

# Regional Industrial Policy in times of Big Disruption: Building Dynamic Capabilities in Regions

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## Objectives:

The transformational impact of Industry 4.0 on business is expected to be substantial (Bailey and de Propris, 2020; Bianchi and Labory, 2018). The territories in which firms are embedded will have to transform as well, not only from an economic but also a social and cultural point of view. When regions are considered as complex adaptive systems, as in the Evolutionary Economic Geography (EEG), this means that all interacting elements of the systems will have to adapt. How can this be realised? Can regional policies favour adaptation? The literature has provided many insights on the conditions and possible directions of transformation. The literature on regional path development has outlined the conditions and mechanisms by which new paths are created (Hassink et al., 2019; Mackinnon et al., 2019; Dawley, 2013). Regarding policy, two influential policy concepts have been proposed, namely the Constructing Regional Advantages (CRA) approach (Asheim et al., 2011) and the Smart Specialisation (RIS3) approach (Foray, 2015; McCann, Ortega-Argiles, 2015). Both policy concepts recommend identification and prioritisation of targets for policy intervention. The CRA approach emphasises related variety and bottlenecks that prevent related industries from cross-fertilising, while RIS3 stresses the entrepreneurial discovery process (EDP) whereby the entrepreneurs select the domains for future specialisation, on the basis of a dialogue with regional governments. New activities and capabilities can thus be activated, mobilised and supported in order to spur regional growth.

However, this process also requires specific regional capabilities. In particular, regions might lack a capacity for change and maintain old structures and assets that impede the identified necessary changes. In other words, there might be a missing element that is however essential for transformation to occur, namely the capacity to recombine, reconfigure and reshape assets in order to realise and consolidate new transformational paths.

Bailey et al. (2018, 2020) also provide useful insights on the adaptation of regions using regional industrial strategies. They outline the relevance of the literature on Strategic Management (SM) for the design of policies for regional development centred not only on value creation, but also on value capture. They argue that advocates of place-based

approaches to regional development (both the constructed regional advantages and the smart specialisation approaches) recognise the importance of the commercial potential of regional industrial strategies, but do not delve into the specifics of how and what particular value-capture strategies can be deployed by regional policy makers. They show that the SM literature provides useful insights in this respect.

However, how the capacity for change and adaptation of the regional complex system can be deployed remains unclear. In fact, the SM literature has examined this key aspect, and suggested that dynamic capabilities represent what makes the difference, especially in times of deep transformation in the firms' competitive environment. We are in fact in the middle of deep structural changes, causing big disruption to territories at all levels, particularly the regional one. The width and breadth of technological changes induced by Industry 4.0, namely the fourth industrial revolution is indeed well documented (Santos et al., 2017; Bailey and de Propris, 2020). This industrial revolution is caused by many discoveries and innovations in different scientific and technological fields, such as nanotechnologies, genomics, artificial intelligence, and more. Many new products and processes can be introduced, changing industries, economies and societies. All businesses are affected, whatever the place they are embedded in. Businesses have to adopt new technologies (digitalisation in particular), as well as renew their products, by "servitising" them, or branching into new activities. As a result, regions themselves are impacted, and have at least to provide the skills and resources needed for the adaptation of the regional businesses. They might also embark on new development paths, if they are able to develop a capacity for change.

This paper therefore aims at contributing to the literature by proposing that regions also have to develop dynamic capabilities in order to successfully adapt to big disruption such as Industry 4.0. The paper starts from the literature on dynamic capabilities to explore why, how and what dynamic capabilities might be deployed at regional level. The theoretical insights are then illustrated in a specific case, that of the Emilia Romagna (ER) region in Italy, which regional industrial policy adopted in the last decade in fact comprises an important effort to develop the dynamic capabilities of the region.

### Methodology

Data were collected for this article on the basis of the interviews with regional stakeholders, in the government, regional administration, as well as businesses and their associations, trade unions and education institutions (school and universities). Official documents produced by the stakeholders, particularly the policy documents of the regional government, were also reviewed and analysed.

The paper is structured as follows. The first section reviews the insights of the literature on the adaptation of regions to changing environment, especially in terms new path creation

and value creation / capture. The second section examines the SM literature on dynamic capabilities at business level, and examines its application to the regional level, concluding on the importance of regional dynamic capabilities and outlining two aspects for their practical development. The third section illustrates these findings in the specific case of the ER region. The fourth section concludes, discussing the implications regarding regional industrial strategies in other regions, and lagging ones in particular.

### Results and implications

The paper concludes that regarding the literature on the way regions can adapt to changing environment and embark on new development paths, the different lines of research, either focused on the determinants of adaptation and new paths or the policies that can favour such dynamic processes all stress the importance of regional capabilities and assets that have to be activated and mobilised for value to be created in the region and therefore new growth paths to set up. As stressed by Bailey et al. (2018, 2020), regional industrial strategies should not only address value creation but also value capture.

However, these dynamics cannot unfold without two important considerations. First, regions are complex socio-economic systems made of different interrelated elements that all have to take part in the evolutionary dynamic in order to be successful. Second, adaptation, new path creation or cross-fertilisation through related variety cannot take place if regions do not develop dynamic capabilities.

The paper argues that dynamic capabilities also exist at the regional level, and not just the firm level on which the SM literature focuses. Regional dynamic capabilities are made of the dynamic capabilities of the different elements constituting the regional complex system, namely primarily its businesses, but also the regional administration and other institutions such as education and research institutions, trade unions and NGOs. Overall, the whole is more than the sum of the parts also with respect to dynamic capabilities.

These dynamic capabilities are developed by reconfiguration and recombination of assets in the region, and creation of new assets. For this purpose, restructuring of the regional socio-economic system, whereby all elements re-organise to contribute to the adaptation of the whole system, appears as important, especially in times of big disruption such as that induced by Industry 4.0.

The case of the Emilia Romagna (ER) region in Italy has illustrated how regions may develop dynamic capabilities. For this purpose, two aspects are essential: first, all the elements of the regional system have to deploy such capabilities; second, this deployment has to be realised in a coordinated and coherent way in order to provide benefits. The ER region has indeed defined and implemented a complex industrial policy to adapt to (and

possibly anticipate some of) the transformations induced by Industry 4.0.

This policy has been comprehensive, in the sense of not only focused on innovation and innovative sectors but involving all the regional productive sectors. The literature on regional branching and development paths tends to focus on innovation as a source of evolution, leading to a bias towards technological innovation and high tech as the only source of upgrading. It is true that adaptation and evolution are always driven by innovation, but the innovation does not regard new technology only: a firm may innovate by simply recombining its existing assets and capabilities or redeploying them in new activities without adopting new technologies. The focus on regional innovation system tends to lead to concentrate attention on technology and technological development, while innovation is much broader. Policy for industrial and hence economic development should rather be industrial policy, taking all the industries into account, not only high-tech ones, and not limiting attention on manufacturing but taking industries as all productive activities, both products and services. This implies an involvement of the whole regional socio-economic system in development policy, and not just the technology developers and adopters.

Regions can build dynamic capabilities, which are important but only in times of big disruption such as an industrial revolution, but also when its industries are losing market shares or incurring difficulties making it necessary to renew products or develop new activities. The Smart Specialisation Strategy (RIS3) has aimed at favouring the development of new activities in regions by encouraging them to adopt new technologies to renew their existing activities or branch into new activities. An important aspect of the strategy has been the Entrepreneurial Discovery Process (EDP), which consists in a dialogue between policy makers and businesses, and possibly other regional stakeholders, in order to identify opportunities and focus regional policies on them. In practice, many regions have implemented the EDP to develop new capabilities but without paying attention to dynamic capabilities. Regional networks, the structure of regional organisations such as businesses themselves, education / training organisations and the regional administration have remained the same, while changes in both structure of the regional socio-economic system together with the role, motivation and incentives of its members should often be transformed. Hence, an implication of this paper is that in the future regions defining and implementing smart specialisation strategies should pay more attention to the deployment of dynamic capabilities. For this purpose, the policy model adopted in the ER region might represent a good starting point.

The ER case is specific and might be difficult to replicate in other regions where public administrations are more rigid and not open to change, and entrepreneurs not willing to change their businesses. However, what the analysis of this paper suggests is that a primary aspect to make lagging regions more dynamic and able to change might be to change the structure of the regional networks, as well as the administration of the region, possibly helped by extra-regional collaboration. In other words, developing dynamic capabilities

might be a useful policy focus for lagging regions to embark on new development paths. The conditions and the manner in which this can be done is an issue for future research.

Another line of future research implied by this paper regards the orientation of industrial development towards more sustainable paths, not only in terms of environmental protection but also in terms of reducing social inequalities. In fact, the theory of organisational learning in the SM literature has been criticised for not providing insights on how to make organisations more ecologically responsible and socially equitable (Jorgensen et al., 2019; Pedler and Hsu, 2019). Our paper suggests that the socio-economic system in which the firm is embedded might have an important role, since it can induce all regional stakeholders, including firms, to mobilise towards and contribute to the realisation of regional goals such as social inclusiveness (creating quality jobs for all regional citizens) or reducing emissions and preserving biodiversity (which is a new focus for the ER region in the new programming period, 2021 to 2027). In times of big disruption induced not only by an industrial revolution (Industry 4.0), but also new societal challenges such as the Covid-19 pandemic, these insights might be useful to further explore.

## References

- Bailey D., & de Propris L. (eds.) (2020), *Industry 4.0 and Regional Transformations*, London: Routledge.
- Bailey D., Pitelis C., & Tomlinson P.R., (2020), Strategic management and regional industrial strategy: cross-fertilization to mutual advantage. *Regional Studies*, 54(5), 647-659.
- Bailey D., Pitelis C., & Tomlinson P.R., (2018), A Place-based Developmental Regional Industrial Strategy for Sustainable Capture of Co-created Value. *Cambridge Journal of Economics*, 42(6), 1521-42.
- Bianchi P., & Labory S. (2019), Regional industrial policy for the manufacturing revolution: enabling conditions for complex transformations. *Cambridge Journal of Regions, Economy and Society*, 12(2), 233-49.
- Bianchi P., & Labory S. (2018), *Industrial Policy for the Manufacturing Revolution. Perspectives in Digital Globalisation*. Cheltenham: Edward Elgar.
- Dawley S. (2013), Creating new paths? Offshore wind, policy activism, and peripheral region development. *Economic Geography*, 90(1), 91-112.

Foray, D. (2015) *Smart Specialisation: Opportunities and Challenges for Regional Innovation Policy*. London: Routledge.

Hassink R., Isaksen A., & Trippel M. (2019), Towards a comprehensive understanding of new regional industrial path development. *Regional Studies*, 53(11), 1636-45.

Jørgensen, K.M., Hsu, S.-W. & Hersted, L. (2019), The learning organization: critical analysis and future directions, in Örténblad, A. (Ed.), *The Oxford Handbook of the Learning Organization*, Oxford: Oxford University Press.

Mackinnon D., Dawley S., Pike A., & Cumbers A. (2019), Rethinking Path creation: a geographical political economy approach. *Economic Geography*, 95(2), 113-35.

McCann P., & Ortega-Argilés R. (2015), Smart Specialisation, Regional Growth and Applications to EU Cohesion Policy. *Regional Studies*, 49(8), 1291-1302.

Pedler, M. & Hsu, S.-W. (2019), Regenerating the learning organization: towards an alternative paradigm, *The Learning Organization*, 26(1), 97-112.

Santos C., A. Mehraei, A. C. Barrosa, M. Araújo, & E. Ares (2017), Towards Industry 4.0: an overview of European strategic roadmaps, *Procedia Manufacturing*, 13, 972-79.

Si prega di strutturare l'abstract nelle sezioni che seguono:

- **Obiettivi;**
- **Metodologia;**
- **Risultati;**
- **Implicazioni.**