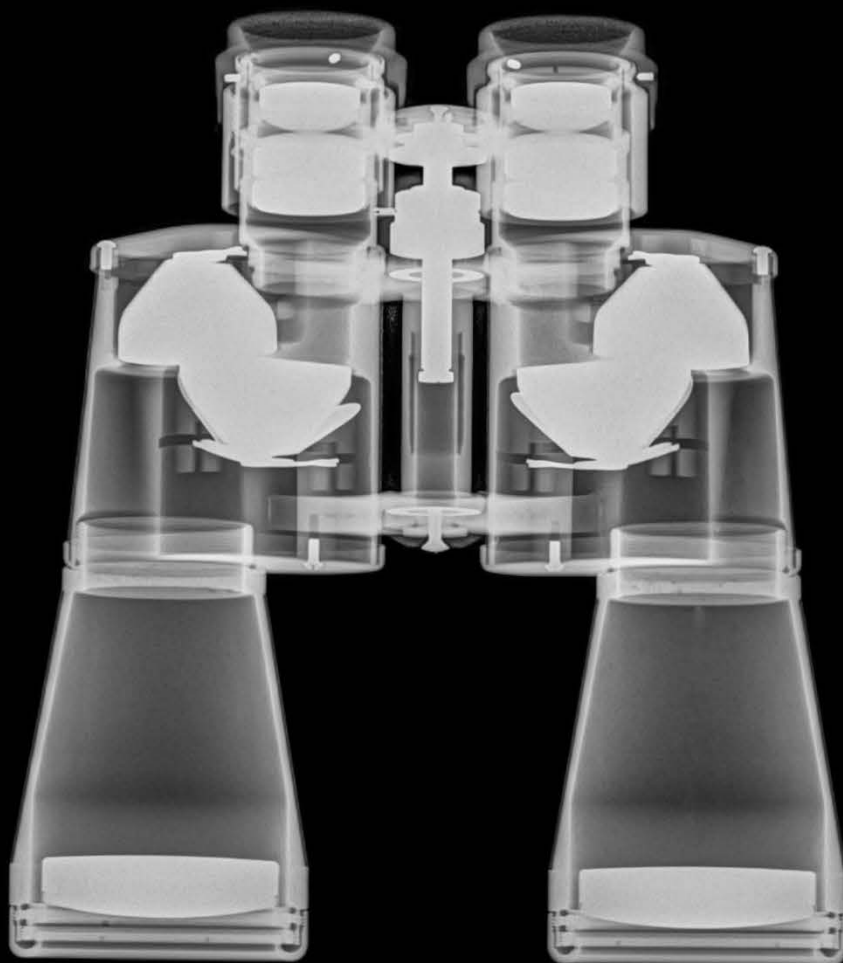


Report 2018

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DIGITALISATION AND CENTRAL GOVERNMENT EMPLOYER POLICY

How does a labour market in transition affect central
government employer policy?



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Employers (unless otherwise stated)

Preface

As in the OECD generally, central government operations in Sweden face a number of challenges. One of these challenges is the power of digitalisation, which will change our organisations in an all-encompassing manner. As the employer organisation for the central government authorities in Sweden, we see how digitalisation daily affects the organisations that the Swedish Agency for Government Employers (SAGE) is tasked to support in employer policy issues. The ability to meet these challenges will be critical to the ability of the central government authorities to conduct their operations effectively. From this insight came the idea of trying to discuss, from an overall perspective, some of the most important aspects of the digitalisation that affect the relationship between employers and employees.

Given the report's point of departure is the impact on employer policy, it does not reflect on how digitalisation may cause operational challenges, such as open data or digital security. Nor does it deal with the relationship between government authority and the public but rather mainly the relationship between employer and employee, that is, what we call employer policy.

For practical reasons, not all aspects of employer policy can be examined in this report. SAGE has, however, chosen to highlight some areas in which the impact on central government employer policy will be so significant that it will lead to a discussion about a new direction or re-examination of employer policy. The purpose of the report, however, is not to introduce new standpoints in these areas; rather, it is intended to provide a basis for discussion.

It should also be noted that this report considers possible future scenarios and that our analysis of the future is more or less a matter of educated guesswork. Nevertheless, there is a need for preparedness regarding issues that may affect us as employers in the future.

The report is written primarily from a central government perspective; however, many of the issues touched on are also relevant for most of the social partners. The changes we have seen as a result of digitalisation are not unique to Sweden. Even if certain parts of the report are best understood in a Swedish context we firmly believe there is great universal applicability in the issues discussed. The translation of the report is based on the intent that it should serve as a general overview of issues that pertain to digitalisation and employer policy. In this way we hope the information and views expressed may help to facilitate different types of international collaboration and sharing of experience.

The report was written by Chief Economist Roger Vilhelmsson.

Stockholm, April 2018



Eva Liedström Adler
Director General

Summary

In this report, the Swedish Agency for Government Employers has identified some of the areas in which new technology and digitalisation require that employers adapt their employer policies to enhance their competence supply and deliver effective governmental operations. This report is not an attempt to introduce new standpoints in these areas; rather, it is intended to serve as a basis for discussion about future employer policy.

Life-long learning, skills development and labour market transition

The new technology is driving a structural transformation in which companies, industries, occupations and jobs have shorter lifespans. In the future, few people may expect to hold the same job throughout their entire working life career. At the same time working life expectancy will increase since we live longer. Naturally, every individual is responsible for his or her own competence. In order to safeguard the competence supply and employment rate, however, the social partners should work jointly with central government to develop a new system to ensure *life-long learning, skills development* and *labour market transition*. Key employer policy questions are then how the financing of such a system should be carried out, who should decide the focus of this learning or when and how the learning should be carried out.

The future supply and structure of the education system

A new system also demands that central government and the social partners share a common view as to how the education system structure and range of courses should be developed. It is likely that first-time students will spend a shorter period in their formal education but will subsequently spend more time engaging in skills development later in their professional careers. The need for shorter-term educational programmes and stand-alone courses, and the opportunity to pursue university studies while working, are expected to increase. In public debate it is often said that the universities in Sweden need a new mandate for change and a new financing system that would better support a modern and more accessible range of courses.

The need for job security and flexibility in the face of rapid structural transformation

Due to the rapid pace of structural transformation that results from digitalisation, certain industries may disappear overnight, and it is increasingly difficult to link *job security* to the seniority rules of the Swedish Employment Protection Act (LAS). The social partners in the private sector have had a formal discussions about a possible trade-off between a loosening of seniority rules and a financing of skills development. As a result of digitalisation, for more and more people on the labour market employment protection lies in competence rather than seniority rules. Even though the central government sector already has an agreement that is more linked to job tasks, an agreement covering large parts of the labour market concerning the Employment Protection Act could be something that even central government employers would need to decide how to approach. Moreover, politically initiated changes to the Employment Protection Act, in the form of legislation, are not entirely improbable.

A wage formation that can address an increasingly polarised labour market

There is a shortage of well-educated labour, whereas those who lack education have difficulty finding a job. The automation of jobs that has followed in the wake of digitalisation has strengthened the prevailing polarisation on the labour market. To date it is the more routine-based jobs in the middle of the distribution in respect of wages and education that have been automated. Many of the middle-income earners who lost their jobs chose to seek more low-qualified jobs in the service sector, where they out-competed those with low education. Individuals with more highly qualified jobs were instead favoured by digitalisation since they use computers to a greater extent and thus more productive. Most research studies show that in the future as well as in the passed it will be the highly educated who run the lowest risk of their jobs becoming automated. Therefore, there will be a great

need for educational interventions for those who lack education or who need to be retrained, as well as investment in higher education to cover the significant shortages of highly educated people that have existed on the labour market to date. It is not enough, however, to simply increase the number of places in educational programmes: incentives to acquire education must also be improved. This underscores a more controversial question, *wage formation*. To avoid imbalances on the labour market and provide incentives to people to pursue education, the so-called education premium and the wage spread have grown, in many countries. In Sweden, relative wages have not been adapted to imbalances on the labour market, in the form of labour shortage and unemployment, to the same extent as in other countries. When the relative wages for qualified labour continue to be relatively low, shortages and hiring difficulties will eventually result.

A tax policy that is not an impediment to the competence supply

Tax policy is also an important means by which to mitigate difficulties in hiring highly educated labour in the wake of digitalisation. If the marginal tax and the wage tax are reduced, the so-called education premium and the incentives to acquire education may improve. Current public debate focuses on the idea of a tax change, from wage tax to tax on capital and consumption, as well as the introduction of robot taxes.

How does the digitalisation affect gender equality?

The new companies and industries developing in the wake of digitalisation, particularly in IT, are male-dominated. Moreover, the proportion of women in the more engineering-oriented disciplines that are so key in these industries is traditionally low. This trend may become a dilemma from a *gender-equality perspective*. In these new industries and companies, the employee is more often a complement to the computer and the new technology instead of being a resource that is wholly rationalised away. This generates a higher productivity and higher wages in these rapidly growing jobs. If the labour market in this respect moves in the direction of increased equality, just how much political pressure toward changes in education systems and wage formation that will entail will become a key question.

New work processes and new forms of management

To respond to a faster transformational pressure, in which information flows at an increasingly rapid rate, many believe that employers must change their views on *leadership and co-workership*. In the future, the vast and rapid flow of information is expected to make it increasingly difficult for managers to exercise control and engage in micromanagement. Instead, the employee should be given greater responsibility for operations, while management becomes more visionary, focused on objectives, trusting and coaching. The rapid changes also bring attention to the need for agile and adaptable management. When digitalisation leads to demand for new, more customer-oriented services, it drives the development of *more innovative work processes and a more innovative work climate*.

A work environment in transition

Digitalisation changes the basic conditions of private life and working life, thus placing a spotlight on *work environment issues*. Due to today's boundaryless working life with its increased availability, some people experience greater freedom and flexibility whereas others experience increasing stress. As various more flexible forms of employment become more common, lack of clarity as to who is the employer and who the employee, in the meaning of the Work Environment Act, arises also. Who bears the responsibility for the work environment and how will that responsibility look in the future?

A new digital generation enters the labour market

The new generations now entering the labour market have grown up in a digital world and view working life differently. According to many studies, our boundaryless, flexible working life is more natural for this digital generation. They will often prefer digital meetings over in-person meetings. The contrast with earlier generations is great. How should employers address this generation and what does being *an attractive employer* imply in this context?

Leisure time, vacation and shorter work time

Digitalisation is expected to raise productivity and make it cheaper to produce goods and services. This is expected to lead to a higher standard of living, with some of the increased purchasing power probably being applied to *leisure time, vacation time and shorter work-time*. The collective agreement in the central government sector has enabled individual agreements between employer and employees, in which salary can be exchanged for more pension or vacation time. These individual agreements have increased. Some experts and critics also believe that digitalisation could lead to the shortening of work time and the introduction of a basic income, if many jobs and tasks were to become automated and disappear.

The advantages of digitalisation are best utilised in large cities.

Many people believed that digital technology would eliminate distances. This proved to be only partly true. From a labour market perspective it became almost the opposite, since it is in the large cities that digital technology is utilised most effectively. To a high degree, digitalisation is driving *urbanisation*. Since companies' and employees' productivity gains a multiplier effect from collaboration, many people and firms are drawn to the clusters of the large cities. It is also in the large clusters that the ability to use new technology is developed. However, it is important that all parts of Sweden have the same access to central government services. Should the location of public authorities' networks of offices be based on reasons of distribution policy or efficiency policy? What is the price of an increased central government presence throughout the country? Is there a price implied in not having it? The questions will become relevant as digitalisation continues to progress.

Central government regulatory frameworks, trust in central government and the role of the central government civil servant.

Digitalisation and digital platforms lead to a reduction in the transaction costs of matching labour on the labour market. This trend is expected to result in increased number of flexible forms of employment. An increasing proportion of people active on the labour market consists of self-employed entrepreneurs, self-employed employees, consultants and so-called combiners, whose work time is a combination of self-employment and regular employment. *Central government regulatory framework* around hiring, sideline jobs and procurement, however, give central government employers less opportunity to use this form of engagement. While the regulatory framework may impede future competence supply, it is important to remember that the special rules that exist are a precondition of *trust in central government administration*. If the work of central government is increasingly performed by individuals who are not employees but rather temporary hires or who to a significant extent work for short periods at a central government agency, it may then become more difficult to uphold the foundation of values and loyalty that underlie the role of the central government civil servant.

Our social security and pension systems are in great need of overhaul

The current social insurance and pension systems are based on other less flexible hiring conditions than those now developing in the footsteps of digitalisation. Today's systems were developed in a period during which permanent employment, a regular monthly salary and collective agreements were the norm. As it becomes increasingly common for people to change their job or industry, and as temporary forms of engagement – self-employed entrepreneurship or combining self-employment and employment (so-called combiners) – become more common, the social security systems may be weakened. If increasing numbers of people stand without unemployment or sickness insurances, employers and wage earners could end up paying the bill through higher taxes. When people continuously switch jobs and industries, and more flexible forms of employment become prevalent, pensions could become more difficult to predict. A weaker connection to one's employer will probably lead to more and more people being without an occupational pension.

Is our Swedish model changing?

A similar question is what will happen to employees' and employers' levels of organisation and the *legitimacy of collective agreements* when more and more people have a flexible form of engagement and a weaker connection to their employer. Will a more flexible agreements model develop on the labour market and how might it eventually affect central government employers' manner of establishing agreements and finding solutions?

Contents

Preface	5
Summary	7
Introduction	13
The effects of the new technology on the labour market	15
Job polarisation	15
Job polarisation and wage differences	16
Increased polarisation of productivity and income trends	16
Higher rate of change	17
New technology and new business models	18
The jobs that will disappear	18
What cannot be automated?	19
The new jobs	20
The flexible forms of employment of the future	20
New technology reinforces urbanisation	22
Consequences for future employer policy	25
Labour market transition	25
Skills development and life-long learning	26
Education policy	26
Job protection and flexibility	28
Wage formation	28
Tax policy	30
Gender equality	31
Work environment	32
Leadership and co-workership	33
An innovative climate and approach to work	34
An attractive employer and a new generation	34
Work time, vacation and leisure time	36
Urbanisation and the localisation of central government operations	36
Central government regulatory frameworks and competence supply	38
The role of the modern central government civil servant	39
Social security	39
Occupational pension	40
The legitimacy of the collective agreements	40
Final words	42

Introduction

We live an era of change. The trends that affect us are many and they interact partially with each other. Globalisation – in which information, goods, services and capital move ever more freely across national boundaries – affects large parts of society. There are many demographic issues that are increasingly pressing. The population is ageing, urbanisation causes more and more people to move to the large cities, and Sweden has at times large migration streams.

Possibly, however, it is the ongoing development of technology that is the most far-reaching force. Digitalisation is expected to affect both behaviour and the services that will be offered in the future. In particular, technological development is expected to have consequences for working life and the labour market, which reasonably implies that employer policy must also be adapted. Our ability as central government employers to meet and utilise new technology will be critical to how successful and effective our operations can be in the future.

Public debate has focused on what future consequences digitalisation and new technology can be expected to have on everything from values, democracy and public trust to how welfare and business will be affected. Central government authorities are already engaged in discussions on how issues such as Big Data, open data, privacy, legal certainty, legislation and regulatory frameworks are expected to acquire a new meaning and change their operations.

However, this report does not deal with these types of issues that will have consequences on the operations in themselves; rather, it has a narrower perspective. The focus lies on how new technology and, particularly, digitalisation affect working life and the labour market, and what significance this might have for how a future central government employer policy should be designed.

Employer issues have widespread relevance throughout the central government administration. They involve questions of competence supply, skills development and mobility of labour, wage and hiring conditions, and more. There are also employer aspects in questions concerning operational organisation and management, working methods and cost trends. This can involve everything from details of collective agreements to how central government employers, as a key social partner, can influence their competence supply by setting out their standpoints on education policy and labour market policy. The report takes up some of the areas that could be expected to affect employer policy.

In discussions of long-term competence supply, central government employers tend to talk about *attracting, recruiting, developing, retaining* and *phasing out* personnel. Public debate often presents a scenario in which the new technology means that old knowledge must be replaced, many jobs will disappear quickly, and new tasks will be created, but that the new jobs that arise will not be as plentiful, at least not at first, as the jobs that will disappear. Something that many believe will generate, at least in the short term, a technology-driven unemployment. It is also said that permanent or indefinite-term contracts will decline in number and that self-employment, consultant work, and other business and operations models and forms of employment will become more common as the costs of the technology and the cost of matching employer and employees decline. When work tasks become automated, there is a risk that the job will disappear unless the employee engages in skills development. An employer's ability to attract the individual who is to perform a job will probably be important in the future as well. However, the question is whether the picture of an ever faster structural transformation and digitalisation that is, presented more and more will shift the focus from *retaining* to *recruiting, developing* or *phasing out*.

The effects of the new technology on the labour market

The new technology has already recast the labour market. In this section, an attempt is made to summarise facts and research on how the new technology has affected the labour market and is expected to affect it in the future.

Job polarisation

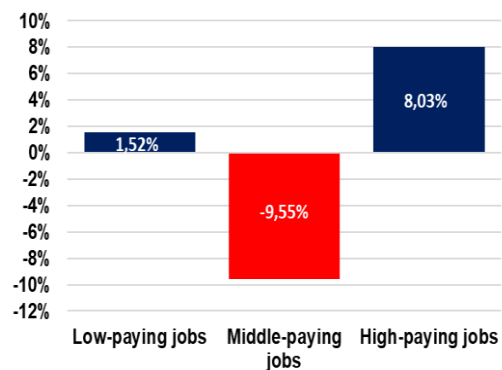
For many years, the most popular hypothesis was that technological development was *skill-biased*, that is, the more education an individual had or the higher his or her knowledge level was the more he or she was favoured by new technology on the labour market. Research showed that low-wage jobs grew at a slower rate than the jobs higher up on the wage scale in the 1970s and the 1980s.¹ During this period, there was also a difference between the private sector and the public sector in Sweden. The low-wage jobs grew in the public sector but declined in the private sector. These patterns are attributable to women's increasing participation on the labour market, among other things. In central government administration, this was intensified by what came to be called the double imbalance: due to a centralised system of wage formation, central government wages increased relatively more for individuals with low education than for individuals with high education.

Since the 1990s, research has found an alternative hypothesis. Technological development is now said to be more *task-biased* – that is, tasks, rather than level of education, determine who will be favoured by new technology. Empirical studies show that many jobs involving simple, routine-based tasks can be entirely automated – that is, the employee will be substituted, made redundant and replaced by new technology. Employees who have abstract tasks can be only partially replaced by computers. They will complement the new technology and will be able to increase their productivity, while those with

service jobs will become neither substitutes for nor complements to new technology.²

Since the 1990s technological and digital development have affected jobs and tasks in that the more routine-based jobs in the middle of the wage and education distribution have disappeared, whereas the jobs at primarily the top of the wage distribution have become more plentiful. People talk about *the squeeze of middle-income jobs*.

Figure 1. Change in the employment rates of different sectors of the Swedish wage distribution, 1993-2010



Source: Goos, M., Maning, A. and Salomons, A. (2014).

To date, neither highly qualified jobs, such as engineer, nor jobs that do not require a lengthy education, such as hairdresser, have been replaced by computers. At the same time, the jobs at the bottom of the distribution have become more exposed to competition, since the middle-income layer of employees who have lost their jobs have competed for the low-income jobs instead of refocusing on the more high-demand jobs that require higher education. The

¹ See, for example, Katz, L. and D. Autor (1999), Changes in the Wage Structure and Earnings Inequality, in Ashenfelter, O. and D. Card (eds.), *Handbook of Labor Economics, Vol 3A*.

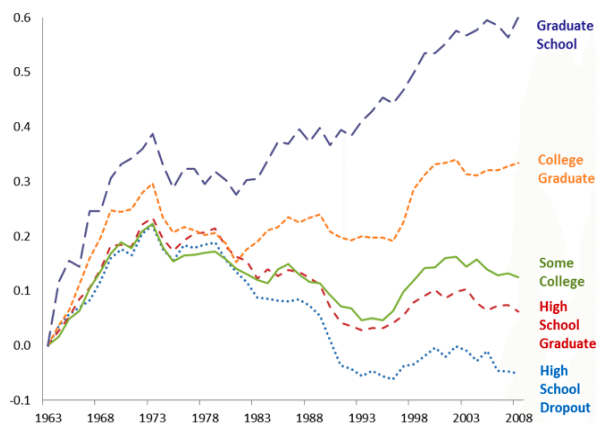
² See Autor, D (2015), *Polanyi's Paradox and the Shape of Employment Growth*, Federal Reserve Bank of Kansas.

phrase “over-educated baristas” is often seen. In many western countries, development has led to a clear *job polarisation* on the labour market, with high unemployment among those with low education and simultaneously high demand for and shortage of highly educated workers. This trend has been observed not only in Sweden³ but also in large parts of the western world. Changes in labour demand, production moving to other countries, and globalisation are cited as other conceivable explanations for job polarisation.

Job polarisation and wage differences

Even if many occupations cannot be replaced by computers, employees in jobs requiring low qualifications, such as, for example, hairdresser, cannot increase their productivity to any great extent with the help of a computer, in the same way as, for example, an engineer. Greater competition and a relatively weak productivity trend are probably why real wages have declined in the past few decades for many low-skilled groups at the bottom of the wage distribution in the USA and other countries.

Figure 2. Change in full-time wages for men in the USA, different education levels



Comment: Composition-adjusted real log weekly wages

Source: Acemoglu and Autor (2011)⁴

³ See Adermon, A. and M. Gustavsson (2015), *Job Polarization and Task-Biased Technological Change: Sweden, 1975–2005*, Department of Economics Working Paper 2011:15. See also Goos, M., Maning, A. and Salomons, A. (2014), Explaining Job Polarization: Routine-Biased Technological Change and Offshoring, *American Economic Review*, 104(8) or Autor, D. and D. Dorn (2013), The Growth of Low-Skilled Service Jobs and the Polarization of the US Labor Market, *American Economic Review*, 103.

⁴ Acemoglu, D and D. Autor (2011), *Skills, Tasks and Technologies: Implications for Employment and Earnings*, Handbook of Labor Economics, vol 4b.

⁵ On the other hand, income differences have increased in Sweden as well. The increase, however, stems from increased

At the top of the distribution, real wages have instead increased sharply owing to substantial digital productivity improvements.

In Sweden and the other Nordic countries, however, the trend has been different. In Sweden, despite a trend toward a more polarised labour market characterised by high unemployment among low-skilled workers and an acute shortage of highly skilled workers, wage differences have not increased to the same extent as in, say, the USA.⁵ The wage trend has remained largely the same for most groups in Sweden, and almost all have seen significant increases in their real wages in the past two decades. There are several reasonable explanations for the differences between Sweden and the USA. Unlike the US, Sweden has had strong trade unions that have promoted a solidarity wages policy. The legislation governing the labour market is different: Sweden, for instance, has a wage formation model, which involves an established wage-setting norm to which most actors adhere, and institutions such as the Swedish National Mediation Office, which strives to uphold the model.

Increased polarisation of productivity and income trends

Another trend that leads, at least internationally, to greater income differences is that a few companies – so-called *frontier firms*, that is, the market-leading companies that are innovative and cutting-edge – seem to be better at taking advantage of new technology and have therefore higher growth in labour productivity.

Studies⁶ have shown that the companies with the highest labour productivity (the top 5%) grow rather rapidly while the large majority of

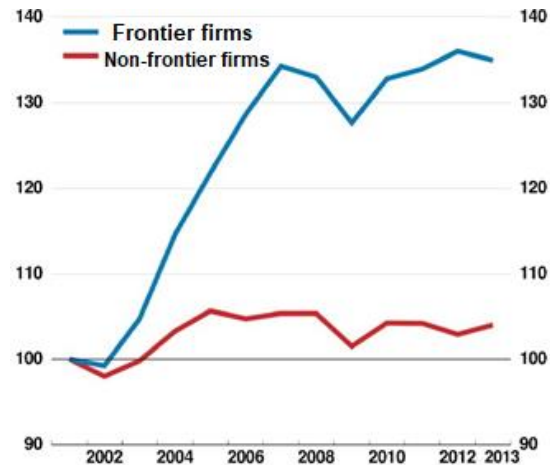
differences in realised capital gains and not from increased wage differences. It is likely that the differences in capital gains are in fact technology-driven. Globalisation and new technology have made it cheaper to produce and distribute services and products. See, for example, Roine, J (2016), *Automatiseringens effekter på arbete och fördelning – en översikt av trender och mekanismer*, Fores Policy Paper 2016:3.

⁶ Andrews, D., C. Criscuolo and P. Gal (2016), *The Best versus the Rest: The Global Productivity Slowdown, Divergence Across Firms And the Role of Public Policy*, OECD Productivity Working Papers, No. 5, OECD Publishing, Paris.

companies, however, have had stagnating productivity growth.⁷

Higher productivity growth among the market-leading, more innovative companies generates, according to the OECD, higher profits in these companies than in other companies.

Figure 3. Growth in Labour productivity



Comment: Index 2001=100.

Source: OECD.

That in turn leads to higher wage increases in these companies than the OECD has been able to observe in other companies.

Higher rate of change

Some consider that growth has slowed because of a lower rate of innovation. Robert Gordon claims that technological development will not continue at its current level and that the pace of productivity will be slower in the future.⁸

Erik Brynjolfsson and Andrew McAfee, however, have a more optimistic view of the future. They maintain that we are only in the beginning of the technological revolution.⁹ The first wave of the digital transformation came in the 1990s. We are now seeing the start of a second wave, in which new technology, for example, *Artificial Intelligence (AI)* is expected to lead to some jobs disappearing and new jobs arising.¹⁰ The difference compared to other major structural

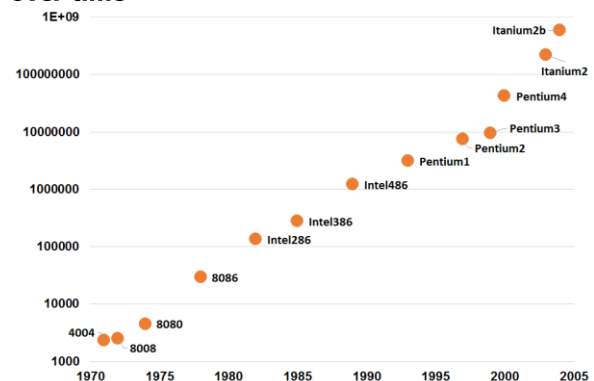
⁷ Research results indicate that this is primarily a matter of differences in multifactor productivity (MFP) and how innovative companies have been in a broad sense. The hypothesis is that this may be due to a slower dissemination of technology and that the so-called winners in certain industries, such as ICT, in which technology is scalable to low marginal costs, take all.

⁸ See, for example, Gordon, R.J. (2014), *The Demise of the U.S. Economics: Restatement, Rebuttal, and Reflections*, NBER Working Papers 19895, NBER.

⁹ For example, read the book that started the whole digitalisation debate. Brynjolfsson, E and A. McAfee (2014),

transformations is that today's technological development is unfolding so much faster.

Figure 4. Moore's Law: the number of transistors over time



Comment: Number of transistors in every chip.

Source: Intel

Debate around the speed of digitalisation often references *Moore's Law*, which put simply means that the number of transistors in a chip (that is, computing power) doubles every other year. Not only is the computing power doubled: the amount of data that can be stored also increases extremely rapidly. At the end of the Second World War, stored data doubled every 25 years; today, it is said to double every year. According to IBM's calculations, the development of services, apps, sensors, etc., generates enormous amounts of information, which is expected to lead in the near future to the doubling of stored data every 12 hours.¹¹

Development has intensified the pressure of transformation and there is some statistical support in showing that companies' lifespans are becoming shorter.¹² This means that both business concepts and workplaces have a shorter lifespan. Many analysts think this implies a shorter lifespan for people's careers as well. While the lifespan of most government authorities is not becoming shorter, tasks and work methods will probably change more quickly in central government administration as well.

The Second Machine Age – Work, Progress and Prosperity in the Time of Brilliant Technologies, Norton, New York.

¹⁰ The White House (2016), *Artificial Intelligence, Automation and the Economy*, December 2016.

¹¹ IBM (2006), *The Toxic Terabyte*.

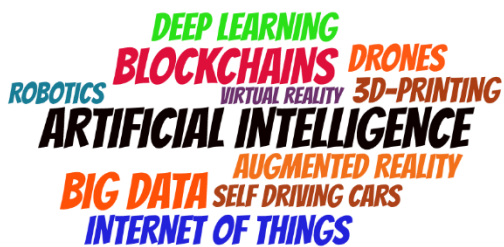
¹² See Foster, R and S. Kaplan (2001), *Creative Destruction*.

New technology and new business models

In the wake of new technology, new actors and business models are already challenging established actors. The new actors often use assets that are already free and accessible (such as free data) in their business models. They have few employees, use scalable new technology at low marginal costs and sell in a global market.

Digitalisation has made it easier for companies in the so-called *sharing economy* to develop. In many of these new business models, goods are converted into services, which often eliminates intermediaries, so that buyers and sellers can be matched more directly. When the consumer no longer buys a CD, but rather streams music, there is no need for the person who manufactures, transports or sells the CD in a store.

Development seems then to have arrived at a kind of turning point at which combinations of new technologies create new possibilities together. Such a possibility is the *Internet of things* (IoT), in which everyday services and goods generate data about us. This might involve everything from information from social media to what consumers buy in stores or on the Internet. Many goods, such as cars, refrigerators, buildings, robots and smart telephones nowadays have sensors that give us a great deal of information about our life patterns. As a result, jobs in security, administration, support and maintenance are changing.



As more data becomes accessible, computing power, and storage, processing and analysis possibilities have also increased. This leads to what is referred to as *Big Data*, which companies may use to understand customer behaviour and make various business decisions. By drawing on Big Data, a computer can in some cases make

medical diagnoses better than physicians themselves can do.

The technology surrounding *Augmented Reality* makes it possible to project 3D objects and visualise objects earlier in the designing or planning stages increasingly early in the product process. Expert help is made available remotely. Today, mechanics carry out repairs and physicians provide diagnoses remotely.

In Sweden, development in *Robotics* is still in its cradle. In Germany, the number of robots is twice as high per capita as in Sweden. It is increasingly common to use so-called humanoids – that is, robots that behave like and resemble humans. In Japan, they can already be seen in banks, hotels and stores. In customer service and finance, self-teaching *chat robots* are expected to revolutionize advisory services.

The greatest impact, however, is expected to come from *Artificial Intelligence*. Particularly in the public sector, where it will have many potential areas of application. AI will lend itself to functions such as administrative processing, control, examination, application and decision cases and advice provision.

Blockchain technology is by some experts expected to revolutionise central government operations and enhance such functions as administrative processing, case management, and service provision.

The jobs that will disappear

Even complex tasks may in the future be divided up into small task components that can then be made routine-based and digitalised. A prominent report by Frey and Osborne¹³ examines 700 occupations in the US market. These occupations were divided into various task components and computer specialists and other experts in the field could then assess how large a proportion of the jobs' tasks could be automated. The conclusion of the report is that within 20 years as much as 47 percent of the jobs may be replaced by digital and automated technology.

The possibility of a job being automated in the future does not necessarily mean that this will happen. There are laws and rules in place to halt

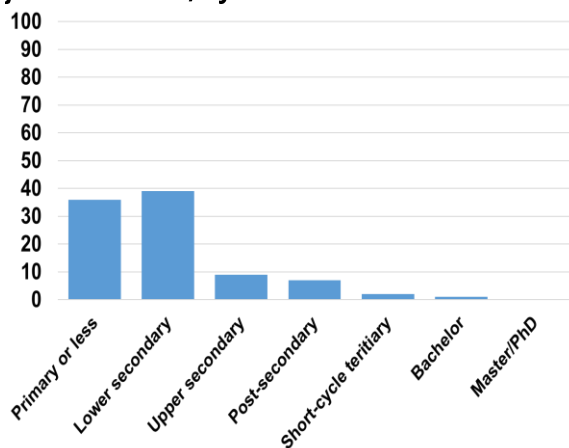
¹³ See Frey, C. B. and M. A. Osborne (2013) [The Future Of Employment: How Susceptible Are Jobs To Computerization?](#), September 17, 2013. University of Oxford.

such a development, particularly in computer security. It could also be a matter of customer preferences. People still prefer an ordinary pilot over an automatic pilot, or to receive a diagnosis from a physician, rather than a computer.

Frey and Osbourne's study was replicated using Swedish data and the results showed that approximately 53 percent of today's jobs could be digitalised within twenty years.¹⁴ Calculations done by the Swedish Agency for Government Employers show that the occupations that in the study are expected to be replaced within 20 years are not as common in central government administration. This is probably due to the fact that the central government administration has more jobs involving abstract tasks and a larger percentage of highly educated workers who to a greater extent will be a complement to the computer rather than be replaced by it.

Other studies, however, show that the proportion of jobs at risk of being automated is significantly smaller and lies, within the OECD, at approximately 10 percent. The study by Frey and Osbourne assumed that everyone with the same occupation would be rationalised away. A new study from the OECD uses statistics on work tasks taking advantage of the fact that there is some variation within every occupation.¹⁵ Therefore, different individuals within the same occupation have a different automation risk, and not everyone in a particular occupation will disappear.

Figure 5. Proportion of people with a high risk of job automation, by education level



Source: OECD and Arntz et al. (2016)

¹⁴ Fölster, S. (2014), *Vartannat jobb automatiseras inom 20 år – utmaningar för Sverige*, Swedish Foundation for Strategic Research.

According to a study from McKinsey, only 5 percent of jobs can be fully automated, but approximately 60 percent of all occupations will see 30 percent of their work tasks automated.¹⁶ Most studies show that those with less education run the greatest risk of being made redundant, whereas the higher educated have a relatively low risk.

What cannot be automated?

Naturally, there are work tasks that cannot be automated. What is it exactly that a robot or a computer cannot do? Autor (2015) argues that which can easily be automated follows certain rules that are easy to write down and understand – such as mathematical calculations and calculation rules. That which can be written down can also be coded into a computer program.

It is considerably more difficult to automate something that is difficult to understand explicitly and cannot be easily described for a computer. This could be cognitive characteristics, such as coming up with new ideas and devising arguments for or against something, or things that humans learn instinctively, such as riding a bicycle, finding out how someone is feeling etc etc. When there is no manual for something, it is difficult for the engineer to build something that has its characteristics.

Naturally, just what is possible will change over time. Levy and Murnane (2005) argued that creativity, social ability and human interaction could not be replaced by computers or robots.



¹⁵ See Arntz, G and U. Zierahn (2016), *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis*, OECD Social, Employment and Migration Working Papers, No. 189.

¹⁶ See McKinsey (2017), *A Future that Works: Automation, employment and productivity*.

After working with Oxford engineers and robot researchers, Frey and Osborne (2013) identified three similar characteristics that they argued were particularly difficult to automate.

Firstly, it is difficult to replace *the ability to understand and manipulate* – for example, the ability to understand and cope with an emergency situation, or the ability to manipulate things physically, such as the manual dexterity involved in grabbing hold of something. Secondly, it is difficult to automate a person's *creative ability*, such as drawing or thinking outside the box; and thirdly, it is difficult to automate *social intelligence*, such as the ability to understand, interact with, persuade or negotiate with another person.

The new jobs

Digitalisation brings new work tasks and new jobs. The Swedish Foundation for Strategic Research attempted in a second study to identify what new jobs will be created over the next 20 years.¹⁷ The study is partly based on what work tasks the employee is expected to retain and partly on what digitalisation has brought in its wake. The report identifies three channels through which digitalisation may increase the demand for labour.

In the first channel, digitalisation is expected to continue to create jobs, to both build and maintain digital technology. The number of computer specialists, for example, has in the past few years increased faster than any other job, and is expected to provide the greatest addition in terms of number of jobs in all occupations over the next 20 years.

In the second channel, jobs will be created *indirectly* in sales, purchasing and marketing. A key consequence of digital technology is that it makes it easier to manufacture and distribute a large range of more customised products and services. A wider variety requires more people to market, sell, install and maintain products.

New jobs are also created through digital platforms such as Spotify, Google or Blocket. In certain cases, this will be a matter of a small number of employees; in some firms, however, such as e-trading companies, more jobs will be

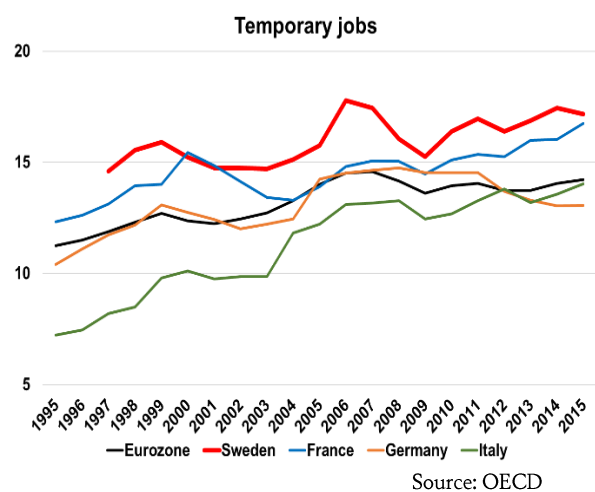
created in distribution to carry out delivery to customers.

In the third channel, increased revenues in the hightech sector will lead to greater demand for services and consequently more jobs in, for example, the restaurant business, entertainment, trades and services. This development has been common in the USA. Studies show that one new job in the digital sector creates three new jobs in the service sector.¹⁸

The flexible forms of employment of the future

A trend that can be clearly seen in international statistics is that the proportion of temporary and fixed-term employment is growing whereas the proportion of permanent employment, that is, what is referred to in Sweden as “indefinite-term employment”, is shrinking.

Figure 6. Temporary jobs, according to the OECD, 1995-2015



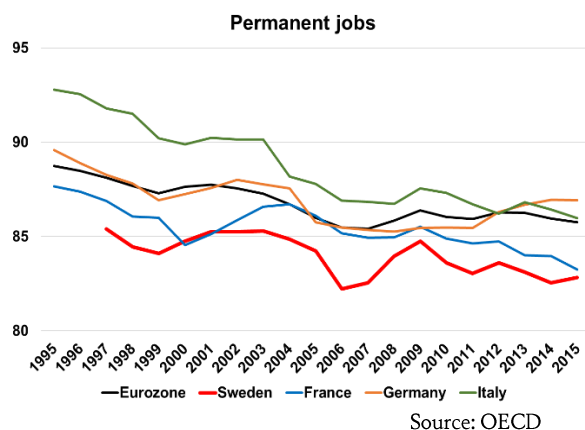
In Sweden, since the beginning of the 1990s there has been a clear upward trend in the proportion of temporary and fixed-term jobs. The exception is the first years of the financial crisis, when the proportion of fixed-term contracts as a proportion of the total number of employees declined quickly. Once the fixed-term contracts ended, no new positions were created

¹⁷ Fölster, S. (2015), *De nya jobben i automatiseringens tidevarv*. Swedish Foundation for Strategic Research.

¹⁸ Moretti, E and P. Thulin (2013), *Local Multipliers and human capital in the United States and Sweden*, Industrial and Corporate Change, Volume 22, No. 1, pp. 339–362.

at all. After the first years of the financial crisis, the proportion of fixed-term jobs began to show a clear upward trend and is now at the same level as before the financial crisis.¹⁹ In a corresponding pattern, permanent jobs have instead declined.

Figure 7. Permanent jobs, according to the OECD, 1995-2015



For economists, the understanding of how a company acts is related to how it is organised. Why are not all transactions between individual buyers and sellers managed via a price mechanism in a market? Why do companies not hire or procure temporary labour in a market every time the need arises, instead of having an employee who will not be fully occupied in certain periods?

According to Nobel laureate *Ronald H. Coase* the reason is, that every transaction between a buyer and a seller has a transaction cost.²⁰ Temporarily hiring, renting or procuring labour involves a number of transaction costs in the form of time and resources that must be spent on finding the right workers. An employer/outsourcer must look for, verify, evaluate, negotiate, contract, train, guide, etc. Because of these transaction costs, it is cheaper to not hire frequently, even though that entails having employees who will be underutilised during parts of their work time.

In recent times, companies and business models that take advantage of new technology to reduce their transaction costs have become increasingly prevalent. Digitalisation appears to have made it easier particularly for companies in the so-called

sharing economy to develop. In the sharing economy, companies and individuals can buy and distribute services on digital platforms. The platforms make it easier to match supply and demand at low transaction costs. This reduces the search time required and makes it easier to verify and evaluate contractors and outsourcers through opinions and reviews. The lower transaction costs make it more attractive for an employer/outsourcer to use more flexible forms of employment than previously.

In Sweden, this has entailed an increase in *temporary staffing employees, contingent employees, self-employed workers, self-employed entrepreneurs and combiners*. In the temporary staffing industry, for example, the proportion of full-year employees as a proportion of all employed persons in Sweden has doubled over the past ten years.²¹ The number of self-employed workers has increased fourfold in four years.²² According to Statistics Sweden (SCB), the proportion of one-person companies rose from 8 percent in 1993 to 16 percent in 2013. According to SCB, the number of combiners has increased in the past few years also. In the central government sector, there is a clear trend toward more production being done by workers other than central government employees that is, being procured or performed by rented personnel.²³

Lower transaction costs to match supply and demand in a labour market, however, is not the only explanation mentioned. For the employer, greater flexibility has become increasingly important in times when development is described in buzzwords like “disruptive”, and the employer has to be “agile” to stay relevant or survive.

Another factor in opportunities to be an entrepreneur, self-employed worker or combiner is that technology has become less expensive and more accessible, requiring increasingly less capital.

Another explanation of why the desire to work in these forms of employment has increased lies in the individualisation of society. However, it is still a majority who prefer permanent or indefinite-term contracts over more flexible forms of employment, but that proportion has

¹⁹ SCB (2015), *Utvecklingen av tidsbegränsat anställda*, statistiska meddelanden AM 110 SM 1501.

²⁰ See Coase, R.H. (1937), *The Nature of the Firm*, *Economica* 4, pages 386-405.

²¹ According to statistics from the Agency of Temporary Staffing Companies, the number of full-year employees has risen from approximately 35,000 in 2006 to approximately 76,300 in 2016. As a proportion of the total number of

employed persons in Sweden, temporary staffing employees have grown from 0.7 percent in 2006 to 1.6 percent in 2016.

²² According to Novus (2016), Branschindikatorer för egenanställning, March 2016.

²³ According to the Central Government Barometer Survey conducted by the Swedish Agency for Government Employers, the proportion that has engaged external contractors has grown from 86 to 96 percent over the past 10 years.

shrunk among the younger generations. Greater freedom and flexibility are often given as the reasons.

Yet another explanation for the growth of more flexible forms of employment is that those who previously had difficulty entering the labour market i.e. outsiders have now found a way in.

Atypical or flexible forms of employment

are all forms of employment that differ from employment contracts that apply until further notice.

Indefinite-term employment is an employment without a specific date. Also referred to as permanent employment.

Fixed-term employment has a defined start and end date. Internationally, the term “temporary employment” is often used.

Contractor person who undertakes to perform temporary assignments for others, without being employed.

Outsourcer engages a contractor to carry out an assignment.

Umbrella company is registered for business tax and invoices its temporary employees outsourcers

Self-employed worker pays P.A.Y.E. tax and is temporarily attached to an umbrella company.

Temporary staffed employee is employed by a temporary staffing company and rented out to outsourcers.

Combiner is an individual who is both an employee and an entrepreneur.

Self-employed entrepreneur runs a sole proprietorship or a partnership and is thus personally liable for the company's debts, unlike an entrepreneur who runs a limited company.

One-person company is a company that is operated by one person but has no limitation as to corporate form and may have additional owners.

One weakness of the new, more flexible forms of employment (atypical forms of employment), such as self-employed workers' contracts and work placed through digital platforms is that it is difficult to determine who is to be considered employer and who is to be considered employee. This may have consequences as to who is to have

responsibilities, obligations and rights in different employer policy related contexts.

New technology reinforces urbanisation

Many people believed that digital technology would eliminate distances and reduce the need for in-person meetings; however, the trend so far is otherwise in many ways. The large cities continue to grow in size where smaller communities and remote areas are becoming depopulated.²⁴ It is in the large cities that new technology is developed and used most. One of the critical driving forces behind urbanisation is that workers and employers have incentives to move to these clusters. Such incentives have been *strengthened* by digitalisation.

Empirical research shows that cities and communities are affected by the educational level of their inhabitants.²⁵ Statistics show that cities with highly educated workers attract more innovative companies, create more job opportunities, invest to a greater extent in new technology, and have higher productivity and wages. New technology enables knowledge-intensive workers to achieve enormous productivity gains from being in dynamic clusters with high concentrations of other knowledge-intensive workers.

Examples of innovation-driven, rapidly growing cities are San Francisco, Seattle, Stockholm and Amsterdam. Research also shows that cities that have a low proportion of highly educated workers often have a low proportion of new technology in companies, a lower number of job opportunities, and a shrinking population. Instead of being dominated by innovation-driven companies, in such cities there is more traditional manufacturing industry, based on older ideas. In the USA, this would be cities like Detroit (cars) or Cleveland (steel), while in Sweden it often involves mill towns or sparsely populated areas.

What theoretical explanations exist for urbanisation? Why have cities with high education levels that are more digital become so attractive for labour and companies? Research

²⁴ More than half of the Earth's population now lives in the large urban regions. The figure is expected to rise to 60 percent by 2030. See US National Intelligence Council (2012), *Global Trends 2030*. For a forecast based on Swedish data, refer to Swedish Public Employment Service (2016), *Globaliseringens effekter på lokala arbetsmarknader i Sverige*.

²⁵ For an overview, see, for example, Berger, T. and C.B. Frey (2015), *Industrial Renewal in the 21st Century: Evidence from U.S. Cities*, stencil, Lund University or Moretti, E. (2013) *The New Geography of Jobs*, Mariner Books, Boston.

has a number of explanations.²⁶ Perhaps the most common explanation is that a high knowledge level has so-called *spillover effects*.²⁷ In this case, it is a matter of others' competence spilling over to the individual employee – that is, our own productivity is dependent on others' competence. Highly educated people have a tendency to make even less highly educated people more productive, and if highly educated people work alongside each other they tend to increase their productivity more than, if they were to work alone. Cities with a high proportion of highly educated people tend to use more and better technology. When the educational level rises, companies tend to invest in new technology as a supplement to their workforce.²⁸ In this perspective, digitalisation is *skills-based*, since it is used to a greater extent by highly educated workers in clusters. It may also be *task-based*, since the need for in-person meetings depends on task complexity.

Another explanation is that large cities often have a large and broad-based labour market that *improves matching and reduces the risk* of being without a job or without workers.²⁹ When highly specialised workers are needed, it is easier for employers and employees to be in places where there is a large supply of competent workers and job opportunities. In a large labour market, matching is more efficient in the sense that a good match between the right competence and the job leads to better productivity in the organisations. When the companies can find specialised workers, experience shows they will invest more in new technology. The opportunity to move between different jobs will enhance matching, productivity and wages, and reduce workers' risk of being unemployed and companies' risk of not seeing a return on their investment. A larger market for other consumption goods and services in cities leads to a critical mass of people and companies who have the same interests and want the same things,

creating new business opportunities.³⁰ There are economies of scale in larger cities, since employers and employees can share costs and take advantage of the greater demand. This favours everything from schools and art galleries to the subcontractors of a particular product.

²⁶ For an overview, see, for example, Moretti, E. (2011), [Local Labor Markets](#), in Handbook of Labor Economics, Elsevier.

²⁷ See Lucas, R. E. (1988), [On the Mechanics of Economic Development](#), Journal of Monetary Economics, 22: 3-42.

²⁸ See Acemoglu, D. (1997), [Training and Innovation in Imperfect Labor Markets](#), Review of Economic Studies.

²⁹ See Helsley, R.W and W.C. Strange (1990), [Agglomeration Economies and Matching in a System of Cities](#), Regional Science and Urban Economics, 20: 189-212, Acemoglu, D. (1997), [Training and Innovation in Imperfect Labor Markets](#),

Review of Economic Studies. Rotemberg, J.R. and Saloner, G. (2000), [Competition and Human Capital Accumulation: A Theory of Interregional Specialization and Trade](#), Regional Science and Urban Economics, 30(4).

³⁰ See Abdel Rahman, H. M. and M. Fujita (1990), [Product Variety, Marshallian Externalities, and City Sizes](#), Journal of Regional Science 30(2):165-183., Moretti, E. and P. Thulin (2013), [Local Multipliers and Human Capital in the United States and Sweden](#), Industrial and Corporate Change, 22(1).

Consequences for future employer policy

An employer's ability to adapt at a pace with changes in the business environment is critical to the success and effectiveness of its operations. This section presents a line of reasoning concerning various areas in which an adaptation of employer policy might be relevant, or even essential.

Labour market transition

Not only do jobs disappear in the wake of digitalisation, but new jobs are created as technology makes it possible to demand new goods and services. These types of structural adjustments are not new but are rather a continuously ongoing process. However, some believe that there is a risk that this adjustment period will be unusually painful. Major structural and profound changes are rarely entirely painless. The industrialisation was initially followed by widespread social misery, unemployment and increasing social disparities. What distinguishes the current adjustment from other major structural shifts, such as industrialisation, where the farmer was to be placed in service alongside a machine, without any significant retraining, is that this time it will be difficult to utilise obsolete competence in some other industry since digitalisation impacts multiple industries at the same time. This may mean that this time the adjustment will take longer and will look different, and the content of the adjustment programmes may need to change.

There is currently a significant shortage of labour in many of the jobs that require higher education. In central government administration, as in the rest of the labour market, there is a widespread shortage of appropriate applicants in IT.³¹ Another result of job polarisation is that those furthest down in the wage distribution have been

outcompeted by those in the middle of the distribution, whose jobs have been rationalised away as a result of digitalisation. If the labour market transition had worked fully, some of the polarisation on the labour market could have been avoided. If those who lost their jobs had switched over to in-demand jobs higher up in the wage distribution instead of outcompeting those at the bottom of the distribution, the labour market would have functioned better today.

Adjustment needs will probably exist in the future as well. Most studies show that the risk for highly educated people of losing their job as a result of digitalisation is lower than for those with less education. Since the proportion of highly educated people is relatively high in the government authorities, the need for adjustment assistance will not be as great as in other sectors. If sectors with a large percentage of low-skilled jobs, in which the risk of automation is high, instead invest in competence improved interventions, the central government's competence supply will benefit as well. No doubt, ideas about a collective financing of adjustment throughout the labour market will arise if the needs increase.

How important will the job security and adjustment collective agreements be in the future? To what extent should the employer allow resources to be invested in jobs not associated with a shortage situation? Can the employers' organisations collaborate on adjustment issues to resolve major problems

³¹ See The Swedish Agency for Government Employers (SAGE) (2016), [Konjunkturbarometern för den statliga sektorn](#), June 2016

such as labour shortage, polarisation and exclusion? Or should the government assume greater responsibility in these transition issues, since they affect large parts of society?

Skills development and life-long learning

Due to the ever faster pace of digitalisation, the employee's competence becomes outdated increasingly quick. There comes a point at which further on-the-job training is not enough, and education becomes a more extensive process throughout a person's working life.

The Swedish Digitalisation Commission notes that digitalisation implies that over the course of their working lives most employees will need to retrain themselves and continuously develop their skills.³² Even though highly educated workers probably have a lower risk of becoming unemployed and less of a need for skill adjustment provisions to find a new job, it is probably the case that even parts of highly educated workers' tasks will change to a significant extent.

It is expected to become as important to increase and change further training for employees as it is to provide the right education for young people. One problem is that student financial aid is not sufficient to allow people to embark on a new course of study in mid-life. A new model involving a more extensive and continuous skills development and funding will probably become necessary to enable employers to manage their competence supply and employees to have relevant knowledge and avoid unemployment.

Another argument for life-long learning that is often presented is that it will be necessary in terms of public finances that retirement will be moved to later in a person's life and that everyone should change careers some time in their life.³³

³² SOU 2015:28, *Gör Sverige i framtiden – digital kompetens*, Partial Report of the Swedish Digitalisation Commission.

³³ An interesting contract, under which career change on account of age is now possible, exists in the theater world. It is currently possible for theatrical artists, who have relatively

How should such a model be designed? Who should be responsible for ensuring that ongoing investments in relevant skills are made? Who should fund the investments and decide what investments are to be made? Should all types of education be included? Where do we draw the line between skills development and career adjustment? How do we clearly differentiate the roles of central government, the social partners and the individual in issues related to responsibility and funding? The employer's influence over when an employee is to be permitted leave of absence is another issue.

Over the years, several models and systems for skills development and life-long learning have been discussed in Sweden. One line of reasoning involves a type of *voluntary individual learning accounts*, possibly including a tax credit. Also under consideration is a type of compulsory or voluntary *insurance model* involving government subsidisation, similar to that provided for unemployment insurance. A third model often discussed is a form of *collectively agreed insurance model* similar to the current adjustment and income security agreements.

There are a number of these models. Reference is sometimes made to skills insurance or skills trusts to which the social partners make allocations. Such schemes could be supplemented with voluntary and individual learning accounts.

One problem with a collectively agreed solution is that it applies only to those who are employed. As permanent employment becomes less and less the norm on the labour market, another solution will become necessary. Previously, one of the Government's ad hoc analysis groups³⁴ proposed a universal, compulsory form of skills insurance.

Education policy

As a result of an increased need for life-long learning, the *range of courses* and the *structure* of higher education must also change. In the

short careers, to change career without being terminated or laid off.

³⁴ See Analysgruppen för arbete i framtiden (2015), *Arbete i framtiden*, Kansliet för strategi- och framtidsfrågor.

wake of increasingly poor labour market matching, more and more voices in public debate argues that the range of courses must be adapted to the needs of the labour market. The range of courses must keep pace with the rapid digital development, be usable and be adequately dimensioned.



The courses provided by Higher Vocational Education are often relevant to what is in demand on the labour market, whereas universities and colleges currently have a broader mandate than to only take into consideration that which is in demand on the labour market. Certain government studies therefore call for more collaboration between the social partners and the institutions of higher learning.³⁵

Naturally, there are difficulties involved in meeting the needs of the labour market. It is sometimes difficult for employers and institutions of higher learning to identify the needs. This applies particularly to industries in which there are no formal qualifying requirements. In central government administration, where formal titles are becoming less common and where requirements are instead defined by changing task packages, it can at times be difficult to identify such needs. The institutions of higher learning also require longer planning periods, which also makes it difficult to meet the employers' shorter time horizons.

As regards the labour market's ever greater demand for digital competence, a change is needed. This could be a matter of more IT education programmes or a greater element of

IT in programmes that already exist. Some analysts believe we will see more and more generalists who supplement their education through on-job learning. According to research, generalists currently receive more job offers and higher initial salaries.³⁶ Others believe instead that specialists will become increasingly common as technology takes over more routine-based tasks.

A change in the structure of the higher-education system is also needed, to provide professional people with the necessary conditions to manage a lengthy work hiatus to pursue studies, or to study while continuing to work, to a greater extent than is currently possible. Life-long learning implies that employees must spread their higher education across their working life and change the length of their education. More than anything it seems the need for short-term stand-alone courses is increasing as a result of development. Being able to study part-time, evenings and remotely to a greater extent can increase the accessibility for working people.

The problem, as a number of Swedish studies have noted³⁷, is that the proportion of stand-alone courses and distance courses has decreased in favour of longer education programmes associated with degrees. According to these government studies, this is a result of the design of the resource allocation system. An institution of higher learning receives funding based on academic credits awarded, and in that respect, working people tend on average to obtain fewer academic credits. The number of stand-alone courses seems then to have served as a financial buffer in times when operational cutbacks have been necessary for saving purposes. Introducing changes in the longer education programmes takes more time and therefore has no immediate savings effect.

The 1993 reform entailed a decentralisation of the institutions of higher learning, which largely became autonomous. Some, however, want to see clearer steering of universities and colleges, whereas others believe overly detailed steering would not properly utilise the

³⁵ See, for example, Swedish National Audit Office (2016), *Det livslånga lärandet inom högre utbildning*, RiR 2016:15 and SOU 2015:90, *Utbildning för framtidens arbetsmarknad*, Appendix 5 of Långtidsutredningen 2015.

³⁶ Merluzzi, F and P. Damon (2016), *The Specialist Discount: Negative Returns for MBAs with Focused Profiles in Investment Banking*, Administrative Science Quarterly 16.

³⁷ See, for example, SOU 2015:70, *Högre utbildning under tjugo år*, Betänkande av Utredningen om högskolans utbildningsutbud.

expertise of the institutions of higher learning.³⁸

The location of the universities and colleges is also significant for accessibility. More senior workers who have homes and families are less likely to move than are younger people. Many analysts believe that whether in fact the student financial aid system should be adapted to accommodate studies undertaken later in life.

Key questions for employers to consider are how the structure and range of courses in higher education should be further developed. Should education be more linked to the future needs of the labour market? Should universities and colleges be given a new mandate? How should educational programmes be designed in the future as a response to digitalisation? How should they be funded?

Job protection and flexibility

An employer's automation gains are enormous when employees with salaries, employer social security contributions, payroll taxes and insurance payments are replaced by cheap, usually more productive and replicable technology. Therefore, in public debate it is often said that everything that can be digitalised will be digitalised.

When it becomes possible to replace a particular occupation with technology, it will not be just a few employees in that occupation who will be terminated; rather, the risk is that an entire occupational group will disappear. Naturally, such a development will reduce job protection, since the seniority rules of the Employment Protection Act will not protect an individual employee if an entire occupational group is made redundant simultaneously. Since the severance pay and financial compensation that an employer may pay out are small compared with the profit the

employer will reap from an automation, the profitability of rationalisation is high.

Digitalisation has intensified the adjustment pressure, so that the employer's need for flexibility has increased. It goes without saying that job security and job protection can be discussed in terms of the earlier perspective, namely, that forms of employment will become more flexible and employees more mobile. Labour law is based on the idea that the employee will remain at the same workplace for a long time.

To create a more modern form of job security, the social partners in the private sector have carried on a discussion about allocating resources for skills exchange and skills development in exchange for deviations from the seniority rules of the Employment Protection Act. As an effect of digitalisation, employees' security and protection against technology-driven unemployment no longer lies in the length of their employment period, but rather in their competence.

Relevant, updated competence also makes it possible for employees to change employer more often and work more flexibly and easier for employers to find the right competence in an ever more rapidly changing world.

It is important to note that the seniority rules in the central government sector differ from the rest of the labour market in that a special seniority agreement³⁹ exists, supplemental to the Employment Protection Act. Even though central government employers have a flexible agreement, they must also decide how they wish to act if a new system becomes reality in large parts of the Swedish labour market.

Wage formation

As mentioned earlier, digitalisation has increased the polarisation on the labour market. Jobs with routine-based tasks in the middle stratum have become automated and those who have lost their jobs have often outcompeted the low skilled for low-wage

³⁸ At the time of this writing, the Government has also introduced new committee directives for steering and a new resource allocation system for the institutions of higher learning. See *Styrning för starka och ansvarsfulla lärosäten*, dir 2017:46

³⁹ Statens avtalsverk (1984), *Avtal om turordning för arbetstagare hos staten (TurA-S)*, circular 1984 A11.

jobs. This has resulted in high unemployment among low-skilled workers (excess supply). Similarly, the individuals at the top of the wage distribution have been able to increase their productivity since to a greater extent they complement the computers. This has meant that more has been demanded than has been supplied. Therefore, an increasingly high shortage (excess demand) has arisen among these more highly educated groups.⁴⁰

In practice, it is important to ensure that the matching between supply and demand works smoothly; however, according to the textbook this type of imbalance should be adjusted by adapting *the demand, the supply* and *the price of labour* – that is, the wages.

To eliminate the high unemployment among low-skilled individuals (excess supply), *demand* volume of low-skilled workers should increase. If the demand is to increase and the so-called simple jobs are to become more plentiful, it is essential that, all else being equal, the *wages* be adjusted downward. The question, however, is whether such a development is compatible with the aims of a knowledge-intensive nation. An alternative that is often considered more attractive is to reduce the *supply* of low-skilled workers by increasing the number of education opportunities available for this group.

The past few years' influx of new immigrants, among whom a relatively large proportion have no education, has made the problems of high unemployment among low-skilled people acute. To adjust wages downwards and to provide further training to those with low education, the Swedish Trade Union Confederation (LO) and the Confederation of Swedish Enterprise reached a collective bargaining agreement about "get established" jobs. In this agreement in principle the Swedish government is expected to contribute large wage subsidies (provide downward wage adaptation) in combination with a large number of places in training programmes.

To eliminate the high shortage of highly skilled workers (excess demand), the *demand* for highly skilled workers should decrease. That scenario is not particularly attractive

either from the point of view of a knowledge-intensive nation. A more attractive scenario would be to increase the *supply* of highly skilled workers. It is not enough, however, to simply increase the number of places available in higher education programmes. In Sweden, the so-called education premium – that is, the return that one year of higher education results in, in the form of higher salary – is currently the lowest in the entire OECD.⁴¹ Compared with other countries, in Sweden education is a not a great investment. To persuade more people to continue in their education to university or college and to make it more lucrative for those who do, the *wages* for these groups should be adjusted upward.⁴²



Some analysts in Sweden suggests that many industries wages should be set more flexibly. Centrally steered wages appear to lead largely to less-than-optimal wage adaptation and to higher unemployment.⁴³ Many analysts also believe that local wage formation would make it easier to eliminate the imbalances on the labour market.

The most important reasons for individually and locally set wages in central government, however, are that it supports competence supply and makes it possible to govern the operations. Central government employers want an efficient wage distribution that is adapted to the operations in question. In a labour market with a substantial shortage of highly skilled workers, the authorities' ability to recruit the necessary competence is dependent on their ability to set wages. Individual, differential wage setting, in which

⁴⁰ Sweden has the largest shortage of university-educated workers. See Hays/Oxford Economics (2016), [The Global Skilled Landscape – A Comple Puzzle, The Hays Global Skills Index 2016](#).

⁴¹ See OECD (2016), [Education at a Glance 2016](#).

⁴² Wage is not the only thing that makes a particular job attractive. For example, in certain IT programmes it has

been difficult to fill all of the available places even though those who complete the programme are in great demand and can receive a relatively high wage.

⁴³ See National Institute of Economic Research (2017), [Lönebildningsrapporten 2017](#).

the links between goals, results and wages are clear to the employee, can then enable central government managers to efficiently lead and steer their operations toward the fulfilment of established operational goals.

Since digitalisation is expected to continue to lead to a high shortage of the highly qualified workers that are usually required by central government, discussion about how wage setting may contribute to eliminating the imbalances on the labour market or manage the competence supply will probably be ongoing.

Tax policy

Another way to mitigate the polarising effects of digitalisation and the shortage of highly skilled workers is to lower the wage tax. If a society with increasingly strong adjustment pressure wants to encourage education, skills development and life-long learning, high marginal tax rates should be avoided.

A lower marginal tax rate also leads to more hours worked and gives the employer an ability to use wages as an instrument in operations. When the marginal tax rate decreases and wage hikes are permitted to have an impact, the desire to perform and take responsibility for operations is strengthened.

If the wage tax is lowered, other tax bases will be needed. Therefore, many economists prescribe a tax change, from wage tax to a tax on capital and consumption.⁴⁴ The challenge then becomes selecting the taxes that have the least impact on Sweden's competitiveness and growth potential.

From a growth perspective, it is important that incomes in society be relatively evenly distributed. A concentration of incomes would probably result in a smaller proportion of incomes being spent on consumption and being applied to savings instead, which would inhibit growth. As mentioned initially (see footnote 5), research has shown that the income disparities in Sweden are not the result of wage disparities but rather of major

differences in capital income. Therefore, the advice is often given to raise the tax on capital income in exchange for a reduced marginal wage tax.

Another common argument put forth in debate among economists is that the tax bases of labour and capital are expected to change in the future. The development of new technology has entailed a drop in the price of real capital (that is, machinery, computers, software, etc.), which has increased the incentives for employers to automate and robotise their production (that is, replace their workforce with capital). As a result, the tax base of labour has decreased, whereas the tax base of capital has increased.⁴⁵

Another suggestion that is often made in public debate is that social security contributions, which are based on employment, should be lowered, to reduce incentives for job automation. At the margin, it is true that high employer's social security contributions on employment provide an extra boost to automation; however, it could be argued that lowered employer's social security contributions are insufficient to cause employers refrain from automation. An employer would have no payroll expenses for, say, a robot or a computer. Therefore, an employer has a strong incentive to automate, even if employer's social security contributions were to be completely removed.

One way to strengthen the effect would be to combine a lowering of the wage tax with some form of robot tax or tax on computers (in addition to the already existing tax on capital). The problem is that the introduction of an extra cost in the form of a tax on new technology would inhibit growth and hamper the new jobs that could potentially be created through the new technology – something that would hardly benefit those who have seen their jobs become automated. Moreover, it would be difficult to delimit such a tax. Should only physical robots be included or should even, say, software be included?

⁴⁴ See, for example, Waldenström, D (2018), *Kapitalbeskattningens förutsättningar*, Konjunkturrådets rapport 2018, SNS, Blix, M (2015), *The economy and digitalization – opportunities and challenges* or Blix, M.

(2017), *Höga skatter utmanas av digitaliseringen*, *Dagens industri*, 2017-05-17.

⁴⁵ See Karabarounis, L and B. Neiman (2013), *The Global Decline of the Labor Share*, NBER working Paper 19136.

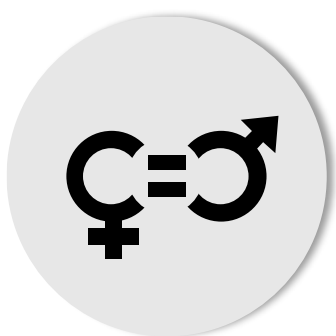
Gender equality

In the past decade, the gender segregation of the labour market has decreased, contributing to an overall reduction in the wage difference between woman and men. The proportion of women in traditionally male-dominated occupations has grown, and vice versa. The proportion of women in senior positions has also increased.

Since digitalisation is now restructuring the labour market, new generations of women and men should enjoy strong opportunities to challenge old structures. If women are given more opportunities, as both managers and staff employees, in the new industries and companies, additional steps toward full gender equality on the labour market and lower wage disparities could be taken.

This does not appear to be the case, however. Instead, it seems that gender equality in the new companies and the rapidly growing industries is even weaker than in the old industries. This applies particularly to many occupations in IT, which are male-dominated.

Digitalisation and robotisation have increased the need for workers with engineering competence, in fields in which the proportion of women is extremely low. As the proportion of employees with digital competence increases, it appears that the labour market is becoming even more gender-segregated.



The wage difference may increase, since the high demand for IT competence will lead to extremely high salaries, particularly in the private sector, which can pay the higher wages.

Wages in IT are driven up not only by *increased demand* but also by *higher productivity growth* in the companies that are better at taking advantage of new technology and IT.

These innovative cutting-edge companies – referred to in the first chapter as “frontier firms” – have much higher productivity growth and wage growth than do other companies. A clear majority of their employees are men, who receive extremely high raises.

At the same time, gender segregation is increasing for reasons other than digitalisation. The demographic trend is expected to result in a rapid increase in the number of employees in traditionally lower-paid female-dominated occupations in healthcare and social care. The increased demand for competence in healthcare and social care should also result in higher wages; however, wage levels are still low in comparison with the IT sector. This is partly attributable to the fact that productivity is lower in the public sector and it is a question of tax-funded operations.

These changes will likely mean that the wage and income disparities between woman and men do not decrease at the same rate as previously. These problems were noted in the Swedish Digitalisation Commission’s report, which presented a proposal whereby women who have started and completed certain higher-education programmes in IT would have their student loans for six semesters – corresponding to an undergraduate degree – written off after obtaining their degree. Whether the proposal is compliant with the Discrimination Act and EU law, however, is debatable.

A trend in which the wage difference between woman and men do not decrease at the same rate as previously will likely increase the political pressure to implement a quota system or undertake annual wage surveys to correct unjust wage. As regards quota systems, the central government employers advocate an inclusive view in which competence is the top priority. A quota system in central government authorities would also disregard legislation designed to ensure that positions are filled based on merit and skill.

There are also those who see advantages stemming from digitalisation, from a gender-quality perspective. Digitalisation has increased opportunities to create a more flexible working life. The opportunity to work more flexibly enables many women to avoid the so-called part-time trap. A study conducted by TNS Sifo, commissioned by

Jusek, shows that almost one-third would need to reduce their work time if they were not able to work more flexibly.⁴⁶ Others argue that, on the contrary, such flexibility cements a more unequal taking of responsibility for domestic and parenting tasks.

Work environment

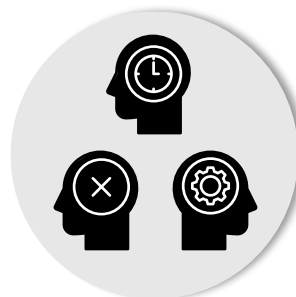
Digitalisation and robotisation mean that heavy lifting and boring, routine-based tasks will disappear. Digitalisation changes the basic conditions of private life and working life. The so-called boundary less working life has meant that certain employees experience freedom whereas others find their stress is increased from being continuously connected. In central government administration, sickness absence related to physical injuries is decreasing, whereas stress-related sickness absence is increasing.

According to research, digital work involves a combination of factors that have proved to yield greater creativity, flexibility and freedom, but that can also increase stress. According to the Swedish Work Environment Authority, stress is increased by demands for high quantity or quality, work intensification, increased information, low control over one's work and the perception of weak support, while cognitive demands of perception, attention and memory are high.⁴⁷

Automation often results in major organisational changes. Certain modern forms of employment, such as within the sharing economy, are experienced not only as flexible but also as insecure. This, too, can lead to increased stress.

At the same time, flexibility creates better conditions in which to make everyday life easier. It has been shown to be particularly important for parents of young children who can now, much more than previously, choose where they work from and when they perform their work.⁴⁸ Flexible work time has to a certain extent become something that young academics in particular view as attractive.

They look for greater freedom to enable them to plan and prepare their work. When the employees work to a greater extent outside the workplace, demands on management change from an employer policy perspective.



Modern working life entails more flexible solutions and forms of employment than regular indefinite-term contracts. In certain situations, it can even be unclear just who, in the meaning of the Work Environment Act, is the employee and who is the employer. Who is responsible for the work environment and what does that responsibility entail? For temporary agency workers, the law is clear, whereas work performed over digital platforms and self-employed workers create significant unclarity as to who is the employer and thus who is responsible for the work environment. The Swedish Work Environment Act (1977:1160), which was created in the 1970s and has not completely kept up with the digital era, is probably in need of modernisation.⁴⁹ A common view among employers is that the work-environment legislation is also overly problem-oriented. Conceivably, research should focus to a greater extent on identifying success factors instead of focusing on identifying the factors that are harmful to people's health.

In central government employer policy, development issues have been linked to the work environment through establishing that good work environment promotes operational development. The aim is to promote health in working life, rather than focus on ill health.

⁴⁶ See Jusek (2016), *Familjen i det flexibla arbetslivet*.

⁴⁷ See Swedish Work Environment Authority (2015), *Digital arbetsmiljö*, 2015:17

⁴⁸ See Jusek (2016), *Familjen i det flexibla arbetslivet*, rapport 2016.

⁴⁹ See SOU 2017:24, *Ett arbetsliv i förändring – hur påverkas ansvaret för arbetsmiljön?*, Betänkande av Utredningen om arbetsmiljöregler för ett modernt arbetsliv.

Leadership and co-workership

In order to respond to an ever faster digital adjustment pressure, many organisations have begun to change their approach to running their operations. The increased digital adjustment pressure demands that organisations continuously change and become more innovative.

At first, the adjustment pressure affected mainly IT-related industries, but it has since spread and now affects all organisations that have commercial operations. The combination of increased digitalisation and a higher knowledge content in goods and services entails increased pressure on organisations to renew themselves and focus on innovation.

For some time now, the pressure on the public sector has also been intensified. While competition does not exist in the same way in the central government sector, the knowledge content in government authorities' service offerings is increasingly large and the pressure on central government authorities, from the Government, citizens and companies, to undertake efficiency-enhancement and renewal measures is great. Therefore, central government sector innovation processes are also critical to how well the public authorities will be able to fulfil their mandates.

As regards employer policy, naturally, there are many theories and views about what the rapid and disruptive changes brought by digitalisation will mean for leadership, co-workership and the way the work is organised.⁵⁰ There are, however, some recurrent reflections on which most experts and analysts agree are important for successful leadership and co-workership in the ongoing digitalisation. The basic starting point is that digitalisation is driving development and change at an increasingly rapid pace, which will require a change in both leadership and co-workership.

The idea of delegated leadership is far from new; however, as development goes faster and the information flow becomes ever larger, this view is undergoing a renaissance. Previously, a manager often had an informational advantage

over the employee; nowadays, however, due to the enormous flow of information it is often the reverse. Because of this enormous flow of information, a manager cannot focus on details and control. Instead of exercising control, which also dampens the employee's creativity and readiness to take responsibility, a manager should be more of a visionary, point out the direction for the operations and communicate the purpose of its goals. Management explains the goals of the operations, while the employee takes greater responsibility for the planning and for how the goals are to be achieved. This implies that a manager should also take a more coach-like approach and be sure to create the conditions employees need to succeed. Providing encouragement, motivation and feedback to the employee becomes more and more important. It is important to understand that the flexible employment forms will be a great challenge for a more loyal, participatory and responsibility-taking co-workership.

The experts often talk about how future leadership should also be more agile – that is, flexible in its approach and responsive to the situation at hand. How the employer handles resources and what degree of flexibility the organisation has in its structure and process become significant. Leaders should be able to more quickly identify changes that are significant for their own operations and understand what will be needed in the future.

Being adaptable and able to change are also expected to become increasingly important characteristics in the employee. Employees are expected to be able to take greater responsibility not only for their own work but also for the development of the operations overall.

As mentioned previously, a more flexible working life brings entails demands on management. These might be, for example, getting employees to share with management the responsibility for both operations and their health.

⁵⁰ See, for example, Berkley Research Group (2016), *The Silicon Valley Model: A New Approach to Managing the Firm in a Digital Age* or Nilsson, S (2015), *Making*

innovation everyone's business – using routines and controls, dissertation, KTH.

An innovative climate and approach to work

The rapid digital development also means that work processes need to change. The idea is to create faster, more flexible work processes.



Digitalisation entails a transition from the industrial society's more hierarchically steered process, focusing on mass-produced goods, to more user-focused, individualised digital services. Many analysts therefore believe that the processes must become more customer- and user-oriented. Services are increasingly designed based on individual requirements and preferences. It is increasingly common that the user is integrated in the development process for new services.

Instead of long processes in which new ideas and services are tested and checked at various levels in the internal organisation, prototypes should be tested directly on users. The work process should build more on trial and error, with the user's views on a service being given particular significance, instead of the bureaucrat's own views being given too much significance.

The new work process should be based more on daring to test new ideas and it is one of the manager's most important tasks to create a culture in which employees dare to take more chances and are allowed to fail. So-called

innovation labs and collaborations across sectoral boundaries have begun to be increasingly common.

From an employer policy perspective, this implies that the employer must become even better at creating the conditions for an innovative and creative climate. Wherever there are opportunities to reprioritise resources to the benefit of more innovative work, they should be used. A well-known rule is the so-called 70/20/10 rule for innovation, whereby 70 percent is applied to core operations, 20 percent to developing the core operations and 10 percent to developing something new.⁵¹

In many of the successful digital companies, frequent reference is made to the possibility of failing, learning from one's mistakes and even celebrating them. Risk-taking should be rewarded. Being forgiving builds trust and stimulates people's ability to be innovative.

It is also important to create an open and learning organisation. Knowledge and information should be shared in the organisation as much as possible. The researchers also stress how important it is that organisations' innovative work be integrated and work smoothly with the rest of the organisation's approaches to work.

An attractive employer and a new generation

Digitalisation has led to a new generation, the so-called Generation Y, or Millennials, who grew up in a digital world, viewing working life in a different way than earlier generations have done. The debate around this generation and how they view working life is based on many studies that resulted in a number of generalisations.⁵² They have always had access to the Internet, are continuously connected

⁵¹ See, for example, Steiber, A (2014), *Googlemodellen – företagsledning för kontinuerlig innovation i en snabbföränderlig värld* [The Google Model: Managing Continuous Innovation in a Rapidly Changing World], Fritzes.

⁵² See, for example, PWC(2017), *Workforce of the Future*, Deloitte (2017), *The Millennial Mindset*, Manpowergroup

(2016), *Millennial careers: 2020 Vision*, IBM (2015), *Myths, Exaggerations and Uncomfortable Truths*, Constanza, P. et al. (2012), *Generational Differences in Work-Related Attitudes*, Journal of Business and Psychology, Vol. 27, No. 4. PWC(2011), *Millennials at Work – Reshaping the Workplace*.

and live their lives on social media. They have been able to watch an entire TV series at once, rather than having to wait a week for the next episode.

They are used to immediately seeing comments and “likes” about their life and their person. Just as in their private lives, in their working lives they look for frequent feedback from, say, a supervisor. They prefer communication to be straightforward and direct.

Leadership should be of a coaching nature that takes the individual into consideration. Leadership should also be open and transparent. They do not want the manager to keep information to him or herself and they do not appreciate being excluded. To an increasing extent, they consider images and video as their first and native language.



They enjoy working flexibly and have accepted a boundary less working life. They have more difficulty accepting traditional office hours and do not feel the need to always sit at the same desk, but rather they prefer creative, innovative workplaces. That is perhaps an argument in favour of the so-called activity-based workplaces. They appreciate freedom with responsibility and trust-based working hours. They are keen to create a sort of brand for themselves in social media, through a combination of their work and their private life.

They favour a working life that is more adapted to the individual and have difficulty accepting the one-size-fits-all model. Impatience also leads them to change jobs or

tasks more often to a greater extent than earlier generations. Therefore, it can be important for the employer to highlight the more challenging tasks that are available.

Another generalization that is often done in surveys is that this generation is considered to be idealistic and seek a deeper purpose in their jobs than simply to earn money. They want to make a difference and improve the world. Many analysts think, therefore, that it has become as important for private-sector actors as for public-sector actors to have a message that holds a deeper, genuine meaning. Naturally, this allows central government employers excellent opportunities to highlight the societal benefit of their operations.

The question is how employers should interact with the new generation, and if something must change in order to ensure that employers are attractive. In what way must operations and workplace culture change, or is it the new generation that will change and become more conformist once it has become more established on the labour market?

One area in which the approach to work may become more digital is the way in which a central government employer recruits and creates contact interfaces with potential employees or contractors. As regards recruitment, a new study from McKinsey Global Institute shows that the use of digital platforms for employment increases productivity and reduces the costs.⁵³

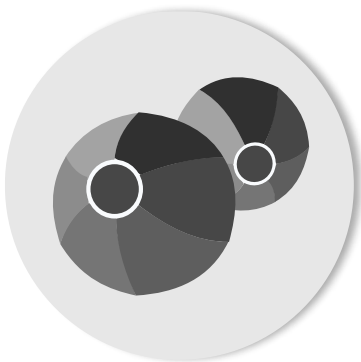
Other analysts believe it will become increasingly important for employers to take advantage of the digital tools and contact interfaces that are available. One of every four Swedes of working age currently uses LinkedIn.⁵⁴ Those who are attractive on the labour market know their worth and are increasingly mobile. A precondition of this mobility is digital tools and contact interfaces. What does such a development imply for central government employers?

⁵³ See McKinsey Global Institute (2015), [Connecting talent with opportunity in the digital age](#).

⁵⁴ Source: ISS (2016), [Svenskarna och internet 2016](#).

Work time, vacation and leisure time

Digitalisation implies that it will eventually become cheaper to produce goods and services. All else being equal, this implies major productivity improvements that will lead to large profits. It could also lead to higher wages for the employee groups that complements the new technology. They will increase their work productivity and thus their potential wage level. At the same time, lower production costs and stiffer global competition imply that the prices of goods and services will not increase as quickly as normal. Higher wages and stagnating price, all else being equal, result in greater purchasing power. That in turn implies that the groups that have ended up with more in their wallets can use some of their increased purchasing power to demand more leisure time, in the form of longer vacations, more leave times and shorter work times. There is considerable evidence that increasing numbers of people want to utilise collectively based *individual agreements between individual employer and employees*, in which salary is exchanged for more vacation time or more pension.⁵⁵



Unemployment and leasured time can also be involuntary. Therefore, in many countries, renewed public debate on the subject of a basic income has grown up. If a technology-driven unemployment became widespread, many believe that basic income would perhaps be the a solution. Others hold that it could

create a new underclass and that it is a poor fit with the Swedish employment philosophy. An alternative would be a sort of basic income involving the requirement of a *quid pro quo* in the form of engagement in retraining. Another popular suggestion in the same vein is the idea of shorter work time in response to increased automation, fewer jobs and increased productivity. As always, the question remains of just who would pay for such a shortening of work time. Should it be funded through lower profits, lower wages, or less of some other aspect of welfare?

Urbanisation and the localisation of central government operations

The first chapter described how urbanisation has been reinforced by digitalisation. There is no doubt that certain costs, for premises and wages, for example, increase when operations are relocated to clusters. At the same time, both theory and empirical evidence point to even greater advantages in the form of better competence supply, increased collaboration, higher productivity, and proximity to citizens, other organisations and companies. Advantages that surpass disadvantages such as high costs for premises. Operations that are conducted in both the public sector and the private sector are considered in almost all cases to be more cost-effective if they are localised to large clusters.



⁵⁵ The Swedish Agency for Government Employers (SAGE) (2017), *Löneutvecklingen på det statliga avtalsområdet, statistikperioden, 2015-2016*.

In other cases, business operations or government authority service require a physical presence. For certain government authorities, part of their mandate is to be physically available in all regions. These might be, for example, law-enforcement operations, for which physical presence is not something that can be digitalised away to the same extent. Service cannot be provided digitally since physical presence is part of the very mission of the operations.

Other parts of central government administration, such as the Social Insurance Agency, the Public Employment Service, the Enforcement Authority or the National Tax Agency, have been digitalised and have improved the efficiency of large parts of their operations, which in turn has affected their local office networks and the number of local offices. According to the study by the Swedish Agency for Public Management on the localisation of government authorities,⁵⁶ the data showed that the authorities find that the significance of having a local presence has fallen. Instead, they fulfil their service provision obligations through digital services. While digitalisation reduces the need for a physical presence, for most there are still groups, such as recent immigrants and seniors, who for various reasons prefer a physical presence and service on site.

To increase the efficiency-enhancement of their operations, many government authorities have combined their operations and localised themselves to regional centres throughout the country. The decision to place entire public authorities or parts of their networks of offices in different clusters was made for reasons of efficiency policy. Ignoring such a decision almost always implies a weakening of the operations in some perspective.

Sometimes there are instead reasons of distribution policy for localising government authorities or parts of authorities to another place on regional policy grounds.

Therefore, in this context there is a classic opposition between that which is referred to in economic theory as *efficiency goals and the goals of distribution policy*. This means that considerations of regional policy have their price – for example, in the form of longer

processing times by a government authority (all else being equal); similarly, more efficient central government operations has its price – for example, in the form of fewer in-person meetings with an administrative officer in a remote area.

It becomes a political balancing act between keeping the entire country together, on the one hand, and extracting as much value from tax funds as possible, on the other. The rapid digitalisation and urbanisation make it probably even more important to be clear in the future about the consequences and the costs of the various alternatives.

On what grounds should central government operations be localised? Ultimately, politics is responsible for central government administration, and according to the Swedish administration model. It is traditionally the Government that decides where government authorities and headquarters should be located; however, through *employer policy delegation* the authorities themselves have been given the opportunity to decide where their office networks and regional operations are to be located. However, the urbanisation of the past few years has led to the localisation of government authorities' office networks being called into question in public debate.

If employer policy delegation is obstructed and government authorities can no longer decide the location of their office networks, they will be deprived of a key instrument in their ongoing efforts to enhance efficiency in central government operations. If government authorities are deprived of their efficiency-enhancement instruments, would it not then be reasonable to also abandon the efficiency requirements imposed on the authorities?

This would concern, for example, the productivity and efficiency-enhancement requirements in the central government sector appropriations system. Should not the principle be that efficiency requirements only be imposed if the ability to influence the efficiency is owned by the authority's management?

⁵⁶ See The Swedish Agency for Public Management (2016), *Statliga myndigheters lokalisering – Ett samlat underlag*, 2016:8

Central government regulatory frameworks and competence supply

The development toward flexible forms of employment has special consequences for central government employers. Central government regulatory frameworks in Sweden provide central government employers with fewer opportunities than other employers to apply flexible forms of employment.

As mentioned earlier, when flexible forms of employment are applied via, for example, digital platforms and self-employed positions, who should be considered, in the meaning of the law, as an employer, employee, contractor or outsourcer is not always self-evident.



From an employer perspective, the important thing is to know whether the person performing a job at a government authority is to be considered an *employee* or a *contractor*, as that is what determines what set of rules and laws to apply.

If a central government employer is dealing with an *employee*, the rules on seniority and skill apply.⁵⁷ The employment rules

concerning the obligation to inform and the appeal process must also be taken into consideration. There are also rules around the exercise of authority, how it may be outsourced and who may exercise it.⁵⁸

As *combiners* become increasingly common, central government employers will also encounter them more frequently. In such situations, a central government employer *must* forbid sideline jobs that are or could become detrimental to public trust due to conflict of interest.⁵⁹ Moreover, central government employers *may*, under collective agreements, forbid sideline jobs that could interfere and compete with the person's regular work.⁶⁰ Problems could also arise if an already employed civil servant were to believe that he or she was taking on an additional job as a contractor to another government authority (as, for example, combiner), whereas the person was actually to be considered an employee of the second authority as well. The person could then automatically lose the first job.⁶¹

Digitalisation and globalisation means that work tasks can in many cases be performed at a location other than the location of the employer. In the private sector, it is common to hire employees outside Sweden when it is difficult to find the needed competence in Sweden. Can the Swedish central government take advantage of the boundary-crossing opportunities that result from digitalisation in the same way? In central government, it is possible to have Swedish personnel stationed abroad, but it is more difficult for a government authority to hire foreign expertise in a foreign country. For the central government administration, it is feasible in certain cases to use distance employment contracts, but from a legal perspective, it is more difficult to take advantage of foreign expertise in a simple and practical manner. One exception is diplomatic missions abroad, which are permitted to hire locally.⁶²

⁵⁷ See in 12 kap. 5 § [The Swedish Constitution \(RF\)](#) and 4 § in [The Swedish Public Employment Act \(LOA\)](#).

⁵⁸ See [The Administrative Procedure Act](#) (1986:223) and rules governing the responsibility of a civil servant in LOA and the Criminal Code.

⁵⁹ See 7 § i the Swedish Public Employment Act (LOA)

⁶⁰ See The Swedish Agency for Government Employers (SAGE) (2012), [Bisysslor](#).

⁶¹ See 11 § in The Swedish Public Employment Act (LOA)

⁶² See [Förordning \(2014:115\) med instruktion för utrikesrepresentationen](#)

Should it instead be a question of an *external contractor*, the Public Procurement Act (LOU) would apply instead.⁶³ There are also a number of special rules involving different public authorities that would apply here.⁶⁴ In the past few years, an extremely extensive set of regulations has been augmented by the requirement that certain conditions of labour law concerning wages, work time and vacation be satisfied if the procurement exceeds a certain value.⁶⁵



How should central government employers deal with the situation that the rules for central government employers lead to a narrower competence supply in the central government sector than in other sectors? Should central government employers strive to obtain the same opportunities as other employers have? That is, of course, a principle that is otherwise commonly asserted. At the same time, it is essential to remember that the purpose of the rules is to avoid corruption and create public trust in the central government. In the absence of public trust in central government operations, it does not matter what competence is available.

The role of the modern central government civil servant

If in the future more and more of the work of the central government administration is performed by individuals who are not employees but rather are engaged on a temporary basis, and shorter employment periods become increasingly common, other difficulties may arise. The question is whether it will then, over and above competence, become increasingly difficult to uphold the fundamental values and loyalty that the role of the central government civil servant demands.

Many of the rules listed in the previous section are designed to uphold a set of fundamental values and public trust in the central government. Disqualification rules, the principles of administrative law governing communication with the parties affected by an issue, the civil service responsibility in both the Criminal Code and the Public Employment Act – are fundamentally based on the principle that procedures are to be characterised by transparency and that a central government civil servant must not be challengeable as disqualified. If temporary workers and shorter employment periods become increasingly common, it may become more difficult to uphold the foundation of values to which these rules refer.

Social security

The current social security systems are based on other less flexible hiring conditions than those now developing in the footsteps of digitalisation. Today's systems developed during a period in which permanent employment, a regular monthly salary and collective agreements were the norm.

As it becomes increasingly common to change job or industry and as temporary forms of employment, self-employment and combiners become increasingly common, there is a risk that the social security systems will become weakened.

Firstly, a trend toward fewer schedule-based jobs implies that work time in the traditional sense will become an obsolete concept that is

⁶³ See *The Public Procurement Act (LOU)*, (2007: 1091).

⁶⁴ There are also other laws governing particular areas, ordinances and EU legal directives that govern procurements. See, for example, *Lagen om upphandling inom områdena vatten, energi, transporter och*

posttjänster (LUF), (2007:1092) or *Lagen om valfrihet hos Arbetsförmedlingen*, (2010:536).

⁶⁵ The requirement of a certain threshold value has meant that approximately two-thirds of all procurements are excepted from the regulations. See Finansutskottets betänkande [2016/17:FiU31](#)

difficult to measure or define. Since the systems are in many cases based on how much the employee has worked, or for how large a proportion of the work time an employee's ability to work has been reduced, it will become more difficult to assess the right to and the size of the benefits.⁶⁶

Secondly, given the increasing numbers of self-employment positions, freelancers, self-employed entrepreneurs, etc., there is a risk that certain groups will fall outside the social security systems. In certain self-employment positions, it has proven particularly difficult to legally establish whether the individual is entitled to Swedish unemployment insurance.

Major technological revolutions have often eventually led to higher prosperity for the majority; however, the transition has often entailed increased unemployment. If the labour market is now facing a new transition period, in which many people risk becoming unemployed as a result of digitalisation, it becomes particularly important that as many as possible be covered by unemployment insurance. If many people stand without sickness or unemployment insurance, the cost of providing financial support will increase instead. The bill is likely to land in the laps of employers and wage earners, in the form of higher taxes. Therefore, it has traditionally been important for the central government and the social partners that as many people as possible be covered by social insurance.

Occupational pension

Continuous changes of job or industry, and more flexible forms of employment, in which it is more common to have several jobs at the same time or perhaps to combine a job with being a self-employed entrepreneur, also make it increasingly difficult to get an overview of one's retirement needs and plan one's pension. There is a risk that the content of the official pension information will become increasingly difficult to compile and comprehend.

As more and more people have a flexible attachment to a workplace, employer or trade

union, probably fewer and fewer will be associated with a collective agreement and occupational pension.



Is it reasonable to have an insurance or an occupational pension attached to every job, or should there be some form of mutual insurance or occupational pension? What is desirable from a competence supply perspective? Will development lead toward more individually adapted solutions or more mutual solutions? How should pension, sickness and unemployment insurance, or “competence insurance” be designed in the future?

The legitimacy of the collective agreements

In the past two decades, a decline in the rate of participation in trade-union organisations has been observed on the Swedish labour market.⁶⁷ Granted, the decline was temporarily interrupted at the beginning of the financial crisis, but continued a few years later. In the same way, the proportion of state civil servants who are members of a trade union has declined over a very long period. The decline has levelled out in the past few years. Still, a majority of the employees are members in trade unions.

There are several conceivable explanations for the decline in the rate of trade-union membership on the Swedish labour market. The proportion of younger people,

⁶⁶ Granted, in sickness insurance there are solutions for handling persons with irregular incomes and variable work time.

⁶⁷ See The Swedish Labour Policy Council (AER) (2018), [Hur fungerar kollektivavtalen?](#)

internationally born people and big-city dwellers with a lower rate of trade-union membership has increased, whereas groups with a high rate of trade-union participation, such as public servants and blue-collar workers, have decreased. There are also extensive statistics that suggest that the elimination of the right to a tax deduction for trade-union membership fees has had a negative effect. The weakening of unemployment insurance and higher unemployment insurance premiums also seems to have resulted in fewer and fewer people choosing to join a trade union.

No decline in the rate of organisation for employers has been observed. An explanation for a high rate of organisation among central government employers is that public authorities and agencies that are directly under the authority of the Government and therefore have a compulsory membership in the employer organisations.

There is international research in which a strong correlation has been observed between the rate of trade-union participation and the proportion of employees who have a collective employment agreement.⁶⁸ To date, however, the decrease in the rate of trade-union participation has not affected the degree of applicability of Swedish collective agreements to any significant extent.

One factor that is expected to become increasingly important for the degree of organisation of the Swedish labour market is the development of the flexible forms of employment. What will happen to the roles of the trade unions and the employers when more and more labour market participants are self-employed or are in some other way more flexibly attached to an employer? How should the trade unions organise employees when there is no traditional workplace?

There is a great deal of international evidence that so-called atypical employment contracts reduce the degree of trade-union organisation.⁶⁹

Employers' interest in and incentives for belonging to an employers' organisation and applying collective agreements may decline if employees are not trade-union members. Such a development would give the collective agreements reduced legitimacy and could possibly eventually result in a weaker degree of applicability.



⁶⁸ See, for example, OECD (2017), *OECD Employment Outlook 2017*.

⁶⁹ See, for example, Schnabel, C (2013), *Union Membership and Density: Some (not so) Stylized Facts and Challenges*, European Journal of Industrial Relations, vol. 19

Final words

As mentioned earlier, the purpose of this report is not to deliver definitive standpoints in employer policy. Rather, it is intended to serve as a long-term basis for discussion around how future employer policy strategy may eventually be further developed in the areas in which the Swedish Agency for Government Employers believes that digitalisation will change fundamental conditions.

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The purpose is not to articulate standpoints but rather to establish a basis for discussion that includes examples from areas in which central government employer policy should perhaps be adapted as a consequence of digitalisation.

It is the aim of the Swedish Agency for Government Employers that this report serve as a source of inspiration for strategic discussions concerning, for example, the decision and influence structure for the Agency's members and for the development of ideas that takes place in the Agency's strategic projects.



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