

# IKE 40-Year Anniversary

Memories, old ideas and new trajectories

By Bengt-Åke Lundvall, Aalborg University, May 24, 2017



DEPARTMENT OF BUSINESS AND MANAGEMENT  
AALBORG UNIVERSITY

# IKE 40-YEAR ANNIVERSARY

## The first steps



Bent Dalum who passed away 2010 initiated the IKE program 1977 while he was still a bachelor student.

IKE owes its existence to the efforts of many scholars but one person played the most important role and that was Bent Dalum.

Bent Dalum came to Aalborg 1971 as member of the Interim Board for Aalborg University, where he represented the national student union DSF. I met him late 1972 when I came to Aalborg to apply for a job at the affiliate to Copenhagen Business School.

Bent became one of my second year students in 1975 and at that time he signaled that he would move on to study economics *only on the condition that the teachers got their act together and created a research group with a common research theme.*

At that time Björn Johnson, Esben Sloth Andersen and Asger Brændgaard had joined the university. In the fall of 1977 we decided to follow Bent's proposal and get together to work on international competitiveness as common theme and in 1978 we sent off an application to the Danish Social Science Research Council. Two of the four subprojects were financed and that was the first external funding of IKE-activities.

Let me take this opportunity to tell you how important Bent's role was for making IKE a viable and strong research group. Much of his own research was data based and he invested much time in developing one data-base on international trade and another one on the case of mobile communication cluster in North Jutland. He always insisted that the IKE-group should give strong attention to the study program in economics and he functioned as ambassador for IKE both in Denmark and abroad. Those who got to know him are aware, that he combined diplomatic skills and a tough management style with being extremely generous and loyal to his friends and helpful to his students.

Björn, Esben and myself moved with our families into a collective house on Nørre Tranders Vej around the same time as IKE was started and we lived together there for a decade. Bent and

## IKE 40-YEAR ANNIVERSARY

Asger were our close friends. But luckily this extreme form of social proximity was combined with diversity in several different respects. We had quite distinct competences and personalities.

We were quite different in terms of research styles. Bent was focused on getting the details right, Esben is quick to take up radically new ideas, Björn has a basic skepticism but also a stubbornness when it comes to pursue his research ideas, my own contribution was social intelligence and intuition when it comes to select research topics and branding new concepts. Asger, who came with a Ph.D. in political science from North Carolina, added his dry sense of humor and complete disrespect for everything pretentious.

### The original ideas

The group was heterogeneous also in terms of research background. Esben came with a mixed background combining studies in forestry (giving him a uniquely long perspective on development) with critical research on Danish big firms and their role in national science policy. Björn had written a thesis on regional development with focus on big cities. Asger's thesis had been on working conditions and health for workers. I had worked on Marxist economics and got fascinated by understanding what determines the rate of productivity growth.

In 1977 Aalborg-economists organized the annual Danish Meeting for Economics. I joined Poul Rind Christensen, Sten Sverdrup Jensen and Fleming Ibsen in presenting a paper where we criticized the use of the concept 'international competitiveness' as rooted in low wages. In that paper we reached conclusions that were very much in line with what later became known as 'the Kaldor paradox' (Kaldor 1978). Our message, that competitiveness is rooted in long-term developments in organization, institutions and technology rather than in low costs, was not at all popular among mainstream Danish economists.

But it gave us the impetus to define the research program of IKE. Björn, Esben, Bent, Asger and myself agreed that the group should be operating as the IKE-group referring to International KonkurrenceEvne. The main research question was: What processes determine the long-term development and performance

# IKE 40-YEAR ANNIVERSARY

## The original ideas

of national economies?

It is fair to say that the IKE-group from the very beginning organized its research agenda according to the fundamental principles on which Aalborg University was created. It reflected the key role of students in shaping the research agenda and its research agenda was interdisciplinary and problem-based.

But even before the IKE-group was established we had to define the profile and content of the Aalborg University study program in economics. Here we developed a specific Aalborg profile where the focus was on what we called 'structural economics' with elements of Keynes and Marx. Important components were structural change and economic growth, input-output analysis all in the context of an open economy. Authors such as Kuznets, Salter, Leontiev, Pasinetti and Thirlwall were important. We gave less attention to neoclassical micro- and macroeconomics.

There has been a complex co-evolution between the research program and the education program. The student program and its transformation into the MIKE-program has played very important roles for the viability of the IKE-group. In this context I will only repeat Bent Dalum's message that it is absolutely crucial that the research program is built upon a strong education program. Recent development at Circle (Lund University) illustrates the vulnerability of research programs that remain decoupled from education.

The MIKE program has become successful in attracting excellent students from other parts of Europe and from outside Europe with a bachelor in business economics. Currently the main challenge for the MIKE-program is to increase its intake of students from Danish universities and students with a background in general economics.

## IKE 40-YEAR ANNIVERSARY

### Milestones in the 1980s

In the beginning of the 1980s there were two major milestones.

One was the MIKE-project where Asger Brændgaard and myself got a grant from the Danish Technology Council to study the impact of microelectronics on the Danish economy. It was an important project in several respects. We travelled around Europe to visit other research units working on similar questions and we used the structural economics platform to develop our own specific approach to study the link between technical change and economic outcomes. It was a very exciting project and the constellation of the team with Birgitte Gregersen, Ivan Aaen and Niels Maarbjerg Olesen was perfect. Ivan was important because he gave us the necessary insight in the technological mysteries of what we at that time called 'microelectronics'.



The MIKE-project team 1983. From left: Ivan Aaen, Asger Brændgaard, Birgitte Gregersen, Niels Maarbjerg Olesen and Bengt-Åke Lundvall.

## IKE 40-YEAR ANNIVERSARY



Christopher Freeman (1921-2010) played a key role in stimulating the IKE-research program in the beginning of the 1980s and he remained a strong supporter of the program.

The project gave us an important basis for theorizing about the innovation process. The link between respectively national performance, structural interdependence and user-producer interaction gave a pointer toward national innovation systems as rooted in national production systems. And it reinforced the idea that it is useful to link analysis at the level of the single organization to the sector and the macro level.

The other milestone was establishing the Freeman/SPRU connection. Finn Thomassen, who worked on a thesis in business economics, visited SPRU in 1979 and he came back to Aalborg with the idea that we should invite Christopher Freeman to give guest lectures. This resulted in Chris Freeman joining us as guest professor for a month per year 1981-83. Until Freeman came, our understanding of science, technology and innovation had been somewhat superficial. As many of you know Freeman was a fantastic lecturer. We learnt a lot and the fact that Chris took our work seriously and referred to IKE in the next edition of his book as an important and promising team gave us self-confidence.

It should be emphasized that the ideas that laid the basis for the MIKE-project were strongly influenced by others in the IKE-group. Esben introduced important ideas from French structuralist economics, Gert Villumsen studied the role of user-producer interaction already in his master thesis etc. The IKE-group has always been generous when it comes to sharing ideas and that has been an important advantage for the group as a whole.

Of course, there were other major developments within the group that should be mentioned. In parallel with the MIKE project in the beginning of the 1980s Esben Sloth Andersen, Bent Dalum and Gert Villumsen worked on trade specialization and economic growth in close collaboration with Freeman. They linked international competitiveness to international specialization and hereby they prepared the analysis of national innovation systems as open systems.

## IKE 40-YEAR ANNIVERSARY

In the last years of the 1980s Björn and myself were asked to organize a research project at explaining the extreme Danish productivity paradox from 1986 and onwards. We did so under the heading the PIKE-project, and Allan Næs Gjerding, Lars Kallehauge and Poul Thøis Madsen were engaged as research assistants. One of the most important insights from that project was that promoting technology without developing human capabilities and new forms of organization results in inefficiency. Later on this insight inspired the DISKO-project.

It should also have inspired the so-called productivity commission (2013-14) – but it was not even mentioned – this reflects the size and density of ideological blinkers among standard economists. (I see this as unfinished business and I have talked with one of the youngest IKE-member, Jesper Eriksen, about revisiting the Productivity Problems of Denmark. They have not gone away!)

### Milestones in the 1990s

At the end of the 1980s several IKE members contributed to an anthology on innovation and growth in small countries with Freeman and myself as editors, and immediately after that we started to work on the 1992 book on national innovation systems. The 1992 book was the outcome of a truly collective effort and almost everybody in the IKE-group was involved. Birgitte Gregersen, Jesper Lindgaard Christensen, Allan Næs Gjerding, Lars Gelsing, Jan Fagerberg, Björn Johnson, Asger Brændgaard, Esben Sloth Andersen and Bent Dalum contributed as authors and Ina Drejer and Keld Laursen were engaged as student assistants. Outside contributions came from Jan Fagerberg, Christopher Freeman and Francois Chesnais.

All the contributions to the 1992-book were of high quality. One reason for that and for the success of the book was that we did not rush things. We used almost three years to finalize the book. At some point people started to refer to it not as the IKE-book but as the IKKE-Bog which in Danish means the NON-Book.

## IKE 40-YEAR ANNIVERSARY



The IKE-group around 1992.

The book has become widely cited and it might actually be one of the most cited scientific works by Danish scholars! I think that we are now around 15.000 citations and the only work that I have found with a higher number of citations in social sciences authored by a Danish scholar is a book by Gösta Esping Andersen – and he actually spent most of his career outside Denmark.

The next major collective effort starting around 1995 was the DISKO-project where we analyzed the Danish Innovation System in comparative perspective. The book on innovation, growth on social cohesion took the form of a monograph with myself as author but it was based upon research by 15 IKE-scholars who all contributed to the project. Four of them finalized their Ph.D. (Ina Drejer, Søren Nymark, Frank Skov Christensen and Kenneth Jørgensen) in connection with the project. It was a successful project in several respects. According to Ebbe Graversen (2017) the report from 1999 was the background for establishing a

## IKE 40-YEAR ANNIVERSARY



The IKE group during the DISKO-project from 1997.

systemic innovation policy in Denmark.

But it should also be mentioned that the 2002 publication in English (Lundvall 2002) has not attracted the same kind of attention as Lundvall (1992). It illustrates that national focus, even if the aim is to produce new theoretical insights, will not attract the same attention as work that covers more general and conceptual issues.

The 1992 and the 2002 book have in common the focus on innovation as an interactive process as well as the intention to link micro-dynamics to developments at meso- and macro-level. One important difference is that the DISKO-project gave more attention to the role of the firm, the work organization and labor market dynamics. The participation of Reinhard Lund, Allan Næs Gjerding and Peter Nielsen along with some of the Ph.D.-students made it possible to establish new insights in the co-evolution of technological and organizational change. More recent work with Edward

## IKE 40-YEAR ANNIVERSARY

Lorenz, Peter Nielsen and Jacob has gone further in this direction using data from the European Institute for working and living conditions and comparing work organization, organizational learning and innovation across Europe.

During the 1990s Bent Dalum pursued the analysis of the mobile communication cluster together with Gert and other colleagues. Esben began his systematic work on Schumpeter and evolutionary economics in the end of the 1980s and as result he has now become an international authority in this field. He also contributed by using this theoretical background to qualify key concepts used by the IKE-group. Björn developed his original analysis of the role of institutions in innovation systems.

Other important milestones for the IKE-group were the formation of DRUID in 1995 and the participation in European collaborations such as Etics and Dime. Bent Dalum and Esben were at the frontline in making these networks function and in setting up European-wide Ph.D. training as well as the DRUID-Academy.

### Lessons from the first decades of the IKE-history

In the same period IKE scholars (led by Björn) together with colleagues from department of Development and Planning got involved in the DANIDA-supported SUDESCA project on sustainable development strategies for Central America. The project made an important contribution to building research capacity in innovation and sustainable development in Central America and AAU. SUDESCA existed for nearly 15 years (1995-2010), and many of the Latin American scholars are now active members in Globelics and Lalics.

At the beginning of the new millennium the IKE-group had gained wide international recognition for its research contributions. That was quite an achievement for a research group located at a new provincial university in Denmark and it reflected that scholars with different research styles and different competences established a very close and intensive collaboration built upon trust and openness. The dialectics between proximity and diversity was both an

## IKE 40-YEAR ANNIVERSARY



Dorte Baymler who has been secretary for the IKE-group and its projects since 1982.

important theme in the research program and important for the performance of the research group.

But research does not take place in an organizational vacuum. It is quite sensitive to the wider organizational framing and to administrative support. Here the IKE-group has been lucky in many respects. Aalborg University has through the years offered good conditions for academic entrepreneurship. The university administration has not been overly bureaucratic and often the leaders have been supportive to new initiatives.

Another important factor has been that the research group has had great secretaries who have been good at solving administrative issues that otherwise might hinder research. If I should mention one single individual, besides Bent Dalum and Christopher Freeman, who has been crucial for the relative success of the IKE-group, I would point to IKE's (almost) 'permanent secretary', Dorte Baymler.

Dorte Baymler joined the IKE-group around 1982 and has, with a short break, been a central actor since then. In the turbulence characterizing a project based organization such as IKE there is a need for some key person who through her personality and professionalism can bring some stability and order as well as some human warmth to keep people together. Jeanette Hvarregaard joined the group in the late 1990s and she has fulfilled a similar role for DRUID.

### Comparing the IKE-program with the programs at SPRU and MERIT

The IKE-group's research program has much in common with similar programs at SPRU and Merit and I think it is appropriate to 'learn-by-comparing' with these two European strongholds in the field innovation studies. But the IKE-program differs from those in some important respects:

1. Stronger focus on regional development.
2. More consequent integration between firm level, meso- and macro analysis.

## IKE 40-YEAR ANNIVERSARY

### Comparing the IKE-program with the programs at SPRU and MERIT

3. A strong link between network formation on the one hand and human interaction as shaped by organizational learning, education and labor market experiences.

This unique IKE-profile is reflected also in the work of the second generation of IKE-scholars (Jesper Lindgaard Christensen, Christian R. Østergaard, Ina Drejer, Bram Timmermans and Jacob Holm Nielsen). I think that it is important to be aware of the fact that the IKE-group more than other programs doing research on innovation, has a tradition to look for the role of 'people' in the innovation process.

Comparing the IKE-group with SPRU and Merit may also serve to remind us of weaknesses in the IKE research program:

1. As compared to SPRU we have had less focus upon specific technologies. (The specific focus on energy technologies and wind mills shared by Rasmus Lema, Poul Houman Andersen, Birgitte Gregersen and others point in the right direction).
2. As compared to Merit we have had less in-house competence in the use of quantitative methods. (The attachment of Edward Lorenz and Jan Fagerberg may be seen as compensating for this. And the work of Jacob Rubæk Holm, Christian R. Østergaard, Roman Jurowetski and Daniel Hain may be seen as creating more competence here).

I would like to draw some lessons from the first decades of IKE-research. I see the following ingredients as being the most important for the relative success of IKE-research:

1. Research with a mission.
2. Diversity in terms of research style and competences.
3. Social proximity and generous knowledge sharing among scholars.
4. Regular efforts to produce IKE-books and engage in major projects.

## IKE 40-YEAR ANNIVERSARY

5. Building know what in terms of data bases (trade, ICT cluster, DISKO-surveys, IDA).
6. Building know who through networking (DRUID, Etics, Globelics).
7. Building know why through openness to new ideas (it might prove difficult to substitute for Esben as IKE's idea generator).

If I should point to weaknesses the list gets a little shorter:

1. There has been too little focus upon 'know how' in terms of developing scientific methods and tools.
2. There has been too little focus upon innovation in specific technological fields. Too much loose talk about innovation in general (self-criticism!)

### Globelics and some interesting options for the IKE-group

I withdrew from the role as coordinator of DRUID around 2000 and from the function as coordinator of IKE around 6 years ago and since then I have played a marginal role in IKE-affairs and I do not expect to be very active in the future. Therefore it would be inappropriate for me to signal in what direction the IKE-group should develop its research in the future. This is why I decided to circulate a mini-survey to all active IKE-scholars. But before reporting what members of the group indicate as promising research fields I would like to say a few words about Globelics.

Around 2000 Birgitte Gregersen, Björn Johnson and myself launched the global network Globelics together with colleagues from different parts of the world. In the period 2010-16 we established the Globelics Secretariat at the Department, where we were joined by Rasmus Lema, Margrethe Holm Andersen, Gro Villumsen, Nina Kotschenreuter, Emil Størner, Roman Jurowetzki, and Shagufta Haneef. Globelics is the most difficult and ambitious of all the projects that the IKE-group launched. It is a global version of DRUID and it allows young scholars from Africa, Asia and Latin America to develop their research on innovation and economic development.

## IKE 40-YEAR ANNIVERSARY

The Globelics Secretariat was moved to Rio de Janeiro at the end of 2016 but we should consider how we can follow up on this experience. Through Globelics we have built a strong position in the global network of innovation scholars, and Margrethe Holm Andersen will coordinate our important role in connection with Ph.D.-training in collaboration with the regional chapter of Globelics, AfricaLics. Besides that, we have built good-will at SIDA, in Sweden as well as in other international organizations. Ned Lorenz has accepted to take on a role in a revitalization of the European chapter of Globelics – Eurolics - in connection with the upcoming conference in Athens.

I am well aware that the majority of IKE-scholars have a focus on European, Nordic and Regional issues, and I assume that this will be the case also in the future. But it would be passing important opportunities not to make use of the global intellectual and social capital that has been built through Globelics.

Concrete outcomes could be hosting a global Giga-project on globalization, openness of national innovation systems and economic development. It could be a Handbook about innovation and inclusive development or it could be a SIDA financed project on universities, development, innovation and gender (UNI-DIG). Getting Eurolics moving ahead with Ned as dynamo offers a much wider set of issues about inclusive and sustainable development in Europe. For instance, there could be room for linking innovation and development to how the UN SDG-goals could be realized in Europe. As we shall see in the next section there is strong support for linking innovation to inclusive and sustainability among the current members of the IKE-group.

What do IKE-scholars propose in terms of a common future research agenda?

As mentioned, I have asked all active IKE-scholars to give their individual ideas on what IKE-research is about and where it should go. I will end with an impressionistic interpretation of the 20 answers.

I asked about what could be a title of a common IKE-publi-

## IKE 40-YEAR ANNIVERSARY

What do IKE-scholars propose in terms of a common future research agenda?

cation. IKE-scholar came up with the following proposals:

1. Textbook on Innovation Knowledge and Economic Dynamics.
2. Beskrivende innovationsøkonomi el. Danish Innovation.
3. Disko 2.
4. Innovation, inclusion and sustainability: The case of Denmark.
5. Systems of innovation for a sustainable future.
6. Capitalism in a sustainable and inclusive future.
7. The limits of Green growth.
8. Inclusive innovation.
9. Global connectivity, innovation and development.
10. Universities and inclusive development.
11. Submarket developments and ecosystems of innovation in the 21st century.
12. Role of LICs in achieving SDGs related to inclusion and sustainability.

I also asked directly about in what direction my colleagues wanted to move the research agenda:

1. More focus on how specific new technologies change the pattern of knowledge production and processes of innovation.
2. More of application of research perspectives on policy fields and grand challenges.
3. More on social innovation and sustainability.
4. More focus on inclusive and sustainable development.
5. Even more interdisciplinary.
6. More focus on the firm level in innovation studies.
7. To strengthen the theoretical foundation of our understanding of innovation and evolution.
8. Better understand the multi-level interplay between business, technology and social development.
9. Promote learning and capacity building in relation to UN Sustainability goals.
10. More focus on innovation and inclusive development.
11. More clear definition of users of IKE-research.

What do IKE-scholars propose in terms of a common future research agenda?

12. Retain and strengthen the international standing of the IKE-group.

In both lists we find many references to the need to link research on innovation to the grand challenges of growing inequality and global warming. There are also several references to respectively the role of business firms in the innovation process and to public policy as user of research. Finally, there is a call for more interdisciplinarity as well as a call for strengthening the theoretical foundation of basic concepts.

The most striking in the list of proposals for common research projects is the common concern on social and ecological sustainability. A brave interpretation of the list as a whole is that there is a basis for a common IKE-project that gives attention to how innovation systems can be given new directions toward sustainable and inclusive growth in a context of new technologies, new business strategies and new forms of global connectivity. But perhaps that would be to put too many different things into one basket?? There is some tension between focus on Denmark (DISKO 2) and a more global focus. So there is probably room for more than one major book project.

New themes that might be useful because they to some degree challenge our own thinking about innovation are implicit in some of the proposals:

1. How do new technologies and new social media affect knowledge production, learning and the innovation process itself?
2. To what degree can the IKE-perspective on innovation be applied to knowledge intensive service sectors including those that mix where there is strong involvement of private and public actors as well as of NGOs (Health, Education, Entertainment, Finance, Energy, Environment, Transport)?

## IKE 40-YEAR ANNIVERSARY

### Research that goes beyond the production of BFI-points

Most of this presentation has been on positive milestones. IKE has also had its crises. One of the most dramatic came in 1995 when the economics program and the related research were evaluated by a panel of traditional economists. What has been presented as strength in this presentation – the close connection between general economics and business economics - was seen as a weakness in this assessment. The panel was also negative to the publication pattern with books rather than journal articles and there was a real risk that they would close down the education program in economics. As response, the IKE-group and the newly formed DRUID-network gave major emphasis to stimulate and to support publishing in scientific journals. We also began to promote Ph.D.-theses constituted by already published articles.

Today it has become widely accepted at all levels of the university that publishing in the right journals is crucial for the ranking of the university and for the reputation of research groups and for individual careers. But the trajectory toward 'publish or perish' principles that we had to follow since 1995 has now gone too far. If we lose track of our inner motivation to do research – be it a mission or just genuine curiosity – it will be reflected in research outcomes that are boring and little creative.

When I look at the current composition of the IKE-group I see a great potential when it comes to produce high quality research on important topics. The signals that we get from the answers to the mini-questionnaire demonstrate that the group is composed of scholars who have ambitions and missions that go far beyond producing BFI-points.

I expect the next generation of IKE-scholars to use and develop the shared idea that knowledge creation, learning and innovation has to reflect the involvement of 'people' and address global challenges such as inclusion and ecological sustainability. The challenge is to transform these ideas into research activities that both give international recognition and make a difference for people's lives.

## References

Freeman, C. (ed) (1981), *Technological Innovation and National Economic Performance*, Aalborg, Aalborg University Press.

Freeman, C. and Lundvall, B.-Å. (eds.) (1988), *Small Countries Facing the Technological Revolution*, London: Pinter Publishers.

Johnson, B. (1992), 'Institutional learning', in Lundvall, B.-Å. (ed.), *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning*, London, Pinter Publishers.

Lundvall, B.-Å. (ed.) (1992), *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning*, London, Pinter Publishers.

Lundvall, B.-Å. (2002), *Innovation, Growth and Social Cohesion: The Danish Model*, Cheltenham, Edward Elgar.

In the questionnaire IKE-members were asked them to refer to what they thought was their most important written contribution so far – the list below gives an indication of the diversity of IKE-research :

Andersen, E.S. (1994), *Evolutionary Economics: Post-Schumpeterian Contributions*, Pinter, London.

Andersen, P.H. and Medlin, J. (2016), 'Transient commitments and dynamic business networking' *Industrial Marketing Management*, vol 58, nr. 10, s. 11-19.

Christensen, J.L. (2013) "The ability of current statistical classifications to separate services and manufacturing". *Structural Change and Economic Dynamics* 26, pp. 47- 60.

Drejer, I. (2004). *Identifying innovation in surveys of services: a schumperian perspective*. *Research Policy*, 33(3), 551–562.

## References

- Gjerding, A.N. (1996), *Technical Innovation and Organisational Change. The Innovation Design Dilemma Revisited*, Aalborg: Aalborg University Press.
- Gregersen B, (1992), "The public sector as a pacer in national systems of innovation", in *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning* Ed. B Lundvall (Frances Pinter, London) pp 124- 146.
- Andersen, M. H. and Hanlin, R. (2016), *Strengthening Health systems: the role of innovation*, Globelics Thematic Review 2016, Aalborg University Press
- Holm, J. R., Andersen, E. S., and Metcalfe, J. S. (2016). *Confounded, augmented and constrained replicator dynamics*. *Journal of Evolutionary Economics*, 26(4): 803–822.
- Jurowetzki, R., & Hain, D. S. (2014). *Mapping the (R-)Evolution of Technological Fields: A Semantic Network Approach*. *Lecture Notes in Computer Science*, 8851, 359-383.
- Lema, R & Lema, A (2016), *Technology transfer? The rise of China and India in green technology sectors. in T Altenburg (ed.), Sustainability-oriented Innovation Systems in China and India*. Routledge, Oxon, United Kingdom , pp. 23-44.
- Lundvall, B.-Å. and Johnson, B. (1994) *The learning economy*. *Journal of Industry Studies* 1, 23-42.
- Rolfstam, M. (2013), *Public Procurement and Innovation: The role of institutions*. Edward Elgar Publishing, Incorporated, Cheltenham, UK, Northampton, MA, USA.
- Taran, Y, Boer, H & Lindgren, P. ( 2015), 'A business model innovation typology' *Decision Sciences*, vol 46, no. 2, pp. 301-331.
- Villumsen, G., Laursen, K., & Dalum, B. (1998). *Structural Change in OECD Export Specialisation Patterns: De-specialisation and "Stickiness"*. *International Review of Applied*

# IKE 40-YEAR ANNIVERSARY

## References

Economics, 12(3), 447-467.

Østergaard, CR, Timmermans, B & Kristinsson, K, (2011), *'Does a different view create something new? The effect of employee diversity on innovation'* *Research Policy*, vol 40, no. 3, pp. 500-509.

Østergaard, CR & Park, E.K. (2016), *'What Makes Clusters Decline?: A Study on Disruption and Evolution of a High-Tech Cluster in Denmark'* in D Kogler (ed.), *Evolutionary Economic Geography: Theoretical and Empirical Progress*. Routledge, London and New York, pp. 130-145. *Regions and Cities Series*, no. 92

Østergaard, A. (2017), *Human resources in the entrepreneurship eco-system*, Ph.D.-dissertation, Aalborg University.

# IKE 40-Year Anniversary

Memories, old ideas and new trajectories