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Policy in Urban and Regional Economics

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Erasmus University Rotterdam
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Policy in Urban and Regional Economics

Economic geography: a damsel in distress?

Economic growth, innovation, production and consumption thrive in cities disproportionally well. Firms, employers and employees profit from specialised economies of scale in labour market matching, subcontractors market sharing and innovative learning from competitors, customers and research institutes. Cities also offer urbanisation economies like a diversity of lifestyles, accessibility to services like education and healthcare, and are more inter-regionally and internationally connected to other cities throughout the world. These matching, sharing and learning localisation advantages as well as urbanisation economies are summarised as agglomeration economies[1]. Likewise, there are also many disadvantages linked to larger cities, like pollution, congestion, and increasing inequality. Theorizing, identifying and explaining such urban and regional economic positive and negative effects of cities are at the core of the research fields of economic geography and of urban and regional economics alike. The two fields are drifting apart, according to some. Especially economic geography as a discipline seems to be fervently looking for rights to exists and it has been discussed as such in many recent panel meetings at conferences of *Regional Studies*, *Regional Science and Geography of Innovation*, with observations that economic geography departments are de-prioritized, emasculated and increasingly out-placed at economic departments and business schools. Some see this as a threat to economic geography[2], others hesitantly look at it also as an opportunity[3]. I definitely see the crossovers between economic geography and urban and regional economics as an opportunity. Throughout this lecture I will argue that they need each other; perhaps one more than the other. That is, it is not urban and regional economics as a discipline that cries out for existential back-up. But if anything is in need of their *joint* expertise, it is urban and regional economic policy.

As I am probably the personification of someone working and moving between economic geography and urban and regional economics, I had and have some good opportunities to observe the mutual value of the two disciplines. Starting at Erasmus University by studying spatial economics and business economics, I learnt about opportunities and problems *in* cities, and *of* cities. People-based or firm-based effects, related to sorting processes according to income and social background (of people), or skill needs and market orientation (of firms), matter more in cities because of larger populations of each. Crime per head of population may be constant, but with 11 million inhabitants there will be more of it in Shenzhen China than in 900,000 inhabitants Rotterdam. Place-based effects on the other hand are

1) E. Glaeser (2011), *Triumph of the city: how our greatest invention makes us richer, smarter, greener, healthier and happier*. London: Penguin Books.
2) R. Martin (2018), "Is British economic geography in decline?" *Environment and Planning A* (forthcoming).
3) A. Rodríguez-Pose (2018) "Threat or opportunity? On the 'cross-corridor diaspora' of British economic geographers". *Environment and Planning A* (forthcoming).

location-attached impacts on economic opportunities and societal problems. Larger cities coincide for instance with disproportionally larger productivity, crime or innovation. Opportunities of each category are larger in cities. Importantly, I learnt that people-based or place-based policies are less effective when these effects are not disentangled and identified, and applied this in PhD research on regional economic growth and innovation in the Netherlands. I was curious for policy practice. During my PhD research I already started working at the Netherlands Planning Agency *(Rijksplanologische Dienst)* in The Hague, part of the Ministry of Housing, Spatial Planning and Environment. Although many claimed to be working on people's welfare and societal embedding using accountable policies, no-one seemed to care much about sorting, causalities, endogeneity and identifiable effectiveness of policies. And I think the quality of policy suffered from that. It only was little noticeable given positive growth figures in practically all regional economies in the Netherlands. The policy Agency became a research oriented Planbureau, but I still felt like living two lives (Planbureau work during the day, PhD-research in evenings). The feeling never really left, and during my work in the years to come I spent much time in building bridges between fundamental research, applied research and policy. I did move back fully to the university though, and in Utrecht University the focus was (and is) on economic geography. The damsel currently in distress, to my belief because increasingly quantitative measurement and estimation is pursued in an economic disciplined manner, while some parts of the geographical discipline do not integrate this in a common policy-sensitive focus on societal challenges. A substantial part of geographical research relies too much *solely* on case study methodologies, with related suggested governance implications and narratives. Convincing narratives win in importance for argumentation in research and urban governance especially in planning and governance studies[4], seemingly at the expense of quantitative-informed arguments. Convincing narratives seem to legitimate large local governance power over or next to that of national governments[5], arguing that local people's and firms' desires are best served by local policies – even when multilevel and (inter)national network complexities of trade, investments, knowledge, migration and social networks are in play, as I pointed out in my previous inaugural address[6]. With identification and causality gradually kicking in and crossover studies with economics and innovation studies becoming increasingly powerful, the qualitative case study type of research that long characterised economic geography loses impact. Much to the liking of policy, as after several years of austerity during and after the latest economic crisis, demand for "what works" for resilient productivity, employment and innovation has become more urgent than ever[7]. On the Dutch national level, the Ministry and Planbureau of Spatial Affairs are gone, and Economic, Infrastructure and Internal Affairs Ministries have taken over. Devolution of economic performance responsibilities to regions has

4) M. Hajer, J. Grijzen & S. van 't Klooster (2010), *Sterke verhalen. Hoe Nederland de planologie opnieuw uitvindt*. Rotterdam: 010-Uitgevers.

5) B. Barber (2013), *If mayors ruled the world. Dysfunctional nations, rising cities*. London: Yale University Press; B. Katz & J. Nowak (2017), *The new localism. How cities can thrive in the age of populism*. Brookings Institution Press, Washington DC.

6) F.G. van Oort (2006), *Economische vernieuwing en de stad. Kansen en uitdagingen voor stedelijk onderzoek en beleid*. Rotterdam: NAi-Uitgevers.

7) P. Cheshire, M. Nathan & H. Overman (2014), *Urban economics and urban policy. Challenging conventional policy wisdom*. Cheltenham: Edward Elgar.

simultaneously taken place, while regional-economic expertise and budgets have not been developed accordingly[8].

Are increasingly complex societal challenges then fostering storytelling, empirical evidential rigor, or both, for research and policy? Storytelling appears a way out from exact interpreting our increasingly complex regional world, with impacts from economic and social networks, self-organisation and devolution processes, platform economies, local formal and informal institutions, structural change into knowledge economies and societies, helped (or not) by big data, internet-of-things, and increasing automation and robotization, ever faster product lifecycles, growing social inequality, and challenging energy transitions, circular economies and healthy urban living: a flight forward into stories, governance or technological solutions seems more rule than exception. The simultaneous need for well-identified "what works" solutions means that storytelling does not immediately help for bringing large societal challenges to test on economic impacts – theoretical and empirical research should proceed the telling. In our current turbulent world, with cities as focus for many societal processes, measured and identified impacts, causalities, and consistent theories matter more than ever. Or should matter more than ever.

I have participated in many projects that link urban economic and economic geographical research with governance and storytelling – but it always starts (or should start) from the theoretical and empirical premises. Some recent examples I will discuss now in more detail, as they are at the heart of urban and regional economics as a discipline. They relate to the notions that:

- Space matters,
- Spatial structure matters,
- Spatial networks matter.

All examples will relate empirical urban economic research to policy initiatives, and show that policy is served by the research outcomes. Storytelling is present in all examples as well, and I critically argue that in cases that this preceded research, it does not sustain. That *following* identifying research, the interpretation, reflection and storytelling elements are crucial for applied policymaking, I argue in the last section of this lecture.

8) Technopolis (2014), *Verschuivende paradigma's in het ruimtelijk economisch beleid. Evaluatie doorwerking ruimtelijk economisch beleid in de regio*. Amsterdam: Technopolis Group.

Space matters

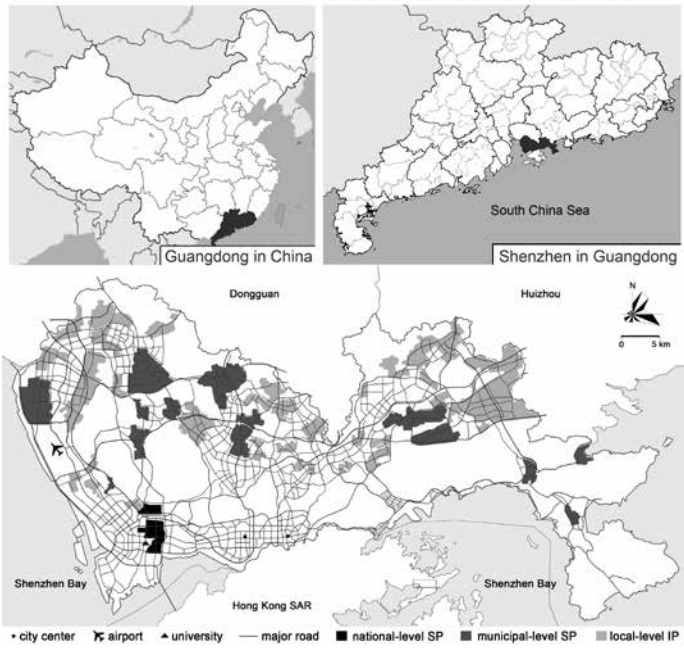
Identifying that space has an impact on economic processes, is the core business of urban and regional economics. With Hans Koster, Michiel Gerritse and Fangfang Cheng I studied place-based policies in Shenzhen, China[9]. If any part of the world shows rapid urban growth with all accompanying opportunities and problems, it is in last decades China. The theoretical embedding of the research is clearly in the place-based versus people-based (in our case firm-based) debate in local development. Many governments spend considerable amounts of money to stimulate innovation, employment and productivity, and battle unemployment. These investments are often not space-neutral but differ between regions, cities and even between neighbourhoods within cities. In developed countries, place-based policies tend to focus on distressed regions or neighbourhoods. In the European Union, for example, Cohesion funds (like the Regional Development Fund) explicitly target regions with high unemployment and a (nominal) income below 75 per cent of the EU average[10]. Similarly, in the US, programmes such as federal urban Empowerment Zones (EZs) and Enterprise Communities are designed to use grants to benefit lagging neighbourhoods. The effectiveness of place-based policies as opposed to people- or firm-based policies is, however, debated[11]. Place-based policies that target deprived areas arguably bring economic activity to the least productive places, thus lowering overall productivity. The distributional effects of place-based policies are also often unclear. For example, beneficiaries of the aid may be the better-off firms and employees in the impacted area, thereby increasing inequalities within the region. Moreover, the spatial extent of the effects of place-based investments may be unpredictable, so choosing a scale for a place-based policy can be problematic. Effects can be temporary, distortive and heterogeneous.

9) H. Koster, F. Cheng, M. Gerritse & F. van Oort (2018), "Place-based policies, firm productivity and displacement effects: Evidence from Shenzhen, China". Forthcomming in *Journal of Regional Science*.

10) F. Barca, P. McCann & A. Rodríguez-Pose (2012), "The case for regional development intervention: place-based versus place-neutral approaches". *Journal of Regional Science*, 52(1), 134–152.

11) Neumark, D., and H. Simpson (2015), "Place-based Policies". In: G. Duranton, J. V. Henderson, & W. C. Strange (Eds.), *Handbook of Regional and Urban Economics* 5. Amsterdam: Elsevier; E. Glaeser (2008), *Cities, Agglomeration, and Spatial Equilibrium*. Oxford: Oxford University Press.

Figure 1: Industrial parks in Shenzhen, China

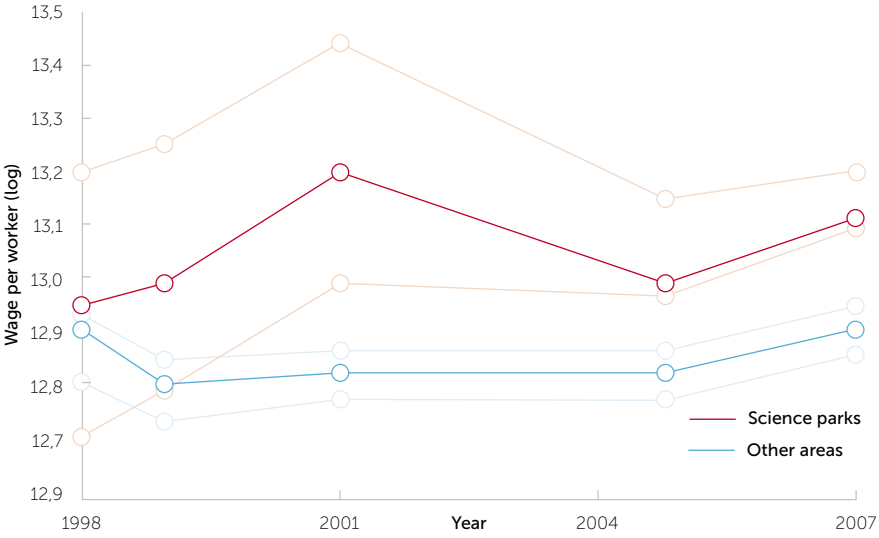


Source: Koster, Cheng, Gerritse & Van Oort (2018).

Identification is the key word. Looking at welfare effects applied to place-based policies in Chinese Shenzhen, we applied urban econometric methodologies. We use variation in industrial park assignments, in longitudinal firm productivity, employment and output, in control firm and neighbourhood characteristics, and in time of opening up of locations, to identify effects. Figure 1 shows where and when in Shenzhen industrial parks are opened up by national, regional and urban authorities.

A quick look at firm productivity levels inside and outside targeted learns that firms within science-parks are substantially more productive than similar firms outside the parks (figure 2).

Figure 2: Firms value added per worker in science-parks and other areas in Shenzhen



Source: Koster, Cheng, Gerritse & Van Oort (2018).

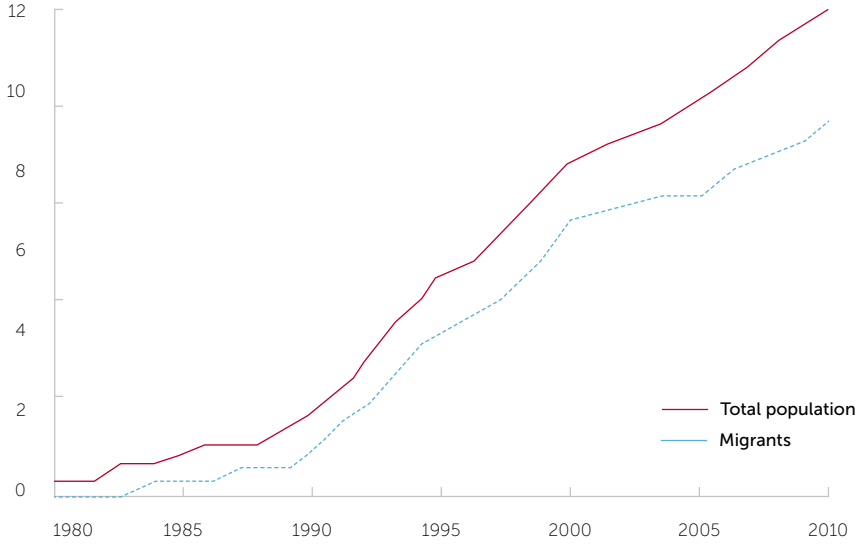
But just comparing firm performance inside and outside the area of a programme does not yield an accurate evaluation of the programme's impact (with treatments like cheap ICT facilities, land ownership, supply of legal advice, cheaper energy supply, etc.). Governments single out specific locations to establish science-parks (in the case of China, in so-called Special Economic Zones). Moreover, once a place-based policy is initiated, productive firms and workers may sort into these areas because they benefit from the policy or because the policy specifically applies to them. Ignoring the selection of a policy area and sorting processes in the evaluation of a place-based policy may lead to biased estimates of policy effects. To identify a causal effect of the science park policy in Shenzhen, one has to rely on an identification strategy – in our case on spatial differencing. This approach implies that firms inside science parks are compared to firms in areas that are very close to science parks and that are very similar in geographical and functional characteristics. The exact location of the boundary is then considered to be random. Exploiting the panel nature of the firm-level data, firm fixed effects are included to capture sorting. The fact that not all science parks opened up at the same time is useful information as well, identifying the effect of science parks by comparing productivity differences before and after the opening, and by using follow-up locations as a feasible control group.

Our results show that area-based incentives have a substantial impact on the productivity of firms in the Shenzhen science parks. Firm output increases by 15-25 per cent due to science park policies, even after ruling out alternative explanations of sorting and selection. These large and economically meaningful effects are in

line with the idea that place-based policies have more sizable effects in transition economies. But it is also shown that large productivity improvements are paired to distortive effects (of almost half the productivity gain), namely job displacement effects with sizable negative welfare impacts. The displacement of capital has far lower welfare consequences.

Despite large positive firm productivity effects in Shezhen's science-parks, other place-based effects occur at the same time. Growing from 10,000 inhabitants to 10,000,000 in ten years (figure 3) puts strains on housing and labour markets.

Figure 3: Population and migrants in Shenzhen since 1980



Source: Koster, Cheng, Gerritse & Van Oort (2018).

As many workers in Shenzhen are migrant workers (as the city and industrial structure started from scratch), many of them do not have access to large scale housing and health provision due to the *hukou* system[12]. As a consequence, many migrant workers that shape the economic success of the largest manufacturing city in the world live in improvised and provisional housing circumstances in so-called urban villages: older settlements in the territory of the present-day Shenzhen region, where land owners build increasingly dense housing for multi-family use. With urban villages gradually being redeveloped into large-scale urban projects for housing, retail and amenities, the number of these villages decreases rapidly, causing migrant workers to suburbanise to other cheap areas and make long commutes to reach their workplaces every day. Clearly, these effects of displacement are more complex than those discussed for firms, and are more subject to sorting than to any

12) Y. Liu, S. Geertman, Y. Lin & F.G. van Oort (2017), "Heterogeneity in displacement exposure of migrants in Shenzhen, China". *Journal of Ethnic and Migration Studies* (doi: 10.1080/1369183X.2017.1391078).

other causes. Interpreting and explaining place-based and sorting effects, related to development policies, inevitably boils down to institutional and cultural impacts on the location of firms and employees, on housing and labour markets, and on treatment effects for targeted populations of firms and people. A growing number of informative urban and regional economic studies focuses on African and Asian economic growth. Given the generally large effects found, they fuel the idea that the still dominant Anglo-Saxon conceptualisation in urban economics and economic geography is in need for revision to make it applicable to situations and dynamics in transition and developing countries[13]. Yet, it is exactly the present-day toolkit of econometric research that provides us with the sense of impact and urgency, and hence proves itself capable of identifying effects for many heterogeneous regions alike.

In China, space matters for productivity, even controlled for large-scale sorting and selection effects. Shenzhen is probably the most make-able economy one can think of, with large growth figures making every situation potentially a bottleneck and every policy solution worthwhile. Does it matter in a similar way in Western economies, like Rotterdam? A 10 to 15% premium on productivity due to the right location is a tempting perspective. With economic growth figures that are only a fraction of those of China and with more mature industries located in the Netherlands, one intuitively feels that the room for place-based development may be smaller and more selective. Not according to local policymakers. Every single city and municipality in the Netherlands has ambitions in science-park and campus development (figure 4). Rotterdam alone has (top-down) assigned 6 locations as innovation districts, counting on similar effects as in Shenzhen. Typically, storytelling fuels these policy expectations. The much cited work of The Brookings Institute for instance[14] provides telling stories on campuses, innovation districts and science-parks, without the types of analyses I just discussed for Shenzhen. A first inventory of aspects correlated to new firm location in Rotterdam I made with colleague Jeroen van Haaren, like clustering of similar and diverse firms (for localisation and urbanisation advantages), accessibility, proximity to producer and consumer amenities, housing and knowledge institutions, showed that the *Next Economy* probably is best served in the Present City, and not in newly created locations away from the present day urban structures[15]. A similar research set-up for testing as in Shenzhen is in the making for the Netherlands, yet treatment effects for all locations seem just as hard to obtain as in China.

13) J. Robinson & A. Roy (2015), "Debate on global urbanisms and the nature of urban theory". *International Journal of Urban and Regional Research* 40: 181-186.

14) B. Katz & J. Bradley (2013), *The metropolitan revolution. How cities and metros are fixing our broken politics and fragile economy*. Washington: Brookings Institution Press. See especially chapter 6: "The rise of innovation districts".

15) F. van Oort & J. van Haaren (2017), "Next Economy, Next City?". In: *Economische Verkenningen Rotterdam 2017 – Stad in Verandering*, Gemeente Rotterdam, pp. 22-27.

Figure 4: An inventory of campuses and science parks in the Netherlands

INNOVATIE

Nederland komt om in de valleys, clusters en delta's

Overdaad aan initiatieven bevordert productiviteit niet

Ilse Zeemeijer
Amsterdam

Een 'Circular Valley', een 'Health Hub' of een 'Smart Space Cluster'. Je kunt het zo gek niet bedenken of er bestaat wel een initiatief dat Nederland als 'toonaangevend topcentrum' op een bepaald gebied op de kaart wil zetten, zo blijkt uit een inventarisatie door het FD. Dat elk initiatief de gedroomde ambities kan waarmaken is wishful thinking, stellen experts.

In totaal zijn er in Nederland zo'n 220 initiatieven te vinden die ondernemers, ambtenaren, burgers en onderzoekers aansporen om te vernieuwen. De samenwerkingsverbanden en organisaties — in totaal 116 — zijn in de meerderheid. Deze clubs hanteren bekende jargon: ze zien zichzelf als experts die 'aanjagen', 'verbinden' en 'versnellen'. Hun boodschap is simpel: wie niet innoveert, is kansloos.

Zo vind je in Apeldoorn de organisatie Stedendriehoek Innoveert, die 'ondernemers kansen aanreikt om hun idee te versnellen'. Het Rotterdamse samenwerkingsverband SmartPort 'speelt een verbindende en stimulerende rol in de samenwerking die nodig is om de complexe uitdagingen van het havengebied aan te gaan'. Soms moeten er ook harde resultaten worden behaald. Zo wil de net opgerichte Noordelijke Innovation Board met de zogeheten 'Noordelijke Innovatie Agenda' de komende vier jaar een miljard aan investeringen in Drenthe, Groningen en Friesland uitlokken en 6500 banen creëren.

Naast de vele overlegorganen zijn er 32 campussen en 20 technologieparken waar innovatie het sleutelwoord is. Zo wil Veenendaal met zijn ICT Campus 'de ICT-stad van FoodValley' worden, en wordt er in Markrese gewerkt aan een 'Geomatics Businesspark', de 'toplocatie voor innovatieve en kennisintensieve organisaties'. Bijna elk initiatief heeft wel een marketingfilm met opzwepende muziek die buitenlandse ondernemers en onderzoekers het gevoel moet geven dat Nederland de 'place to be' is.

Een van de populairste thema's in innovatieland is de gezondheidszorg. Zo is er sinds de oprichting van de Health Campus in Bussnerd sprake van een 'ware explosie aan ideeën en plannen' om de gezondheidszorg te vernieuwen, aldus de initiatiefnemers. Zeventig kilometer verderop, op de Health Innovation Campus in Veldhoven, wordt ook gewerkt aan 'innovatieve producten, diensten en processen' in de zorg. Nijmegen pronkt met een Health Valley waar 700 bedrijven en kennisinstellingen werken aan 'technologische innovaties in de gezondheidszorg'.

Maar 'het platform voor ondernemers die willen vernieuwen in de sector Health' vind je in Zwolle, op het Health Innovation Park. Volgens de initiatiefnemers van de Healthy Ageing Campus in Groningen juist weer het 'inspirerende ecosysteem'. Daar vind je ook het Healthy Ageing Network, dat niet alleen geschikte partners voor ondernemers vindt, maar bedrijven ook helpt bij het vinden van geschikte 'proeftuinen', het modewoord voor praktijkexperimenten.

Frank van Oort, hoogleraar stedelijke en regionale economie aan de Erasmus Universiteit, noemt het grote aantal initiatieven 'zorgwekkend'. 'Iedere gemeente wil een valley, campus of een cluster dat internationaal meedoet. Dat is niet realistisch.' Volgens Van Oort is er veel winst te behalen als bestuurders scherpere keuzes maken en vasthouden aan hun eigen specialisatie. Tegelijkertijd moet er beter worden samengewerkt. Als een bedrijf in cybersecurity bij de gemeente Amsterdam aanklopt, moeten ambtenaren het bedrijf doorverwijzen naar The Hague Security Delta. 'Hier wringt de bestuurlijke schoen. Moet Amsterdam iets aan Den Haag laten zo dat de nationale economie beter af is in plaats van de lokale werkgelegenheid? Dat laat bijna geen enkele burgemeester gebeuren.'

fd.nl: bekijk de interactieve 'hotspot'-kaart

Deze clubs delen een jargon en zien zichzelf als experts in 'aanjagen', 'verbinden' en 'versnellen'

Innovatiehotspots Nederland

Nederland telt meer dan 220 initiatieven en organisaties die uit willen groeien tot internationale trekpleisters voor innovatie

116 samenwerkingsverbanden en organisaties

Voorbeeld: Noordelijke Innovation Board in Groningen

32 campussen

Voorbeeld: Green Chemistry Campus in Bergen op Zoom

13 Valleys

Voorbeeld: Robovalley in Delft

9 Delta's

Voorbeeld: Photon Delta in Eindhoven

20 Innovatieparken

Voorbeeld: Polymer Science Park in Zwolle

pagina 6, 09-05-2016 © Het Financieele Dagblad

Source: Ilse Zeemeijer, Financieel Dagblad, 9-5-2016 (page 6).

Spatial structure matters

Besides urban size, the spatial structure of cities and regions may be determinant for employment, productivity and innovation[16]. In a world with more than half of the population living in cities generating approximately 80 per cent of global output, urban dynamics play a crucial role in the economic performance of regions at any scale. However, an increasingly urban character of a region does not guarantee a superior performance compared to its more rural or less urban peers. In Europe for instance, cities like Berlin, Rotterdam and Lille have struggled to keep up with their national averages when it comes to productivity, employment and income. The theory of agglomeration economies looks at the benefits associated with larger urban size and density, enabling productive clustering of firms and people, thereby profiting from micro mechanisms of *learning* (through the interaction and diffusion of ideas between proximate firms), *matching* (between a concentrated population of numerous firms and the inputs they require) and the *sharing* (of indivisible facilities, large labour pools or gains from a variety of firms). Simultaneously agglomeration diseconomies have received increasing attention as well, as they could explain the lacking performance of mega cities such as Berlin. A regional over-reliance on the infrastructure and capacity of a single city could risk disadvantages such as congestion, pollution and surging land rents and prices for localized labour[17]. Instead, it is argued that second-tier or smaller cities could "borrow size" from each other and from larger cities nearby to bundle agglomeration advantages while mitigating the risks, in a polycentric regional spatial structure[18]. These combinations of cities are assumed to tackle two seemingly conflicting issues: cohesion by enabling balanced regional development, and competition by allowing regions with multiple smaller cities - next to or without larger cities - to compete with mega-city regions[19].

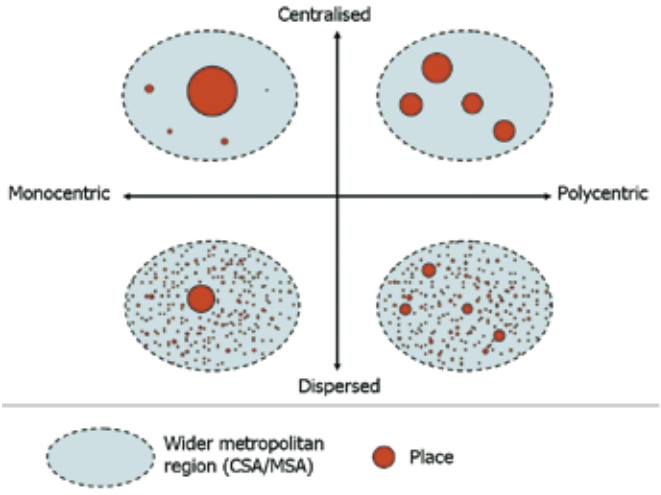
This concept of polycentricity, its advantages relative to mega-cities and its implications for regional development have been received with great enthusiasm among policy makers and researchers, which has resulted in a multitude of studies conducted to test its premises[20]. Especially in the Netherlands, that lacks very large cities, polycentricity as an economic concept gained in popularity[21], but also the European Union embraces the concept[22]. Consequently, a wide variety of definitions,

16) P. McCann (2014), *Modern urban and regional economics*. Cambridge: University Press.
17) M. Fujita, J.F. Thisse & Y. Zenou, Y. (1997), "On the endogenous formation of secondary employment centres in a city". *Journal of Urban Economics* 41: 337-357.
18) E.L. Glaeser, G.A. Ponzetto & Y. Zou (2016), "Urban networks: Connecting markets, people, and ideas". *Papers in Regional Science*, 95: 17-59.
19) E. Meijers & M.J. Burger (2010). "Spatial structure and productivity in US metropolitan areas". *Environment and Planning A*, 42: 1383-1402.
20) A. Peris, E. Meijers and M. van Ham (2018), "The evolution of the systems of cities literature since 1995: schools of thought and their interaction". *Networks and Spatial Economy* (online first).
21) F. van Oort, E. Meijers, M. Burger, M. Thissen & M. Hoogerbrugge (2015), *De concurrentiepositie van Nederlandse steden in netwerkperspectief: van agglomeratiekracht naar netwerkkracht*. Den Haag: Platform31.
22) J. van Zeben & A. Bobic (2019), *Polycentricity in the European Union*. Cambridge: University Press (forthcoming).

scales and other operationalisations applied to different settings and contexts currently exists, which makes the clear delineation of a polycentricity study almost as important as its empirical components for a useful interpretation of its results. Together with Wessel Ouwehand and Nicola Cortinovis we gave it a try for European cities and regions[23].

Using econometric estimation techniques on the impact of spatial organization on productivity for European labour market regions, we wanted to expand the existing knowledge base – which is mainly US-based – while also introducing several measurement and estimation improvements. We predict regional total factor productivity in European regions with both ordinary least squares and two-stage least-squares models, to address endogeneity. A great deal of empirical work has traditionally linked external economies associated with size or structure to productivity levels. However, only recently have studies stressed and investigated the potential bi-directionality inherent to this linkage, as regional productivity in itself could influence a region's growth or its spatial organization. As long as at least some production factors are mobile, higher productivity levels attracting firms and people could run very much in parallel with the traditional assumption that size leads to urban or industrial clustering benefiting productivity. Likewise, high land and real estate prices characterizing highly productive urban areas might cause people to move away from the main city cores to neighbouring areas, which subsequently experience growth and clustering in their urban centres. Three dimensions of regional urban structures are utilised: urban size, polycentric arrangement of centres and dispersion of centres in EU regions in 2012 (figure 5).

Figure 5: Dimensions of regional urban structure



Source: Meijers & Burger (2010).

23) W. Ouwehand, F. van Oort & N. Cortinovis (2018), "Spatial structure, urban hierarchy and productivity in European regions". Working paper, Erasmus University Rotterdam.

Rank-size distributions are used to measure cities' polycentric degree in regions, and surface occupied by urban and non-urban functions are related to dispersion patterns. Size we measure by population. To construct strong and valid instrumental variables, much effort was put in constructing similar indicators for all European regions in 1850, using old handbooks on city rankings and land-use. Using control factors for accessibility, human capital and country-block fixed effects, we came to remarkable conclusions. We find significant causal effects for both urban size and structure. Larger cities are more productive, but a group of polycentric cities is not[24]. Testing with interaction terms suggests that "borrowing size" helps when all cities in a region are small ("together stronger"), but not when one of the cities is larger: that city will attract the economic productivity gains. The results hold after several robustness checks with changing urban and regional definitions.

Taking these results seriously, attempts to translate polycentricty into governance debates have to be carefully assessed, in Europe and perhaps also in the Netherlands. The much heard thought that polycentricity can work for agglomeration economies as long as local governance is prepared to invest in mutual accessibility and sectoral complementarities, is not unambiguously proven in the European context[25]. Instead, planning for larger cities may be more useful for productivity gains. Of course, polycentric urban planning can have other gains than productivity (like environmental protection or traffic reduction), that also can be valued. This makes policy recommendations based on urban and regional research also partial in nature. Yet, since economic gain is a central argument in the urban growth debate, less governance fragmentation in urban areas and more focus on density that facilitates scaling may be considered beneficial[26].

24) This contradicts the US-study of E. Meijers and M. Burger (2010), "Spatial structure and productivity in US metropolitan areas". *Environment and Planning A* 42: 1383-1402, that find direct positive impacts from both size and polycentricity.

25) G. Teisman (2006). *Stedelijke netwerken; ruimtelijke ontwikkeling door het verbinden van bestuurslagen*. Den Haag: NIROV; F. van Oort, E. Meijers, M. Burger, M. Thissen & M. Hoogerbrugge (2015), *De concurrentie-positie van Nederlandse steden in netwerkperspectief: van agglomeratiekracht naar netwerkkracht*. Den Haag: Platform31.

26) See for more recent work on this: T. van Raan (2018), "Urban scaling and its relation with goverance structures and future prospects of cities". Working paper, Leiden University; and R. Ahrend, E. Farchy, I. Kaplanis & A. Lembcke (2014), What makes cities more productive? Evidence on the role of urban governance from five OECD countries. Paris: OECD, Regional Development Woking Paper 2014/5.

Spatial networks matter

The concept of regional competitiveness has become a dominant concept within public policy circles in developed countries over the last decades[27] and has been translated into policy goals by the European Commission and national governments across Europe[28] and in all other continents. Relevant regional policies involve the conditions in the microeconomic environment under which productive firms can prosper and new firms and investments are attracted. Benchmarking exercises have become particularly popular within regional economic policy-making in recent years, enabling policy-makers and practitioners to measure, analyse, and compare competitive regional performance. From a theoretical perspective, such popularity is linked to notions concerning the means by which regional governments are able to learn about the effects of economic policy, particularly through methods based on comparison or monitoring.

The urban and regional economic discipline does not view the concept of regional competitiveness very favourably. It is argued that regional competitiveness lacks a clear, unequivocal and agreed-upon meaning within the academic literature. The concept seems to refer to good governance and to numerous regional characteristics affecting business performance but not to identification of any explicit causal relationship between economic performance and such regional characteristics. Thus, benchmarks and composite indices present relationships between inputs and outputs of competitive processes without much discussion of causality or the weighing of inputs. Prevailing critical discourses in this area have highlighted the distinctiveness of regional environments as limiting the utility of what is considered 'copy-and-paste' and 'one-size-fits-all' policy-making, as regional stakeholders purport to transfer perceived 'best practices' from one region to another. Concerning regional development, several authors have drawn attention to the potential importance of global networks as sources of goods and knowledge in shaping firm competitiveness in a particular area[29]. This international relatedness, together with interregional networks, is precisely what is missing from many current empirical studies of competitiveness. Economist Paul Krugman, therefore suggests that the competitiveness debate addresses several time-honoured fallacies about international trade and productive relations, concluding that the debate is now dressed up in (too) pretentious rhetoric[30]. The international network dimension must be brought into analyses of regional competitiveness to distinguish localised from network growth determinants.

27) G. Bristow (2005), "Everyone's a 'winner': problematising the discourse of regional competitiveness". *Journal of Economic Geography* 5: 285-304
28) R. Baldwin & C. Wyplosz (2009), *The Economics of European integration*, London: McGraw-Hill.
29) N. Cortinovis & F. van Oort (2018), "Between spilling over and boiling down: network mediated spillovers, local knowledge base and productivity in European regions". Working paper, Erasmus University Rotterdam.
30) P. Krugman (1996), Making sense of the competitiveness debate. *Oxford Review of Economic Policy* 12: 17-25.

Central positions in international networks of trade, investments and labour (talent), are dependent on attractiveness of regions and cities for such actors and flows, and many cities choose to invest in such attractiveness elements. In this, both producer and consumer city investments are relevant, with the latter growing in importance over the last decades because of its supposed impact on talent and human capital. With Mark Thissen and others, I worked for some time now on an agenda on regional competitiveness and regional policies in Europe using data on economic networks, like trade and talent[31]. Defining regional competition as market overlap in trade, FDI and knowledge, it is shown that for heterogeneous markets, the number and ranking of competitors varies, and that one-size-fits-all policies are by definition not effective. Competition is place-specific, product market-specific, sector-specific, and time-specific. Formulating so-called smart specialisation policies aiming for competitiveness through localised innovation and specialised production strategies, a recent EU policy introduced ahead of any thorough impact research, are bound to be ineffective when these network linkages are ignored. The globalised value-chain character of many of these networks cause far more complex impacts on local economies than can be understood from simple trade-balance or benchmark comparisons. Several years after the introduction of the smart specialisation policy, empirical underpinning of it remains scarce. It is particularly troublesome that the "success" of smart specialisation policies and goverance currently leans on best practices, while empirical evidence on economic impacts is lacking.

The ignoring of regional economic network complexity and reliance on storytelling and speculation comes to the fore in a recent research project on the impacts of Brexit on regions in the UK and the EU, granted by the Economic and Social Research Council in the UK, a joint effort with Mark Thissen, Bart Los, Nicola Cortinovis, Raquel Ortega-Argilès and Philip McCann. Prior to the Brexit voting in 2016, storytelling was the norm, especially by the Leave campaign, and any plausible research on the impacts was lacking. The outcome of the referendum was a real shock, not anticipated by anyone. Shocks do not come much better for identification strategies by economists. Using similar data as applied for the critical assessment of regional competitiveness and smart specialisation strategies in EU regions, we tested the regional-economic consequences of a hard Brexit scenario – at the time of starting the project seen as an unrealistic option. We especially look at trade-related effects, using regional input-output data on traded goods and services to determine impacts on local GDP and local labour income when trade flows crossing UK borders are being exposed to a trade-stop[32]. The exact nature of a trade-deal between the UK and the EU or other countries after Brexit is still not known, yet we are able to determine the *exposure* of local economies to Brexit[33]. Asking ourselves "which shares of local GDP and

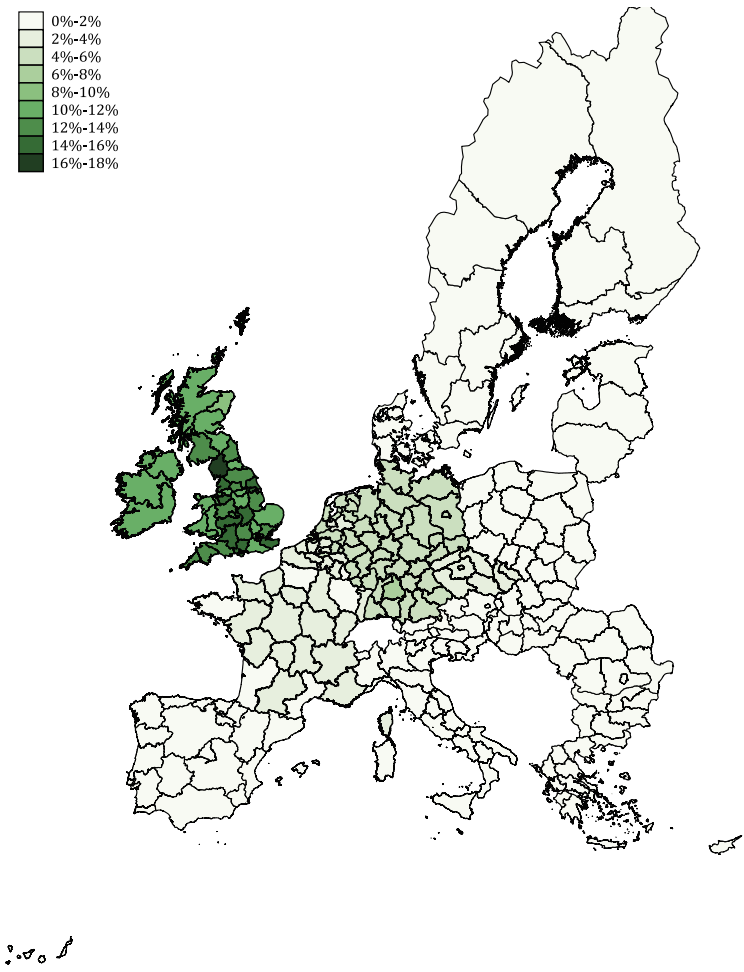
31) M. Thissen, F. van Oort, D. Diodato & A. Ruijs (2013), *Regional competitiveness and smart specialization in Europe. Place-based development in international economic networks*. Cheltenham: Edward Elgar.

32) W. Chen, B. Los, P. McCann, R. Ortega-Argiles, M. Thissen & F. Van Oort (2018), "The continental divide. Economic exposure to Brexit in regions and countries on both sides of the Channel". *Papers in Regional Science* 97: 25-54.

33) For the UK regions, direct trade linkages (export, import, re-export and re-import), indirect trade linkages via other UK regions and third country demand mediated via EU value-chains are taken into account. For EU regions, direct trade linkages (export, import, re-export and re-import), indirect trade linkages via other EU regions and third country demand mediated via UK value-chains are taken into account. UK-EU and EU-UK demand linkages mediated via third countries are excluded from analysis.

regional labour income are at risk as consequences of future Brexit-related trade barriers" is not identical to "which shares of regional labour income and GDP will be lost as a consequence of Brexit". The impact of tariffs and non-tariff barriers will only be partially that of the exposure (dependent on selection of goods and services to be targeted and the height of the tariffs), substitution effects may occur and competitiveness on cost advantages and locational properties (like agglomeration advantages) may mitigate impacts locally, but regions that are exposed more will arguably (and proportionally) also be impacted more. It is this mechanism that leads to the following remarkable map (figure 6).

Figure 6: Regional shares of local GDP exposed to Brexit



Source: Chen, Los, McCann, Ortega-Argiles, Thissen & Van Oort (2018).

The economic exposure of UK regions to a hard Brexit are over 4.5 times more severe than in mainland Europe due to the integration of UK production and services into global value chains. Ireland has levels of exposure comparable to those of UK regions. Ironically, manufacturing based regions and cities voting *Leave* are relatively much more exposed than the business and financial service economies in London. Yet, because of its' sheer size (despite non-specialization there is still a lot of production in Greater London), due to linkages of services to manufacturing elsewhere, and because of a possible lack of future talent or FDI flowing into the City, the London economy is not expected to be unharmed from Brexit.

With 12% of GDP and jobs at risk in UK regions compared to just over 2% in Europe: those figures resonated deeply in presentations and discussions in Birmingham, Leeds, London and Edinburgh following the research. With research team members Mark Thissen and Nicola Cortinovis, we added the impacts on competitiveness to the discussion, by showing that UK cities and regions will probably witness rising production costs for the products and services they produce by typically 2% (and much more for certain sectors, and again in magnitude these are more than three times larger than EU counterparts) in case of a hard Brexit, and that UK regions are already losing market shares in important production and export markets in Europe and globally. Such cost increases are sufficient to wipe out the profit margins of many sectors. In Birmingham, experts in the automotive industries indicated that investments in plants and production lines were substantially downsized (more than halved) last year. Not so in mainland Europe. Similar signals came from industries in The North of England, Scotland and Northern-Ireland. Less investments, rising prices: competitiveness-wise the UK regions and industries face major challenges indeed.

Brexit has not taken place yet. Yet, besides raising awareness of the network impacts on local economies, the meetings in Edinburgh, Birmingham, Leeds and London where our research results were discussed, also resulted in lively debates amongst experts and think-tanks regarding local strategies and how to deal with this possible future. The world does not stop innovating, changing, individualising and capitalising because of Brexit. It is the *uncertainty* of what Brexit may entail, and under what conditions business has to work in the future, that seems to weaken creativity, expectations and trust. Policy-oriented stakeholders are aware of that, and in all four cities it was stated that local policy should remain focused on the existing agendas of innovation, skill-upgrading, employment, and creating a favourable regional context for accommodating societal challenges such as energy transition, ICT-based development in industries and households, sharing economies and technological advancement. Storytelling could be convincing and helpful at this stage of policy implementation – yet plausible stories that help interpret the calculated *fallout* outcomes and help mitigating strategies locally, appear hard to formulate at the moment.

Urban and regional economics: a knight in shining armour?

The three examples discussed in this lecture show that urban and regional economics as a discipline has powerful tools to show impacts of regional policies on various spatial scales, in various societal contexts. The discipline adds rigor and identification to complex societal issues. It could be seen as a knight in shining armour, helping out the economic geography damsel in distress. But the knight needs damsels and policies in distress to shine – and interpretation, contextualisation and applied policymaking of urban and regional economic research outputs is better off by economic geographical interpretations and story-telling embedding. It is always good to invest in careful listening to policy needs and processes as well.

In case of the Brexit research, it has been widely suggested in the meetings with policymakers and entrepreneurs that now is the opportunity to re-think city matters and policy more seriously. There is much debate in the UK and societies want to change – the meetings were a prime witness of that. The inequality in economic development between Greater London and other regions in the UK arguably is one of the main reasons for the 48/52 vote on leaving the EU. The "regions and places that do not seem to matter and feel left behind[34]" and the "geography of discontent[35]" have gradually turned into major policy challenges. While all UK-regions are outward looking and cherish talent and growth opportunities, the meetings strongly suggested that without place-based policies and investments, the divergence will only grow larger. This lecture showed that places matter, that spatial structure matters, and that spatial networks matter in economics and policy, next to sorting effects of people in firms in urban and regional locations.

This line of research I intend to continue at the Department of Applied Economics at the Erasmus School of Economics and at the Institute of Housing and Urban Development Studies (IHS). Its results should be interesting for urban and regional economic disciplines, economic geography, public economics, international economics, management and industrial organisation studies, and labour economics. I call it "related variety in practice". Ideas for research projects on urban and regional economic interpretations of foreign direct investment, relatedness and structural economic change, urban amenities, creative class, inequality, migration, alumni, skills, firm ownership, entrepreneurial ecosystems, subjective well-being, health, competitiveness and resilience are there. And campuses, as mentioned. The agenda is never empty.

34) A. Rodriguez-Pose (2018), "The revenge of the places that don't matter (and what to do about it)". *Cambridge Journal of Regions, Economy and Society* 11: 189-209.
35) B. Los, P. McCann, J Springford & M. Thissen (2017), "The mismatch between local voting and the local economic consequences of Brexit". *Regional Studies* 51: 786-799.

Words of thanks

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Previous inaugural addresses – Erasmus School of Economics

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