

The impact of new technologies on the labour market and the social economy

The relationship between new technologies, employment and inequality has gained a lot of attention in recent years. One reason for this interest is alarming reports about possible negative consequences for employment from the widespread use of new information and communication technologies (ICTs), including machine learning, digitalisation of production, robotics and automated vehicles. What are the appropriate policy responses?

A recent study on the impact of new technologies on the labour market and the social economy investigated the relationship between innovation, new technologies, employment and inequality. The study was carried out by the Austrian Institute of Technology (AIT) at the request of the European Parliament's Science and Technology Options Assessment (STOA) Panel, and was managed by the Scientific Foresight Unit (STOA) within the Directorate-General for Parliamentary Research Services (DG EPRS) of the European Parliament. Drawing on the existing literature and experience from previous technological revolutions, the author concludes that we can be optimistic about the future. Innovation is labour-friendly: it destroys, but also creates employment. The race between job creation through product innovation and job destruction through process innovation was won in the past by the job-creating effects of innovation. The study does not foresee that digitalisation will lead to mass unemployment; however, it points out that because of the skill-biased nature of technological change, the costs of digitalisation are unevenly distributed and are borne in particular by low-skilled workers, who face a higher risk of job displacement. Occupations with a high share of routine tasks, particularly in the services industries, are also at risk. Therefore, the challenge of the future lies in coping with rising inequality as a result of technological change.

The study proposes seven policy options, each expected to contribute to alleviating at least one challenge or barrier. The study also identifies positive or mutually reinforcing influences among them, which indicates that enhanced results could be obtained provided these policies are implemented together. Below is a list of the proposed policy options.

Policy Option 1: Education

In a world where skills levels are closely related to inequality because skilled-biased technological change continuously increases the demand for skilled labour, it seems essential to invest in education, irrespective of how the future will evolve, and to regard education as a key policy area. A more flexible education policy will make it possible for both younger and older people to adapt to new working conditions. That said, depending on the difference in skills between jobs destroyed and jobs created, the time and cost of individual adaptation will differ. Investments in education should cover all educational levels and should also account for the social dimension, particularly as children from a disadvantaged background are less likely to get the support they need, and are in danger of lagging behind during their early years, especially if they come from families that lack the social and economic resources to provide them with early developmental stimulation. For efforts to be of the highest efficiency and effectiveness, support should start from early childhood, covering children at kindergarten, pre-school and elementary school age. Furthermore, such efforts should take the form of focused policy interventions underpinned by increased investments in education.

Another education-related issue, which assumes increasing relevance as we move away from early childhood and the related basic skills mentioned above, is deciding what skills should be taught. The literature on skills, ICTs and employment suggests that fostering non-routine skills is the most pertinent path to follow. On the one hand, these

skills are related to human interaction and social perceptiveness; on the other, they complement ICT applications, enabling technology to augment human capabilities. The problem with this approach, however, is that digitalisation is moving fast, and some of today's machines are capable of accomplishing things that most experts considered out of range only a few years ago.

Policy Option 2: Research and development

Research and development (R&D) is a second key policy area with respect to digitalisation. It is closely related to education, in particular at tertiary level. Investments in R&D help firms to develop their competences and are, therefore, an important driver of competitiveness and employment growth, at least in the long run. Another feature that education and R&D have in common is that the potential return on investments in education and R&D at the societal level is higher than at the level of individuals or firms. This is one important reason for policy to support private firms' efforts in the area of R&D. Furthermore, the social returns from R&D (4-8 %) today are considerably higher than the current interest rates for public debt, which is a solid argument for making public investments in R&D. Last but not least, there are some signs that Europe's comparably low level of R&D is related to funding, not to a lack of capabilities. Europe should invest in R&D at all levels, from basic research, which has a considerable training effect on scientific and technological staff, to applied development. This would include higher budgets for universities, and more public funding for R&D in firms.

Policy-makers should consider balancing tax incentives for business R&D with direct support to foster R&D and innovation in areas such as ICTs or health, where Europe has deficits compared to the US. Another important matter with regard to the design of R&D policies is deciding what freedom should be granted to recipients of public funding for R&D in choosing the areas they want to research. In recent years, a number of governments have earmarked funds for R&D in areas related to global or societal challenges. In this case, direct support measures may be more appropriate than tax incentives, because they allow governments to 'push' R&D in directions they consider best. However, one may argue that governments do not necessarily have better knowledge about future technological requirements than do firms, which are under market pressure to deliver new products that find acceptance, because they satisfy consumers' demands.

Policy Option 3: Entrepreneurship

R&D needs entrepreneurs to transform new scientific findings into growth and new employment. A recent report by the OECD shows that a considerable amount of new jobs are created by small start-ups. The same report argues that Europe is lagging behind in start-up growth. The emergence of ICTs in particular has been very strongly shaped by start-ups in the past, with some having grown to a considerable size over a very short period of time. So far, European entrepreneurial ecosystems have not generated an equivalent to Amazon, Facebook or Google. Technological change occurs fast in ICTs, and the knowledge base of these technologies provides only low entry barriers for new firms. Thus, ICTs provide considerable opportunities for new ideas and new firms. Europe needs more support for new firms in the fields of ICTs and biotechnology. Besides soft measures, such as training and consulting for people who want to start a business, this may also include measures to increase the available amount of venture capital. However, it cannot be the task of governments to provide venture capital. Instead, governments should generate incentives for individuals to invest more in start-ups and small firms, and they should also make efforts to strengthen the capital markets in Europe.

Policy Option 4: Infrastructure

Investment in infrastructure is crucial if Europe wants to keep pace with the ICT revolution. Policy can use digitalisation for modernising the welfare state, since digitalisation provides a digital infrastructure that could be used by businesses as well as the rest of society for education, health and wellbeing-related services. In particular, Europe should invest in upgrading its internet infrastructure. An active role for policy is needed for maintaining a balance between cities – which are likely to get a lot of private investment – and rural areas, which may lag behind in terms of infrastructure. Moreover, there is also a danger that imbalances in internet infrastructure between eastern and western EU Member States, as well as within the group of central and eastern EU Member States, may deepen. As regards the digital infrastructure, it is clearly the task for the European level to ensure equal access to connectivity. It seems evident that a further deepening of this digital divide in Europe has to be avoided. The European Union has already taken steps to upgrade infrastructure across its territory through the European Fund for Strategic Investments (EFSI), an instrument aimed at re-launching investment and restoring EU competitiveness. Besides energy and research, development and innovation, digital technologies are also a priority area in which EFSI operates. A European programme for broadband on a European scale could be a first step in that direction.

Policy Option 5: Employment regulations

Social security systems will face some challenges related to the developments described in this study. In all scenarios, Europe will be well-served by sticking to the concept of flexicurity. This concept, on the one hand, meets the strong demand to make labour markets, employment and work organisation more flexible. On the other hand, it also meets the equally strong demand for providing security to employees – especially vulnerable groups – and for preserving social cohesion in European societies. The flexibility aspect of the flexicurity approach matches the positive scenario, which predicts that self-employment and more flexible working arrangements will increase in the future thanks to ICTs, while the security aspect is needed to enable people to make secure transitions from one job to another and to cope with structural change in the future. This is why flexicurity, which is already an important part of the European employment strategy, will be essential in helping future labour market policies cope with technological change.

More specifically, new types of self-employment, such as platform work or gig work, also call for new employment regulations. These new forms of employment offer some opportunities for more self-determined and more flexible work; however, opportunities for more self-determination should not come at the price of more uncertainty, nor should they undermine the goals of promoting full employment or rising and stable incomes. Platform employment can also create a new 'precariat' of isolated individuals living from job to job, without lasting financial or social connections to their workplaces or to other workers. Policy should review the status of these types of employees, and, if necessary, expand social security legislation, but also health and safety regulations, to cover platform work. This would also mean that owners of platforms should contribute to social security. However, policy should avoid moving from current non-regulation to over-regulation. Historically, productivity increases generated by new technologies have led to reductions of working time, and allowed more people to be brought into work, or dampened the negative effects of automation on the labour market. Such reductions may also be appropriate when ICTs lead to further automation. The reduction of working time is a very flexible approach that can be easily implemented, including in small steps; furthermore, it may prove to be a more moderate form of redistribution than the introduction of a basic income, which may have some unintended side effects, as pointed out below. Reduced working time, however, also means an increase in labour costs, which may have negative consequences for the competitiveness of export-oriented firms, provided their productivity does not increase in the same way. However, just like the universal basic income discussed below, working time reduction may be the right measure if the goal is to reduce inequality caused by new unemployment.

Policy Option 6: Tax and social security policies

If economic activity remains vibrant, growth will speed up and tax revenues will remain stable or may even grow, which could allow governments to maintain the welfare state and invest in education, R&D and infrastructure. However, if capital and value added become the main contributors to economic wealth as a result of digitalisation, EU Member States' tax systems may need to undergo a shift from taxing labour as their main source of revenue,

to taxing these components instead. However, such a shift in taxation only seems feasible if the overall tax burden does not increase and the tax burden on labour is substantially reduced. As regards machines, they may also contribute to the financing of social security.

The designers of tax policies should also bear in mind that capital is more mobile than labour. The shift away from labour towards capital and value added may lead to distortions, and even to firms leaving countries that tax these factors too strongly. Taxing the super-rich by imposing higher income taxes and introducing a stronger progression in income taxes or wealth taxes is seen by many as a way to decrease inequality and raise funds for the state. This may have a greater psychological impact than a financial one, because it may reduce feelings of injustice and discrimination among ordinary taxpayers who frequently come across reports about tax avoidance among higher-income groups. In recent years, there have been many proposals to tax the super-rich, including through a progressive global tax on wealth of up to 2 %, coupled with additional income taxes. At present, such a tax may be impossible to implement, because it requires a degree of political coordination that seems very difficult to agree on. A solution to this dilemma can only lie in strengthening EU-wide and international cooperation on this issue, to achieve some convergence.

Policy Option 7: The idea of an unconditional basic income

If a pessimistic scenario of massive job losses and a huge increase in inequality triggered by the economic effects of new ICTs comes true, some scholars have suggested introducing an unconditional basic income – a fixed sum of money provided by the government – for every citizen or resident of a country, regardless of whether they are employed or not. This should prevent the most severe economic inequality, and provide the means for participation in society.

The idea of a basic income has generated wide interest in a number of countries, and several political parties are discussing it actively. With respect to digitalisation, an unconditional basic income appears for many to be a sound approach for redistributing the gains from automation. Advocates of a basic income hope that it will be an effective measure to protect many people from falling into poverty. Moreover, it should avoid a concentration of income in the hands of large enterprises and their owners, who benefit disproportionately from digitalisation and winner-takes-all effects.

Applying this approach requires that basic income be accompanied by a new tax policy that focuses on capital gains and the benefits of automation and digitalisation, as a measure that would complement the taxation of labour. The economy-wide implementation of a basic income would not be an isolated experiment, but apparently a large-scale one, with an uncertain outcome. Moreover, it seems that once a country has implemented the unconditional income, it would be impossible to revoke it. Therefore, the study argues that less revolutionary measures, such as changes in taxation or a reduction of working time, may be more appropriate than a basic income.

To sum up, it is not desirable nor feasible to stop digitalisation, but policy has many options to influence and steer the process by investing in education, infrastructure and R&D, and adapting labour legislation and tax and social-security policies to digitalisation. Perhaps most important is to think of digitalisation not as a threat, but as a chance to increase welfare, opportunities and social cohesion for all European citizens.

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