

Globala värdekedjor, digitalisering och jobbens och tillväxtens geografi

Martin Andersson

Blekinge Tekniska Högskola (BTH), Karlskrona

CIRCLE, Lunds Universitet

Entreprenörskapsforum, Stockholm

IFN, Stockholm

"If you want to know what is going on now in the information and communications technologies, and how they will impact the industry and our society in the not so distant future, this book is essential reading."

— RUPERT MURDOCH

Chairman and Chief Executive, The News Corporation

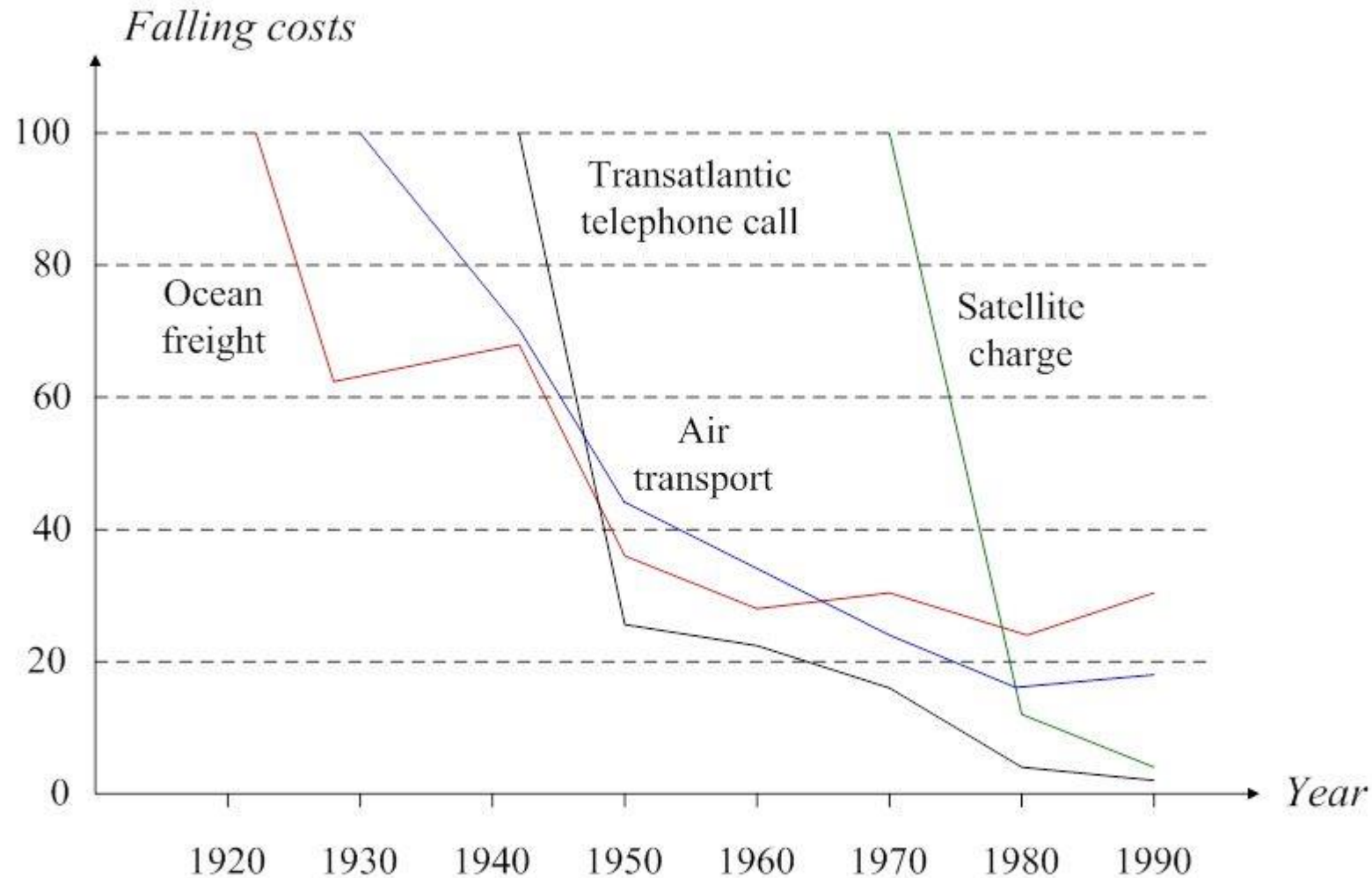
THE DEATH OF DISTANCE

How the Communications Revolution
Will Change Our Lives

FRANCES
CAIRNCROSS
OF THE ECONOMIST

HARVARD BUSINESS SCHOOL PRESS

The Death of Distance *)



Source: World Development Report 1995, World Bank

*) F. Cairncross. **The Death of Distance.** – Harvard Business School Publishing, 1997.

Table 2. Growth in employment since 1990

	<u>2008-2015</u>	<u>2001-2015</u>	<u>1991-2015</u>
Peripheral regions (local center $\leq 10\ 000$)	-6%	-5%	-19%
Small regions (local centers $10\ 000 \leq 50\ 000$)	-3%	-2%	-13%
Medium-sized (local centers $50\ 000 \leq 100\ 000$)	0%	3%	-6%
Large regions (local centers $100\ 000 \leq 250\ 000$)	3%	8%	0%
Metropolitan regions (local centers $250\ 000 -$)	10%	18%	22%

Three biggest cities are the main "winners" in domestic interregional migration

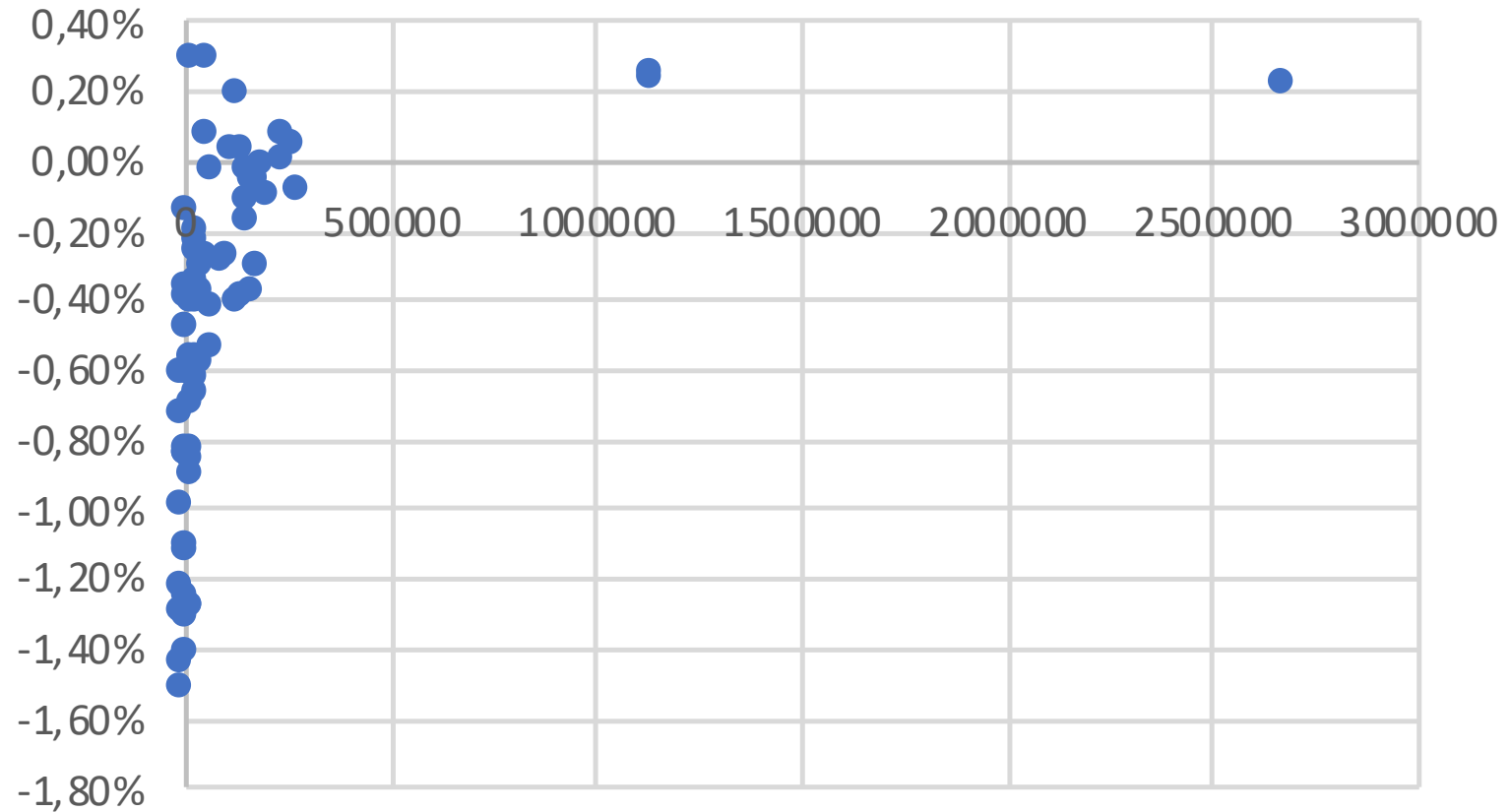
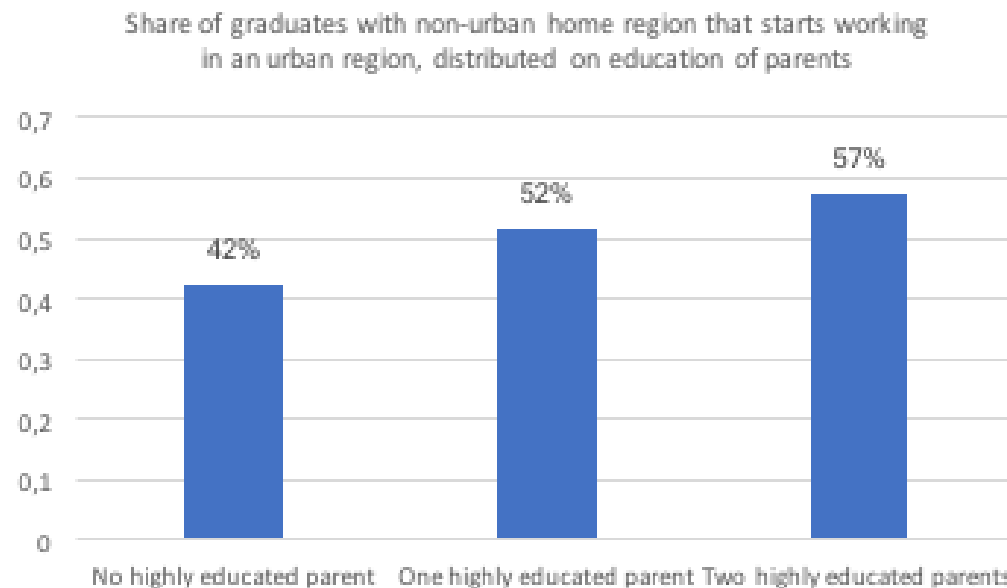
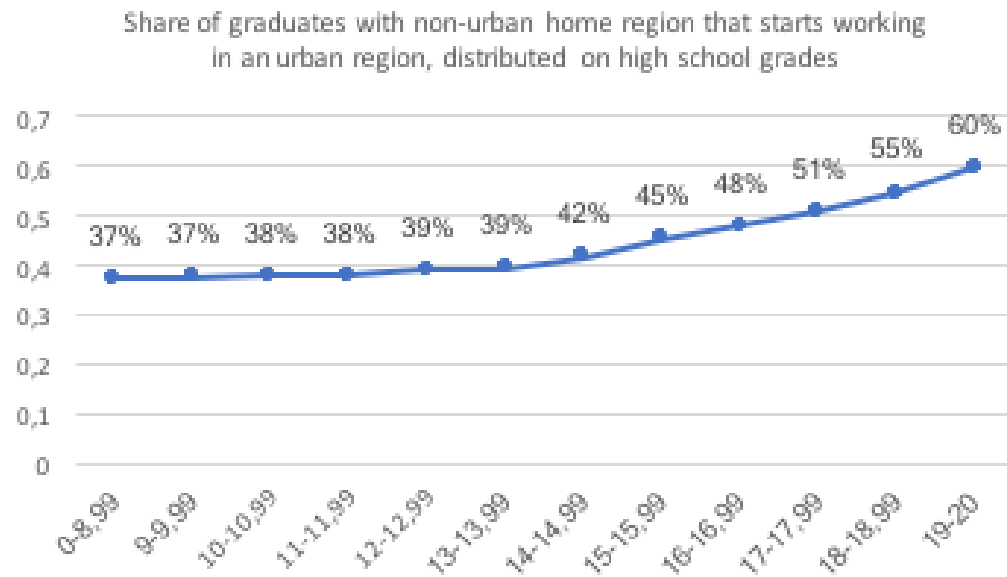


Figure 38. Net domestic interregional migration flows 1997-2017 as a fraction of population.



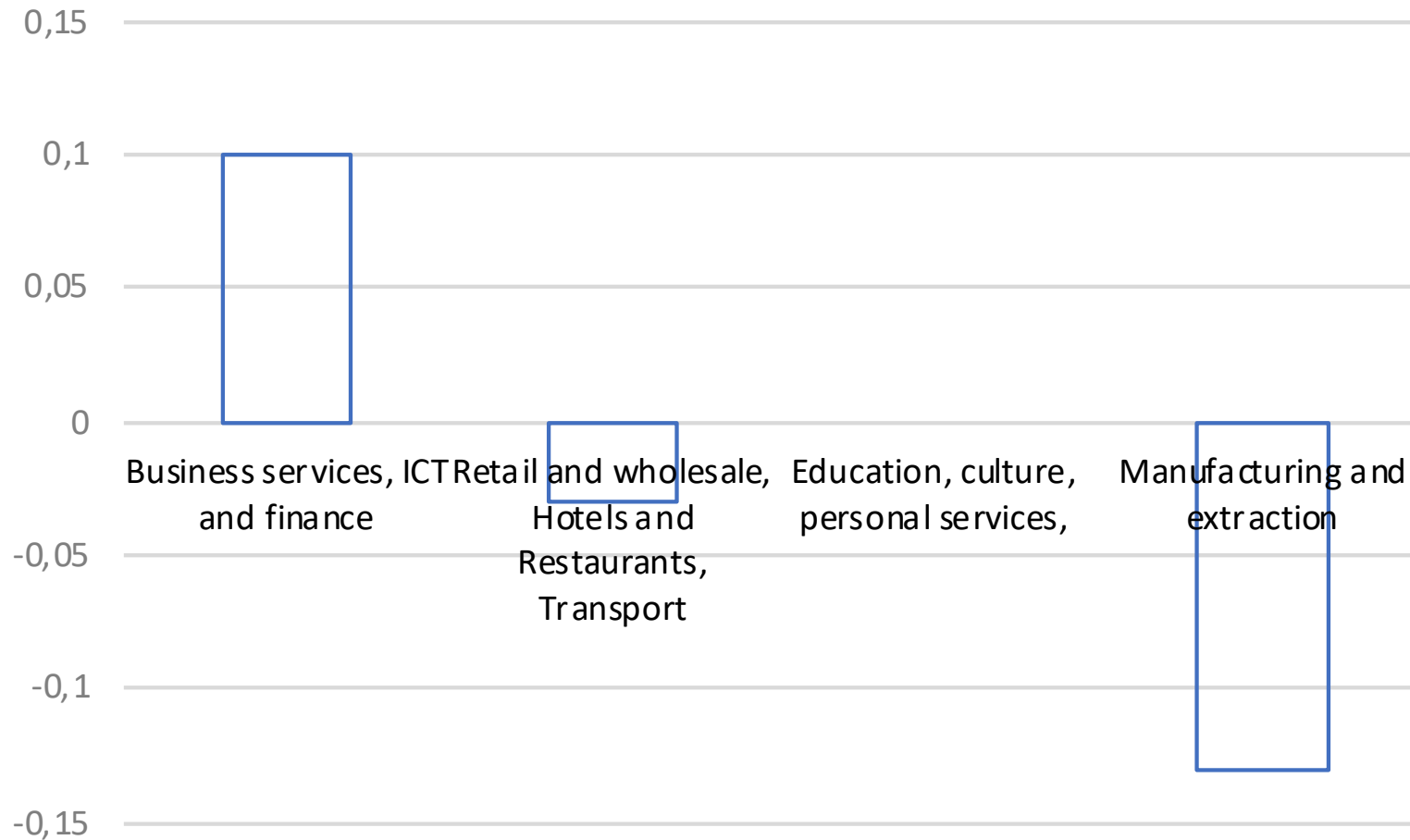
Selektiv rumslig
”sortering”

Ahlin, Andersson and Thulin (2018), *JRS*

FIGURE 1: Net flow of university graduates 1995–2009 in Sweden to urban regions distributed on average high school grades (upper panel) and parents’ education (lower panel), percent.

”Modernitetsgap”

mellan stad och land i termer av *inriktningen* på nyföretagandet



Size elasticity of start-ups per capita in Sweden

Tre "megatrender"

- Urbanisering



- Digitalisering



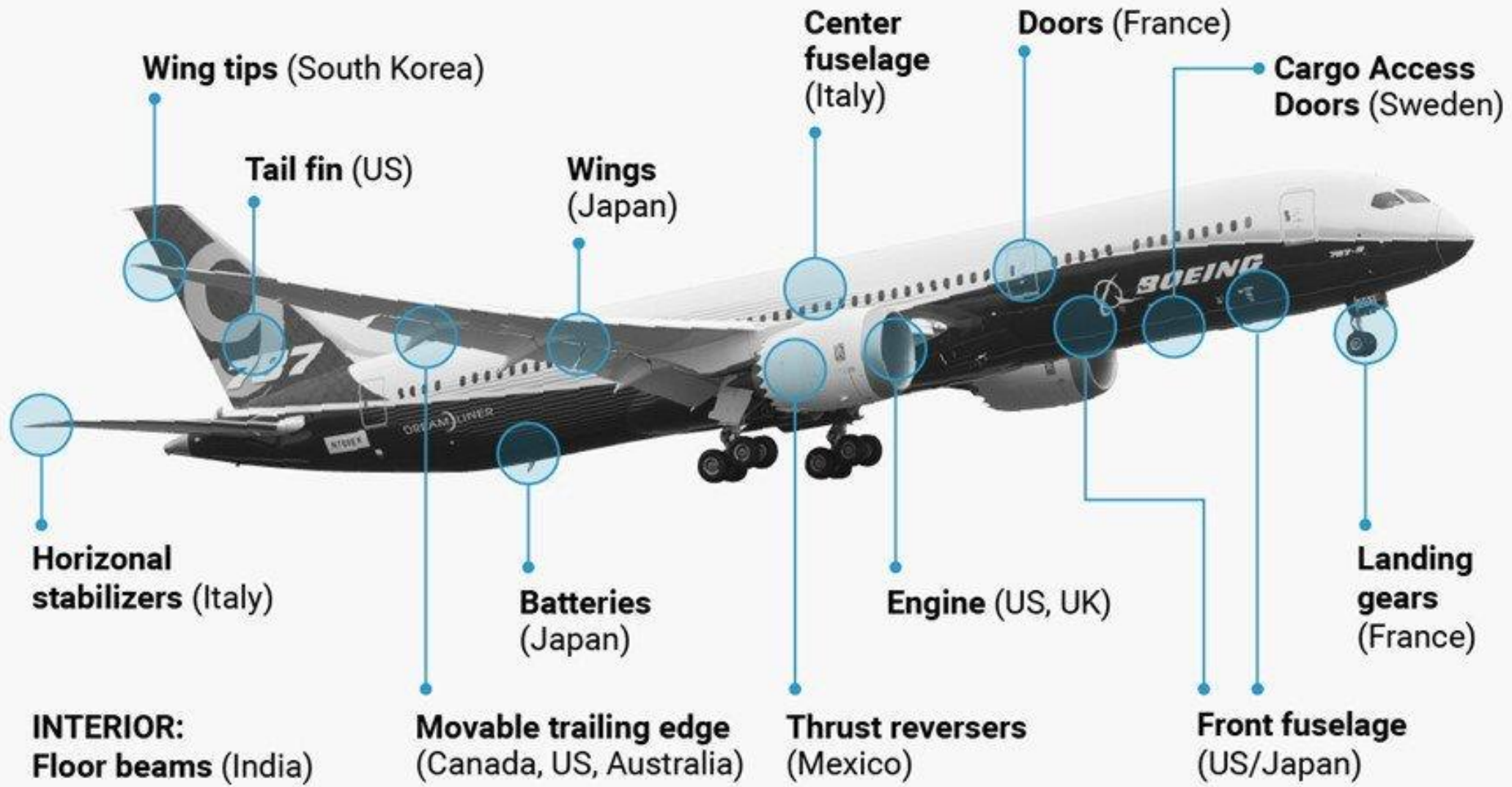
- Globalisering

*De påverkar varandra
(ömsesidiga beroenden)*

Vad är Globala Värdekedjor (GVK)?

- Värdekedja:
 - avser alla steg i en produktionskedja.
 - produktion, sammansättning, support- och tilläggstjänster och tillika aktiviteter före produktion, t.ex. FoU och design, samt efter produktion som t.ex. service och distribution (Amador och Cabral 2016).
- geografisk fragmentering: *global värdekedja*
- “Today, most goods and a growing share of services are *made in the world*” (OECD 2013, s.8).

THE GLOBAL ORIGINS OF THE BOEING DREAMLINER



APPLE AROUND THE WORLD

Location and number of Apple suppliers per country



Suppliers to the 2016 Toyota Tacoma



Framväxt av GVK

- Två frikopplingar (Baldwin 2016):
 1. "steam made it possible, scale economies made it profitable".
 2. "ICT made it possible, wage differences made it profitable".
- Offshoring och outsourcing

Vad betyder globala värdekedjor för konkurrenskraft?

- *”om Volvo exporterar fler bilar från Sverige, men varje bil innehåller färre delar som är utvecklade och tillverkade i Sverige, betyder det att svensk konkurrenskraft har förbättrats eller försämrats?”*
(Tillväxtanalys 2014, s.4)

- Två implikationer för hur vi kan mäta och förstå konkurrenskraft:

1. istället för att studera värdet på länders bruttoexport bör vi studera vilket värde länder tillför till (förädlingsvärde)
1. istället för att basera diskussioner om konkurrenskraft i termer av branscher bör vi istället fokusera på förädlingsvärden och konkurrenskraft i olika steg/aktiviteter i värdekedjor.

- Centre for Economic Policy Research (CEPR)

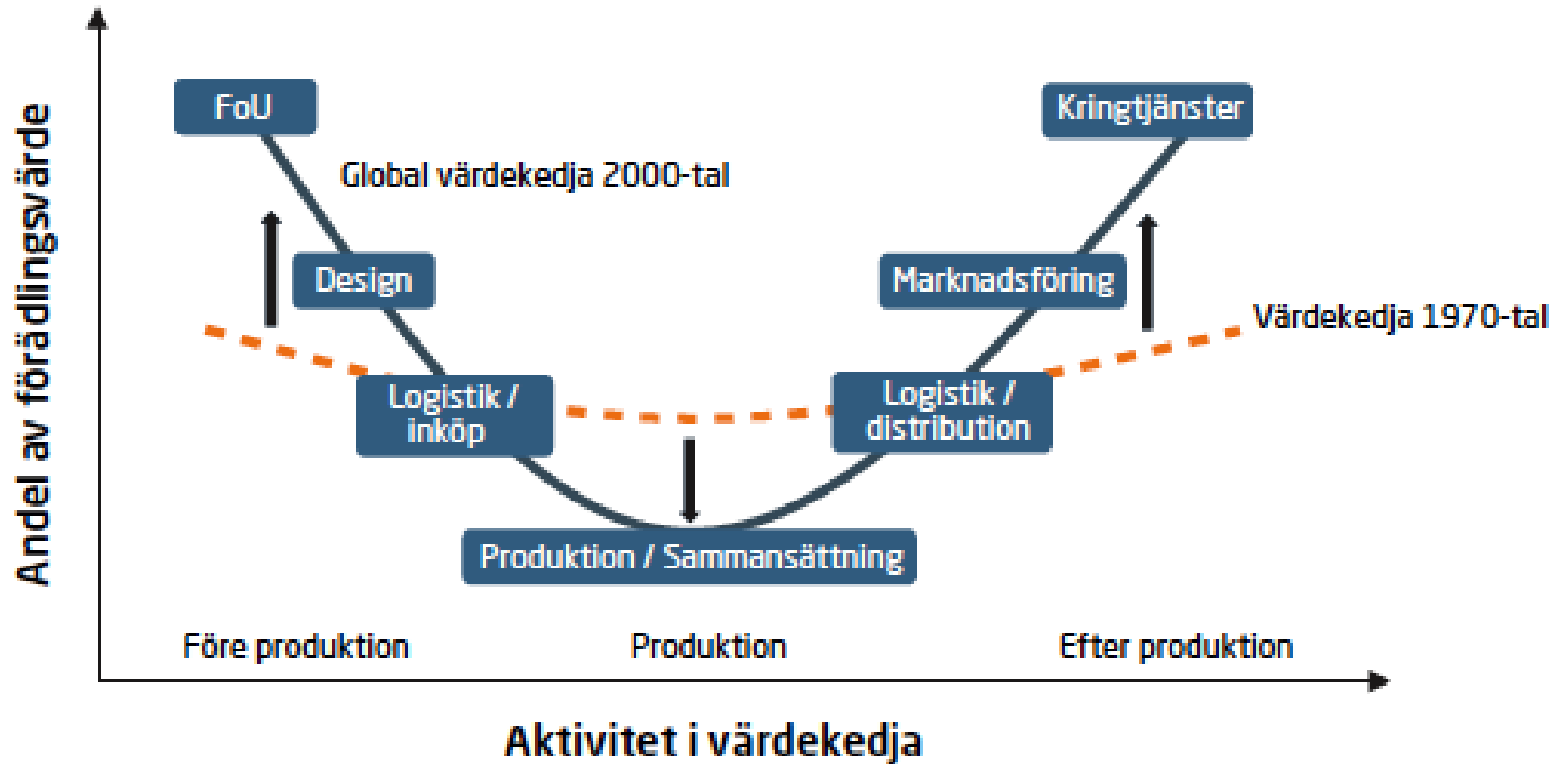
- Storbritannien i globala värdekedjor:

”how can the UK focus on steps in global value chains that really add value?”

- Timmer (2016):

”it is no longer about what you sell, but what you do”.

Figur 1. Förädlingsvärden i värdekedjans olika steg på 1970-talet jämfört med 2000-talet - "The Smile Curve".



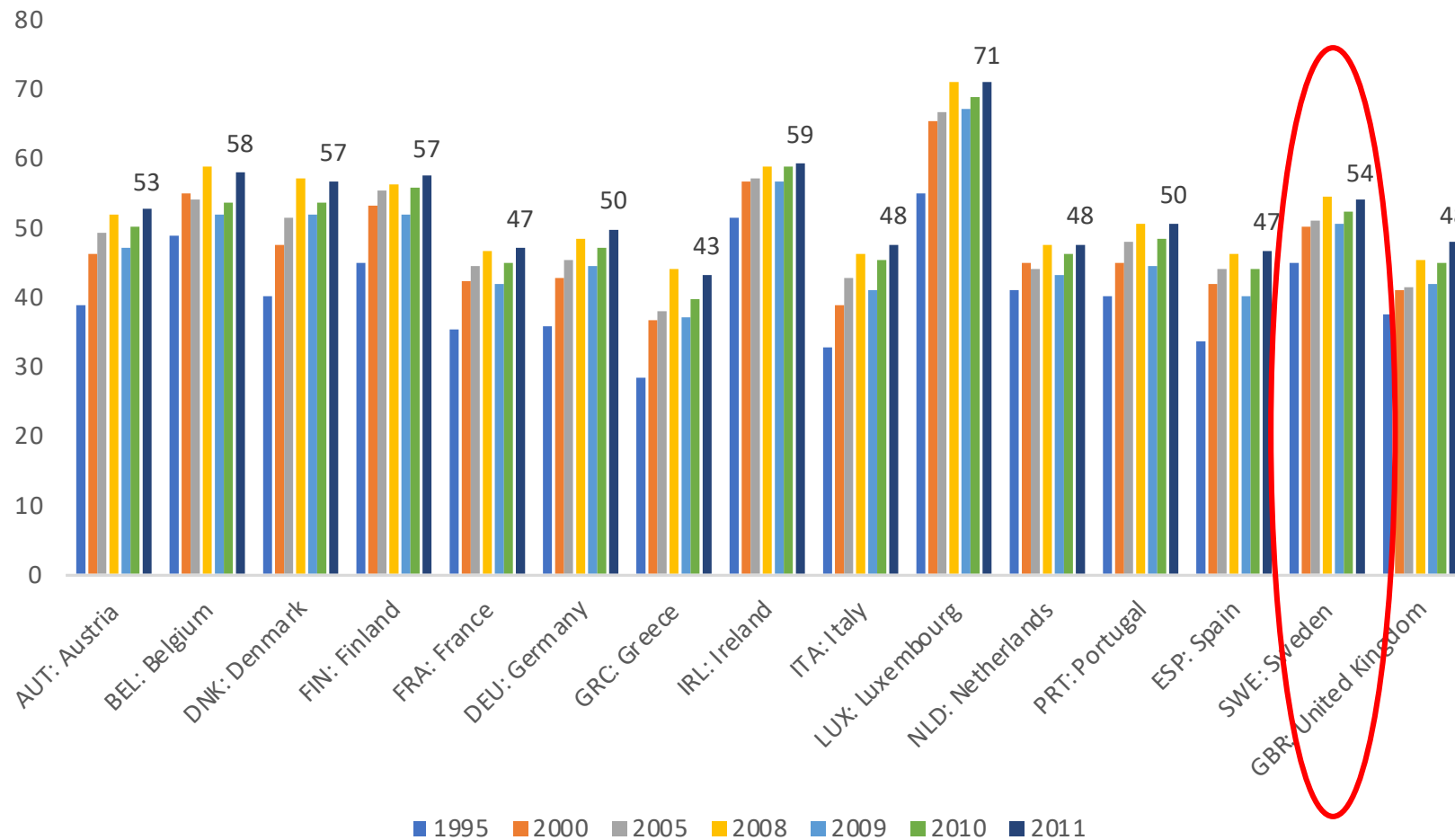
Sverige i globala värdekedjor

Nedströms deltagande:

innebär ett lands export används som input till exportprodukter som utvecklas eller sätts samman av företag i andra länder.

Uppströms deltagande:

innebär att företag i ett land använder importerade intermediära produkter och tjänster för att producera exportprodukter



Figur 5. Index över deltagande i globala värdekedjor, dvs. summan av upp- och nedströms deltagande (participation index, %), OECD TIVA.

Förändringar i relativ efterfrågan på olika typer av
arbetskraft

- Crino (2009)
 - a) offshoring inom tillverkningsindustrin bidragit till att öka lönegapet mellan kvalificerad och mindre kvalificerad arbetskraft
 - b) har bidragit till att göra sysselsättningen mer volatil
 - c) har bidragit till att öka hur känslig efterfrågan på arbetskraft är med avseende på förändringar i löner.

Förändring i kunskapsintensitet

Tabell 1. Förändring i GVK-jobb 1995-2008 (tusental) efter kvalifikationsgrad (utbildningsnivå).

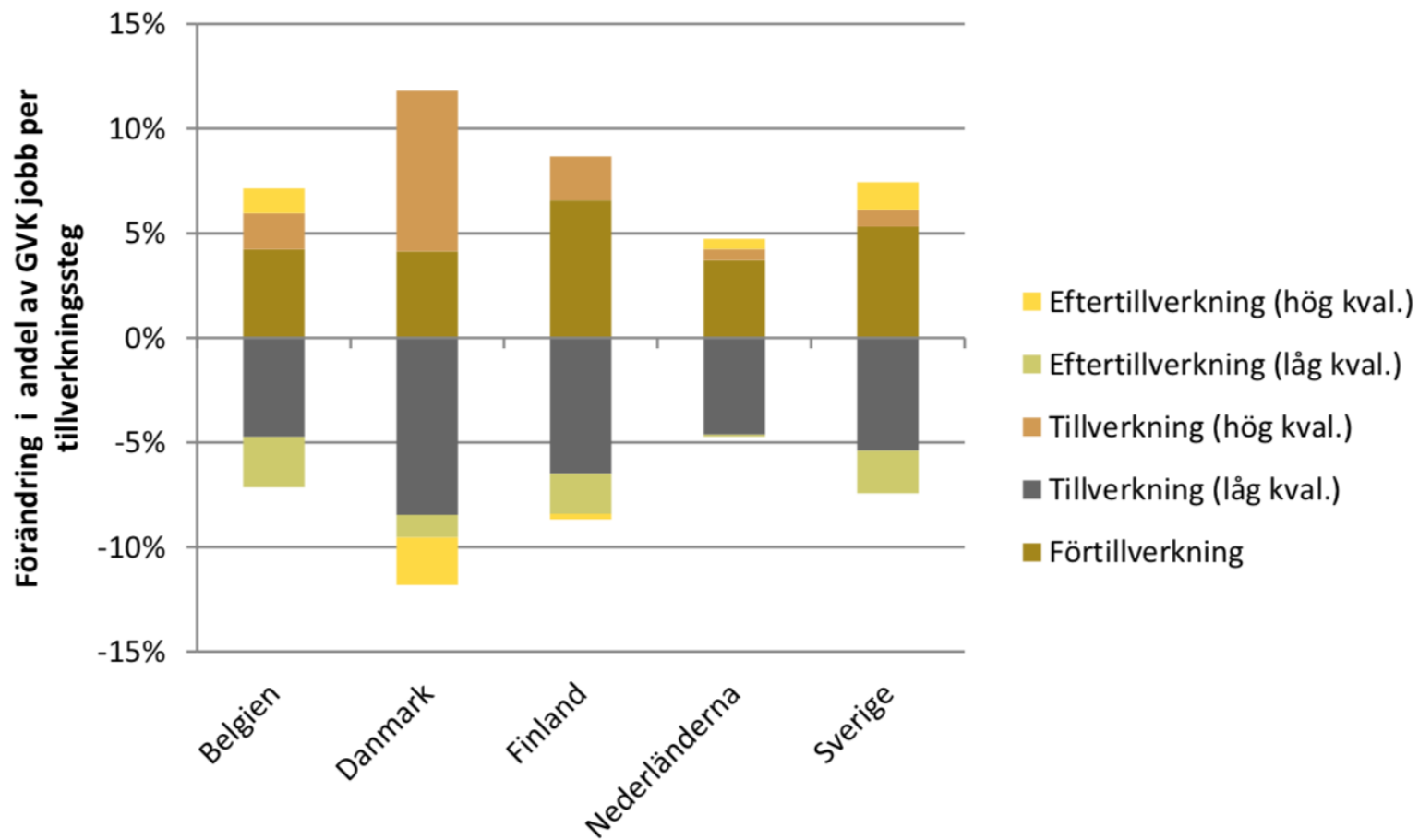
	Låg- kvalificerade.	Medium- kvalificerade	Hög- kvalificerade	Total
Belgien	-199	106	61	-32
Danmark	-13	-79	51	-41
Finland	-53	30	37	14
Nederländerna	-119	-54	202	29
Sverige	-114	32	105	22

Källa: Tillväxtanalys (2014:12), ursprungligen från Timmer m.fl.(2013).

Förändring i funktion

Table 5 Changes in jobs by activities, 1995 to 2011 (in thousands).

	Pre- production activities	Production activities (low skilled)	Production activities (high skilled)	Post-production activities (low skilled)	Post-production activities (high skilled)
Belgium	31.7	-75.0	8.2	-31.4	3.9
Denmark	12.4	-116.1	22.6	-18.6	-20.6
Finland	26.5	-49.8	5.2	-11.0	-5.4
Netherlands	65.1	-60.5	13.1	2.1	12.5
Sweden	45.4	-65.7	1.5	-21.9	10.4



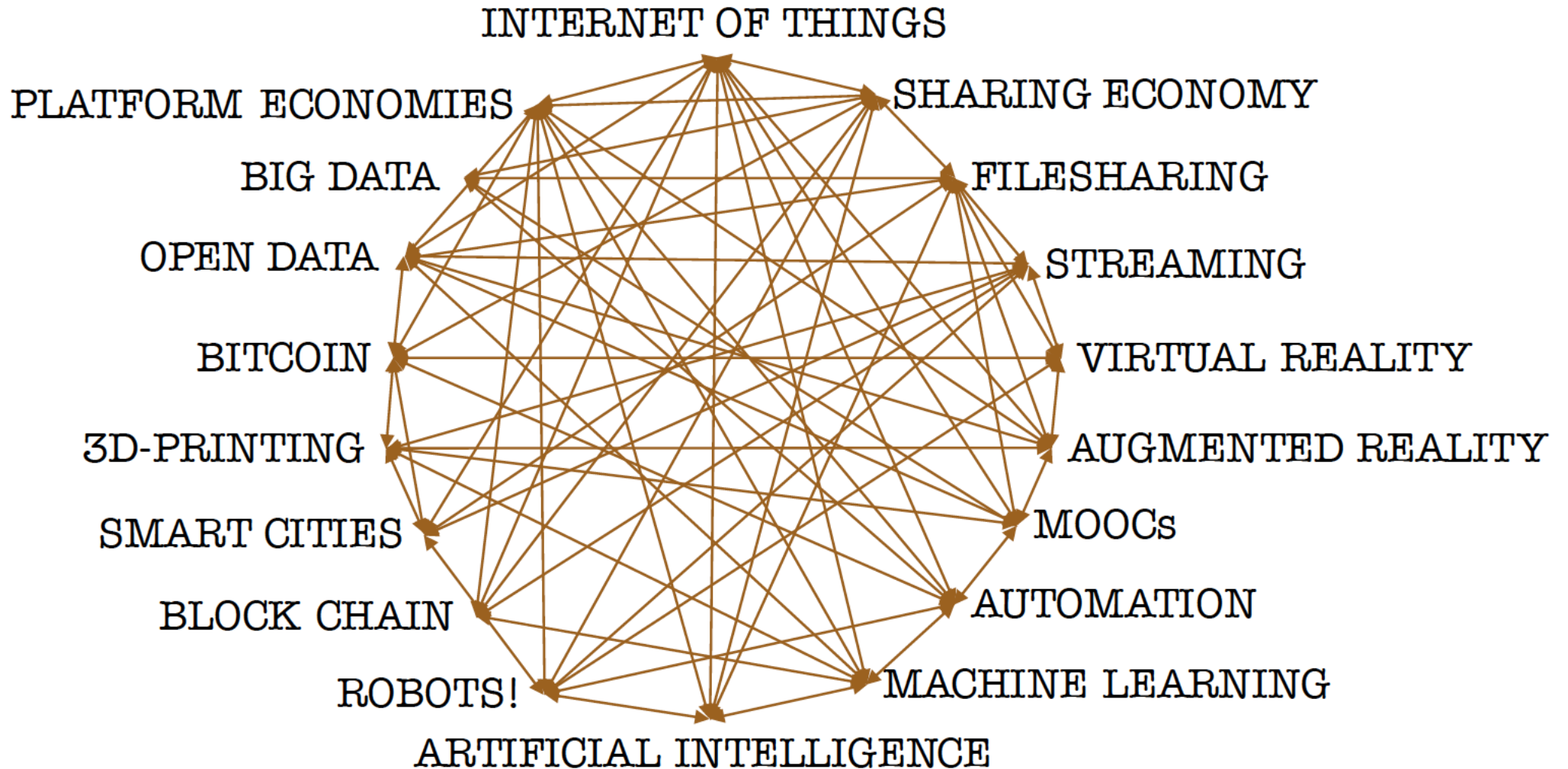
Figur 9. Förändring i fördelning av GVK-jobb över olika steg i globala värdekedjor. Källa: Tillväxtanalys (2014: 12, figur 8)

Slutsatser

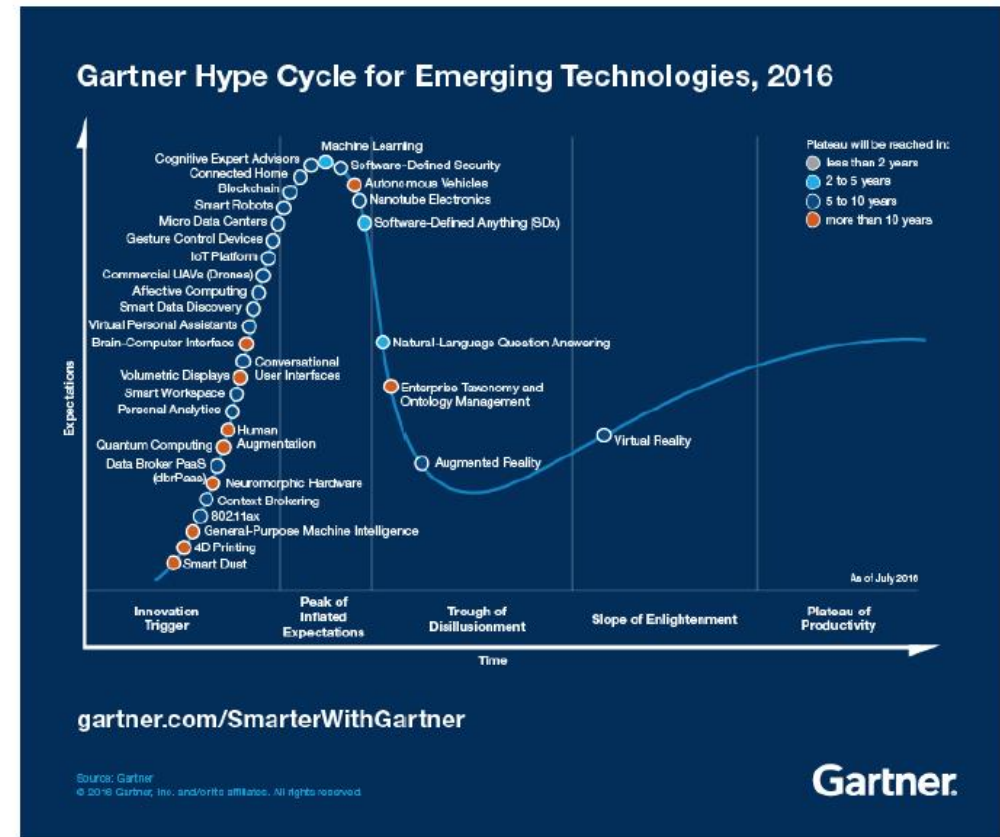
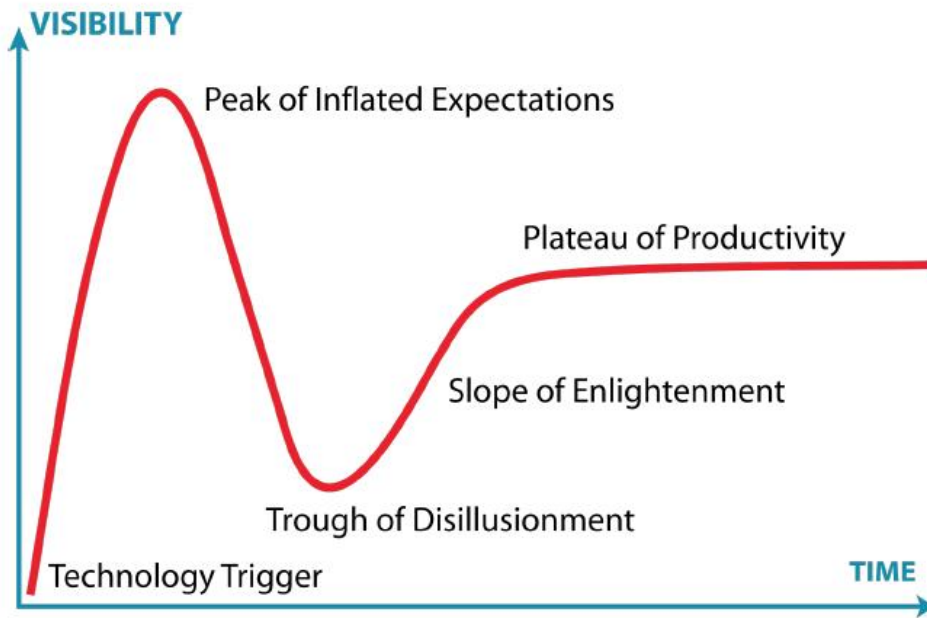
- Svenskt värdeskapande i globala värdekedjor i ökande utsträckning specialiserats till stegen före och efter tillverkning ("*Smiley story*")
 - stort inslag av tjänster
 - Svensk tjänsteexport en "input" till andra länders export
- Ökad relativ efterfrågan på välutbildad arbetskraft (icke-rutin)
- Geografi?
 - Skifte mot komparativa fördelar mot verksamheter som trivs i och gynnas av urbana miljöer (agglomerationsekonomier)
 - Ökad relativ efterfrågan på arbetskraft som trivs i och gynnas av urbana miljöer
 - Agglomerationsekonomier
 - Selektion:
 - Jobbmotiv
 - Konsumtionsmotiv

DIGITALISING

What is digitisation?



Hype curves

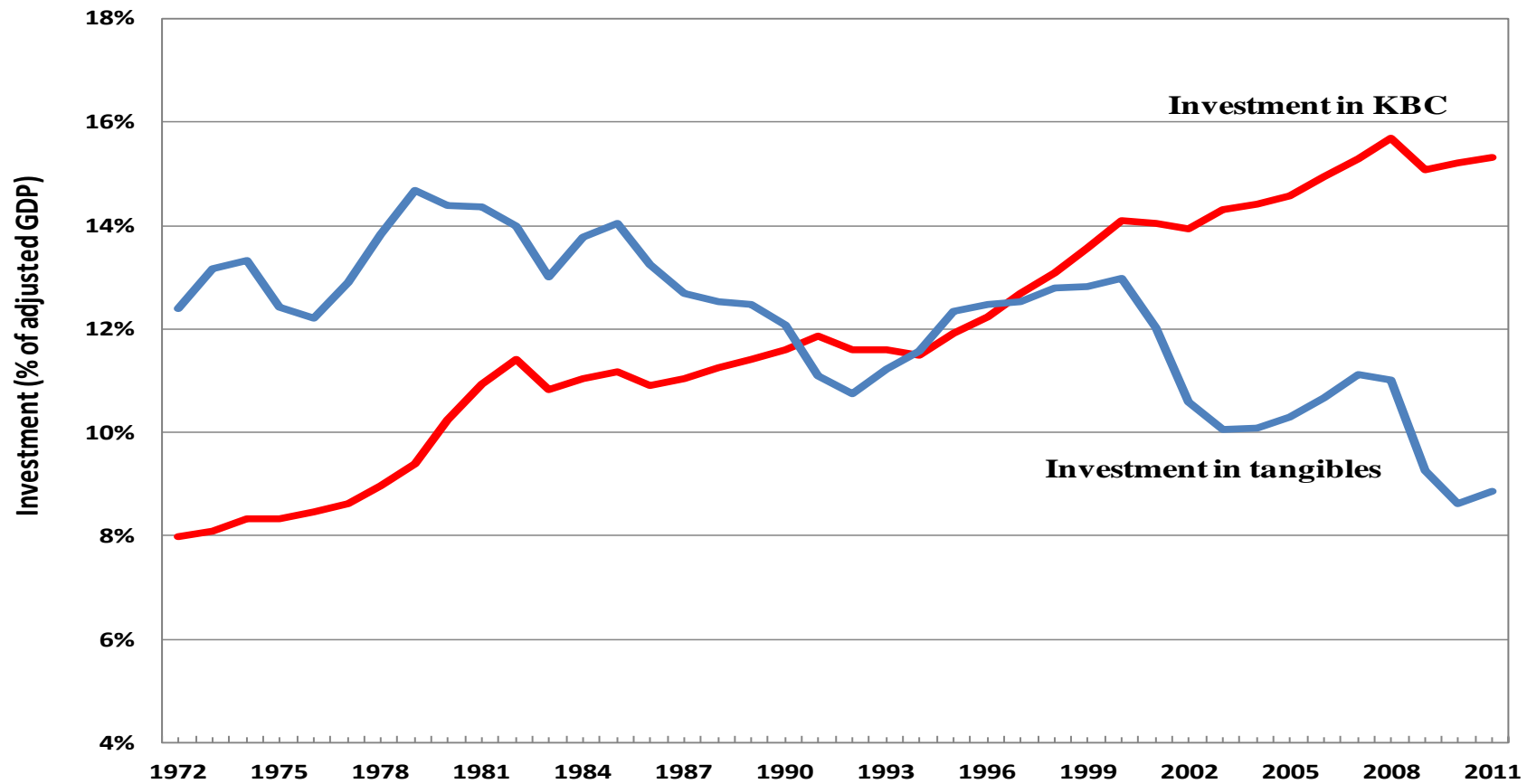


- **From IT-sector to shift** in economy and society:
General purpose technology

1. **Same problem, same solution (slightly better)**
Incremental innovation (Word processor, email)
2. **Same problem, new solution**
Radical innovation (iPhone)
3. **New problem, new solution**
Paradigm shift (Internet)

Focus on function, not technology:

Business investment in intangibles (KBC) and tangible assets in the United States (% GDP, 1972-2011)



What are intangible assets?

Computerised information

Innovative property

Economic competencies

TECHNOLOGICAL CHANGE IS SKILL-BIASED

Frank Levy and Richard J. Murnane



THE NEW DIVISION OF LABOR

How Computers are Creating
the Next Job Market

THE SKILL CONTENT OF RECENT TECHNOLOGICAL CHANGE: AN EMPIRICAL EXPLORATION*

DAVID H. AUTOR, FRANK LEVY, AND RICHARD J. MURNANE

June 2003

Revised from September 2002

ABSTRACT

We apply an understanding of what computers do to study how computerization alters job skill demands. We argue that computer capital (1) substitutes for workers in performing cognitive and manual tasks that can be accomplished by following explicit rules; and (2) complements workers in performing nonroutine problem-solving and complex communications tasks. Provided these tasks are imperfect substitutes, our model implies measurable changes in the composition of job tasks, which we explore using representative data on task input for 1960 to 1998. We find that within industries, occupations and education groups, computerization is associated with reduced labor input of routine manual and routine cognitive tasks and increased labor input of nonroutine cognitive tasks. Translating task shifts into education demand, the model can explain sixty percent of the estimated relative demand shift favoring college labor during 1970 to 1998. Task changes within nominally identical occupations account for almost half of this impact.

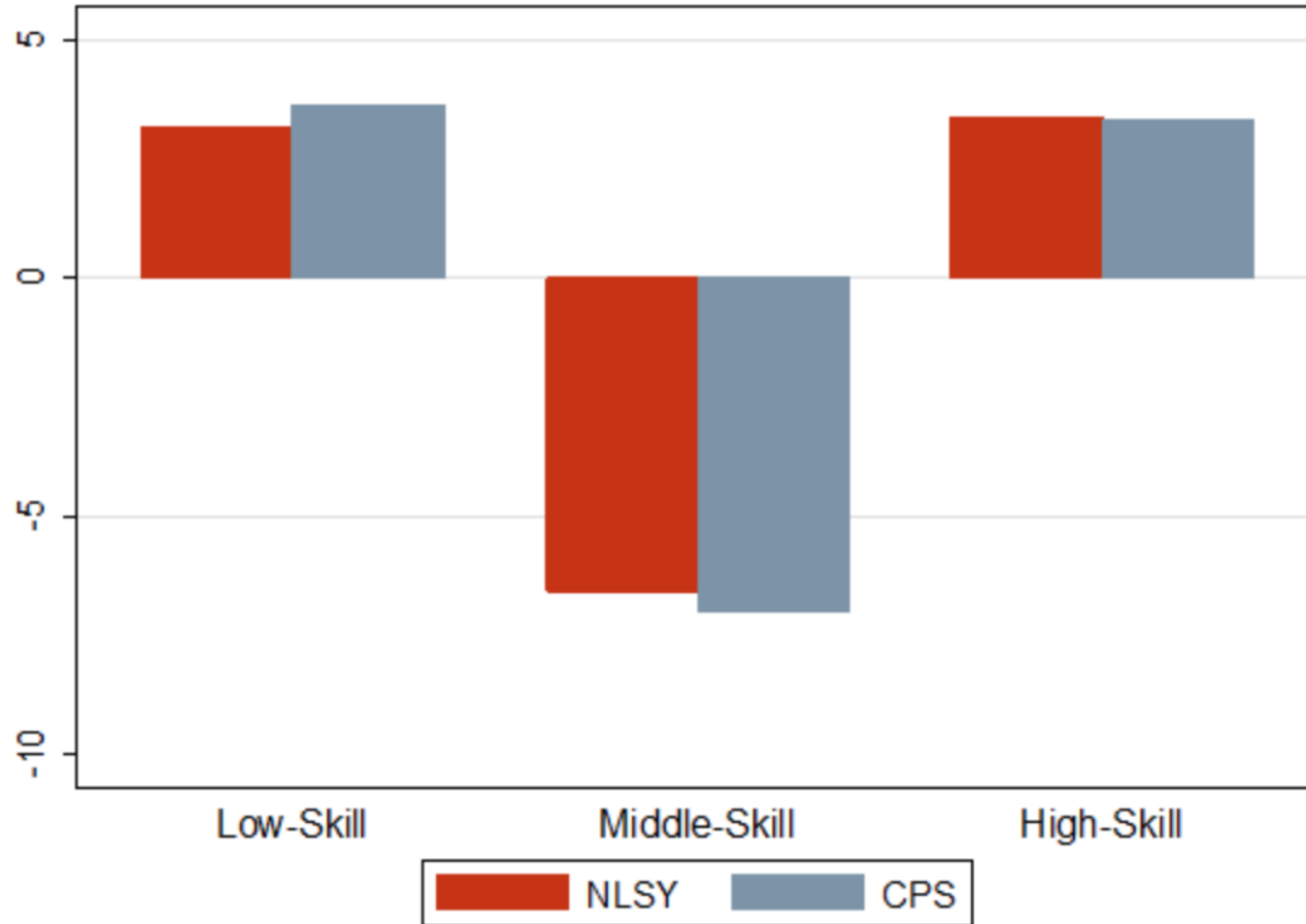
Routinization hypothesis

- Not only education!
 1. **Non-routine cognitive task-intensive occupations**
 2. Routine cognitive task-intensive occupations
 3. Routine manual task-intensive occupations
 4. **Non-routine manual task-intensive occupations**
- non-routine jobs consists of two categories:
 - (i) non-routine cognitive: high-education and high-income jobs
 - (ii) non-routine manual tasks: low-education and low-income jobs.

Rutiniseringshypotesen

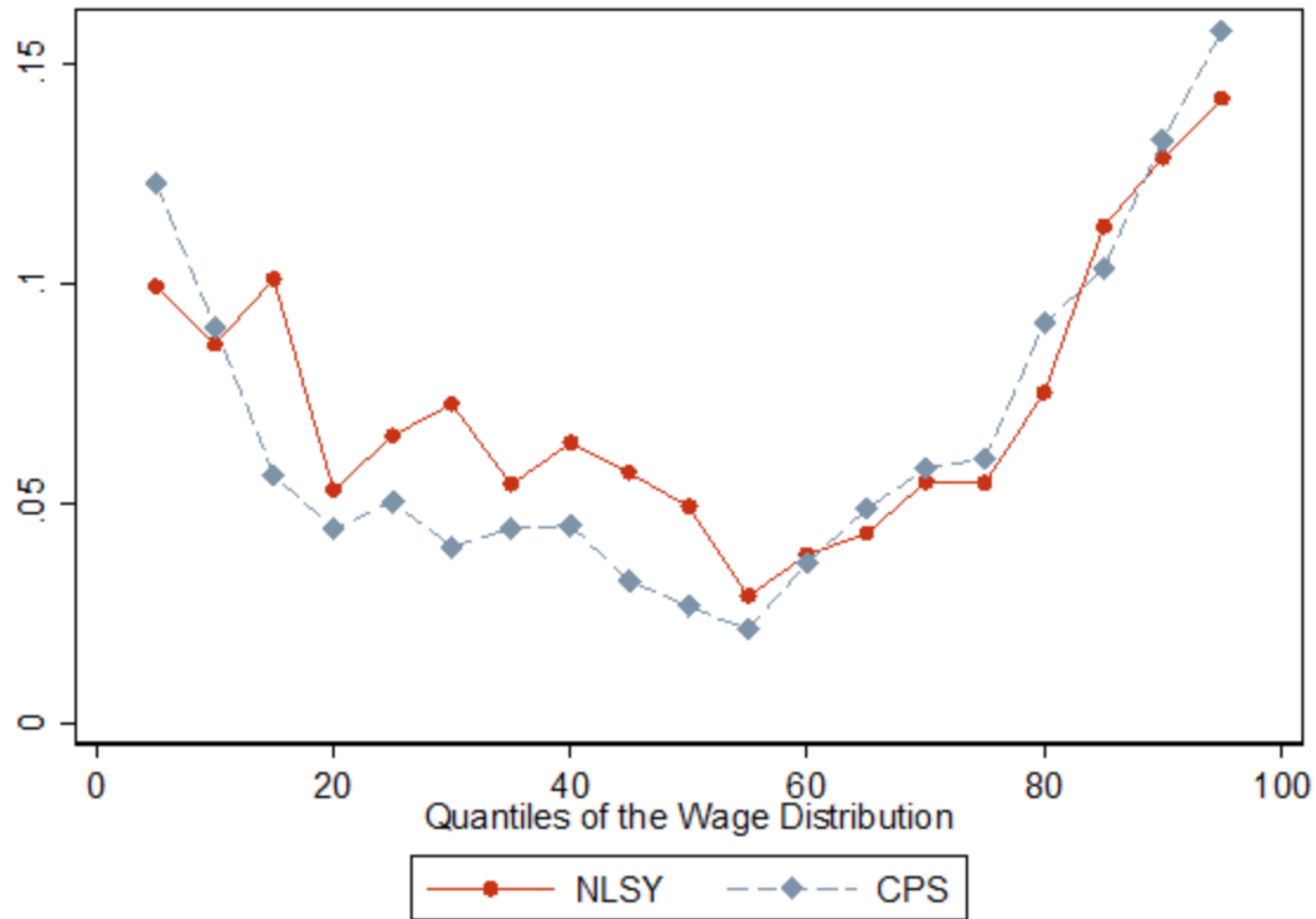
- the nature of technological change is such that it feeds a process of simultaneous growth of high-education/high-wage jobs and low-education/low-income jobs at the expense of middle-education/middle-wage jobs.

Figure 1. Changes in US employment shares by occupations since the end of the 1980s



Notes: The chart depicts the percentage point change in employment in the low-, middle- and high-skilled occupations in the National Longitudinal Survey of Youth (NLSY) and the comparable years and age group in the more standard Current Population Survey (CPS). The high-skill occupations comprise managerial, professional services and technical occupations. The middle-skill occupations comprise sales, office/administrative, production, and operator and labourer occupations. The low-skill occupations include protective, food, cleaning and personal service occupations.

Figure 2. Percentage growth of the quantiles of the US wage distribution since the end of the 1980s



Notes: The chart depicts the change in log real wages along the quantiles of the wage distribution between the two cohorts for the NLSY and the comparable years and age group in the CPS.



2016:4 Digitaliseringens dynamik – en ESO-rapport om strukturomvandlingen i svenskt näringsliv

Författare: Fredrik Heyman, Pehr-Johan Norbäck och Lars Persson

I ESO-rapporten studeras hur investeringar i digitalisering och automatisering påverkat det svenska näringslivet. Analysen, som baseras på detaljerad information om anställda och företag i Sverige 1996–2013, pekar på stora effekter för svenskt näringsliv och svensk arbetsmarknad.

Läs [sammanfattning](#) och [English summary](#).

Läs [pressmeddelande](#).

Beställ rapporten från [Wolters Kluwer](#).

Routinization hypothesis challenged by AI?

Geografi

- Digitalisering:
 - Underliggande drivkraft för GVK
 - "Egen" påverkan på ökad relativ efterfrågan på kunskap
 - Ökad betalningsvilja för "goda idéer"
 - Tjänstefiering / immateriellt kapital
 - Fördel för urbana miljöer

Density of "connected" people and businesses

- **Urban Digital Markets**

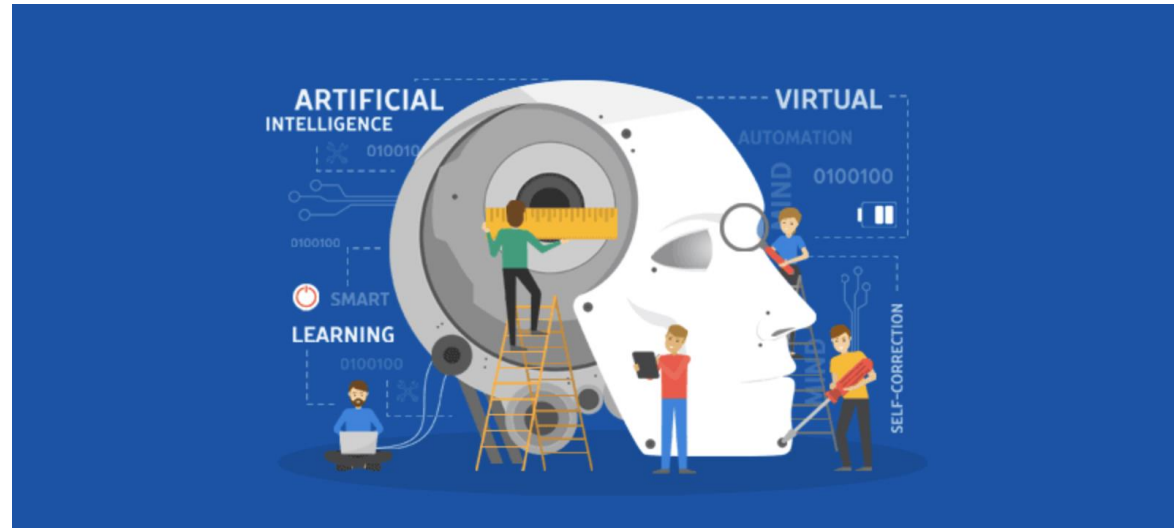
- *"The ride-hailing app Uber, the room-for-hire app Airbnb and the dating app Happn are all examples of businesses that rely on many people being close together to gather critical mass for their services. In turn, they contribute to facilitating and promoting interactions and transactions between people, something that is widely considered to lie at the very heart of the success of urban economies. These are the characteristics of an urban, or dense, digital market, which sets it somewhat apart from general theories about digital markets".*

Framtidsutsikter

MCKINSEY GLOBAL INSTITUTE

GLOBALIZATION IN TRANSITION: THE FUTURE OF TRADE AND VALUE CHAINS

JANUARY 2019



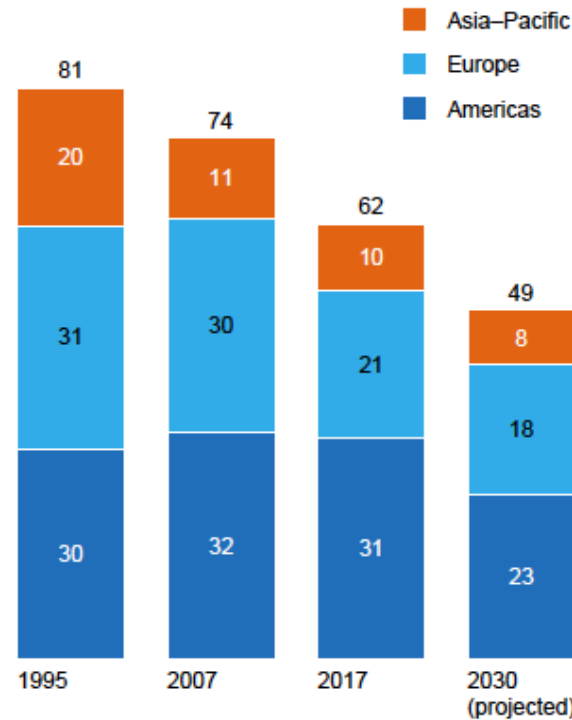
Trender

- "Globalization is in the midst of transformation"
 1. Varuproducerande värdekedjor blir mindre export- och importintensiva
 2. Tjänster har en växande (och undervärderad) roll
 3. Handel som är en direkt konsekvens av skillnader av arbetskraftskostnader (*labor cost arbitrage*) minskar
 4. Globala värdekedjor blir mer kunskapsintensiva
 5. Värdekedjor blir mer "regionala"

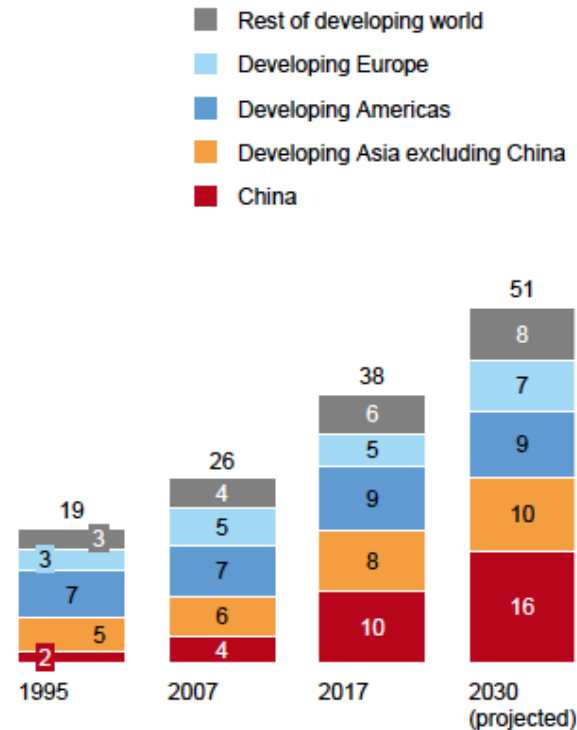
Förklaringar?

- Förändring i den globala efterfrågans geografi

Advanced economies' share of global consumption by region



Developing economies' share of global consumption by region



“more of what gets made in China is now sold in China”

NOTE: Figures may not sum to 100% because of rounding.

SOURCE: McKinsey Global Growth Model; McKinsey Global Institute analysis

- Utveckling av inhemska värdekedjor i Kina och andra "emerging markets"
- Nya teknologier och komparativa fördelar:
 - Automation och mindre (relativ) betydelse av lönekostnader: större relativ betydelse av "speed to market", närhet till stora marknader, infrastruktur, och tillgång till kvalificerad arbetskraft.
- "Tidig digitalisering" (ICT): lägre transaktionskostnader => mer handel

Osäker effekt av nya teknologier på olika typer av handel och globala värdekedjor

				Impact on flows			
		Technology ¹	Example	Primary re-sources	Manufactured goods	Services	Data
Reducing transaction costs	Digital platforms	E-commerce	US consumer buys shoes from UK e-commerce site	—	▲	▲	▲
	Logistics technologies	Automated document processing	Paperless customs documentation processing in India reduces time for loading/unloading ships	▲	▲	▲	▲
		Internet of Things	IoT sensors track shipments from Brazil to Angola	▲	▲	▲	▲
		Next-gen transportation	New material enables shipping through Arctic route	▲	▲	—	—
		Autonomous vehicles	Autonomous vehicles move cargo in ports, airports, and warehouses	▲	▲	—	▲
	Data processing technologies	Blockchain	Blockchain enables automated cross-border insurance claims ²	—	—	▲	▲
		Cloud	An Australian company utilizes Google Cloud	—	—	▲	▲
Altering economics of production	Additive manufacturing	3-D printing	3-D printing of toys at home	—	▼	▲	▲
			3-D printing of hearing aids in Vietnam for global distribution	—	▲	—	—
	Automation	Advanced robotics	A company equips a new UK factory with robots to make appliance manufacturing viable	—	▼	—	—
			Bangladesh automates textiles production, boosting productivity to gain global market share	—	▲	—	—
	Artificial intelligence	Virtual assistants	A British retailer deploys virtual assistants for customer service calls, substituting for offshore labor in a call center	—	—	▼	▼
		Robotic process automation (RPA)	A Philippine company employs RPA in back office processing, reducing cost and increasing volume	—	—	▲	▲
Transformation of existing products and creation of new products	Digital goods	Streaming movies/music	Drake's new album is streamed a billion times globally in one week	—	▼	▲	▲
	New goods	Renewable energy	China increases electricity generation from renewables, reducing coal and LNG imports	▼	—	—	—
		Electric vehicles	European consumers buy more EVs, requiring fewer imported parts and lower oil imports	▼	▼	—	—
		Telemedicine	A German doctor relies on 5G to perform remote robotic surgery on a patient in Turkey	—	—	▲	▲

McKinsey

- Across advanced economies, however, outlooks and priorities vary. Those with strong service sectors and exports, such as the United States, the United Kingdom, France, and Sweden, should be able to capitalize on their existing strengths as trade grows in industries such as IT services, business services, healthcare, and education.
- In contrast, those that excel mainly in global innovations value chains, such as Germany, Japan, and South Korea, may find a more challenging environment ahead as China expands its capabilities and surpluses in these industries.

- Baldwin och Evenett (2012):

“nothing about value chains challenges the wisdom of opening markets and upgrading skills. The tried and true competitiveness policies are valid independently of value-chain considerations”.

Utmaningar

- Arbetsmarknadsutsikter
 - Utbildning
 - Geografi
 - Löner
- Globalisering / Digitalisering / Urbanisering
- Social rörlighet \Leftrightarrow geografisk rörlighet