

# Preface

Information and communication technology (ICT) and the automotive sector are two of the most important industries in the EU and the USA. Therefore, there is broad interest in the sectoral dynamics of these two sectors. ICT is an enabling technology that is used by every sector and the automotive is one of the strong sectors in the Old Economy that heavily relies on ICT for product and process innovations. The ICT sector—while heterogeneous with respect to the subsectors—is leading in terms of innovation performance both in the USA and in the EU. A key trait of the ICT sector is that firms and innovators rely on digital networking and the opportunities to exploit regional (and international) clustering dynamics: While part of the new knowledge is codified and can easily be transferred to firms or innovation partners around the world, there also is a considerable element of tacit knowledge that is only diffused on the basis of face-to-face contacts and the mobility of skilled labor/inventors across firms. Cluster building has been an endogenous growth element in the Silicon Valley and there is no doubt that the regional innovation system—including venture capital financing and specialized universities—and the innovation dynamics of leading ICT firms as well as start-up companies have created a critical minimum of networked knowledge. Several regions in the EU have also tried to create dynamic ICT clusters and this study looks into seven regions of six EU countries to highlight the regional ICT dynamics observed. Moreover, we also look into cluster dynamics in the automotive sector which has undergone enormous changes in the context of the EU eastern enlargement: Many countries in Eastern Europe have attracted production of automotive parts or of motor vehicles which has put pressure on automotive regions in Western Europe. Relocation within the new Europe is taking place in the automotive industry, but this does not mean that there is a full transfer of technology through foreign direct investment. The analysis presented here for selected key countries of EU27 suggests that creating innovation networks in Eastern Europe is a sluggish process and that the international division of knowledge within multinational companies is quite asymmetric across countries. The general idea that the level of technology is the same across OECD countries—a typical assumption within

modeling on the basis of the Heckscher–Ohlin approach—is quite doubtful even if some countries in some sectors probably stand for similar technology levels; the analysis of technological networks shows how strong these networks in crucial sectors of leading western European countries are and how difficult the creation of technology networks even in advanced regions in eastern Europe is. By implication, factor rewards will not converge easily across countries and even if factor rewards were the same in both countries (in a two-country model) the existence of asymmetric foreign direct investment implies that GNP per capita is not converging across countries—an idea that has been explicitly emphasized in *Innovations in Macroeconomics* (a book that is now in the third edition).

The analysis not only contains new analytical findings, but also has several clear implications for rational policymakers. For instance, there is urgent need to monitor the innovation dynamics in EU cluster regions. The European Commission has established a unique cluster observatory and some of the results available from the EU have been reproduced in this study; however, it is not fully clear so far that cluster projects of EU countries have been a consistent element of the innovation policy of the Community and of the Lisbon 2010 Agenda, respectively. Thanks to the presented case studies, one can also understand that there are some key ingredients for success for ICT clusters and automotive clusters, respectively. It is not possible to have a dynamic regional ICT cluster without involving universities and specialized research centers. As regards the automotive industry, there is clear evidence that the regional supplier networks are rather mobile within the EU27. While supplier networks are relatively mobile across countries, knowledge networks that have grown over many years or even decades in western EU countries are not easily replicated in EU accession countries. Even in eastern European EU accession countries with considerable automotive production by automotive companies from EU15 countries, there is no evidence that comprehensive regional knowledge networks or mobility networks can be created relatively quickly in Eastern Europe. Headquarter countries of automotive multinational companies face the advantage that innovation is a relatively centralized sphere of overall value-added and there is no inherent interest of the headquarter to make knowledge generation a much internationalized and flexible element of overall value-added. Certainly, headquarters of MNCs have a strong interest to give subsidiaries abroad access to the latest technologies within the MNC, but such access is only available for fees paid by the subsidiaries abroad and certainly MNCs are reluctant to establish strong innovation activities in subsidiaries abroad (China as a location is a different case, since China apparently has enough politico-economic leverage over western firms to not only transfer technologies to China but also establish some regional R&D activities in this big and fast growing economy—foreign firms would often not benefit in a significant way from China’s public procurement if the firm is not undertaking at least some R&D in certain locations in China).

The results presented in this study are mainly the outcome of the cooperation between researchers of the European Institute for International Economic Relations (EIIW) at the University of Wuppertal and the Hungarian Institute for World Economics in Budapest. We are grateful for the support from the Hans Böckler

Foundation (Düsseldorf) and in particular to Mr. Marc Schietinger who has supported our activities with many suggestions from the Scientific Advisory Board active under his leadership. The findings presented cover only part of the analytical ground for understanding regional adjustment dynamics in the ICT sector and the automotive sector in the EU. More research is to be conducted in the future.

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