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# Measuring innovation space: numerical devices as governmental technologies

Andreas Öjehag-Pettersson 

## ABSTRACT

The context of sub-national regions in Sweden is used to illustrate how rankings and indices operate as part of contemporary governing of space and territory. An empirical study of an index designed to measure the innovative capacity of these regions is presented to illustrate how such numerical devices are invoked as part of policy by providing policy-makers with a means to define reality, guide strategy and legitimize certain actions. Drawing on both the literatures of governmentality and the sociology of quantification, the construction of the index and its deployment into politics are examined with a focus on the performative aspects of mobilizing such technologies in governing. The analysis shows how an instrument intended as a learning tool for regions and regional policy-makers turns into a device through which power operates in the processes of marking, grading and commensuration, in turn reinforcing established orders among the regions. Following from this, it is found that such numerical devices are important governmental technologies that help relay and institute political rationalities. Therefore, they should be considered more carefully in any analysis of discourses of regional development, which is a field permeated by rationalities of innovation and competitiveness.

## KEYWORDS

regional development; territorial restructuring; competitiveness; ranking; Sweden; governmentality

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## INTRODUCTION

For the last couple of decades, a powerful discourse about global competition has swept through Europe and beyond transforming not only the state but also the soul of the citizen subject along neoliberal trajectories of development (Brown, 2015). Not restricted to firms, businesses and corporations, competition is currently thought to extend to territorial units so that the mantra of competitiveness has become a more or less unquestioned virtue of nations, regions, cities and humans alike. In the scholarly literature this change in the form and function of territory has been recognized as the birth of a ‘competition state’ (e.g., Cerny, 1997; Jessop, 2002) as well as ‘entrepreneurial’ modes of governing (cf. Harvey, 1989). Indeed, this line of reasoning is now so common that few pause to reflect upon the prerequisites for thinking about cities, regions and nations in terms of competitiveness. A rationale that, just two decades ago, economists such as Paul Krugman

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(Krugman, 1994) argued was not only meaningless but also a ‘dangerous obsession’ among governments and government officials (Fougner, 2006). Thus, while the message of territorial competitiveness is relatively new, it ‘has been hammered home by governments, corporations, and the media to the point that it is taken for granted, a fact of life that is so obvious that we unthinkingly acquiesce to its dictates’ (Rinehart, 1995, p. 14).

In relation to this discourse of competition between territorial units, the sub-national regions are often pointed to as the most appropriate spaces for fostering competitiveness. Put crudely, the argument goes that globalization puts tremendous pressure on states to reorganize their internal territory (in terms of both form and function) so that they can better compete for whatever resources they need in global markets. Therefore, rather than the state existing for its regions, the reverse applies. Regions must, in a sense, fend for themselves in competition with each other and show that they contribute to growth for the state and help make their nation competitive overall. In many countries this marks a profound shift in terms of regional policy, particularly so in Sweden, where the focus has instead been on redistribution, equality and democratic ambitions (Säll, 2014). While this process unfolds differently, and unevenly, depending on the national context, a range of publications over the past two decades has characterized this *new regionalism* as being widespread throughout Europe and beyond (e.g., Cox, 2009; Harrison, 2006; Jones & MacLeod, 2004; Keating, 1998; Lovering, 1999; MacLeod, 2001; MacLeod & Jones, 2007).

In addition, it is not only the notion of competitiveness that has been firmly established among governments but also the hailed trinity of creativity, innovation and entrepreneurship as *the means to become competitive* seems equally unquestioned as a virtue. Therefore, *to govern innovation* has become paramount for policy-makers and government officials in different contexts as they struggle to become the most innovative region, city or country. It is argued here that to govern any domain of reality requires a significant amount of work that sometimes receives too little attention in terms of the political dimensions at stake. Specifically, in order to govern something, that thing must be installed as a space that is possible to act upon by the government, where policies can address problems and where programmes can be applied (Dean, 2010; Li, 2007). In this sense, innovation is no different from other governable objects and so, therefore, it too must be made governable. While there is certainly no shortage of literature that discusses what innovation is, few studies focus on the politics of installing innovation spaces that can be set up and governed according to the rationalities of global competition. In this regard, like in most present-day governance, numbers and quantification seem to play a specific, and highly important role. Numbers, indices and rankings, conceived of here as *numerical devices*, serve as governmental technologies that help mark and commensurate disparate phenomena, making them more easy to govern. In addition, numerical devices are also important in terms of legitimacy as they often produce an illusion of transparency that is hard to achieve with words and written text (cf. Espeland & Sauder, 2007; Espeland & Stevens, 2008; Hacking, 1991; Hansen, 2015; Hansen & Flyverbom, 2015).

Therefore, the purpose of this paper is to provide insights into how numerical devices operate in the contemporary governing of innovation in regional development practices throughout Europe and, more generally, how numbers are part of making such domains governable in the first place. To show this, it scrutinizes the Reglab innovation index, which is designed to measure the innovative capacity of Swedish regions and does so by examining the construction of the index as well as its deployment in politics. As a case, this can be understood as *paradigmatic* (Flyvbjerg, 2006) with respect to how regional development is governed to produce innovation and competitiveness as well as in relation to how numbers operate in this process. Hence, the paper also illustrates the connection between space and politics in the present discourse of global competition and how regions are reimagined, in certain ways, as innovation spaces that are made governable through the use of, among other things, numerical devices.

The paper is structured as follows. It next sketches the contours of how regional development has changed throughout Europe in general and Sweden in particular into a governance practice

that is concerned first and foremost with competitiveness through innovation. It then turns to the theoretical framework of governmentality in order to conceptualize the role of numerical devices in governance and to flesh out a set of important features of such devices when they are mobilized as part of governing. The paper uses those features as analytical concepts in an empirical analysis of the construction and deployment of the so-called innovation index in Swedish regional governance. Finally, the paper ends with a discussion of the results in relation to existing research.

## REGIONS AS INNOVATION SPACES

In the trope of global competition, the spatial construct of ‘the region’ has gained a prominent position as the unit that states need to reinforce, fortify and strengthen in the struggle for resources. Larger than the local context, yet more flexible and smaller than nation states, the sub-national region constitutes a space where various authorities can come together to produce the competitiveness they are all presumed to require. This moment of ‘resurgent’ sub-national regions has not gone unnoticed among scholars as well as policy-makers (cf. Cox, 2009; Lobao, Martin, & Rodríguez-Pose, 2009).

One school of thought that started to account for the resurgent regions described the process in terms of a *new regionalism* (Keating, 1998).<sup>1</sup> From the onset, this concept had a somewhat dual character as it was within not only university institutions where it grew in popularity and importance but also government. In policy circles and governance networks it started to designate a new movement that normatively stressed the importance of regions and increased regionalization of the nation state ‘from below’ (cf. Syssner, 2006). In practice, this duality has been evident during the past decades not least in the strong presence of researchers involved in policy-making and in the general mobility across the spheres of research, politics and policy implementation. Indeed, from the outset, some scholars pointed out how research on new regionalism was based on what they understood as lofty ideas, far-fetched assumptions and an unhealthy influence of policy-making. One of the most important of such interventions in the discussion described new regionalism as ‘a set of stories about how *parts* of a regional economy *might* work, placed next to a set of policy ideas which *might* just be useful in *some* cases’ (Lovering, 1999, p. 384) (emphasis is original). Similar forms of critique were launched early on by Fernandez (2000) and Bristow (2005) who also pointed to processes where serious research on regional economics was conflated with popular policy discourses that promised competitiveness on the proviso that they could be interpreted and disentangled correctly.

This wave of questioning in turn set into motion a process whereby many of the prominent scholars on new regionalism started to reformulate their own theories and predictions, while still maintaining the existence of empirically observable changes going on with respect to the regional scale of policy-making (cf. Harrison, 2006; MacLeod, 2001). Not least, proponents and critics of the new regionalism thesis both maintained that competitiveness today is a dominant policy paradigm for European regions.

Whilst the discourse of resurgent regions describes a process spanning over Europe and beyond, most scholars also emphasize that its expressions vary according to context (Keating, 1998). In the Swedish case, the changes have been extensive and in line with new regionalist thinking. More specifically, Line Säll (Säll, 2014) has shown that the political rationalities that structure the governance of Swedish regions have shifted during the last decades so that rationalities of participation and redistribution, formerly the backbone of Swedish regional development, have receded in favour of a competitiveness rationality. One expression of this has been the ongoing struggle over territorial reconfigurations within Sweden where the last two decades have been characterized by attempts (successful and unsuccessful) to create larger, more competitive regions (Mitander, 2015; Öjehag-Pettersson, 2015).

In sum, sub-national regions, throughout Europe as well as in Sweden, have developed into spaces where various authorities seek to deploy policies that could help foster competitiveness. As they have done so, it is not only competitiveness that has been reaffirmed as a goal but also innovation as a means for reaching this goal. Legendijk (2001) describes this context and development as one where various territorial innovation models (TIM) were conceptualized and put to work over time. Thus, Porter's (1990) cluster concept, the ideas of regional innovation systems (Cooke, 1992), learning regions (Asheim, 1996), creative cities (Florida, 2012), flexible specialization (Asheim, 1992) and, more recently, smart specialization (McCann & Ortega-Argilés, 2015) are but some of the many examples of academically informed policy discourses that promote competitiveness through innovation that has circulated throughout European regions. In more recent writings, such policy discourses have been called 'fast policy' (Peck & Theodore, 2015) to emphasize their volatile character and the experimental fashion through which they are introduced.

To be able to govern such a process where space is restructured, considerable governmental efforts must be made even before actual programmes can be rolled out and certain policies can be put to the test. Such practices of demarcation and production of policy problems often involve the mobilization of numbers, rankings and other forms of measurement tools, precisely to mark the domain in question and to make it a calculable object (cf. Rose, 1991). In relation to space, scholars of political geography have, over the last decade or two, theorized how numbers and calculation are vital for producing governable domains and indeed some, like Stuart Elden (Elden, 2005, p. 15), argue that '[c]alculation is [...] key to the constitution of the modern state'. Similar argumentations are made by Hannah (2009) in his genealogy of calculable territory, as well as by Rose-Redwood (2012) who illustrates the importance of calculability when studying how the modern system of street addresses can be said to have shifted from a representation of space into something that constitutes physical space as we know it. In short, a wide range of research points to the importance of numbers, and, more principally, calculability, as spaces are being made governable (cf. Crampton, 2010; Crampton & Elden, 2006; Elden, 2007). Therefore, to understand the recent regional resurgence with its emphasis on competitiveness through innovation more thoroughly, it is important that any analysis includes the ways in which such governmental logics operate through numerical registers.

## NUMERICAL DEVICES AS GOVERNMENTAL TECHNOLOGIES

As mentioned, it is argued here that we may conceptualize rankings, indices and other forms of numerical measures designed to order, evaluate and control as *numerical devices*. Moreover, drawing on the growing body of research that uses the Foucauldian concept of *governmentality* (e.g., Bacchi, 2009; Brown, 2015; Cruikshank, 1999; Dean, 2010; Ettlenger, 2011; Huxley, 2008; Miller & Rose, 2008; Li, 2007), it is also possible to understand numerical devices as a particular form of what is often denoted *governmental technologies*. Before a further elaboration of this concept, a brief discussion of the basic thoughts and points of departure for this school of thought is merited.

Building on the work put forward by Foucault (2007, 2008) in his now famous lectures at the Collège de France, governmentality scholars have focused on understanding *how* government is enacted and *how* it relates to knowledge and truth, and they have also paid close attention to what we may call the conditions of possibility for governing. When doing so, they have stressed how in order to govern any aspect or domain of reality it must first be demarcated and problematized, which means that moments of problematization are intrinsic to rule rather than external to it. In addition, the problematizations are understood to be nested in certain political rationalities that constitute the underlying, internal logic that must be in place in order to problematize a given domain in a particular way and not another (cf. Bacchi, 2009).

Moreover, governmentality scholars have focused extensively on how moments of problematization and demarcation are intertwined with what anthropologist Tania Murray Li (Li, 2007) identifies as moments of 'rendering technical'. To render a problematization technical can be thought of as shorthand for a whole set of practices that aim to turn the domain to be governed into an intelligible field, that through this rendering becomes visible and amenable for calculation, prediction and action (Rose, 1999). In other words, rendering something technical is vital in order to institute a problematization as a governing problem around which policies can be formulated and to allow for various forms of expertise to intervene. In Li's (2007) conceptualization, this process also involves what she calls a 'will to improve', which will be returned to below and elaborate further.

Returning to the concept of governmental technologies, they, then, are crucial for rendering a problematization technical, and thus they can be described as the 'mechanisms, procedures, instruments, tactics, techniques, technologies and vocabularies' (Dean, 2010, p. 42) through which rule is accomplished. These vary greatly in scope as well as complexity and governmentality studies have shed a light on how mundane apparatuses such as a form to fill out at a government agency to more spectacular arrangements such as benchmarking conferences for regions fill an important and specific function in rendering the problem at hand technical, thus enabling rule according to whatever political rationalities involved. Moreover, it is important to keep in mind that the governmental technologies are not reducible to a subordinate category that merely serves as an infrastructure for the political rationalities, but rather governmentality studies emphasize how technologies of rule also form rationalities and affect the way we think of a problem.

Numerical devices can therefore be conceived as examples of governmental technologies whose operation is intertwined with political rationalities as a particular domain is being installed as a governable terrain. They help relay the rationale, and are vital for providing an infrastructure for action on behalf of government; however, they are also very much shaping the object that is to be governed. Clearly, then, as argued by Rose (1991, p. 676), 'such numbers do not merely inscribe a pre-existing reality. They constitute it'. Innovation may be an empty signifier that can be understood as many things but after inscribing it in terms of numerals and indicators those will affect what innovation *really is*, whether or not this is the goal. Therefore, as scholars have noted previously, we may speak of a 'politics of numbers' not only in the sense that numbers are part of politics but also because they are not, despite how they often are portrayed, neutral and transparent representations of reality (Alonso & Starr, 1986; Desrosières, 2002; Rose, 1991). By engaging with recent works concerning the sociology of quantification and the construction of legitimacy through numbers, it is argued here that it is possible to understand numerical devices such as rankings and indices as having three main qualities when they are mobilized as part of governing: numerical devices *mark*, they are *commensurate* and they are *performative*.

### Marking, commensuration and performativity

One of the most basic, and important, functions of numerical devices is to *mark*, which is in some ways similar to the function of words. For instance, numbers on houses along a certain street, telephone numbers, postal codes, bank account numbers, IP-addresses, or the numbers on trains and buses are used to label the social reality that surrounds us and to distinguish and separate entities from each other. This may seem simple enough; however, some of those markings are certainly complex governing achievements in themselves. Consider for instance the so-called International Classification of Diseases (ICD) protocol issued by the World Health Organization (WHO). With a history spanning well over a century the ICD has gone through a number of revisions and since 1994 ICD-10 is the version used by all 194 member states in the WHO and they use it as a 'diagnostic tool for epidemiology, health management and clinical purposes' (WHO, 2016). Moreover, this system of classification forms the basis for resource allocation within the WHO and functions as the basis for a number of important governance statistics around the

globe such a mortality calculations. The system is an example of a very precise and expandable classification device. For example, in the case of the condition labelled F31.1, we can work out that since it is under the category F we are dealing with a mental and behavioural disorder. The next figure '3' informs us that this falls under the subcategory 'mood disorders'; the following number '1' is yet another step down in the classificatory structure and signifies that this is a bipolar affective disorder. Finally, under this category sits a number of versions of bipolar affective disorder and so the last figure to the right of the decimal point reveals that disease F31.1 is 'bipolar affective disorder, current episode manic without psychotic symptoms'.

The ICD-10 example illustrates how the markings of numerical devices make possible a very precise form of categorization that is hard to replicate with words. In addition, numerical devices offer a format that is additive, combinable and easily interpreted across cultures and they are often also perceived to be more transparent than words (Hansen, 2015). This illusion of transparency is one of the reasons that make numerical devices attractive as governmental technologies. However, what is probably even more important for this popularity is that they also represent the first step in *commensuration*.

For Espeland and Stevens (2008, p. 408), commensuration entails 'the valuation or measuring of different objects with a common metric' and thus by marking with numbers it becomes possible to 'transform all difference into quantity' uniting 'objects by encompassing them under a shared cognitive system'. Hence, the rising number of indices and rankings in social and political life, such as the Reglab innovation index that serves as the empirical focus of this paper, are results of commensuration processes. They have a capacity to 'reduce, simplify and integrate information' (Espeland & Sauder, 2007, p. 16) while simultaneously marking out difference precisely through this unification as it makes it possible to distinguish in the case of regions, for example, between one with high levels of innovation and one with low levels. Commensuration in the form of indices and rankings thus reduces all the possible forms of difference in terms of innovation in different regions to a single measure. In other words, numerical devices that commensurate help decontextualize and make the phenomenon that is measured more mobile which contributes to the often authoritative position of numbers in governance (Espeland & Stevens, 2008; Hansen, 2015; Hansen & Flyverbom, 2015).

In sum, marking and commensuration can be understood as two ends of a spectrum for the functions of numerical devices when they are mobilized as governmental technologies. On the one hand, the marking function is always required for commensuration and, on the other, few devices exist exclusively for marking, but rather, like the ICD-10, they are a platform for commensuration. Indeed, ordering is often an explicit goal attached to numerical devices as governmental technologies, and in cases when it is not, it is still an implicit quality.

While all numbers are mobile and combinable, this ordering function of rankings and indices makes them what some researchers call *reactive* (Espeland & Sauder, 2007; Espeland & Stevens, 2008). This concept, or rather reactivity, began as a methodological problem for researchers concerned with how the practices of measurement in itself seemed to influence the object of study, especially if this object was a person or an organization. In this sense, reactivity was a form of contamination of the data that questioned the reliability and validity of results. However, in the broader field that is concerned with the sociology of quantification and the politics of numbers, researchers have mobilized reactivity as a concept that helps describe how actors can be reflexive about the fact that they are being measured and how this can produce a range of unintended effects such as feedback loops and self-fulfilling prophecies. A contrasting way of understanding the ordering quality of numerical devices is to view them as *performative* in line with the way the concept has been developed in feminist theory or in actor-network theory (ANT) (cf. Butler, 1993; MacKenzie, Muniesa, & Siu, 2007). While performativity and reactivity are sometimes used to illustrate similar effects of measurement, it is important also to point out how the two concepts are located at different sides of an ongoing discussion concerning the realism of numbers and

statistics. As Desrosières (2002) has shown, not only recent scholarly development but also rather the history of the development of statistics involves a tension between perspectives that emphasize the independent reality of things being measured, on the one hand, and perspectives that emphasize how statistics and measurement produces 'real' objects, on the other. To prefer the concept of performativity, which is done here, is to signal a position that leans more to the side where reality is understood to be produced through our social relations, among them measurement and ranking.

This means that numerical devices such as the Reglab innovation index cannot be understood as mere representation, or reflections, of whatever phenomena they are trying to measure. Rather, as emphasized above, the index helps constitute and produce innovation as a governable object and, therefore, when it is released, it will be part of the 'doing' of innovation throughout the regions. Therefore, recognizing the performative capacity of numbers is a way of pointing to the fact that numerical devices, like 'speech acts' (Austin, 1976), do something to the context in which they are articulated. They are not exact representations of reality, nor neutral ways of classifying and grouping social phenomena. Rather, they are a part of the iterative practices that brings objects and subjects into being in what we call 'the real' (Butler, 1993).

## NUMERICAL DEVICES AT WORK: THE REGLAB INNOVATION INDEX

The empirical focus of this paper is an index constructed by the Swedish cooperation arena Reglab. This organization is financed by its member institutions with the task to facilitate learning, knowledge creation and support for actors involved in regional development in the country. The main ambition for Reglab is to serve its members, which are predominantly regions, government agencies and other local government actors, and function in accordance with their articulated needs in terms of learning and exchange of knowledge. For this reason, some of its main activities have been to organize conferences and workshops, often in cooperation with academic institutions and researchers, as well as to initiate projects and create tools that can assist the members as they strive to learn from each other. One such project that has been ongoing since 2011 is the innovation index.

Developed by Reglab together with the consultancy firm Kontigo, the index took shape through a series of workshops where people from the membership organizations in Reglab contributed with input, critique and thoughts on how to facilitate a measurement tool that could help gauge the innovative capacity of the respective Swedish regions. While other such tools exist, notably the European Union (EU) innovation scoreboard, most operate at scales inappropriate in the Swedish context, and therefore the need for a more local numerical device arose.

The following presents an analysis of the index as a numerical device, operating as a governmental technology when regions are being governed in line with current rationalities of competition and competitiveness. The analysis is divided into two sections. The first is based on the official documentation provided by Reglab in three different publications (Kempinsky, Hallencreutz, & Lindqvist, 2012; 2014; Lindqvist & Kempinsky, 2016). The aim of this part of the analysis is to show how marking and commensuration functions in practice, based on the three iterations of the index that have been released so far. In addition, by showing how the index is constructed and assembled, this first part provides insight into the political dimensions at stake when trying to produce a common measure of a complex phenomenon such as innovation.

The second section investigates the performativity of the index after it was released. This section is based on a form of internet ethnography (Sade-Beck, 2004) where the author conducted searches for documents that contained references to the index using four widely recognized and established search engines: Google, Yahoo, Bing and duckduckgogo. More precisely, by entering the search string 'Reglab innovationsindex' (which is the Swedish name) at irregular intervals during roughly a 18 months (November 2015–April 2017), the author managed to collect a range of official policy documents where references to the index are included. In addition, what



may be called remnants of the index at work, such as PowerPoint presentations and other similar presentation documents from various agencies and regional authorities, also ended up in the searches. In sum, this data generation process yielded a corpus containing 29 different sources which, it is argued, makes it possible to illustrate the performativity of the index as it made its way into policy-making.

While this case of Swedish regional development and the Reglab innovation index is not meant to serve as a foundation for empirical generalization, it nevertheless illustrates theoretical features of numerical devices in regional development. In that sense, the case presented may be understood as a *paradigmatic* one. As the term implies, paradigmatic cases can be used as prototypes designed to illustrate features of a given social paradigm. In this case, it is argued that the study of a local numerical device offers insights concerning not only *how* such devices are important governmental technologies more generally but also how contemporary rationalities of competitiveness through innovation are remaking spaces and sub-national territories. In other words, as Flyvbjerg (2006, p. 232) reasons, paradigmatic cases can be used to ‘highlight more general characteristics of the societies in question’ and that is the aim here.

The regional governance structure in Sweden is rather messy, so a brief note on the formal actors who are the main producers of the documents used is merited. Sweden is divided into 21 regions and in each there is an elected political body called the county council. In addition, the central state maintains its presence in the regions through the so-called county administrative boards and in some regions the municipalities have formed regional cooperation councils that also handle issues of regional development. Depending on the region, the political body responsible for regional development can be any one of these three. In certain circumstances, regions also cooperate in larger units, particularly in relation to the EU Structural Funds. In the sources used here, the governing bodies mentioned above dominate; however, they are joined by other official documentation from central state agencies that are important for regional development work in the country. Finally, in the following, when quotations from documents are used, they have been translated from Swedish into English.

### Construction and communication of the index

Examining the official documentation for the Reglab innovation index (Kempinsky et al., 2012; 2014; Lindqvist & Kempinsky, 2016), the bulk of the presentations concern the decisions made by the authors as they have chosen particular indicators to capture and represent the innovative capacity in Swedish regions. In other words, what is going on here is *marking* in action where exclusions and inclusions are necessary steps in the process. Indeed, this political dimension of constructing the index is also something about which the authors are well aware given that half the documentation in terms of pages is dedicated to theoretical argumentation where reflexivity and political sensitivity in relation to the choices made are present. Interestingly, rather than making truth claims about innovation, the authors acknowledge that what they are doing in the first half is searching for a narrative that can help them make sense of innovation. In their own words, they argue that ‘the indicators must be able to lean on some existing theory in order to be explained’ (Kempinsky, Lindqvist, & Öhlin, 2014, p. 4).

The authors find what they are looking for in a theoretical model heavily inspired by popular regional development gurus such as Richard Florida (Florida, 2012) and Michael E. Porter (Porter, 1990) and subsequently they construct an index using 15 indicators that represent various important aspects of how innovation is understood to be generated according to their theoretical influences. More precisely, the indicators are grouped together in sets of five that make up three separate scales to measure a region’s *basic conditions*, its *renewal capacity* as well as its *market capacity*. When added together, the three dimensions result in a numerical device that measures the innovative capacity of Swedish regions on a scale where 100 represents the average value for all regions.

Even though the actual values on the index are then constructed as an expression of comparison, according to Reglab, the index is not designed to compare and rank, but rather to be a learning tool for politicians and civil servants in their work to produce policies for innovation. Accordingly, in the documentation it is stressed that '[o]ne of the initial thoughts underlying the index was that it is not supposed to be used to compare among regions, but rather to function as a basis for discussion concerning one's own region's capacities and basic conditions' (Kempinsky et al., 2014, p. 4).

In practice, though, comparison and ranking seem to be the very basis for learning in this case and as the text moves on in the documentation, the reflexive modality of the first half changes as the last half is dedicated to communicating results, descriptions and findings from the constructed index. This is primarily done through the use of diagrams and tables where the main principle is the ranking and ordering of regions according to their index score. When doing so, the authors use combinations of scores on the different dimensions of the index to produce what can be described effectively as policy advice. For instance, regions scoring low on the capacities dimensions but high on the basic conditions are considered to be doing something wrong in the process of turning their good conditions into innovations. As a consequence, it is argued that regions in this category should focus on policies that promote such things as entrepreneurship, mobility and commercial networks.

Moreover, as the indicators are defined, extracted and combined, marking and commensuration also produce a form of abstraction through which the politically contestable choices become obscured. Consider for instance the definitions of indicators 5 and 6:

5. The number of individuals who have changed employers in the last three years as part of the day-time population.

6. The proportion of students who have taken part in the educational concept Junior Achievement Worldwide as part of the total number of upper secondary school students. (Kempinsky et al., 2014, p. 10)

Both indicators are formulated as positive additions for the index, and thus for a region to boost its innovative capacity, it should strive to set up a labour market where the workforce changes job more often, which generally means less job security. Also, it should focus on young students' ability to start businesses and develop their entrepreneurial skills through the organization Junior Achievement Worldwide. Again, the point here is not to assess the accuracy of the index or the validity of the indicators. Rather, the point is that such markings are always political, and in this case, it could be said that they are overtly so in terms of what education should be about and how a labour market should function. However, as they are turned into building blocks of the composite index, they become part of something that presents itself as neutral, and that discloses things the way they 'just are'.

In fact, the actual assembling of the index into one scale from the 15 indicators is in itself an important part of the abstraction that helps push politically contestable choices into the background. For example, certain indicators are in themselves other index measures, which itself illustrates the high combinability and transportability of numerical devices. At the same time it also shows how this makes them opaque rather than transparent. Simply put, to disentangle any given index as it operates throughout policy documents can be a tedious task that involves following definitions and measures not only the particular numerical device in question but also a range of other devices that provide material for its construction.

In summary, the official documentation stresses that comparison among regions is not what the index is supposed to be about; however, as a numerical device, the index is intrinsically tied to practices of ranking and comparison. Through its marking and commensuration it selects, defines and promotes certain aspects and practices within Swedish regions as more important than others and it helps set the direction for the kind of innovation spaces to which regions should

aspire in order to foster competitiveness. In this circumstance, the numerical device produced here functions as a governmental technology that steers, guides and instates policy, and even though the intention is not to rank and order, this quality is clearly evident already in the documentation that describes its construction.

### Performativity of the index

Since the index was first released in 2012, it has travelled through public discourse in Swedish regional development and been a part of informal practices as well as official policy formulations. The following expands the author's description of how such a numerical device as the innovation index operates. More precisely, this means that the articulations of the index are traced in a disparate set of texts, including official policy documents as well as presentation slides and websites where the index has been used in one way or another. This is called here the performativity of the index and it is argued that the most salient articulations in this data can be grouped into two analytical categories that together help shed additional light on the index as a governmental technology. Hence, the following analysis interprets the way that the index *defines reality* in the texts, as well as how it *guides strategy*. Moreover, it is also argued that these two modes of articulation combine and *legitimize* certain actions.

A prominent mode of articulation in the texts uses the index as a descriptor for a current situation or state. In this way it functions as a platform from which further argumentation and claims can be made, along with its role to describe how things really are concerning innovation in a given region. Thus, this mode of articulation can be understood as ways that the index helps *define reality*. It emerges in formally produced policy documents, as well as in presentations where, for instance, consultants have been invited to meetings with civil servants and politicians to communicate findings or provide input concerning certain policies. A good example can be found in the document *Mobilise for Growth: Working for Innovation and Smart Specialisation in Dalarna* (Jönsson, 2015). This document is tied to the so-called regional growth strategy of region Dalarna. Therefore, it is part of a type of formal policy that all Swedish regions are required to provide for the central government of the country in order to show how they are planning to foster growth and prosperity. Consider the formulations made by Region Dalarna here:

All in all, Dalarna has a low innovation index score (around 80), which to a great extent is because of very weak basic conditions for a strong innovation climate. That is, factors such as education levels, tolerance, diversity as well as weak business structures should be strengthened. Many regions are in a similar situation. It is the larger university cities that have index values over 100. More important for the index values is the renewal capacity in the regions. Here, the variation among regions is more pronounced and it is research investment by private and public actors that is the cause. Dalarna's market capacity, on the other hand, affects the index value in a positive direction. It shows that Dalarna has good values for commercialisation (patents, brands and design) and exports. For all regions outside of the big cities, the lack of risk investment capital is evident. (p. 10)

Notice how the different components of the index are used to define reality and describe how certain states of this reality can be explained. In the quotation, and elsewhere in the text, the actual assembling of the index is not questioned, and the individual indicators are not challenged in terms of being a more or less good aspect to consider when accounting for the innovative capacity of a region. Rather, a numerical device such as this presents clear-cut boundaries and internal explanations for the values it produces. Thus, it is probably a welcome tool for policy-makers and civil servants since it shifts focus towards the numerical values of the index and away from what those represent in the first place. Therefore, it provides a manageable and precise way of writing about what is undoubtedly a complex phenomenon – the innovative capacity of a region. Notice also how the representations involving actual index values (80 and 100) contributes to a feeling of more precise statements. This function of using the precise marking qualities of the numerical device can be found in other documents as well. A very illustrative example is in the

documents produced by the county administrative boards of two Swedish regions (Jämtland and Västernorrland) as they jointly formulate an operative programme for the EU regional funds:

The overall result of the study for Middle Norrland shows that for the dimension of basic conditions Jämtland is slightly higher positioned than Västernorrland with an index value of 84,0, a middle position among all regions, while Västernorrland has an index value of 80,5. Concerning renewal capacity, Västernorrland has the index value of 71,2 and Jämtland 67,9, which places them at the bottom half of all regions. One explanation for the lower values can be the limited presence of R&D resources. Within market capacity, Västernorrland receives an index value of 87,6 and Jämtland 77,5. The higher value for Västernorrland is explained by, among other things, the region's exports relative to GNP and the number of registered patents. The total index value for Västernorrland is 77,8 and for Jämtland 76,5, which results in positions 10 and 17 respectively out of all regions. (County administrative board, 2013, p. 155)

The above reasoning shows not only how the index is used to define reality but also how the commensuration and ranking that was never intended as the primary feature in fact is what drives the argumentation. As mentioned above, it is as if the marking and commensuration are intrinsically tied to each other in this form of a numerical device, and when it operates as a governmental technology it almost forces a reasoning that focuses on the relative position among the indexed units. In this case it means that one of the most salient ways the index emerges in the texts can be considered references to rankings and relative positions of different regions.

While the quotations above illustrate how the index defines reality and is therefore already performative in that sense, they are also examples of how the index *guides strategy*. A vital part in many of the documents of this paper's corpus is precisely to formulate policy or to investigate a particular question on behalf of policy-makers. In this sense the Reglab innovation index certainly does not manifest primarily as a learning tool, but rather as an instrument that marks performance based on ranking position which signals if there is need for concern. There are, however, times when the index functions primarily as a learning tool, yet comparison among regions is usually part of such exercises as well. One example can be found in a report produced by Stockholm County Council (2013) as part of its work with regional development in the larger region surrounding Stockholm (called East Middle Sweden):

Uppsala has a lower score when it comes to basic conditions but scores slightly higher regarding renewal and market capacity (figure 15). The remaining parts of East Middle Sweden, that is the regions of Västmanland, Södermanland, Örebro and Gävleborg, end up in the field of the matrix where there is a combination of low basic conditions and low capacities. Here commitment is needed in several areas in order to strengthen the basic conditions to achieve better renewal and market capacity. (p. 38)

Often commitments such as those spoken of in the quote remain unspecified in various articulations throughout the corpus; however, at other times reports and presentations follow the index in more detail and suggest that certain indicators are particularly low for the region under discussion and that measures must be taken to rectify this. In other words, the index guides strategy and policy formulation quite directly, and when it does so, little remains of the fact that it is constructed around a particular narrative of innovation and that it has been assembled through the fitting together of disparate indicators in ways that can certainly be questioned, both in terms of politics and validity.

When considered together, the way that the index is used to define reality and to guide strategy often functions as a tool of legitimization. Thus, a third noticeable performative effect is that when the numerical device appears in policy documents, it helps point out certain paths, directions and actions as important and more *legitimate* than other possible ones. While this is obviously also achievable through the use of regular written texts, the numerical device conveys a level of certainty and closure that makes it particularly suitable for resting argumentation upon.

Indeed, a striking insight into the legitimizing function of the index is the way it is often suggested as a measurement tool for evaluation, effect measurement and evidence-based policy. Formulations such as those made by the regional cooperation council in Sörmland are examples of this: ‘To be able to follow the development concerning the prerequisites for innovation broadly, the innovation index is a good measure that also is included in the Sörmland Strategy 2020’ (Regional Co-operation Council Sörmland, 2014, p. 11).

Finally, in this context, there is another important dimension to how the index works performatively in the material. Often, the policy documents are quite glossy productions in the sense that they have a nice layout, with lots of images and typographical detail. When the index is referred to and mobilized as evidence-based policy, it often function as a modality marker that signals ‘science’, robustness and transparency. Consider Figure 1: the three pages from the innovation programme of the region Jämtland Härjedalen illustrate this performative aspect quite well. The precise and comparable format that the index is communicated through is a stark contrast to other typical pages in the document (as illustrated). The spider diagrams used to convey the results of the index not only change the modality of the text at large but also omit actual values, thus again underlining how a comparison with other regions is what is most important. Indeed, the main focus in the diagrams is to compare the region with the national average.

More generally, the science modality offered by the index is reproduced in various ways throughout the corpus. In particular, a common representation in PowerPoint slides and presentations carried out by consultants and civil servants is shown in Figure 2. Originally part of the documentation provided by Reglab, it seems to help put a focus on what is considered most important when a wider audience of policy-makers is present.

Figure 2 plots all 21 Swedish regions in a two-dimensional space, and while some of the main effects in terms of performativity are the same as with Figure 1, it is interesting to note the popularity of this particular representation throughout the corpus. The present interpretation is that such plots imbue what is in fact 21 individual and separate measures with a sense of movement and direction. While the intention may be something else, the immediate connection made by most viewers here is a linearity where one understands that movement towards the upper right would be good in this case. Thus, the graphical representation of the index quickly turns the question of ‘where are we?’ into ‘where should we be?’, again based on a comparison with other regions.



**Figure 1.** Science modality of the index.  
 Source: Innovation programme of region Jämtland Härjedalen 2020 (Region Jämtland Härjedalen (2016, pp. 7, 12, 18).

FIGURE 11.  
Prerequisites and capacities 2011  
Source: Kontigo

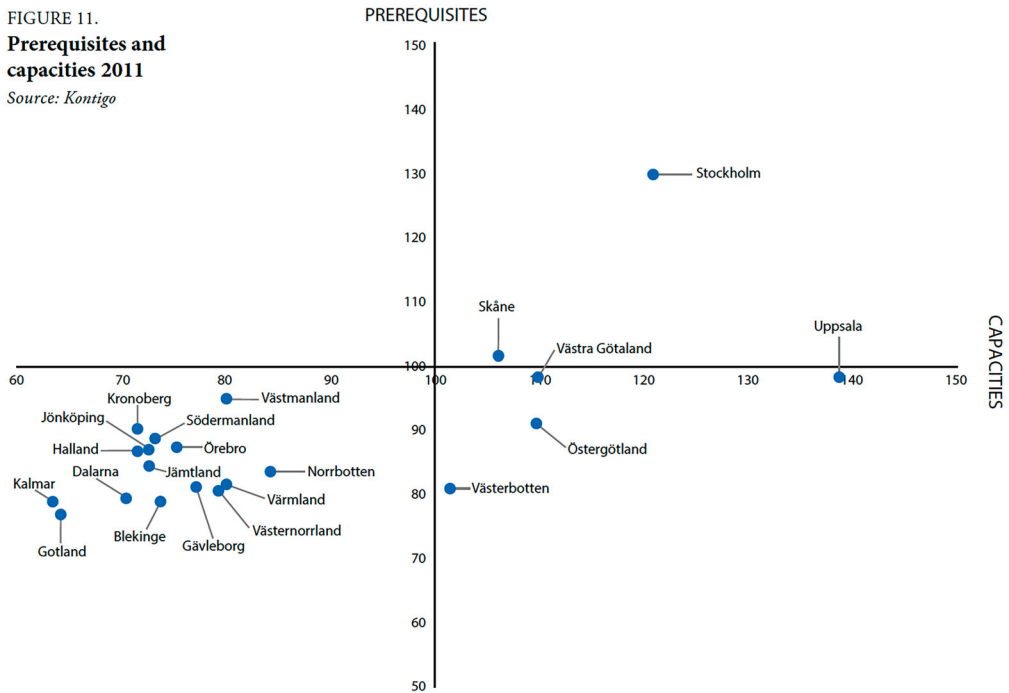


Figure 2. Linearity and sense of direction.  
Source: Official Reglab documentation (Lindqvist & Kempinsky, 2016).

## CONCLUSIONS: THE WILL TO IMPROVE AND ANTI-POLITICS IN REGIONAL GOVERNANCE

The two steps of the empirical analysis presented here have illustrated how a contemporary numerical device operates in the context of governing space in Sweden. The first section showed how already in its construction phase the numerical device, by marking and commensuration, produced rankings and particular forms of ordering Swedish regions with respect to their innovative capacity. Despite being explicitly stated that this was never the intention of the innovation index, the next step of the empirical analysis also showed that ‘in the wild’ the numerical device operated precisely along the dimensions of comparison, ranking and ordering. It was through such features that it helped define reality and guide strategy as well as legitimate certain policy actions.

Based on this analysis, the paper now briefly draws attention to a few more general aspects of numerical devices as they are made part of governing and connect these to processes where state spaces are being moulded into units fit for competitiveness. First, the innovations index did not arise as a device thrust upon those who govern Swedish regional development by some external force, but was rather created in tandem with their problematization of the domain of competitiveness, innovation and measurability. In this sense, it has been part of a ‘will to improve’ regional governance, to paraphrase Li (2007). For Li, the will to improve is an important driver for those she calls ‘the trustees’, or in other words, those inhabiting a position where their expertise makes it possible for them to claim knowledge about the needs of others. The objective of the trustees is seldom to dominate others, but rather to increase ‘capacity for action, and to direct it’ (p. 5). However, they nevertheless exercise fundamentally important governing as they structure fields of possible interventions and make certain courses of action seem more appropriate than others. In the case of Swedish regional governance, this means that innovation as a policy objective is not

only inscribed as very important but also considered important in specific ways. For all regions except the capital region of Stockholm, measures must be taken to address the fact that they lag behind. While this, in fact, is an effect stemming from the construction of the index as a device where scores are allocated based on the average of all regions, it does not matter as the index is released. Throughout the documents analyzed here, regions seek the appropriate actions to take with respect to their innovative capacity based on their index scores. Given the position the concept has in the discourse of territorial competition, it often means that the measures that regions list as important are quite encompassing and involve changes throughout the social system. This can mean everything from changing focus in pre-school education to fostering new attitudes in public service organizations or to making healthcare processes intertwine with entrepreneurship in more distinct ways (cf. Öjehag-Pettersson, 2015).

In addition, Li's (2007) argumentation draws attention to how rendering a problem technical also often means casting it as non-political. Indeed, usually the will to improve is not just non-political, it is anti-political in the sense that it serves to maintain the status quo rather than upset current power regimes. Accordingly, anti-politics re-poses political questions as technical ones, suitable for intervention by experts rather than politicians. Thus, to develop regions is in this sense more a question of how to be innovative than about the power relations that produce some regions as lagging behind and others as innovative in the first place. As mentioned in the analysis, numerical devices are well suited as instruments for anti-politics because they disclose political choices that are necessary parts of marking, and at the same time are often perceived as more transparent and objective representations of phenomena than presentations based on written text (Hansen, 2015).

In the case presented here, the connection between rendering technical and the anti-political dimension of governing can be exemplified by the way that numerical devices often proliferate ideas of 'best practice' that others are supposed to follow (Bruno, 2009; Espeland & Stevens, 2008). Rankings that become part of the governmental discourse help put a focus on winners and losers, and the ranking positions tend to matter, regardless of whether or not they are tied to resource incentives. For those who end up at the bottom of rankings, it becomes particularly important to improve their position. As this starts to be a focus for policy-makers, the actual position, rather than the index score, become more important than, for instance, a critical discussion concerning the validity and reliability of the measurement. Indeed, while the majority of regions have very similar scores, to the point where they should be treated as indistinguishable from each other, it is their rank order that prevails.

In more general terms, this also illustrates important features of numerical devices as performative. After an object of scientific knowledge, such as this index, has been constructed and various conflicts and disagreements have been settled, such political dimensions are bracketed as the object is put to use. Therefore, after it has been rendered technical, a numerical device such as the innovation index can travel through networks and be used by various actors without controversy, and to reopen issues and conflicts would require considerable political mobilization. Therefore, in combination, the best-practice proliferation and the anti-political character of numerical devices often facilitate new ways to inscribe and legitimize established power orders. In the case of the innovation index this is evident in the way that the best practice for all others to follow is the dominant, urban capital region as well as in the fact that the important people for the future are identified as the creative and entrepreneurial subjects of contemporary popular policy scripts (i.e., Florida, 2012).

Perhaps most strikingly, though, it reinforces and enhances the already dominant narrative on competition and competitiveness in regional governance as it contributes to the production of regions into innovation spaces, designed to be winners in the global race for talent, resources and wealth. The form of power that makes this happen is not connected to law or formal policy instruments that punishes or reward, rather it works through constant surveillance: not only does

the index enable an ever-present monitoring from a centre of calculation but also activates the regions to monitor themselves through interactive websites, reports and presentations. Studying the EU's Open Method of Coordination (OMC), Isabelle Bruno (Bruno, 2009) has pointed to similar conclusions, emphasizing that benchmarking instruments propel the competition needed to be able to measure competitiveness in the first place, and that they result in a form of indefinite discipline. Indefinite since the best practice is always a moving target. As soon as those who lag behind catch up, a new target is defined, and established power orders maintain the status quo. In sum, the way that numerical devices such as the innovation index are used as part of governing regions in Sweden expresses dominant discourses and helps them manifest in 'the real' and, in this case, produce an 'objective', non-contested understanding of what innovative capacity in a region actually is, as well as which regions have the most of it.

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## NOTE

1. The literature on regional development has different conceptions of the relation between old forms of regionalism and this 'new regionalism'. Often, it is argued that old regionalism basically was a matter of state-led regionalization, or, in other words, a top-down process, while new regionalism is propelled by a bottom-up movement where regions, not least in Europe via the EU, now strive to gain more authority and influence. Thus, there is not an automatic difference that relates to neo-liberal forms of governing between old and new. Indeed, Tiebout (1956) was an early model that stressed local competition between political units as a 'non-political' policy incentive to produce prosperity. The point here, however, is not so much to distinguish between 'old' and 'new'. Rather, this paper accounts for the context in which current regional development takes place. For a discussion on the difference that also refers to a Nordic case, see Syssner (2006).

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