

POLICY AREA: Digital Economy

Sustainable Digital Revolution

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Abstract

“We are suffering just now from a bad attack of economic pessimism” (J.M. Keynes, 1930). This sentence is relevant nowadays. The digital revolution has positive and negative economic consequences. It is expanding consumers’ choices and creating new intermediation possibilities for investors. But in some sectors (with more routinary based tasks) output and employment are stagnant as workers are cheaply substituted by robots. Data show that tasks requiring sociability and originality cannot be automated: education investment shall be re-directed toward those. All together labour hours might shrink, but sustainable income for all shall be considered.

Challenge

Challenges for consumers and investors.

Digitalization has impacted the life of consumers and investors. New technologies like 3D printing are expanding the availability of varieties as products can be tailored more easily on individual needs. This increases welfare. Whereby the banking sector went through one of the deepest crisis of the century, other intermediation possibilities have emerged: peer-to-peer lending or crowdfunding allow investor to take command of their investment opportunities and provide information externalities. Machine learning technologies allow those investment platforms to provide cheap and timely information about investment projects, thereby reducing information asymmetries. This improves the risk-sharing abilities of investors and reduces the need for costly monitoring delegation. Consider for instance peer-to-peer lending, which are platforms in which borrowers are funded directly by investors with no intermediation fees. Data from Prosper, a peer-to-peer lending platform, shows that despite the lack of monitoring and insurance from an intermediary default rates of borrowers have declined steadily, from a 30% in 2007 to an almost 0 in 2014 (see Faia and Paiella 2017). This decline in losses is marked by the FICO and other credits scores provided in the platform showing that borrowers’ reputation and reliability has improved steadily over time. This shows that the information signals provided in the platforms, thanks to big-data storing and machine learning updating, can provide a good discipline device for borrowers, hence a risk-improving device for investors. Many other examples can be done.

Challenges for sectors and workers.

Against the above background, other more worrisome consequences might emerge for instance in the labour market. Job tasks in many sectors can be automated and workers (especially after recessions and in periods of high uncertainty) can be cheaply substituted by robots. Already Autor et. al. (2003)

warned about this possibility. Subsequent work by Autor and Dorn (2013) show that the effect of routine replacement technological change depends on the relative size of the production elasticity of substitution between computer capital and routine labour and the composition elasticity of substitution between different goods and services. An optimistic view is presented in Gaetz and Michaels (2015) who find no adverse effect of robots on employment for 17 countries. A more worrisome picture is presented instead in Frey and Osborne (2013) whose data show that for the U.S. about 47% of employment is at risk of automation. A recent report from Citygroup also confirms this picture for a number of other countries. My own recent calculation for Europe shows a more nuanced picture but an equally worrisome one. For instance, while previously mainly the manufacturing sector was at risk of automation, data show that in some countries even financial services tasks have an about 0.9 probability of being automated. This has far reaching consequences for both sectors and workers. In many industrialized countries the manufacturing sector has been shrinking and this is also due to the new technologies which assign more values to logistical services rather than to physical production. But the advancing of automation in the service industry (digital intermediation services, robot advisors, etc.) is endangering also this one. In a recent speech V. Constancio warned about the risk of faster de-banking due to the advance of the FinTech industry. Workers might be at risk too on other fronts. Data shows that the labour share has declined in several countries from about 60% (The Kaldor stylized fact) to about 40%: Karabarbounis and Neimann 2014 attribute this decline to the decline in the cost of IT-based capital. Most recent crises have been marked from the so-called jobless recovery: this was in part due to the fact in an uncertain environment for firms it was cheaper to automate several tasks even while recovery was picking up. Finally, a recent work from Gregory et. al. (2016) estimating the effects of automaiton on labour demand find that product demand externalities (the increase in product demand) can outweigh the labour substitution effect, but only to the extent that the income benefits from the IT-technological revolution are more evenly spread across workers/consumers. This last point makes it evident that the consequences of IT-development for employment might be positive only to the extent that policy actions are taken to guarantee a sustainable and more equal development.

Proposal

Given the above challenges actions shall be taken on two fronts. On the one side, the positive aspects of digitalization shall be fostered. On the other side, the impact of digitalization on the production and service sectors and on workers shall be monitored to take pre-emptive policy actions that can avoid the social unrest in some sectors, regions or cities.

Reforming banking and fostering alternative intermediation

The crisis has shown that the banking industry, whose primary goals are that of providing risk-sharing opportunities and monitoring expertises of investment projects, is susceptible to risks that can have an impact on investors. The digital technology provides alternative investment opportunities that can contain the consequences of bank panics. Those alternatives, while helping to improve risk-sharing abilities of investors, might however endanger the sustainability of the banking sector.

First, the banking sector shall be reformed not only in terms of its safety, but also by re-directing its business models so as to take advantage of new technologies. While bank officers are being substituted by internet intermediation services and financial analysts are being substituted by robot advisors, it is possible to devise alternatives business areas. For instance, currently investors wishing to engage into digital platform investment face large search costs are those platforms are dispersed and

do not provide comprehensive retail services. The banking sector can re-direct part of its activity and human resources to organize the logistics of those comprehensive digital retail services, thereby taking advantage rather than suffering the information externalities.

Second, alternative intermediation sectors shall be fostered, albeit supervised. As explained earlier digital intermediation can improve risk-sharing possibilities through better data and information handling. But another aspect is particularly important. In most European countries firms are small and many do not have access to traditional banking sector funding, let alone to equity funding. Crowd-funding and peer-to-peer lending can provide alternatives for innovative start-ups and other small firms to get funding for promising projects. Creating alternative funding markets, also through digital platforms has also been one of the declared goals of the European Capital Market Union.

An important concern that shall be addressed relates to investor protection. While digital investment platforms provide several signals that improve projects' assessment abilities, they still require a minimum knowledge of the financial products sold. Therefore, while fostering those alternative intermediation means, it is crucial to guarantee that all investors have a minimum level of financial literacy.

Monitoring the automation of job tasks and re-directing investment in human capital

To guarantee sustainability of the digital revolution it is important to monitor the automation of jobs in the various sectors. This will provide early warnings for possible employment stagnation.

Second, it is important to direct investment in human capital toward abilities that are most needed in sectors which are not at risk of automation. Much of the investment in human capital is driven by its returns on the job. Engineers' tasks in the manufacturing industry have been at an increasing risk of automation. The same is true now for many tasks in the financial industry. On contrary tasks in the caring and education industry are less susceptible of automation. This suggests that it might be important to target investment in education toward abilities needed in sectors which are less at risk of automation. Furthermore since the type of skills required in more IT-based sectors change rapidly, education shall direct efforts also toward improving malleability of skills. This might require investing more in a knowledge-based as opposed to a competence-based education, as the first implies more flexibility.

This requires two things. First, Labour Ministries shall commit to develop consistent databases that can help to trace the automation developments. Second, there is need for conscious investment in pedagogical methods that foster originality and social skills. This will be a crucial part of sustainable development.

Addressing inequalities and social unrest.

As many jobs can be automated there is no doubt that a large portion of the population will observe its employability shrinking, particularly so workers in routinary jobs. It is also possible that the Keynes prediction that we will all be working few hours will materialize (some countries have already taken actions to reduce the working hours; see for instance Sweden, which is currently testing a six-hours working week). Furthermore we observe mounting under-employment in many industrialized countries. For instance data from Bell and Blanchflower (2013) show that under-employment has been growing in the UK, particularly so after the Great Recessions. On the other side, we observe

successful digital companies extracting extraordinary rents. If this process contributes increasingly to polarization and inequality, actions on this front are unavoidable. A proposal to tax robots is not viable as this would discourage innovation in new technologies that might be useful on many fronts. However for companies that extract extraordinary large monopolistic rents (well beyond what is needed to incentivize innovation), a viable solution might be higher and more harmonised taxation, whose proceeds can be used to contain social unrest. Other active labour market policies (like facilitating skill/matching or lowering tax wedges) might have to be considered.

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Implementation Overview

- Address the impact of digitalization on the upcoming de-banking and on other service industries. For the banking industry supervisory authorities can monitor business plans and re-direct efforts toward tasks that exploit the digital revolution.
- Foster access of investors and small borrowers to more democratic digitalized investment opportunities. Provide protection for investors who enter the investment platform with low financial literacy.

- Monitor the development of automation in all sectors.
 - Provide coverage for social unrest in sectors that are at high risk of automation. Resources can be extracted by taxing rents of beneficiaries of the digital revolution.
 - Re-consider education policies with more attention toward pedagogical methods that foster sociability, originality and malleability of skills.
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