

# INFLUENCE OF DIGITAL PLATFORMS ON THE EUROPEAN INDUSTRY AND POLICY MAKING

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The article builds on the Euro-CASE Policy Paper published in 2013 on “Transforming Manufacturing’ A path to a Smart, Sustainable and Inclusive growth in Europe” [Euro-CASE 2013]. The industry is a very significant sector of the economy in the Czech Republic, it is crucial to follow new industry challenges as the upcoming digital revolution enables connectivity, automation, robotization etc. with the potential to change the productive structure and reorganise the value creation increasingly around digital platform ecosystems. Digital platforms refer to a technology-enabled business model that facilitates exchanges between multiple agents and offers a value that is proportional to the size and the quality of the engaged community. The exponential change of technology development and the globalization challenge the structure of production and manufacturing not only in the Czech Republic, but also on the European level. The paper raises discussion points on the above mentioned future challenges.

## KEYWORDS

innovation, manufacturing, production structure, digital platforms, scale-up

## 1 INTRODUCTION

Industry is a very significant sector of the economy in the Czech Republic as over 40% of all economically active residents are employed in the sector [CSO 2017] and it accounts for over 30 % of the Czech economy. The main industrial branches of the Czech economy include chemical, engineering, food and steel industries [The World Factbook 2016]. Therefore, it is crucial to follow new industry challenges such as Industry 4.0 as the upcoming digital revolution enables connectivity, automation, robotization and virtual simulation levels with the potential to change the whole productive structure and reorganise the value creation increasingly around digital platform ecosystems.

This article deals mainly with the importance of digital platforms and further extends part of the Euro-CASE Policy Paper published in 2013 on ‘Transforming Manufacturing’ A path to a Smart, Sustainable and Inclusive growth in Europe [Euro-CASE, 2013]. This Euro-CASE Position Paper was based on the hypothesis that manufacturing of high-complexity and high-value manufacturing products is the key driver of technology and innovation for the European industry sector.

## 2 BACKGROUND

The exponential change of technology and the globalization challenge the structure of European production and manufacturing. Therefore, to understand the challenges and to provide guidance for policy and management, it requires approaches capable of addressing the complexity and uncertainty.

Many digital platform firms have succeeded to increase returns over the last two decades by leveraging network effects. Lessons can be learned from companies such as Google, Apple, Facebook, Amazon, Airbnb, Instagram, Snapchat or Uber. These companies rapidly gained customers with continually updated products that become more valuable with more users. After utilizing their foundational strength they offered new and linked services to their customers in order to further strengthen their relationship. It revolutionised access to information and better connected buyers and sellers of services and goods. Fast transformations have created multibillion businesses with global presence in comparison with industries, which have experienced creative destruction.

The term “digital platforms” refer to a technology-enabled business model that facilitates exchanges between multiple agents and offers value that is proportional to the size and the quality of the engaged community. Platforms can scale massively to connect many users without performance degradation and drastically enhance the performance of the overall system.

Both the empirical evidence and the emerging literature on platforms and the explosive growth of their owner firms coupled with technological change are attracting wider interest and affecting horizontally many industries, including the manufacturing sector [Evans and Gawer 2016]. Digital platforms have dramatically influenced the development of the digital economy [Evans and Gawer 2016]. In total, the EU currently represents only 4 % of the total market capitalisation of the largest online platforms. The vast majority of platforms originate in the USA and Asia [Evans and Gawer 2016].

## 3 THE TRENDS & THE DRIVERS

Driven by technological and deep demographic changes, a profound transformation of our society is on the verge. The evolution of overall digitalisation will determine the future of industrial production and manufacturing. Digital connectivity in real time will enable the interconnection of value chains and networks regardless of geographical location.

Breakthrough innovations in fields such as robotics, artificial intelligence, virtual simulation and augmented reality, additive manufacturing, new materials, nanotechnology etc. will revolutionise current production centres and they will profoundly alter the current social organisation of work. Initiatives like “Industry 4.0” in Europe or “Made in China 2025” anticipate the transformation as a new revolution.

So-called “servitization of products” [Athyantha 2017] will provide competitive differentiation and address evolving market demands across all customer touch points in the product lifecycle. Altogether, the adoption of digital technologies and their application extends the range of business models available for product manufacturers.

BlockChain, the technology behind the virtual currency BitCoin, is extending into a broad range of potential applications, from finance to the energy grid and it is very likely to emerge as a

new digital breakthrough, which may change how the economy works at large.

The technological and scientific advances beyond the digital sector will most likely result in totally innovative products thanks to biotechnology, nanotechnology, photonics, advanced materials and new production technologies along with the increasing incorporation of software as part of the final product, which promise to bring unprecedented advances in food, medicine, new materials and new energy sources.

### 3.1 The rise of platform economy

The digital platforms have allowed American firms to build global emporiums that have come to dominate the technology industry [The Economist 2016, Platforms]. As of today, 70 % of the so-called Unicorns are platform firms [Evans & Gawer 2016]. 10 % of the world's public firms generate 80 % of all profits. Firms with more than \$1 billion in annual revenue account for nearly 60 % of total global revenues and 65 % of market capitalisation [The Economist 2016, Superstars]. Platform businesses such as Facebook and Google are aggressively diversifying into everything to do with information.

Today's giants have fewer assets and fewer roots in a local society and furthermore are more global. Successful firms race ahead of their rivals in order to enjoy the advantages of temporary monopolies [Thiel 2014]. The so-called "Platform capitalism" is a broader transformation of how goods and services are produced, shared and delivered. Platforms like YouTube and Twitter have different roles, rules, strategies, and business models than more typical firms. Their customers engage themselves directly with each other in the new "participatory model" instead of individual firms competing for customers. That creates completely new markets being highly disruptive to existing ways of operating.

It is expected in the near future that the policymakers will revamp antitrust policy for a rich-information world with stronger networks effects. The antitrust authorities need to examine and understand the ways that digital firms are using network effects to crowd out potential competitors, and extract rents by repackaging other people's content. The policymakers also need to become tougher concerning the dark arts of management such as tax-dodging [The Economist 2016, Superstars].

### 3.2 Influence of European industry

Europe has played only a secondary role behind the US and Asia in the development of the platform economy, with a modest 4 % of the total market capitalisation of the largest online platforms [Evans and Gawer 2016], and a lower number of the so-called unicorns.

The digital platforms play a key role in leveraging network effects, and therefore in driving growth in the new sectors, and they thrive the evolution of industry and manufacturing and hence the transformation of different sectors in economy. There are a number of common themes [Simon and Bogdanowicz 2016]:

- The development of unicorns is market-led with most of the firms growing organically. It does not appear to be the direct result of specific policies, although indirect support is clearly important
- Unicorns all rely to some extent on venture capital for their initial funding, their development and functioning

- The founders are often "serial entrepreneurs" who have set-up other firms before. Most of the founders are seasoned business people with strong academic backgrounds
- Most unicorns have a significant level of R&D expenditure

The role of venture capital is the key for success as the gap between the EU and USA is enormous, and that's probably the single most significant reason behind the current state of affairs in the digital economy [OECD 2016]. On the other hand, the situation is improving. The amount of funds available in Europe has increased over the last decade, and the number of venture-backed IPOs in the region has more than tripled.

"Deep tech start-ups" refer to start-ups whose business is built around unique, differentiated, often protected or hard to reproduce, technological or scientific advances. The most recent report by Atomico [ATOMICO 2016], Niklas Zennstrom's technology investment London based company, highlights three major trends underlying the growing influence and success of the European technology industry:

- Deep tech is thriving and diversifying. Since 2011, the number of deep tech start-ups founded in Europe has grown 3.5 times. Nearly \$2.3bn has been invested in deep tech in Europe since 2015 compared to them \$1.7bn that was invested over the four-year period between 2011 and 2014. 2016 was a bumper year with \$88B in deep tech M&A, while more US and Asian tech giants as well as European corporates and investors are investing into, or acquiring, deep tech firms and tapping into a growing deep tech talent pool [ATOMICO 2016].
- New tech hubs are emerging beyond the traditional order of London, Berlin and Stockholm. The report suggests Munich, Zurich, Lisbon, Madrid and Copenhagen will be ones to watch over the coming years. Paris is starting to seriously challenge London and Berlin in terms of the number of VC-financed deals and deal volume [ATOMICO 2016].
- Traditional industries are awakening to tech. Two thirds of Europe's largest corporates by market cap have made a direct investment in a beginning of 2015 [ATOMICO 2016].

The key role will be to identify and cultivate high-potential SMEs. The question is how to place bets on firms with strong growth potential while making it easier and less traumatic to recycle the resources in old non-viable firms. Policies aiming to improve SME growth opportunities should address regulatory obstacles in the business environment that are size-insensitive but will bring great benefits to SMEs. Having more experienced entrepreneurs, and using market tests linking SMEs to lead firms, to multinationals or to larger domestic firms, are sensible pointers.

## 4 SHAPING THE FUTURE OF INDUSTRIAL EUROPE BY 2030

While the business history has been defined by periods of intense competition followed by long periods of consolidation, it remains to be seen if the digital revolution will repeat that pattern [Pérez 2003] or if the increasing abundance of technological assets leads to evermore dynamic and volatile markets where incumbents become a constant subject of disruption. Only those who learn to manage adaptive platform ecosystems agile enough to adapt to changing business

environment are more likely to stay in the driver's seat of cooperation between incumbents and newcomers.

Advances in connectivity, automation and robotics are already completely redesigning the overall industrial landscape. Internet of Things, Artificial Intelligence, Additive Manufacturing and Virtual Reality will have a major impact on the EU 2030 industry. Recent advances in neural networks and "deep learning" technologies are delivering the expected results. Deep learning algorithms have the capacity for opening up numerous new areas for application. The EU industry must keep the leading edge in most of these technologies if the industry is to keep the competitive advantage.

In the next decade, most of the European production structure must remain based on the SMEs; as the opposite, the destruction of this structure could bring dramatic social consequences in employment and welfare that Europe cannot afford. Nevertheless, the trend is that employment will migrate from the physical to the cyber domains and the new connected industry will require new infrastructure and new skills. There are two parallel efforts; on the one hand to consolidate and transform the existing SMEs to survive the change to a connected automated and robotized industry, and on the other hand, to foster the innovation in the cyber domains.

## 5 CONCLUSIONS

Technology will be the driving force in shaping industry and business. Developments in connectivity, automation and robotics and, in particular, the combined advances of the Internet of Things, Artificial Intelligence, Virtual Reality, cooperatives robots etc. will transform the processes and the industrial value chains. Without a strong industrial base the future of Europe will be compromised. To keep an advanced production base capable to compete in the global markets in 2030 and to provide a high level of employment and quality jobs must remain a high priority as the key stone of the welfare state and political stability. The challenges in the governance of digital platforms provide invaluable lessons learnt also for reorganising the manufacturing industry. Despite the transformative potential of platform ecosystems, current policies addressing platforms within the market and the system failure paradigms seem to attempt to optimise the benefits and to mitigate the downturns [European Commission 2016]. Such market and system failure approaches are more useful for dealing with a steady state situation in which public policy intervene to correct a stagnant market, but not to dynamically create and shape new trajectories [Mazzucato 2016]. In order to harness the disruptive potential of platform economy for societal transformation and direct such developments towards societally beneficial pathways, these need to become an integral part of governance rationales.

The policies struggle especially with platform ecosystem that share common schemata between stakeholders and entail emerging properties and resilience. They require policy approaches that also align with and adapt to complexity rather than reduce it, because in complex systems unwanted impacts of policy measures tend to be the rule rather than an exception [see, e.g. Bauer 2014].

Platforms redefine markets. For instance, is the travel management platform Uber a transport business or an app business or rather both? How regulators define markets and consider monopolies and subsequent control measures can drastically influence the competitiveness of platform players and industry at large. All in all, servitization of products has

potential to provide competitive differentiation and transform also the value creation in the manufacturing industry. Policymakers need to revamp antitrust policy for an information rich world with stronger networks effects. Antitrust authorities need further insights into how the digital firms use network effects to crowd out potential competitors, or extract rents by repackaging other people's content. The regulators must also be aware not to overload the rules: the point of antitrust policy is to promote competition and hence economic efficiency. Policymakers need to become stricter on false practices such as tax-dodging. However, any moves to discipline firms need to be made multilaterally to prevent potential trade wars.

Leadership to show direction is often the key to overcome the inertia inherent in techno-institutional systems. To overcome switching costs and path dependency problems, regulatory and other policy changes will have to yield benefits that are larger than the aggregated switching costs. Not only may this be difficult to assess, benefits and costs will often be asymmetrically distributed. Consequently, considerable resistance will be exerted by stakeholders who benefit from the status quo but might lose under alternative sets of rules [Weber and Rohracher 2012].

Governance of platform ecosystems balances between the opening up for innovation and closing down for controlling the competition to ensure sustainability and market dominance. The government can wisely incentivize the development of open APIs to access to platforms within the integrated spaces of value creation. Pooling resources through PPPs (Public Private Partnerships) and incentives for private Venture capitalists to improve the financial and capital markets seems to be the crucial steps with this respect.

Forcing such transition with strong interventions affecting the entire system (e.g. radical redesign of the legal and regulatory framework) may be a strategy with largely unknown outcomes [Geels 2005; Hendriks and Grin 2007]. To avoid the high risks of unanticipated consequences from system-wide policy interventions, governments must champion policy experimentation and scale-up quickly what works. The level of connectivity and interdependency among the different actors requires new tools of analysis. It is important to be able to model the complexity of current and future innovation and economic ecosystems. Furthermore, the governance of complex adaptive systems - like digital platform ecosystems - demands similar flexible and adaptable rules able to co-evolve with the system. Thus, adaptivity and capability of building bridges over different research traditions is advocated for the development of new governance approaches.

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