Beyond Industry 4.0 & Implications for Industrial Policy (including in Hungary)

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Today:

Definitions of I4.0
MAKERS: a broader interpretation (I4.0+)
Auto case: ICE to ACE
Implications for Industrial Policy (including Hungary) (Brexit: UK case?)
Indices of economic activity

- Steam
- Cotton
- Iron
- Railways
- Iron
- Steel
- Electricity
- Chemicals
- Autos
- Electronics
- Synthetics
- Petrochemicals

Kondratiev’s Long Waves

MAKERS - Smart Manufacturing for EU growth and prosperity is a project funded by the Horizon 2020-MSCA-RISE - Grant agreement number 691192.
‘4th Industrial revolution’

Biotech, nanotech, neurotech, green & renewables, ICT & mobile tech, 3D, AI, Robotics, sensoring & space tech, drones
MAKERS

Revolution or evolution?
Industry 4.0 describes the organisation of production processes based on technology and devices autonomously communicating with each other along the value chain in virtual computer models.

Industry 4.0 involves a series of disruptive innovations in production and leaps in industrial processes resulting in significantly higher productivity.

**Efficiency driven arguments**

- **Smart and webbed factories**
- Large plants
- Large firms or multinational firms
- Mass customisation

**Key Features**

- AI- IoT – robotics- automation
- Cyber-physical systems (smart ordering, scheduling, control and delivery systems, ‘big data’).
- New combination capital & labour
- Lower inventory upstream, in process and downstream.
- Max productivity
MAKERS → Broader
Industry 4.0+

New markets

New technologies

New production spaces (Connected factory)

Personalised flexible Artisan customisation

New business models (gig economy & Servinomics)

Local supply chains

Sustainability core
‘I4.0+’ & Auto:
• Connected devices and sensors;
• Predictive analytics, cognitive computing & AI; decisions and predictions based on real time data;
• Widespread adoption of mobile, touchscreen and virtual reality;
• New flexible systems of production, technologies such as 3D printing and intelligent robotics;
• Connected factories

AND....
Source: PA Consulting, 2016. Brexit: the impact on automotive manufacturing in the UK
ICE to ACE
Implications for the Auto Value Chain 1

‘fleet-based on-demand personal mobility’ value chain, comprising components which will share data across the value chain, such as:

• **Vehicle design and manufacturing** (existing automaker, outsourced automotive manufacturer, supplier or fleet operator, operating more on an open innovation model).

• **Operating Platform** (existing automaker, tier 1 supplier or new entrant like Waymo, Renovo or Drive.ai)

• **User Experience Platform provider** (controlling the passenger’s mobility experience, including in-cabin experience, including hardware, software and data.)
Implications for the Auto Value Chain 2

- **Data services provider**: content - entertainment, traffic, mapping or weather, consumed by ACE platforms or passengers in ACE vehicles.

- **Fleet creation**: fleet operators could specify, design and buy/lease from a specific vehicle manufacturer or lease vehicles from a ‘fleet creation company’, as in the airline industry. Fleet creation involves financing and insurance.

- **Fleet operator**: firms operating and managing the fleet of ACE vehicles offering on-demand mobility services - extend to integrating on-demand with public transport and to ‘Global Distribution System’ firms (as in the airline industry) offering reservations to on-demand mobility services?

- **Fleet service and maintenance provider**: servicing, maintaining and supporting fleets – specialists may provide this service.
Some key issues

- Co-creation
- New ways of consuming, using, accessing...
- Servitising consumption and sourcing
- Downscaling: Q: economies of scale?
- Shorter value chains?
- Rethinking products and processes from an ecological perspective
Manufacturing in the knowledge economy (De Propris, 2016)

Global Value Chain

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New manufacturing model: possibility for ‘reindustrialisation’ in ‘OIRs’?

- Focus on high-value added activities
- Re-positioning on Global Value Chain
- Personalisation of offer
- Focus on manufacturing & services (services (‘Manuservices’ / ‘servitisation’))
- ‘Factories of the future’

1 to 2 OR a, b, or c?
Pinch points?

- Lack of information
- Vested interests
- Resistance to change
- Risk and uncertainty
- Delusion about the inevitable supremacy of services
- Belief that businesses & market know better
Implications for industrial policy

- Political understanding of scale of change → information and education
- Design clear and communicated vision → shared vision, commitment
- Promote technology adoption and application → join technology with sectors
- Join national with regional scales → multi-level

→ regional industrial policy
• Skills, training and retraining (UK: devolution?)
• Infrastructure; eg 5G, charging infrastructure...
• Firm access to I4.0+ technologies (finance, funding, support)
• ‘Platform sharing’: enabling technologies. join technology, sector, place (e.g. EU’s digital innovation hubs)
• Open innovation approaches? (implications for eg challenge funding)
Implications for industrial policy 3

- **GVC Repositioning? Reshoring?** Recoupling innovation and manufacturing?
- **New GVCs:** ‘servitisation’ opportunities
- **Place-based dimension of niche development** (transitions lit: MLP): role of place!
- **Modern forms of IP:** *process* of discovery of tacit knowledge, identify opps, challenges and how to overcome → National & regional.
Industrial policy in Hungary?

• Vulnerability? E.g. FDI attractiveness?
• Position in GVCs?: Upgrade AND new GVCs?
• Smart specialisation: Value *capture* as well as creation? (CJE, 2018); e.g. ‘bottleneck’ assets.
• Financing for SMEs to take up I4.0 technologies
• infrastructure
• Domestic enterprises and clusters
Industrial policy in Hungary?

- ‘Multi-sector’ clusters?
- New tech → reg disparities?
- Bring together technologies, sectors, places?
- Training and retraining?
- Modern forms of IP: *process* of discovery of tacit knowledge, identify opps, challenges and how to overcome → National & regional.
Big Data

Autonomous Driving

Connected Car

New Sales Models

Recalls

NOx

CO2

BREXIT?

2016

2020

Big Data

Autonomous Driving

Connected Car

New Sales Models

Recalls

CO2-Regulations

NOx

China

USA

Europe

Cost Pressure

Shorter Development Cycles

Platforms

Mobility

Light Weight Materials

Electro Mobility

Car Sharing

New Suppliers

New Player

CO2-Regulations

NOx

China

USA

Europe

Cost Pressure

Shorter Development Cycles

Platforms

Mobility

Light Weight Materials

Electro Mobility

Car Sharing

New Suppliers

New Player

CO2-Regulations

NOx

China

USA

Europe
UK - Brexit: some priorities to consider:

• Impact of Brexit on UK industry could be felt via: economic growth, investment delays, shifting cost bases, export disruption (and policy measures).

Need?:
• Prioritise Single Market in negotiating position with the EU or at least Customs Union +;
• Being able to hire skilled workers from EU;
• Exploiting opportunities on reshoring and the technological revolution underway: needs a much stronger industrial policy for auto & manufacturing.
Industrial policy - UK case?

• Eliminate uncertainty over trade position as soon as possible
• Make the most of **opportunities** to export and reshore components supply
• Boost capital allowances rather than general cut to corporation tax?
• ‘Re-boot’ industrial policy and funding:
  More to rebuild supply chain – *reverse previous mistakes*
  Skills and finance – **devolution to regions.**
  Support for exporters
  Attracting tier 1 suppliers? Segments of supply chain.
  Innovation eg ‘phoenix industry’ linked to open innovation
  More holistic approach to e.g. encouraging the shift to EVs
  Energy costs? Proper compensation scheme.

*Need to join up sectoral industrial policy and technology policies with place based approaches at regional level. A Federal approach?*
Cette image est une représentation d'une pipe. La citation en bas de l'image est en français et se traduit par "This is not a pipe."
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Q&A