.
- The majority of the workforce will freelance by 2027.⁶
- As remote work becomes the norm, cities will enter the talent wars of the future. People will acquire new geographic freedom to live where they want, and cities and metropolitan regions will compete to attract this new mobile labor force.

⁵ Digitalization and the American workforce (Brookings Institution, 2017)

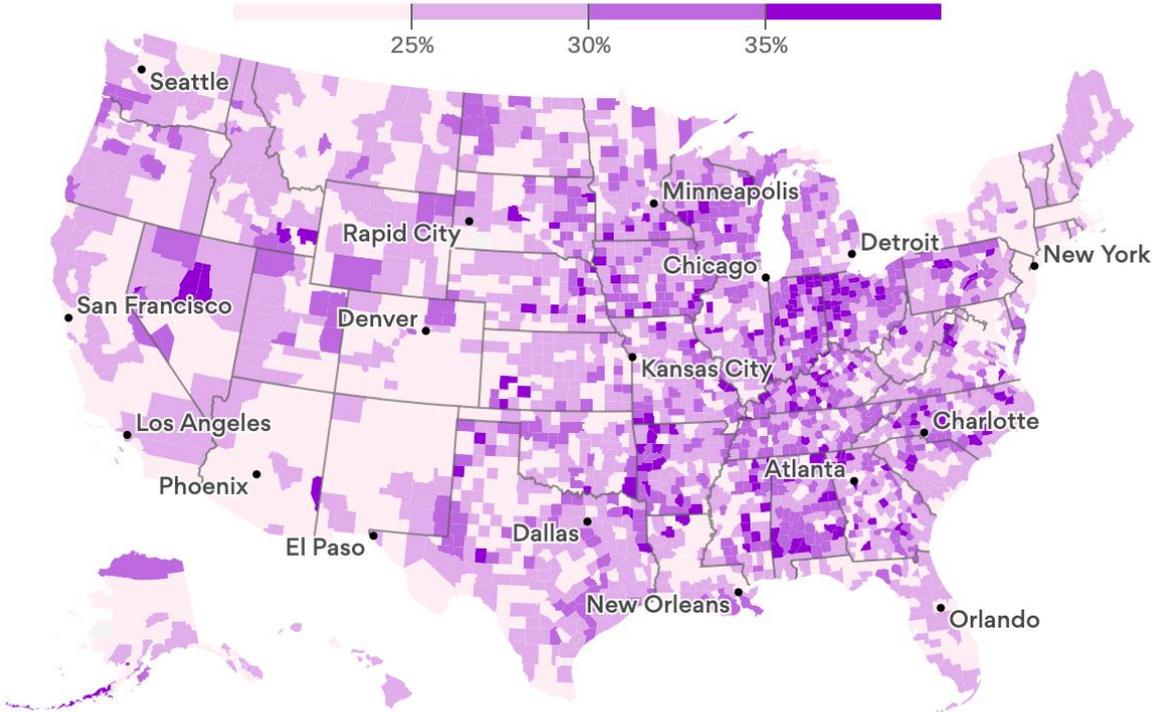
⁶ Freelancing in America (Upwork, 2017)

3. Future of Democracy and Politics

Americans aged 18 to 29 are as positive about socialism (51 percent) as they are about capitalism (45 percent), found the poll by Gallup. That means a 12-point decline in young adults' positive views of capitalism in just the past two years and a marked shift since 2010, when 68% viewed it positively. Another poll by SurveyMonkey shows that even 61 percent of Americans aged between 18 and 24 have a positive reaction to the word "socialism" — beating out "capitalism" by ten percent. Overall, 39 percent of Americans are well-disposed toward socialism. The evidence of something happening in the society can be found also in low number of new startups, and relatively few IPOs in last couple of years.

Historians, political scientists, sociologists, legal scholars, and economists generally agree that the prevailing neoliberal policy framework had failed society, resulting in monumental and growing inequality.⁷ Almost four decades of largely flat wages for the vast majority of workers and four decades of meager productivity gains have its impact the illiberal, nativist turn in politics. Moreover, millions of people feel left behind by the rapid social, cultural and economic changes caused by automation. The bipartisan system is shattered and some politicians like Senator Marco Rubio calls for a coalition on the scale of the New Deal and the Reagan Revolution. Both parties are on opposite sides of almost every labor issue, such as trade, immigrant workers and the idea of universal basic income for everyone, but the fear of automation is uniquely bipartisan.

Share of jobs at highest risk of being disrupted by automation



(Brookings Institution)

⁷ Suresh Naidu, Dani Rodrik, and Gabriel Zucman: Economics for Inclusive Prosperity (February 2019)

Brookings created what they call “a weather map” that shows exposure of jobs to automation across the US. The division is clear - the Rust Belt city of Toledo, Ohio, is the most exposed to the power of machines that can take over workers’ tasks. On the other hand, Washington, DC is the least exposed. The five states with the highest share of endangered jobs are Indiana (29%), Kentucky (29%), South Dakota (28%), Arkansas (28%) and Iowa (28%), all of which voted for Donald Trump in 2016. The bottom five are New York (20%), Maryland (20%), Massachusetts (21%), Connecticut (22%) and New Mexico (22%), unsurprisingly the ones that went for Hillary Clinton. As middle and low skill and wage jobs in the US heartland disintegrate, the polarization will only deepen.

Economist Oren Cass rejects the usual explanation that the problem is caused by automation in. In his new book *The Once and Future Worker*, he argues that public policy pushed many workers away from physical labor, to which most are suited. And the industrial economy, including extraction industries, that might employ these workers has disappeared. Cass points to the entire economic system to be reordered from a worship of greater GDP and toward wage growth, higher participation of workers in the labor force and a higher savings rate. To absorb the coming disruption, the government and corporations shall support reskilling and upskilling of displaced workers.

The political development and rising inequality is not a problem of the US. These issues were discussed at recent annual World Economic Forum meeting in Davos. Global elite agreed that even if Brexit were overturned in a second referendum and Trump were defeated in 2020 almost nothing would change in the big picture. The political and economic order would continue to unravel, and a new age of global economy and politics would continue to take shape. The political rifts in the recent five years are seen only as a symptom of the shift to a new world order, according to reports from Davos off-the record meetings. The biggest difference of the current transformation in comparison with the past, is the speed. Rapid technological advances are core in this dramatic shift causing much of the angst felt across the advanced economies, along with the political turbulence that flows from it. The first industrial revolution occurred over 100 years. The fourth is happening over less than ten.

The United states are by far not the only country hit by the changes of political landscape. Italy for instance has been described as “the center of the political universe” by Trump's former strategist Steve Bannon. The new government left-right, anti-establishment coalition consists of “a populist party with nationalist tendencies - the Five Stars, and a nationalist party with populist tendencies - the League,” he said for the Politico’s European edition. “It’s imperative that this works, because this shows a model for industrial democracies from the US to Asia,” Bannon added. The Five Star movement itself started as a political platform with strong emphasize to the direct democracy and roots in techno-optimistic movement. One of its flagship policies is a universal basic income that proposed a monthly stipend of 780 euros for Italy’s poorest citizens. One of the most popular ideas to tackle negative impacts caused by automation. The original movement was taken for a progressive popular front and in many ways resembles the Czech Pirate Party, that pose to be liberal, but is getting stronger among young and left-leaning voters, attracts protest votes and proposes socialist policies. It is also a member of Greek`s former finance minister Yanis Varoufakis Diem 25 movement.

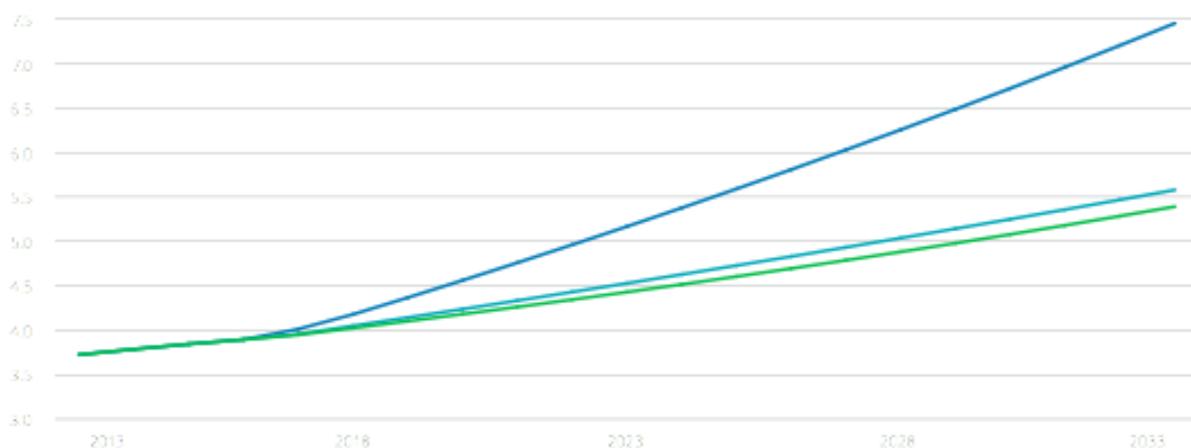
4. Future of Czech Economy

The development of AI technologies in Czech Republic has been thoroughly described by the “*Analysis of the Development Potential of Artificial Intelligence in the Czech Republic*”⁸ commissioned by the Office of the Government. Considering the workforce structure and the way the country is involved in global value chains, the study expects that the Czech Republic will be among those significantly impacted by AI in its employment structure.

Based on the current technological level in the field of AI, the analysis expects that on the five-year horizon the technology will be able to replace more than 50 percent of the required skills in 11 percent of the occupations. On the 30-year horizon, automation can replace over 50 percent of skills in the vast majority of the current professions. At the same time, new professions will continuously emerge, though they will require different skills and abilities in comparison to current professions.

The model of automation and the AI impact on the labor market was developed by the authors from Technology Centre CAS using a Deloitte computational and data model. It is based on an estimation of the automation potential of individual work activities in each profession. Together with the time horizon where the required levels of ability will be met by technology (described as the so-called activity-based approach). The model thus follows the approach used by the McKinsey Global Institute (MGI) based on the decomposition of the different occupational categories. Unlike that, the study does not deal with activities carried out in individual professions but directly with the information about the skills.

The previous long-term economic projection by Deloitte⁹ shows the potential significant impact on the whole economy and its production. The positive/negative impact will depend solely on the adoption of technology and right policies to tackle upcoming market changes.



Czech economy output model - negative, positive and optimal scenario (Deloitte, 2018)

⁸ This chapter is based on *Analysis of the Development Potential of Artificial Intelligence in the Czech Republic* (TACR, Office of the government of the Czech Republic, 2018)

⁹ *Automation of work in the Czech Republic*, Deloitte, 2018

According to the governmental study, the high potential for skills replacement is not limited to manual occupations. The implementation of technologies into economic activities can affect both manual and administrative jobs associated with data management. On the other hand, the lowest proportion of substitutable skills in a 5-year time frame is within the areas of health professionals, science professionals, or cultural and creative industries. Higher risk of replacement is facing especially professions with middle qualifications and income level. In low-skilled, low-income manual professions, automation is in many cases not worthwhile. In high-skilled and high-income professions is the automation potential reduced by the limited availability of the necessary technologies to automate the creative activities. Drop in occupations in the middle-income category caused by automation can therefore lead to a deepening of the economic inequality in Czech society.

As a first step in the systematic approach to AI in the Czech Republic, the study identified the need for a national strategy outlining the priorities in the AI area. Following the Digital Czech Republic program the National AI strategy (AI) has been commissioned by the government and shall be submitted by the end of April 2019. In the area often called Future of Work, it should provide answers to the questions how AI influence individuals and what impact will have on the labor market, what will be wider impact on society and how the state can ensure that social structures will adapt to the upcoming changes.

The authors of the study formulated five basic recommendations towards the further economic development of the Czech Republic:

- Necessary adaptation the whole system of education, lifelong learning and retraining to the changing demands on the skills of the human workforce. In several countries, there are special national reskilling programs which offers individually adapted programs and skills updates for employers and employees.
- Strengthening social security and developing social safety nets. The speed of retraining and finding new jobs is different for different employments and employers, which can lead to an increase in the structural and the frictional unemployment. The social safety nets must be adapted to this situation in order to offer an effective support of the vulnerable employees.
- It will be necessary to verify experimentally which forms of support will work best.
- Automation will also cause organizational changes in companies, tasks in production and services will be more outsourced to non-core employees. This implies a new demand for the state to ensure social security for a growing number of self-employed people (so called gig work, or uberization of work).
- A need will arise to adjust the protection of employees by the labor law. It will include the need to modernize the labor Code.

5. Future of Education

Lakeside school counts among its alumni Microsoft co-founders Paul Allen and Bill Gates. It has also long history of using technology in class - students are given laptops starting in fifth grade, and every high schooler learns programming in math class. But recently Lakeside started a year-long process together with Seattle businesses, government agencies and NGOs to turn its curriculum upside down. The main point is to strengthen non-technical skills, that will be most valuable in the age of AI. Some of them might be better taught in art studios and gyms than in math or science classrooms, reports say.

According to a analysis by LinkedIn, the top five skills companies now seek are creativity, persuasion, collaboration, adaptability and time management. Their popularity outstripped more than two dozen hard skills and are far beyond the reach of even the most advanced AI systems. Such skills, not college degree, will clearly matter for the future workforce, importance of specific knowledge will decrease in favor of complex skills and basic and higher education will get even higher importance. However, the transformation of the education system at all levels is a key task that will have a crucial role both for providing top scientists and researchers and for delivering a quality and adaptable workforce.

Transformation of educational system requires proper digital education and significant steps shall be taken to transform currently established educational system into a lifelong learning process in which universities serve as partners to both employees and employers. The education system must keep pace with the changing labor market and must be able to flexibly change the ways in which it prepares the students for their future jobs. Topics that are covered today are archaic and fail to meet the employers' needs. Graduates are immediately plunged into jobs where they work in diverse teams and are expected to be persistent, independent, and capable of quickly adapting to change. A successful education system constantly changes curriculum based on labor market projections but focus on the long-term to avoid making a new unemployed class in the near future.

The modern learning methods based on so called Ed-tech should be introduced as well as outcome metrics that measure career success by course of study, degree and institutions. A career guide should be available to students who need help with choosing their academic direction. It is also necessary to provide funding for public and private schools on the basis of labor market forecasts. The so-called new-collar education pathways are needed, and the employers should play a more important role in creating them.

The cooperation between companies and the state is an essential prerequisite for the modernization of education systems. There are many examples of such cooperation between businesses, educational institutions and local communities. They usually combine the expertise of public and private stakeholders with government support. Skill mapping is often part of these projects and has proven to be a uniquely suited approach to curriculum design. Cooperation projects between businesses and educational institutions are becoming part of academic courses. They provide students with the opportunity to acquire practical skills, work on specific projects, and find ways to solve complex problems.

Better preparation of the workforce for the jobs of the future requires both private sector innovation and effective public policy. Examples can be found around the world, Dubai for instance announced the Dubai Cares program together with World Economic Forum focusing on reskilling of 15 million people till 2020. Its funding amounting to USD 1.5 billion will be equally allocated to two three year programs - 'Closing the Skills Gap: Preparing Education Systems for the Future of Work' aims to build a network of public-private partnerships, The

'Shared Vision for Talent in the Fourth Industrial Revolution', aims to address the growing mismatch between the supply and demand of future skills in the labor market.

France's Minister of labor Muriel Pénicaud introduced re-skilling programme that includes giving employees 500 Euros a year to choose their own training path. "Today access to capital is easier than access to skills," she said in Davos. She also addressed the citizens feel that they are victims of globalization and technology and remedy given by the chance to choose "their future." Examples of good practice from around the world include also creation of new accounting models that would consider training of human capital as an investment, rather than as an expense. On the other hand, workers may be given tax credit for lifelong training and reskilling.

The Analysis of the Development Potential of Artificial Intelligence in the Czech Republic proposes following measures for the area of Education and training of new workforce:

- Transforming the education system
- Improving the school equipment for development of digital literacy and informatics thinking and adopting the potential of AI in education
- Developing competencies and increasing the social status of teachers
- Development of a state supported lifelong learning and higher vocational education system with a focus on technical and soft skills
- Development of the complex system of retraining for workers threatened by automation

6. Future of Social System

The US government and private companies will need to pay USD 34 billion to reskill 1.4 million workers who may lose their jobs to automation in the coming years, according to a report from the World Economic Forum (WEF). The report also said that 18 percent of them will not be reskillable economically, so the government will have to step in. Most of the cost will have to be covered by the public assistance because only about quarter will be cost efficient for business estimates the WEF. This example clearly shows how important will be the role of government in the transition. Not only in the reshaping of education system, but also in supporting workers as well as businesses in the process of adaptation to changes of labor market caused by automation and AI.

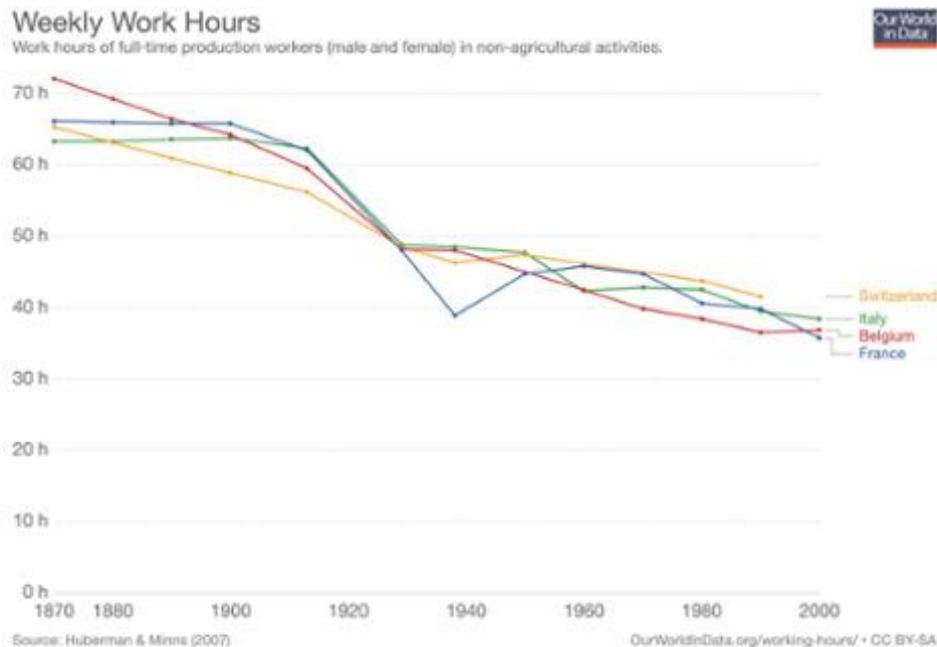
WEF proposes to change worker protections from a safety net to literary a social trampoline. It should embrace technology to deliver benefits and offer low-cost ways to provide skills-training. However, it must be co-designed by all its stakeholders – citizens, businesses, trade unions and other groups who depend on that reskilling and upskilling. Many policy ideas aiming that way is already being tested around the world. Denmark’s model of “flexicurity” offers benefits like unemployment security and heavily subsidized skills-training. Others, such as “portable benefits” aims to provide more universal access to critical benefits support to non-traditional or flexible workers in countries like US where freelancers are not covered by social security at all.

The Analysis of the Development Potential of Artificial Intelligence in the Czech Republic proposes following measures for the area of social system:

- Assessment of usability of new social models to support the transition of employees to new positions
- Assessment of the usability of potential shortening of working hours
- Support of development of work opportunities in more affected regions and support of employee mobility
- Support of retraining and digital skills improvement options as a part of employment
- Development and continuous updating of the National System of Occupations and National System of Qualifications databases

Shorter working week

Probably the most common proposals are focusing on solving possible problems caused by less work (not less jobs). Such the policies are based on shortening of working hours per day or per week. One of the most popular proposals is the four-day working week advocated by psychologist Adam Grant and economist and historian Rutger Bregman in Davos this year. They argue that working less would have a range of benefits for both workers and employers. Reduction of working hours shall make people able to focus their attention more effectively, with higher quality and creativity, and also loyalty to the organizations that are willing to give them flexibility and time to care about their lives outside of work. Shorter working week is not seen as radical idea in longer historical perspective - working hours per week have been cut almost by half during the last century thanks to the advancement in technology.



Peter Diamandis agrees and points out that people nowadays are spending less and less on basic necessities and working fewer hours than previous generations. “Technology continues to change this, continues to take care of us and do our work for us,” he says. And even uses the phrase “technological socialism” to describe radical form of such belief. Extrapolating from the data, Diamandis believe the modern world is heading towards a so-called post-scarcity economy and the current system will have to be changed quite dramatically.

Gig work and its taxation

The main challenge of the coming wave of AI disruption may be the end to the so-called stable traditional work arrangements. The so called ‘gig work’ might therefore prove to be a valuable tool for addressing the upcoming need for more flexible jobs. However, it might also only exacerbate the problems caused by automation.

The rise of independent and flexible work is a long-term trend seen in the past two decades - the number of people engaged in independent work in one capacity or another has increased in most measures. The WEF numbers shows that approximately 20–30 percent of the working population in the US and the EU15 engage in independent work, and the numbers are even higher in most emerging markets. It is a fundamental component of today’s economy and fast-paced technological progress and will even further its importance. Online platforms, such as freelance jobs market Upwork, are helping to fuel this trend, by creating faster and better ways for buyers and sellers to connect.

Companies are expected to continue to push to maximize output per worker and levels of labor productivity and more workers will therefore become a contractor on on-demand platforms, not an employee. Many sectors like taxi/car-sharing represented by Uber, Lyft or Taxify are already dominated by independent contractors based on the nature of the tasks they perform. This shift will also be seen in industries that still mainly rely on employees to carry out routine work. However, these are likely to first be eliminated by automation. Since we can expect most jobs in the future not to be routine, contracting will become the preferred contractual form as opposed to be an employee. The platforms of the gig economy may help to divide work into tasks to be performed by humans and those by AI and robots.

Gig work biggest negative impact might primarily be on the social system and the principle of solidarity of employee payments. The employment contract is the only way to keep social security functional in its present form. Also, the various forms of progressive taxation help dissuade the owners of capital from claiming too large a share of value added at the expense of workers. However, these tax schemes may undermine further investments and innovation.

The key issue is therefore not the flexibility but the profitability of work. The digital economy may shift the delicate balance of the whole system, which today suffers from burdens of the past. For instance, the problem of a bad tax system in the Czech Republic has dragged on since the 1990s. It is necessary to establish fair conditions across the whole system - the tax burden is unequal on employees and independent workers that includes social and healthcare deductions (in fact, direct taxes). For instance, both employers and employees are now motivated to move to individual contracts and digital platforms may facilitate this. Without resolving these issues, it may not be possible to solve the fundamental issues of gig work.

(Un)conditional basic income

The idea of unconditional basic income (UBI) has been floated a number of times during the ages, going back as far as the 16th century. The ideology behind the suggested changes in social security policy tends to be either ending poverty and lowering inequality or replacing most of the current social benefits. Proponents of the basic income argue that it provides citizens whose jobs are automated with a guaranteed income, allowing them to retrain themselves or become an entrepreneur. They envision a hyper-productive economy, where robots do most of the work and people are freed from having to perform an economic activity. Livelihood is provided for them by the UBI and they can dedicate themselves to performing non-economic activities, such as caretaking, artistry, volunteer work and social engagement.

Valid critique of UBI stresses how incredibly costly the system would be. Not to mention the macroeconomic effect of artificially increasing the purchasing power of an entire economy by a fiscal income hike. Almost all basic income proposals have in common that UBI replaces social security and welfare benefits. A large part of the basic income funding can therefore come from the resources that are no longer needed to spend on social security and welfare. However, these systems can only partially cover the funding needed for providing UBI. While the idea is hardly sustainable in its true universality, it is often being quoted as a solution for the reform of various social security systems. In the US it is predominantly being viewed as a basis for the almost nonexistent social security network.

The models of conditional basic income (CBI) on the other hand, build on the premise that all citizens should be guaranteed a certain economic security. In most CBI-models the state's input varies based on the individual's income. Most recently the conditional basic income was proposed by Andrew Ng, formerly creator of Google's deep-learning Brain project, head of AI for Chinese search giant Baidu and the founder of Coursera.org. According to him, AI is coming for plenty of jobs and displaced workers should be paid to learn new job skills. Future waves of innovation will bring even "more profound changes to job markets, and we will need a way to adapt to them," says Ng. Unlike UBI, the Conditional Basic Income seems to be a plausible solution for those whose jobs are going to be lost in the forthcoming era of automation and shall be studied further.

7. Future of Government and Policies

The main issue related with the Future of Work from the perspective of government is the disconnect between people who are building technologies that can severely impact economies and labor markets and those who are designing policies to help manage this impact. Bridging these knowledge and communication gaps shall be of the utmost importance for national states as well as the European Union. The ability to timely react and adopt the right policy is the most important role for every government during the upcoming tectonic market shifts.

The governments shall therefore challenge themselves to drive innovation in the area of Future of Work – shall cooperate with businesses and non-governmental organizations on supporting research and innovations, education system reforms and improvements needed for the social system to accommodate upcoming changes. It shall create regulatory sandboxes or experimental spaces for new ideas and policies to be tested. Including those perceived as initially unpopular or difficult to implement, like a conditional basic income provided for those in process of reskilling. The technological change may come rapidly, and such a policy may create significant competitive advantage for the whole economy.

Detailed and updated data are one of the main tools for anticipation of changes and shifts in the economy. As well as for the policy making based on evidences and economic projections. Datasets based on online data-gathering are therefore essential. The government shall also support non-technical sciences that provides basis for policies, like economy and econometrics. Those are also essential for adjusting of related rules in areas like antitrust and protection of competition.

The Analysis of the Development Potential of Artificial Intelligence in the Czech Republic proposes following measures for the area of Development of public policies:

- Developing structural policies that effectively support entrepreneurship and innovation
- Developing competition and regulatory policies
- Reacting to growing international reliance in innovation and knowledge dissemination
- Tax policy development
- Ensuring adequate assessment of digitization impact and changes on the labor market

Main references

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