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HIGHER EDUCATION, INNOVATION AND COMPETITIVENESS

TERO ERKKILÄ & OSSI PIIRONEN

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Rankings and Global Knowledge Governance

Higher Education, Innovation and Competitiveness

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Preface

There has been a surge of global indicator knowledge that has come to challenge more traditional forms of transnational governance. This book discusses the field development in global ranking and argues that there is now a global policy script on knowledge governance that is greatly linked to economic competitiveness and innovation. Higher education and innovation policies have become central features of national economic competitiveness, nowadays measured by global rankings. We see this as a part of a broader field development in global comparative assessment, where earlier rankings in economic competitiveness and good governance are increasingly interlinked with global university rankings and indicators on innovativeness.

We observe the interlinkages and similarities in the indicators of different policy domains, arguing that there is now an evolving field of global measurement that surpasses them. In considering the dynamics of field development, we highlight how the number of indicators is rising rapidly, as there are new entrants to the field that propose methodological improvements or claim to explore novel conceptual grounds. Regional rankings and city-level indicators have also emerged as alternatives to global rankings.

As a result, the rankings now construct a global policy script on knowledge governance that posits institutions and practices of national knowledge production at the heart of economic competitiveness and innovation.

The universities are at the heart of this, but also university rankings are central to this reasoning, serving as a bridge between the different levels of measurement and inspiring the methodology of other measurements. The field development also has implications for transnational governance more broadly, challenging its typical actors and providing new standards for producing comparative knowledge.

Communication with and among international actors is increasingly taking place with the help of indicators that are now becoming a *lingua franca* for transnational governance. Relevant rankings and indicators are known by everyone in a policy field, as are countries' and higher education institutions' standings in them, but more importantly there often is a shared understanding as to what would need to be done to improve your position in the rankings. Indicators not only describe but also prescribe. This has implications for governance at national and even local levels, as countries, cities, and universities are under pressure to accommodate these policy prescriptions.

It is therefore important to understand the ideational background and normative assumptions underlying the figures, as well as their interlinkages and methodological aspects. Moreover, as we explain in this book, the focus of global measurement is also changing, reflecting the changes in transnational policy ideas but also causing them. To fully appreciate how global indicators and changes in their composition influence transnational governance, one needs to uncover their mechanisms of influence as policy instruments. This allows us to reflect where we now stand, surrounded by numbers, and how to approach them critically.

In tackling the above problematic, this book summarizes many of the perspectives that we have developed over the past decade. It is not only a result of our collaborative effort but also due to our interaction with a broader community of researchers. We have benefited greatly from the academic environment at the University of Helsinki, where we have had several research projects on the topic hosted by the Department for Political and Economic Studies and the Network for European Studies.

Our thanks go to our colleagues Niilo Kauppi, Satu Sundström, Jemima Repo, James Mittelman, Salla Huikuri, Max Eklund, Caroline Werner, Jan Westö, Jaakko Hillo, Leo Aarnio, and Taavi Sundell for joining us in this research venture and for our inspiring academic exchanges

over the years. In addition, we would like to express our gratitude to Henri Vogt, Heikki Patomäki, Jussi Pakkasvirta, Juri Mykkänen, Erkki Berndtson, Pertti Ahonen, Turo Virtanen, Teija Tiilikainen, and Juhana Aunesluoma for their collegial support. This research has enjoyed funding from the Academy of Finland, being part of the project "Policy Instruments and Global Governance: Concepts and Numbers" (grant number 268181).

We have benefited greatly from our collaborations and exchanges with other scholars working on the topic. We would like to thank Pertti Alasuutari, Anni Kangas, Barbara Kehm, B. Guy Peters, Meng-Hsuan Chou, Isaac Kamola, Jon Nixon, Richard Münch, Dorota Dakowska, Bob Reinalda, John Meyer, Detlef Sack, Mathias Albert, Katja Freistein, Fabrizio De Francesco, Thomas Pfister, Terence Karran, Arto Mustajoki, Nelli Piattoeva, and Magdaléna Hadjiisky. Despite the political imaginary of competition that the global rankings enforce, academic research to us is fundamentally about collaboration.

The book project would not have been possible without the outstanding research assistance by Max Eklund, Caroline Werner, Jaakko Hillo, and Leo Aarnio. We would also like to thank Jaakko Hillo for commenting on the manuscript and Mark Waller for editing the language. We also had the pleasure to work with Rebecca Wyde, Laura Aldridge, and Andrew James, our editors at Palgrave Macmillan. Finally, and most importantly, we would like to thank our families for their love and support.

Helsinki, Finland Tero Erkkilä and Ossi Piironen

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Introduction

The book analyzes rankings and indicators in global knowledge governance. Higher education and innovation policies have become central aspects in national economic competitiveness and are increasingly being measured by global rankings. Since the publication of the Shanghai ranking in 2003, governments and universities all over the world have been under pressure to adapt to new global competition in higher education (Hazelkorn 2011). This is part of a broader development in global comparative assessment where rankings in economic competitiveness and good governance had been published already earlier. Recently, global rankings that mainly concern national units of observation have been supplemented by regional rankings and city-level analysis. New assessment topics have emerged, with innovation being the most prominent.

While the rankings and indicators often seem to be supplementary and competing products, our analysis shows that they are closely linked ideationally and by having shared or similar data and methodology. We explore the dynamics of field development in global knowledge production (cf. DiMaggio and Powell 1983), where new indicators emerge steadily. Where do all these numbers come from? Who is measuring what, and how and for what purpose are the measurements being done?

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We argue that rankings and indicators are constitutive elements of global knowledge governance, defining and steering the institutions and practices of national knowledge production.

This book analyzes the evolution of global knowledge governance in prominent policy domains where rankings have been used: higher education, innovation policies, economic competitiveness, and good governance. We understand knowledge governance to be the institutional structures and processes governing and steering the production and dissemination of knowledge in society. We highlight common themes and similarities in the field development in different rankings. The global rankings have their ideational roots in the economic competitiveness that now encompasses national knowledge production and its institutions. Competitiveness currently serves as a dominant political imaginary framing global higher education, urbanization, innovation, and digitalization.

Moreover, the ideational shifts in the thinking of economic competitiveness exert an influence on the global measurements. As the competitiveness paradigm evolves toward holistic measurements that also concern institutional quality, it is also reflected in the measurements and their interlinkages. However, we also notice a move in another direction, where the field development in global measurement is starting to influence the ideas and measurements of competitiveness. The assessments of competitiveness are responsive to new topics of measurement such as higher education and innovativeness.

Global university rankings are often seen as a separate parallel development in the global rise of indicator knowledge. The emergence of the Shanghai ranking is framed as an individual event in the Chinese pursuit for excellence in higher education (Liu and Liu 2005), though its rise in the Asian context can be understood against the grand power shifts in global economy (Reinalda 2013). However, the linkage between university rankings and other global indicators and rankings is often overlooked. In this study, we observe the development of a global field of measurement that concerns knowledge governance. Rankings have become a prominent policy instrument in knowledge governance: the institutions that have traditionally been responsible for the production and management of knowledge in a society are now assessed globally by

various indicators that measure the performance of higher education institutions, the innovation environment of a country or a region, and the role of knowledge in economic competitiveness and the quality of governance. University rankings increasingly provide a bridge between the global and regional measurements of competitiveness and innovation.

Our methodology is based on a qualitative content analysis of global governance indices as well as a conceptual analysis of indicators and the rhetoric of data producers (Koselleck 2004; Skinner 1969). We also provide a narrative on the changes in the field of measurement (cf. Vennesson 2008; Mahoney 2003; Rueschemeyer 2003). The empirical material we present mostly comprises public documentation of indicators (technical annexes, related reports, presentation of data, press releases, and newspaper items); though we also conducted a few background interviews.[1] We analyze a broad selection of rankings in economic competitiveness, good governance, innovation policies, and higher education regarding knowledge governance. In this respect, this book also acts as an introduction to the field of global ranking and existing figures by highlighting key changes in the course of global rankings and possible future developments.

We pursue three main arguments here. *First, rankings influence the policies of nations, though the mechanisms are not always readily apparent*. Previous research has highlighted the emergence of global rankings that now significantly influence policy choices of nation-states (Erkkilä and Piironen 2009; Hazelkorn 2011; Löwenheim 2008). In our analysis of the mechanisms of influence, we highlight the specific nature of indicator knowledge, claims of authority in its production and credibility as well as national identity that is often evoked by the rankings. We outline a comprehensive theoretical framework to explain why rankings are so appealing and how they differ from other types of transnational policy scripts. We also provide theoretical tools for understanding the field structuration of global ranking.

Second, rankings and indicators constitute global knowledge governance. While measuring the institutional structures and processes that govern and steer the production and dissemination of knowledge in a society, the rankings also come to define the scope and attributes of knowledge governance. This renders national institutional legacies visible and makes

them governable, influencing policies on national level. We therefore introduce coherence to the global knowledge governance through indicators, and extend the genealogy of global ranking beyond the field of university rankings. We sketch the ideational history of global ranking and show how indicators from various policy domains now define and steer the institutional structures of knowledge production and dissemination in society. This is a novel approach, as the general development in global ranking in knowledge governance has not been systematically analyzed.

Third, there are similar paths of development in rankings of different policy domains. Most notably, we observe the fragmentation of rankings and indicators in higher education, economic competitiveness, innovation, and good governance. This is caused by new indicator sets and actors entering the field of global ranking. It also reaches the ideational fundaments of the measurements, as the competing assessments potentially dent the coherence in conceptualizing the broad notions of excellence in higher education or competitiveness and innovation. Paradoxically, the fragmentation of rankings has further deepened the field structuration of global ranking. While the rankings are becoming more numerous and fragmented, ranking as a form of evaluation is becoming a standard tool of global comparative assessment, constantly spreading to new domains. We explore how the field of ranking in knowledge governance has developed and where it might be going.

Outline of the Book

The first two chapters of this book analyze the ideational and governmental aspects of global rankings in knowledge governance. Rankings have emerged as tools to reduce complexity in governance amid economic globalization. Rankings are influential policy instruments, creating calculable social objects that become governable. At present, different aspects of states' knowledge production are being governed through external assessments and comparisons. We provide a theoretical framework for understanding the mechanisms of influence behind the numerical assessments that helps to explain why rankings steer the policies of sovereign states,

but we also provide tools for understanding the dynamics of field development around the transnational production of numerical knowledge.

Chapters 4, 5, and 6 analyze the field development of global ranking and the policy processes behind it. We observe a fragmentation of rankings in higher education and knowledge governance through methodological and conceptual critique and politicization of rankings. The related methodological critique and changes in measurements are leading to new actors entering the field of rankings with more nuanced indicators and regional initiatives to challenge established global rankings. The emergence of global rankings can be understood as field structuration, where new actors joining the activity tend to re-enforce it, even if their motivation would be to provide alternative figures. Yet, the above fragmentation makes the ranking producers attempt to reduce complexity in policy assessment to an elusive goal. The argumentation in Chaps. 4, 5, and 6 is chronologically structured because we introduce a broad set of rankings and measurements to show how the field of ranking in knowledge governance has developed over time. This reflects the real-world development rather accurately (see Table 4.1).

In Chap. 2, we present our understanding of rankings as policy instruments. Building on new institutionalism, Foucauldian governmentality, and political sociology, the chapter outlines a theoretical framework for understanding rankings' mechanisms of influence: What makes numbers influential? How and why do sovereign states and semi-independent institutions comply with the tacit policy feed promoted by rankings? We identify objectification as a key mechanism through which rankings are influential in transnational governance: quantification creates calculable social objects (world-class university, excellence, economic competitiveness) that become governable. Numbers allow those who make or possess the figures to grasp abstract phenomena and see their scope and limits. In some ways, statistics often ultimately come to define the scope of governing.

We highlight (de)politicization as a mechanism related to objectification. What we make statistics out of, and how and why, is a highly political choice since this constructs abstract entities upon which we can politicize, debate, and make decisions (Porter 1996). Rankings establish normative standards, identify deficiencies in governance, and

create prescriptions for action (Hopwood and Miller 1994; Miller and Rose 1990; Rose 1999). But still, quantification creates an impression of simplicity, precision, objectivity, and neutrality. While the standards and virtues such as economic competitiveness, academic performance, the quality of research, or innovation seem commonsensical and easy for almost everybody to accept, the rankings, in fact, often involve controversial and particularistic choices not necessarily apparent to those who wish to make use of the numeric knowledge products (cf. Erkkilä and Piironen 2009).

Statistics are increasingly being produced in the international context for the purposes of supranational governance (Löwenheim 2008). Even though actors such as the World Bank, the World Economic Forum, or the Center for World-Class Universities at Shanghai Jiao Tong University do not pursue state-like sovereign power, their use of calculative technologies in defining issues of concern bears remarkable resemblance to historical attempts at making the modern state calculable (cf. Meyer et al. 1997; Sheehan 2006, 9). This also raises concerns over the instrumental rationality of numerical assessment that may come to create a Weberian "iron cage" (Weber 1978), limiting politics and ethics of national decision-making. The numbers have democratic implications creating the perception of a new external audience to whom national governments bear responsibilities, instead of their domestic constituencies.

Quantification can also imply governing through constitution of identities, by subjecting actors to expectations and self-governance. Thus, a ranking not only reinforces particular standards but also affects the status, position, or identity of the ranked entities. In producing imageries where some entities are elevated above others, rankings can make them appear exemplary ("excellent", "world class") and worth listening to, learning from, and imitating. Rankings hence have political implications as instruments of governing. The attributes of rankings serve as guidelines for excellence, giving direct goals for improvement such as increasing financial autonomy of higher education institutions (Erkkilä and Piironen 2013; Piironen 2012).

Moreover, rankings have geographical and temporal aspects that render national institutional trajectories visible. Rankings help to make claims about European higher education vis-à-vis American or Asian

systems (Erkkilä 2014) or identify a link between economic competitiveness and long traditions of transparency in the Nordic countries (Erkkilä 2012). Finally, as governance indices and country rankings make claims about a nation-state or an institution, the results appeal to collective identity and memory drawing power from existing categories. While the early forms of statistics were a mirror of the monarch (Desrosières 1998, 26–27), the current governance indices have become a mirror of the nation, causing reflexivity over institutional traditions (cf. Hobsbawm 1987) and sparking attempts to reform them.

A further way for rankings to matter is through their capacity to lend authority either to the producers of numeric knowledge or to those whom the ranking presents in a favorable light. The production and use of global numeric knowledge builds on social scientific methods and practices of verification. Being recognized as an individual or organization capable of producing indicator knowledge lends an element of authority. It also serves as a mechanism of inclusion and exclusion. The shifts we now see in the production of global rankings and indicators relate to the presence of new actors in the field. We understand this as field structuration (Giddens 1984), where the new actors are joining the field of global governance assessments with competing sets of indicators (Erkkilä 2016; Kauppi and Erkkilä 2011). Structuration is characterized by unintentional reproduction of practices already existing in the field (Giddens 1984, 5). This also owes to the peculiarities of creating epistemic knowledge, where actors need to legitimate their ideas against the criteria set by the community already in the field (Haas 1992). Consequently, the new indicators are likely to conform to the existing normative and causal beliefs and criteria of validity. Paradoxically, while the entrance of new actors leads to fragmentation of global rankings in knowledge governance, it serves to further institutionalize the practice of comparative numerical assessment, making it a new standard for transnational governance.

Chapter 3 tracks the ideational landscape in which the global ranking in knowledge governance operates, focusing on the development and convergence of different policy specific ideas that are, on the one hand, captured by and, on the other hand, affected by global rankings. We view global knowledge governance as based on an atomistic ontology that

constructs reality as economic competition between states. Quantified comparisons, or rankings, are complicit in the construction of such an imaginary. Owing initially to rankings of national competitiveness, this economic reductionism applies to most of the rankings available. Issues such as higher education and good governance are also perceived through the lens of economy, although we could just as well perceive them as matters of social mobility and democracy. This is due to current ideas of institutional economy that now influence perceptions of higher education and draw on codifications of good governance.

This chapter outlines the ideational elements of governance by indicators, which are also reinforced and conditioned by quantification. The focus is clearly on ideas and their interlinkages, not yet so much on rankings. One can consider this chapter as setting out the ideational premises for the rest of the book. We cite examples from the European context and construct the ideational landscape that defines thinking in and governance of production and dissemination of knowledge, highlighting also the central role of the Organisation for Economic Co-operation and Development (OECD). By focusing on certain ideas and processes, we have detected important parts of the narrative. These are as follows: the rise of evidence-based policymaking and valorization of quantitative data; the knowledge society paradigm, including the belief in knowledge-based economy; the ideology of competition and its operational manifestation, e.g., the competitive logic that has come to define and justify policies and policy reforms in Europe almost universally; institutional economics that bring in public administration and society as a business "environment" for market operators; the general push for excellence evident in the domain of higher education where research universities around the globe are expected to become "world-class" institutions; and lastly the years-long process for "innovativeness" to become mainstreamed as the default solution for the perceived decline in European economic standing.

Although the focus is on ideas and policy frames, we point out to the parallel developments in quantification. By examining the operationalization of key ideas and concepts, we clear them of ambiguity, and this makes it easier—and more verifiable—to observe linkages between ideas whose relations it might be problematic to account for by alternative analytical means. We pay attention too to the most general developments

in the field of measurement in governance, competitiveness, and higher education, but leave the details and more elaborate conclusions to the following chapters. Nevertheless, we suggest that the production of comparative data in these fields is done against the predominant narrative of economic competitiveness. All in all, we conclude that knowledge and higher education become perceived as central elements in how states fare amid economic globalization.

Chapter 3 concludes with a summary of the main ideational elements in which rankings are embedded. This serves our argument that the dominant ideas together with the numeric knowledge provided by technologies of governing such as rankings now constitute global knowledge governance, a framework to assess and steer national production and dissemination of knowledge.

Chapter 4 begins the systematic fleshing out of the argumentation put forward in the preceding chapter. The focus is squarely on indicators and rankings. It also links the empirical analysis of rankings to the theoretical framework introduced in the first chapter as it shows how measurement has actually functioned to depoliticize the notion of good governance and how rankings have reinforced atomistic subjectification that projects higher education institutions as self-governing entities solely responsible for their own success and decline. In this chapter, we provide more evidence on the ideational and operational interlinkages—that is, shared indicators and methodologies—between the measurements that we think have come to define global knowledge governance.

The development of the numbers-based knowledge governance framework is a relatively recent undertaking, but much has happened during the last 20 or so years. The chapter sets the scene in constructing the rankings landscape as it was in the beginning of the 2000s; that is, our analysis focuses on the most prominent and visible "first generation" of measures of good governance, competition, and academic performance, characterized by aggregation of data and attempt for maximal geographical scope. This, however, is quite enough to show the high level of alignment—embedded economism and competitive dynamic—these measurements share.

In this chapter, we also go beyond measurement in examining the rankings and their background premises and influence in the context of

European higher education policies. Rankings are meaningless if not contextualized. We show numerous connections between numeric knowledge products and European policy discourse. By drawing on our original research and other studies, we connect dots between institutional practices—for example, the so-called autonomy reforms—and ranking. This highlights the link between the atomistic ontology of ranking and current visions of European higher education.

In Chap. 5 "Field Structuration and Fragmentation of Rankings in Global Knowledge Governance", we place our argument under testing. We discuss whether the rankings at present form such a coherent framework as to warrant seeing them as constitutive of global knowledge governance. The first-generation indices have been heavily criticized and challenged by various newcomers. Not only have the amount of international datasets multiplied, but the varieties of measurement—concerning conceptual and methodological decisions—have also increased. In this chapter, we look carefully at this *fragmentation* of rankings and indicators relevant to knowledge governance in higher education, economic competitiveness, innovation, and good governance that has challenged the established producers of numeric knowledge.

However, we find that the process of fragmentation has not effectively challenged the ideas behind the figures. Instead, the emerging indicator sets are woven into the fabric of the existing measurements as the figures that enter the field largely build on the existing ones without fundamentally challenging their ideational premises, normative underpinnings, and underlying causal beliefs. Throughout this chapter—as with the earlier ones—we trace and identify ideational and methodological linkages between different types of datasets.

Over the last decade there has been a surge in the number of global university rankings. At present, there are about a dozen university rankings of global scope, produced by university research centers, newspapers, consultancies, and international organizations. There are also multiple global measurements of transparency that compare the level of access to government information. Measurements of economic competitiveness have become broader in scope, now focusing on knowledge resources of the state and the innovation environment. The 2007 Global Innovation Index sparked a trend for assessing innovation capacities of nations, also

covering research, education, and knowledge. Also, other global innovation rankings have come to complement the rankings of universities, economic competitiveness, and quality of governance.

We identify methodological changes in the indicators and show how the critique of ranking has led to the emergence of more sophisticated nonaggregated, "second-generation" measurements and "actionable indicators", particularly in university rankings and indicators of good governance. Our examination of new governance measures, like the OECD's Governance at a Glance, suggests that while they introduce methodological variance, even competition between methodologies, they nevertheless form an epistemic community with aligned normative and causal beliefs. We call such a process "field structuration" (cf. Giddens 1984; Kauppi and Erkkilä 2011). While the critique of existing indicators for their methodology and scope allows new actors to enter the field with their alternative sets of indicators, this also further embeds the use of numerical assessment in transnational governance. With structuration comes the unintentional reproduction of existing practices.

The process has been rather similar with university rankings. Here too the harsh criticism of established rankings has led to creation of new nonaggregate measurements—such as the EU-funded U-Multirank—that are arguably more nuanced and methodologically more advanced than the previous ones, many of which we present in this chapter. Here the process of fragmentation has been combined with a tendency for politicization, where concerns over the political characteristics of measurement are voiced. But even with a slight variation in ranking scores, the global university rankings nevertheless steer the international debate toward focusing on individual institutions and not higher education systems. This reinforces an individualistic understanding of higher education in which individual institutions are conceptualized as competing globally. New rankings have not created a real challenge to the dominant thinking in higher education.

The chapter concludes by analyzing the field development, criticism, and fragmentation, concerning measurement of competitiveness. We observe the multiple forms that fragmentation has taken: new methodologies to measure national competitiveness by new data producers, adaptation by established ones, but also conceptual development as new

"innovation" rankings have entered the field of knowledge governance to complement the measurements of competitiveness and higher education. In our discussion on these new datasets, we analyze their ideational foundations and methodological connections with existing rankings and knowledge governance in general. We place innovation indicators somewhere between competitiveness and higher education datasets on our conceptual map, as they seem to draw ideas and data from both directions. We conclude that global innovation rankings do not bring much to the table and, in many cases, they even reproduce the methodological choices found in the first-generation rankings. Fragmentation, new actors joining the activity of measurement, tends to reproduce the existing ideas and practices prevailing in the field.

In Chap. 6 "From Global to Local: Regional and City-Level Alternatives to Global Rankings", we analyze another facet of fragmentation, the recent tendency to localize the numeric knowledge on competition, innovation and higher education. The localization of ranking comes either in the form of regionalization, in which measurement is tied to a delimited geographical or cultural context (such as "Europe" or "Asia"), or in the form of focusing on "local" level units of observation (city rankings). While the explicated justification for localization varies, we note that they either try to challenge the dominant imaginary assuming global comparability of similar units or the state-centric understanding of world order. The regional entrants especially are sometimes put forward by underdogs who feel they have not been fairly treated in global rankings. This indicates potential for politicization, as there is increasing awareness that the different aspects of performance, competitiveness, and innovation may privilege institutional arrangements that also stem from certain cultural and ideological premises.

There are assessments of economic competitiveness and innovation that address specific regions and cities. There are also several ongoing projects to create regional university rankings that can be seen as a potential competitor for the global rankings. Most notably the BRICS countries (i.e., Brazil, Russia, India, China, and South Africa) have been a special focus for such regional initiatives. This carries the symbolic message that the entities measured are worthy of ranking, thus highlighting political sensitivity over global rankings. Moreover, the regional rankings

also address the problem that most of the world's universities are not ranked at all by the global rankings. The rankings on innovation also increasingly have a local flavor, focusing on specific innovation environments and cities. Such global city rankings include assessments of talent, human capital, and innovation.

Nevertheless, conceptually or methodologically, regional and local alternatives hardly depart from the global indicators. Local variants often rely on familiar data sources and established data producers. The most meaningful change is a turn from "global comparison" to "peer comparison" to let the entities to wrestle on their own weight class. City-level rankings, while challenging the traditional state-centric worldview, hardly challenge the logic of competition embedded in ranking practice. They reproduce the old imagery of competition, but now on the city level of actorhood. In fact, due to the lack of urban data many city rankings on innovation make use of national data employed by the established global datasets, as for example our discussion of the Research and Development function of the Mori Memorial Foundation's Global Power City Index would indicate.

We conclude, based on broad variety of localized measurements, that even these rankings share the underlying ideas of economic competition and methodological linkages to established rankings. They too are elements of a specific type of global knowledge governance, defining and steering the institutions and practices of knowledge production through quantitative comparison.

Chapter 7 summarizes our argument. As we have pointed out, comparative measurement is not a neutral tool of rational inquiry. We further argue that the development of ranking in global knowledge governance is best understood as field structuration. Successfully entering the ranking field implies certain premises, some being the result of the inevitable unit-based logic of comparison, and others the social and discursive structures setting the limits of credible measurement. This creates a certain inertia in the measurements, as they largely come to share ideational premises, causal and normative beliefs as well as data sources.

Though the new figures that are entering the field propose new methodological and conceptual openings, they instead offer mild contrasts to the previous figures and do not challenge the epistemic knowledge and

practices of the field. It is thus no coincidence that we find important similarities between rankings of academic performance, national competitiveness, good governance, and innovation. Rankings, their methodology, the data producers and their ideas are not isolated but interlinked and networked. In making these connections and their consequences visible through our analysis, we propose that rankings are a constitutive element of global knowledge governance.

Rankings influence the policies of nations. In our analysis of the mechanisms of influence, we highlight the specific nature of indicator knowledge and its production. We observe a thickening of the political imaginary that now builds on holistic assessments of competitiveness and innovation, traversing the different levels of assessment from global to local. We provide a brief comparison of selected countries and innovation hubs—Netherlands (Amsterdam), Denmark (Copenhagen), Hong Kong SAR (Hong Kong), Chile (Santiago), Singapore (Singapore), Israel (Tel Aviv), and Sweden (Stockholm)—that score surprisingly consistently in all the measurements discussed in the book. Though this could be interpreted as proof of the validity of the measurements, we wish to point out that their conceptual overlap and limited and even shared data sources are equally important factors. Despite the apparent conceptual vagueness of the measurements, there is now a firm political imaginary of global competitiveness and innovation that puts tremendous weight on the institutional structures and processes to govern and steer production and dissemination of knowledge in society.

We further observe a fragmentation of rankings and indicators relevant to knowledge governance in higher education, economic competitiveness, innovation, and good governance. Multiplying in number, the figures generated are spreading to new domains of measurement, yet strongly overlapping conceptually. The fragmentation potentially dents conceptual coherence and limits their relevance as tools of evaluation. Yet, their policy relevance seems to remain high. There is great reflexivity over the indicators at national level where they remain to serve as a point of reference for various reforms. Paradoxically, the fragmentation of rankings has further deepened the field structuration of global ranking. While the scope and focus of rankings is becoming less coherent, they are becoming more embedded in transnational governance as means of comparative

assessment. Moreover, as indicator knowledge has become a universal language of transnational governance, it also limits what can be argued and presented as valid knowledge. While the early rankings clearly followed conceptual shifts in transnational policies from democracy to good governance, we now witness the opposite, where the field development in indicator knowledge is also driving the ideas of transnational governance as innovation rises to supplement competitiveness.

Notes

1. In January 2012, we interviewed six experts in Washington, DC, representing the World Bank, World Bank Institute, and Millennium Challenge Corporation.

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2

Theory: Rankings as Policy Instruments

Introduction

In this book, we argue that rankings have become a prominent policy instrument in knowledge governance: the institutions that govern and steer the production and dissemination of knowledge in society are currently being assessed globally by various indicators that measure the performance of higher education institutions, the innovation environment of a country or a region, and the role of knowledge in economic competitiveness and quality of governance. Numbers—performance scores, comparative benchmarks—can affect individual conduct, organizational practices, and collective decision-making in many ways, whether directly and indirectly, overtly and covertly, or intentionally and unintentionally. In this chapter, we provide a general framework for understanding the mechanisms of influence behind the numerical assessments, one that helps to explain why rankings govern the conduct and policies of individuals and organizations. We also provide theoretical tools for interpreting the institutional effects of global ranking and what conditions them. This also concerns the field development of global ranking in knowledge governance (cf. DiMaggio and Powell 1983), where new indicators and rankings—and their producers—are entering the scene.

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While numbers—statistics—have long featured prominently as the raw materials of decision-making, numeric knowledge seems to have grown in stature over the last two or so decades. Statistics today are collected more and more on a global basis. National data is aligned with international standards allowing worldwide comparison between cases. Intertwined, processes of globalization—with social, cultural, economic, and political facets—have made governance a matter of considerable complexity, the exclusive concern neither of nation-states nor of intergovernmental organizations. As a consequence, expert knowledge has increased in significance, manifest in demands for evidence-based policy-making, managerial reforms in national public administration, and supranational efforts to produce accessible knowledge for various purposes. Contemporary Western culture puts much premium on quantitative knowledge, sometimes for reasons other than truth and best possible outcomes. Quantification creates impressions of clarity, precision, and objectivity.

Although the politics of numbers, statistics, and audition as a research problem is not an entirely new endeavor—some works can be seen as modern classics in the field (e.g., Miller and Rose 1990; Power 1997; Porter 1995; Desrosières 1998)—there is now a growing body of literature specifically attuned to the international aspects of numeric governance: production of numbers by inter- and transnational organizations; production of international comparisons; global visibility and usage of worldwide data; data-related cross-border diffusion of imageries, ideas, and policy scripts. The increased politico-administrative significance of numbers features in studies on transnational soft law and the cross-border diffusion of policy ideas, which have come to acknowledge the role of experts and expert knowledge more generally. New institutionalism, inspired by John W. Meyer's analysis of world society, acknowledges the role of international comparisons—often, but not always, quantitative ones—in the diffusion and domestication of global models and scripts (Krücken and Drori 2009; Alasuutari and Qadir 2014).

Thematically, the research covers questions of democracy, corruption, public management, connectivity, environmental sustainability, equality, health and social services, education, safety and justice, human rights, and all possible domains of social action that are subsumed under the

objectifying practice of measurement (see, e.g., Guo and Schwarz 2016; Cooley and Snyder 2015; Merry et al. 2015; Rottenburg et al. 2015; Kelley and Simmons 2015; Davis et al. 2012a, b; *Journal of International Relations and Development* Special Issue Vol 15:4 2012; Culture Unbound 2012 Vol 4:4; Hansen and Porter 2012; *Hague Journal on the Rule of Law* Vol 3:2 2011; Andreas and Greenhill 2010; *International Public Management Journal* Vol 11:3 2008; Fougner 2008, Löwenheim 2008; Larner and Le Heron 2004; Larner and Walters 2004). Scholars have pointed out many interesting aspects of numeric knowledge. In explaining the appeal of numbers, there is strong emphasis on the characteristics of precision, objectivity, and mobility. There is no denying that numeric knowledge is beneficial in many ways—modern societies would hardly function without statistic—but choosing to rely on information provided by standardized benchmarks and international rankings involves trade-offs that should be explicated.

Below, we try to explain the specificity of numbers and quantification: How does numeric knowledge differ from other forms of knowledge? We introduce a framework that helps to understand the way numbers "govern". To be exact, we do not list sociopsychological or administrative mechanisms such as "benchmark induced imitation", "compliance through naming and shaming", and "allocation of resources/sanctions based on numeric evaluation". Our framework goes beyond these more tangible ways to make agents responsible for ranking scores, as they are included in our broader categories. We argue that the governing functions associated with numbers are related to *objectification*, *(de)politicization*, *subjectification*, and *legitimation*.

Quantification constitutes *knowledge* in setting the parameters within the limits of which a concept, idea, domain, empirical fact, or a policy prescription comes to be understood collectively (objectification). Furthermore, quantification often comes effectively to *depoliticize* an issue, hiding its political characteristics and hence closing the horizon for debate. On the other hand, statistical information can politicize issues, by rendering them as governable policy problems. Quantification also concerns *identities* of social units, making them appear as separate, self-sufficient, responsible, and competitive (subjectification); *authority* in transferring legitimacy to the participants of the numbers industry,

bestowing on them, or to those who numbers present in a favorable light (legitimation), an aura of expertise. We maintain that the above mechanisms are also tightly linked to the institutional outcomes of governance by indicators that nevertheless have contextual variances. Moreover, the outlined mechanisms also help to understand the field development and structuration of global knowledge governance (DiMaggio and Powell 1983), where epistemic knowledge and expert authority increasingly revolve around quantification (Gieryn 1983; Haas 1992), as new actors are entering the scene with new, arguably alternative, datasets.

Thus, the present chapter sets out the theoretical premises, upon which the main arguments of this book are founded. We spell out here *why rankings and indicators matter*, *what institutional effects they might have and what conditions them*, and *why rankings and indicators are here to stay*. These insights are used in the empirical sections, where we take a concrete look at the dynamics of global knowledge governance: the ideational environment in which global ranking is embedded; how mechanisms of politicization and depoliticization quantification play out; the structuration of knowledge governance by rankings and rankers, and its implications for transnational governance.

Numbers, Quantification, and Ranking

We use *quantification* to describe a process whereby the characteristics of various phenomena are presented in or translated into a numeric format. Quantification is a process of producing meaningful *numbers* referring to quantities of *something*. Quantification suggests a shift away from multidimensional classification to statistical commensuration. While not guaranteeing an absence of arbitrariness—in the form of validity and reliability, for example—quantification implies a sort of exactitude absent in "qualitative" representations of reality. The capability to express a complex phenomenon using the format of a set of numbers or a single number implies authority merely because it simplifies contemplation and deliberation and allows for technical manipulation (Hansen and Porter 2012). Moreover, the production of numbers makes it possible to apply mathematical tools and statistical methods of elaboration and

manipulation and reveal patterns—"social facts"—otherwise left unaccounted for. Quantification is a technology without which it would be much harder to translate ideas into social practices.

In science, quantification takes the shape of *measurement*, implying theory-guided empirical observation and a fixed criterion in assigning values to separate but similar units of observation. Arbitrariness is minimized and commensurability maximized with the use of standardized yardsticks. Measurement generates numeric *scores* or *values* for variables, but a number is meaningful only in relation to an external point of reference. The reference may be physical (such as the boiling point of water), theoretical (like an idealization of perfect democracy), or comparative, whereby a score attains meaning in relation to values assigned to like cases. *Benchmarks, indexes*, and *rankings* present data in a comparative format, usually pointing the desired and undesired. Rankings describe and prescribe.

Quantification and ranking have become so commonplace, so important to science and expertise, so visible in the media, so attached to processes of policymaking, that it is possible to analyze them as a *social practice*. If this perspective is chosen, the analytical focus shifts to the recurring performative acts of using and producing numbers. This type of analysis (e.g., Robson 1992; Porter 1995; Power 2003) has pointed to the role of quantification in conferring credibility, trust, and legitimacy on experts and expertise and to processes of policymaking—whether or not expert knowledge actually influenced the outcomes of decision-making (cf. Boswell 2009). Our own research (Erkkilä and Piironen 2009, 2014b) suggests that measurement, the activity of producing comparative numbers, is crucial for international expert organizations, for the credibility of the knowledge they produce, and for the mutual recognition of their epistemic authority.

High trust in numbers seems to be strongly linked to an increasing lack of trust in other types of knowledge and expertise. From a historical perspective, Kula 1986 (cited in Porter 1995) has shown how the practice of measurement has substituted local discretion (preindustrial) for indiscriminate objectivity (modern). This shift in the mode of rational judgment—from qualitative to quantitative—did not happen without consequences for social hierarchies and structures of governance. The standardization of measurements—like the meter for measuring distance or the square grid

for charting land surface—empowered the governing of localities from distant centers "with a bare minimum of judgment or local knowledge", for example, concerning the quality of the land (Porter 1995, 22). At the same time, quantification has helped to standardize the "subject of measurement" in the sense that the measurement is now the same for everybody and "no longer dependent on the personalities or statutes" of those holding a stake in the process of measurement (Rose 2004, 207).

According to Moran (2002), general distrust in policymakers, political processes, and judgmental expertise is evidenced also in the more recent demand for constant monitoring, evaluation, and auditing—accountability through numbers. This, of course, goes hand in hand with the expanding application of new governance instruments. Also, the rapid diffusion of evidence-based policymaking in European countries (OECD 2015), crystallized in quantitative indicators for monitoring the gap between output and policy goals, is a useful example. Power (2003) has, however, pointed out that the generation of accountability through norms of transparency and standardization not only indicates societal distrust, but can further serve to undermine alternative bases of trust. As Rose (2004, 154) puts it, "[a]udits of various sorts have come to replace the trust that social government invested in professional wisdom and the decisions and actions of specialists". So, where there is uncertainty, an acknowledged lack of trust, numbers are conjured up (Porter 1995, 89).

Below we outline different mechanisms through which numbers function as policy instruments. These are also linked to qualities of numerical information that separate global indicator knowledge from other types of transnational policy scripts.

Numbers as Policy Instruments: Objectification, (De)politicization, Subjectification, and Legitimation

Numbers such as indicators and rankings obtain instrumental characteristics through the mechanisms of *objectification*, *(de)politicization*, *subjectification,* and *legitimation* (cf. Piironen 2016). Objectification is a process

where ambiguous—often subjective—ideas and concepts are turned into well-defined and collectively shared knowledge products. Objectification produces representations of reality that are based on science and expert knowledge, quantification and ranking. Numbers often appear apolitical, presenting the results of measurement as social facts, potentially depoliticizing the issues at hand. However, the process of quantification entails choices that can be highly political, as is the very nature of numbers. At the same time, the numbers have the potential to politicize issues, rendering them as policy problems. Subjectification is a process where classifications, often obtained through measurements, are linked to personal or collective identities. Subjectification also comes to shape those identities according to prevailing political imaginaries, leading currently to atomization of subjects—states, institutions, and individuals—that are increasingly seen to compete in global economy. Legitimation is linked to authority that is owing to expertise (expert authority). In the realm of global knowledge governance, authority is also based on the success of organizations producing the ranking information, as well as the prestige given by the rankings to those who fare well in them. We will elaborate on these mechanisms below.

Objectification

Perhaps the most fundamental way to assert the significance of sociopolitical quantification is to understand it as an instrument of objectification (Desrosierès 1998, 9): numbers and measurements function to fix the parameters of ideas, ideals, and realities, thus creating specific representations that may (or may not) influence practices and policies, and the formation of subject categories and identities. Measurements set parameters for abstract ideas and normative conceptions. The significance of measurement as a technology of truth may be due to its capacity to simplify otherwise complicated matters, conceal subjective, interested, partisan, perspectival choices, and create an impression of objectivity, neutrality, credibility, and universality (Porter 1995; Power 2003).

Numbers produce specific representations of reality. Sociopolitical measurement connects abstract construction with empirical observations,

like theories of democracy with levels of democracy in various countries (Piironen 2005). As a result, numbers—variable values and index scores—make a claim about empirical reality in providing comparative knowledge about social entities and their relationships. They may tell us that our national economy is more innovative now than it was ten years ago, that Oxford is on par with Harvard, or that the Danish are happiest people in Europe. But there are of course many reasons why such representations are not innocent mirrors of reality. The visions they provide are specific products of antecedent knowledge, operational decisions, and practical possibility. They are the result of intersubjective meaning structures, of beliefs about the relevant and the important, of operational decisions concerning selection and weighing of indicators, and of material limits for collecting data.

Measurements render domains of reality visible and calculable, and thus governable (Robson 1992; Miller and Rose 1990). Generally, numbers work as technologies that make objects visible and tangible, bordered and governable. Exercises of measurement take part in the (re) creation of social imageries by portraying certain objects (attributes, cases, and properties) as elements of the domain thus constructed, and render them outside the domain by excluding others from the measurement exercise altogether. The selected objects are thus made comparable, presented as "like units", while the "unfitting" attributes, cases and their properties are ignored (Cline-Cohen 1982; cf. Alasuutari and Qadir 2014). In objectifying domains of reality, numbers make them open for politico-administrative management.

The invention and operationalization of the notion of "good governance" at the World Bank has given supranational governors unprecedented leverage in affairs previously considered as internal to nation-states (Erkkilä and Piironen 2009, 2014b). As a policy domain is made calculable and inscribed into the practices of experts, as data is collected, stored, manipulated, and retrieved at will, the status of numeric knowledge is even further solidified. It is more likely that a database once collected will be refined and updated—for the sake of spatial and chronological comparability—than a new standard developed and a new dataset collected: even with the increased competition, Freedom House's dataset has remained the most prominent index on democracy from the

1980s to this day (with only minor changes). Numbers increase the traction of thought.

Numbers are distinctive technologies even more than words and vocabularies. They allow us to deal with problems that take place at locales distant from governing centers (Hansen and Porter 2012; Miller and Rose 2008; Robson 1992). Robson (1992) explains the governing potential of numeric knowledge by qualities of *mobility, stability*, and *combinability*. As numbers reduce objects into specific qualities and variables, they are more easily transported in space and time and through language barriers than the objects themselves or verbal descriptions. They are relatively stable in comparison to specific linguistic vocabularies that are in constant flux and riddled with nuances. Moreover, they "can generate uniformity among different objects counted (three apples and two oranges makes five fruits), compare and thereby associate and link unlike words (Copenhagen and Toronto have measurable temperatures that can be compared). They can also sort out the combined effects of several components (decomposing velocity into time and space)" (Hansen and Porter 2012, 413).

It is this kind of information that makes direct or indirect rational governance of distant places possible. It is remarkable how university rankings have succeeded in inculcating uniformity into academic institutions professing such astonishingly different objectives and resources, and which are embedded in varying sets of local structures (education, culture, jurisprudence, and financing) (Kehm and Stensaker 2009; Nixon 2013). By rendering institutions uniformly comparable, rankings have helped to bring higher education institutions throughout Europe within the reach of transnational governance (Piironen 2013, Erkkilä and Piironen 2014a).

Rankings provide prescriptions for action. The production of comparative numbers is not only a descriptive but also an evaluative and often normative exercise. Measurement does not only make things visible, but provides a technique for judgment, as well as punishment and gratification (cf. Hoffmann 2011). Depending on the particular case, judgmental evaluation takes place in relation to the *normal* or the *optimal* (the best, the leader, top performer, world-class). Evaluation against a norm, what Foucault (1995) calls "normalizing judgement", is a relevant technique of

disciplinary power. Statistical distribution—and the idea of normal distribution—exposes outliers, pathological, abnormal, and marginal cases without mercy.

While the average is sometimes presented as the prescriptive ideal, we would argue that in the contemporary Western cultural climate, the optimal seems to have become the main benchmark (cf. Boli 2006 on rationalization of virtue and virtuosity). Rankings create an atmosphere in which objects of evaluation are induced to optimize their performance in relation to others—peers, challengers, and competitors. All this is symptomatic in the "vocabulary of excellence" regularly utilized in connection with ranking knowledge: terms like "world-class", "top performer", "leader" have risen in prominence during the past two decades. The present-day discourse on higher education revolves around this thinking. Old concepts have been discredited or repacked to validate the hegemonic ideas often with the help of performance rankings (Piironen 2013; Erkkilä and Piironen 2014a). This also often comes to hide the political character of the issues at hand.

Measurements "fix" the parameters of normative and abstract constructions that may affect policies directly or indirectly. As our own research on measurement of democracy (Piironen 2005) and good governance (Erkkilä and Piironen 2009) show, measurements and indices acquire a political function in promoting a certain conceptualization of policy-relevant ideas over alternatives, legal over participatory democracy, and economic values over democratic values. No wonder that from time to time one can observe overt struggles over particular measurement exercises (see, e.g., Erkkilä 2016; Le Bourhis 2016). Although struggles over numbers are relatively common and signify the real potential for opening new political horizons, the opposite is sometimes the case. New numbers challenge dominant ones only to the extent that they come to reinforce each other's legitimacy (Erkkilä and Piironen 2014b). The dynamics of (de)politicization are elaborated below.

(De)politicization

In examining global numerical data on good governance, competitiveness, innovation, and higher education, we exemplify how quantification of social phenomena functions often to depoliticize potentially political

issues in naturalizing certain interpretations of reality at the expense of alternative visions. To be sure, numbers do have also the potential to politicize social phenomena, as, for example, the meager success of European universities in global university rankings have helped to bolster the status of science and innovation policy on the political agenda of the European Union and its member states.

However, there is more to (de)politicization than public visibility of a political question. For Palonen (2007, 41), depoliticization means "movement towards closing a horizon"—as datasets may fix the parameters of the phenomena they seek to depict (for terminology, see Palonen 2003). Flinders and Boulder (2006, 296) prefer to call the process "arena-shifting" as "[in] reality the politics remains but the arena or process through which decisions are taken is altered", taking a policy issue or domain beyond formal political control, out of the immediate reach of general publics and the legislature. Numbers and the practice of producing numbers create specific realities (representations, imaginaries, and identities) that exclude others and, indirectly, have a concrete impact on policies and modes of conduct at all levels of social action. Politicization, on the other hand, marks an opening of something as political, as "playable" (Palonen 2007, 55). An issue, whether or not subject for governing, cannot become political before it is politicized, interpreted as being potential for struggle, and thus opened for politicking—"there is no politics 'before' politicization" (ibid., 66).

We believe that certain powerful objectifications of governance are both representations and instruments of constructing and maintaining an economistic understanding of governance. Numerical index data partly functions as a mechanism through which room for debate is narrowed by framing the meaning of good governance, competitiveness, excellence in higher education, and innovativeness. We intend to show this in the empirical chapters of this study, first, by looking at the shifts in the measurements and, secondly, by assessing prominent indices and what we perceive to be their interrelations. We take a critical view of the content of standardized normative categories, such as good governance, quality of higher education, and competitiveness, which, combined with the technical nature of measuring, help to shift the attention away from what is actually measured and effectively depoliticize issues that are potentially political.

The short history of measuring good governance and excellence in higher education has been one of depoliticization. More than anything else, indicators have strengthened the dominant economist visions of governance and higher education by making descriptive data appear neutral and apolitical (Erkkilä and Piironen 2009, 2013, 2014a). But we also argue that there has been a recent shift in the field development of global knowledge governance, where new types of datasets that claim to break the universalizing logic of older measurements have emerged. We therefore examine whether the new measurements can repoliticize the debates. This is also linked to patterns of identification of those who are ranked as well as those who are ranking them.

Subjectification

To discuss identity means discussing the human capacity to "know" who is who (Jenkins 2008, 5). Identities are categories through which individuals and groups try to individuate and position themselves and others. This knowledge about oneself and others, while consequential for people's lives, is nevertheless imagined. Identities are collectively produced: "the social self is a product of relations with others" (Lawler 2014, 6). Accordingly, identities do not depict innate qualities of individuals; they are not personal, related to "soul" or such like; they do not refer to physical or cultural essences or external material forces; they are neither natural and static nor unequivocally bounded. Identities have real consequences but they determine nothing (Jenkins 2008, 9).

Identification is the process where categories of people are formulated and where persons and groups are attached to these classifications and addressed accordingly. Identification thus represents an ongoing interplay or interaction between a collective signification—social formulation of categories, assignment of people within, and addressing them according to these categories—and individual association through—in terms of—and against these categories. Identification affects the way in which people address themselves and expect to be addressed by others. In practice, the mainstream constructivist understanding of identification is very much in line with Foucauldian thinking on subjectivity and

subjectification: Both deny that identities could be defined in terms of essentialist properties, fixed preferences or practices. Instead, "particular kinds of identity are 'made up' within relations of power/knowledge" (Lawler 2014, 69).

Subjectification is the process by which people acquire, or are incentivized, enticed, pressured to acquire, particular identities. At the same time, they are subjected to the rules and norms that go with a particular identity (ibid.). As such, identification is linked to power and government. For example, as a part of their examination of the space-related practices of neoliberal governmental rationality in higher education, Kangas and Moisio (2012, 214–217) have analyzed university reform policies as subjectification practices, where nationalistic categories are created and proper ways of being and doing are projected to reflect the needs of the global economy (Kangas and Moisio 2012, 214–217).

Sociopolitical quantification in the form of rankings affects identification through two elementary ways, evaluation and atomization. First, numeric evaluation associates particular agents with categories or identity groups as, for example, "one of the least developed countries", "a semi-democracy", "low in corruption", and "highly performing". These categories then affect how the categorized entities are being treated, are expected to behave, and actually see themselves and behave. It could be argued, for example, that meager results in global university rankings have played a role in policy changes in Europe over the past decade or so (Hazelkorn 2009; Kehm and Stensaker 2009; Erkkilä 2013; Erkkilä and Piironen 2014a). This is not only out of external pressures and institutional practices—the rhetoric of the European Commission or performance contracts between governments and institutions—but because of internalized grievance in the face of measured low performance of academic institutions and individuals: "We" should do better. This is also linked to nationalist political imaginaries (Anderson 1991) that construct collective identities amid global economic competition—the making of a "competitive us" (Kettunen 1999).

This brings us to the second way in which quantification matters with respect to identity, that is, by inviting the evaluated units to act and think as autonomous, self-fulfilling and responsible agents. In more general terms, this implies an internalization of social atomism that unit-based

rankings impose on our imagination. Freedom—not a negation of power—is at the heart of such governmentality (Rose 2004, 67). According to Miller and Rose (2008, 34), numbers establish "government at a distance" that is especially linked to the liberal forms of indirect rule in which technologies and vocabularies are used to assemble agents into self-governing networks of affiliation. Numbers—armed with qualities of mobility, stability, and combinability—not only create a common sphere of interaction and an imagery of unity in comparability, they contribute to subjectifying individuals and collectivities as free agents capable of governing themselves in the optimal pursuit of desired results (Löwenheim 2008; Erkkilä and Piironen 2009). Our research supports this analysis: standardized comparisons of democracy, good governance and academic performance all propose common interests, and objectives that should guide the actions of nation-states and academic institutions, with responsibility for success or failure on their own shoulders alone (Chap. 4). However, as the indicators allow "government at a distance", they also bind local experts more tightly into transnational networks of self-governing. But as we shall see, knowledge producers too justify their activities using historical narratives, references to past thinkers and eras, and the evidence of grand global trends. Subjectification also concerns the organizations creating the knowledge.

We also take a look at the way in which European universities are subjected to self-governance by projecting them as autonomous, self-owning, service-providing market operators (Chap. 4). Rankings and ranking techniques are a part of the story of subjectification in association with ideologies (competition) and vocabularies (managerial autonomy), policies (deregulation, autonomization, contractualization), and legislative institutionalization. Comparative ranking and auditing feature as a necessary element of the mechanism of subjectification in *helping to individualize institutions*: (1) in representing them as separate but commensurate wholes, (2) by differentiating them according to their performance, instead of homogenizing them in terms of statutory equality (Neave 2009, 10–11), and (3) by *providing the tools* for micro-governing through unit-specific knowledge that form the basis of performance management and budget allocation, strategic decision-making, and social pressure.

While the above processes have focused more on the characteristics of indicators that may potentially come to limit the sphere of politics and affect processes of identity formation, it is also important to understand the legitimating effects of quantification.

Legitimation

Max Weber differentiated between power [*Macht*] and authority [*Herrschaft*]. He defined authority as "the probability that a command with a given specific content will be obeyed by a given group of persons" (Weber 1978, 53). The common use of the term "authority" approximates to Weber's definition and tends to denote a largely voluntary but hierarchical relationship between the ruler and the ruled, in which obedience is based more on legitimation than coercion. As a social relation, authority (status) is not possessed by the dominant party but constructed in interaction between two or more parties. According to Weber (1978, 36–38), the legitimacy of a resilient hierarchical order (implying an amount of obedience) can rest on charisma/personal affection, tradition, or legality and is, in principle, independent of the approval of particular directives. Contemporary sources of legitimacy are now identified in the practices and reputation of rationality, objectivity, and impartiality, the very principles of modern science (cf. Scholte 2005, 256–266; Drori et al. 2002; Gieryn 1999, 1–35; Porter 1995, 1–8) that are often expressed in measurements (Djelic and Sahlin-Andersson 2006, 13). In modern society, marked by a lack of trust in personal judgment and subjective discretion, numbers (and the standards numbers help to establish and monitor) have been taken as a basis of trust and legitimation in the form of "anonymous objectivity" (Porter 1995, 214–216).

Legitimacy and credibility are clearly important reasons for statistics, rankings, indicators, and scorecards, becoming highly appreciated and preferred (Erkkilä and Piironen 2014b). Scholte (2005, Chap. 8), for example, has argued that the most influential policy approaches to globalization—the most important contemporary, multidimensional, and open-ended process of social transformation—have been premised on, driven by, and implicated in rationalist epistemology manifest in techno-scientific

thinking (cf. Drori et al. 2002). Capability to attach one's knowledge to such a powerful sociocultural base of legitimation lends them a breadth of credibility otherwise absent: to talk about expert knowledge or expertise is to lend some credibility to the argument. Consequently, being *recognized* as an individual or organization possessing or having the capability of producing such knowledge lends an element of authority to such actors (Scholte 2005, 259). Authority based on scientific bases of legitimation can, following Gieryn (1999, 1), be termed "epistemic authority". This is essentially what Boswell (2009, 7) calls the *legitimizing function* of expert knowledge.

Institutional epistemic authority is correlated with an organization's legal standing, capability to produce symbolic artifacts (like publications and conferences), and recognition by epistemic and political authorities. It is no accident that the World Bank and the OECD have such an eminent role in debates on governance (Erkkilä and Piironen 2009, 2014; Pal 2012). Nevertheless, the credibility of a specific argument or piece of knowledge is not only connected to the personal or institutional status of the presenter, but is also dependent on (1) the argument in question and (2) on the method the knowledge was produced with and the form it was presented. An argument that runs totally against cultural, political, or intellectual norms—received wisdom—more likely gets discredited than an argument anchored in a set of taken-for-granted knowledge. For example, it has become increasingly difficult to argue for the notion of academic autonomy that does not point to increases on short-term performance (Piironen 2013). An argument applying rational principles of science is considered more valuable than "softer" forms of knowledge (Boswell 2009, 22).

Both sources of legitimation (related to the speaker and the argument) play a role in how Fougner (2008, 321) considers the World Economic Forum, having succeeded in increasing the prestige of its measurement: "If prominent academic institutions and scholars lend their authority to the competitiveness reports, and if the reports' norms and standards for state conduct are sanctioned by influential economic theories, then so much greater is the inducement for 'responsible' states to take them seriously and act accordingly". Our observations point to a similar conclusion: the producers of good governance and university rankings actively display academic linkages (persons, networks, events, and research).

This is also related to the question of identity and identification. The measurement of governance attributes does not only deal with the credibility of the quantitative knowledge itself but its role in conjuring certain *actors*—producers of numbers—with legitimate authority (Erkkilä and Piironen 2009, 2014b). While this is not to say that the expert status of the World Bank, for example, was necessarily or wholly dependent on its capability to produce international data on various topics, the fact that it possesses this capability plays a role in the identification process. On the other hand, we could argue that much of the epistemic authority Transparency International enjoys is to a great extent due to its highly visible Corruption Perceptions Index. This function that quantification assumes in governance is *symbolic and performative*, and, furthermore, not simply reducible to the quality of the knowledge thus produced (cf. Boswell 2009). If authority, in the end, is a question of identification, and thereby a question of collective beliefs, then the performative act of quantification, the show of muscles, so to speak, may be more relevant than the "objective" assessment of the quality and impact of the data produced.

Our analysis of the field development in global ranking is a case in point. As much as motivated by demands for new and improved data, the decision to enter the field of governance measurement can be seen as a performative act for augmenting the existing institutional identity as an expert authority (cf. Marcussen 2002). We could argue that expert identity implying an extent of authority—capability to summon conformity—would confer certain privileges, if nothing else, at least a higher probability for organizational survival. Indeed, Gieryn (1999), writing about the politics within science, seems to attach epistemic authority to struggles for material resources (cf. Sabatier 1978).

Freistein (2016), in analyzing the production of poverty measuring instruments by the World Bank, also claims that international organizations produce numeric knowledge, not only to promote particular ideas or policies, but also to assert their position and to build up their identities as legitimate authorities on the policy domain in which they are active. In fact, not participating in the social practice of measurement is something they could hardly afford. Consequently, while being important mediators of global governance, they are entangled in a web of governmental rationalities

that condition even the most authoritative international actors such as the World Bank.

If engagement with the professional community by the means of number production can be seen as the positive side of identification (the emphasis being on similarities), Gieryn's (1999) contribution concerning "boundary work" as the activity of drawing boundaries of the "approved" alerts us to the negative side of identification working through exclusions (see Jenkins 2008, 21–23). The capability to produce quantitative data and to enter conceptual and technical debates related to measurement methodologies serves as a mechanism of exclusion. Actors incapable of or uninterested in engaging in quantification thus face the danger of being sidelined, discredited, or marginalized. Hence, they need to find other ways for building up expert authority. It is not a miracle then that international organizations of various sorts are more and more engaged in production of comparative numbers (Chap. 4, esp. Table 4.1; also Chaps. 5 and 6).

Weber (1978, 36–38) identified the sources of legitimate authority into charisma/personal affection, tradition, value-rational faith, and legality. Like charisma, the appearance of "success" can promote personal and collective affection by others, thus increasing the chances for being seen and heard. Soft power, as theorized by Joseph Nye, serves as an example. Here the capability to get others do what you want does not rest on coercion—nor primarily/necessarily on expertise, institutional position, or religious conviction—but more generally on the feeling of *attraction*, the reasons for which can be many and complicated (Nye 2004, 5). Nye (2004) discusses shared values and principled politics, cultural admiration, and glorified myths of invincibility and prosperity. What is important is the fact that success, admiration, and attraction correlate, although the first (success) can sometimes provoke opposite reactions, resentment (ibid, 35–44).

In producing imageries where some entities are elevated above others, rankings can make them appear exemplary, worth listening to, learning from, and imitating. In the language of subjectification, rankings can bring about categories and subjectivities of "successful", "mediocre", and "weak", just as Freedom House classifies countries as "free", "partially free", and "not free" (cf. Piironen 2005). To be ranked "excellent", "world-class",

or "number one" is, sometimes, accompanied with a varying amount of authority. For example, success in OECD's Programme for International Student Assessment (PISA) has definitely increased international interest in Finnish educational institutions and policies and made the word of Finnish experts and policymakers weightier abroad. As we note in Chap. 4, in the so-called "Harvard here" effect—copying of recipes for success—comparative rankings can stimulate attraction and thus indirectly, and to a limited extent, construct authority.

Global Policy Script and Field Development in Measurement

Until now we have discussed the mechanisms through which rankings and indicators obtain instrumental characteristics, making them effective in global knowledge governance. However, to understand the institutional outcomes of ranking, one should consider the contextuality of their constitutive effects and unintended consequences. This also involves the dynamics of field development in global knowledge governance.

Institutional Effects of Global Rankings and Indicators

As we will see in the following chapters, there has been a surge of global rankings and indicators over the past two decades. The rankings and indicators construct a global policy script on knowledge governance (cf. Meyer et al. 1997, 149–151): they identify its critical elements and provide measured entities information on their standing. Moreover, the rankings also help to construct a political imaginary on global competition that now encompasses countries, cities, innovation hubs, and universities alike. As will be shown in the empirical chapters, the measurements of good governance, competitiveness, innovation, and higher education objectify the aspects of knowledge governance that are regarded essential for economic competitiveness and innovation. This policy script is also tightly linked to the imaginaries of global competition and urbanization.

Scholars are arguing for rankings' increasing importance in steering countries' policies. However, the standing literature on the potential influence of global policy indicators provides contradictory accounts. Scholars often refer to global policy measures in a rather totalizing fashion, likening them to Foucauldian technologies of discipline or as a Weberian iron cage (Broome and Quirk 2015; Erkkilä and Piironen 2009; Löwenheim 2008). But the empirical evidence for their actual effects is somewhat indecisive. Scholars have described policy indicators as potential tools of "social pressure" (Kelley and Simmons 2015), "reactivity" (Espeland and Sauder 2007) and "quiet power" (Merry et al. 2015) with "indirect policy effects" (Gornitzka 2013).

But while assessments of the effects of global indicators are somewhat inconclusive, there seems to be a consensus about the potential unintended consequences of such policy measures (Espeland and Sauder 2007; Pidd 2005; Robinson 2003; Smith 1995; Thiel and Leeuw 2002). In other words, numbers do matter, but not always as intended. It is also argued, though, that we should look beyond unintended consequences of indicators, as it is often difficult to reconstruct intentionality behind the figures (Dahler-Larsen 2013, 973–974). The motives for making them might be linked more to index producers' attempts to secure their institutional visibility (Freistein 2016; see above Legitimation) than to engage in a common policy enterprise based on clearly defined causal ideas (cf. Haas 1992). The international organizations which are often behind the global measurements are not monoliths, and there might be many rationalities behind the figures instead of one (Broome and Seabrooke 2012, 10). Moreover, these organizations only see part of the policy problem that they wish to engage, suggesting limited rationality (Mahon 2016). Finally, transnational policy ideas are likely to be edited and translated in different contexts (Sahlin and Wedlin 2008; Schmidt 2010, 18–19). Hence, rankings and indicators constitute institutional practices that are only seemingly surprising (cf. Dahler-Larsen 2013), as they can be understood through closer contextual examination that does not necessarily assume intentionality or single rationality behind the use of measurements.

To understand why localized practices of global policy scripts (Meyer et al. 1997, 149–151), one needs to understand the local practical

knowledge (Scott 1998), existing institutional setting (Campbell 2004; Mahoney and Thelen 2009; Thelen 2004) and redescriptions of the ideas involved (Koselleck 2004; Skinner 1969). For instance, in higher education there are various national-level university reforms that include the rankings as a point of reference for certain policy measures (Dakowska 2013). It is typical of transnational policy discourses (Schmidt 2006) that there are differences in the domestic discourses about rankings, despite general recurring themes that are part of a reform agenda. Rankings have helped to frame higher education as an issue of economic competition that needs actions at the EU level (see above Objectification and Subjectification, and Chap. 4 below). On a national level, policy actors refer to global rankings when promoting national reform agendas. The global discourses become (glo)localized in a process, where the ideas become translated and edited by actors on national level (Drori et al. 2014; Sahlin and Wedlin 2008).

This points to the embedding of institutional ideas in the local cultural setting (prevailing values and norms) and institutional design (Somers and Block 2005). Here concepts and historical narratives are important, as the novel policy ideas should fit the values and institutional traditions prevailing in the context. Somewhat paradoxically, traditions are also evoked to promote novel policy ideas. This refers to the invention of traditions (Hobsbawm 1987), where nations often look to their past when trying to address future challenges; institutional practices and cultural artifacts are identified as remedies for the uncertainties of tomorrow. This often involves global policy ideas that are incorporated in such invented traditions (cf. Erkkilä 2012).[1] Here we have an apparent link to the process of subjectification presented above, where prescribed patterns of identification are linked to action.

Moreover, the institutional outcomes of the growing competition between higher education institutions and innovation systems are not straightforward, and there are also clear national differences (Gornitzka 2013).[2] This reasoning resonates with the new institutionalist accounts on institutional change that draw attention to the contextuality of change and its different modalities (Streeck and Thelen 2005; Mahoney and Thelen 2009), going as far as the decoupling of global policy scripts and their local implementation (Meyer et al. 1997, 154–156).

While we can identify general trends in governance by numbers, the institutional effects on a national level are conditioned by local institutional design as well as by the prevailing norms and narratives of state. This calls for a contextualized analysis of change that allows one to see the actual developments that may even appear surprising against the global policy scripts of rankings. The global ideas carried by the rankings are translated in a local context, where they constitute practices that are linked to general global trends, yet come to reflect prevailing institutional practices. This marks an opening for understanding the rationalities and contextual factors that may even cause seemingly unanticipated effects of policy indicators that nevertheless can be understood through closer examination.

Field Structuration in Global Measurement

The institutional effects of ranking are not limited to national level, however. Numerical objectification has also fundamentally influenced the knowledge production of international organizations and NGOs, which are now compelled to have numbers of their own. At present, we observe a field development in global measurement (cf. DiMaggio and Powell 1983), leading to multiplication and fragmentation of measurements assessing the national production and governance of knowledge. Moreover, there are similar paths of development in the rankings of state knowledge in different policy domains. Most notably, we observe a fragmentation of rankings and indicators relevant to knowledge governance in higher education, economic competitiveness, innovation and good governance. This is caused by new indicator sets and actors entering the global field of numerical assessment ranking, potentially even reducing their conceptual coherence, as the indictors of competitiveness, higher education and innovation now overlap. Though the figures are ideationally aligned, there are often different rationalities and arguments behind them. Nevertheless, the ideational fragmentation of rankings has further deepened the field structuration of global ranking (see Chaps. 5 and 6).

There are methodological changes in the indicators used, as the critique of ranking has led to the emergence of more sophisticated nonaggregate

measurements and "actionable indicators" in university rankings and indicators of good governance, while the limitations of ranking economic competitiveness has also been critically discussed. Furthermore, there is also a critique of existing rankings in terms of their scope and level of analysis. Complementing the existing rankings, the measurements of innovation often hold cities as the subject of their analysis, instead of focusing on countries or universities. There are also new regional university rankings that focus on institutions overlooked by the global comparisons.

In trying to secure a position in the field, the actors engage in the production of competing classifications of reality (Kauppi and Erkkilä 2011). Such classification struggles also entail political conflict, and to a certain extent the critique of existing indicators can be interpreted as their politicization (see above). But most noticeably, the above critique serves as a stepping-stone for new actors to produce alternative figures. In order to argue for the need of yet another indicator, these actors seek to show that existing figures contain inadequacies.

While the critique of existing indicators in terms of their methodology and scope allows new actors to enter the field with their alternative sets of indicators, it also further embeds the use of numerical assessment in transnational governance. One characteristic of structuration is the unintentional reproduction of existing practices (Baert 1991; Giddens 1984, 5) We see this in the field development of global ranking as actors claiming to change existing practices come (often unconsciously) to replicate them. The production and use of global numeric knowledge builds on social scientific methods and practices of verification. As we saw above, the recognized capability of producing such knowledge lends an element of authority to actors involved and serves as a mechanism of inclusion and exclusion. Actors wishing to join the activity of governance measurements need to legitimate their knowledge products according to the criteria set by the epistemic community existing in the field (Haas 1992, 3; Gieryn 1983, 782).

As a result, new indicators are likely to conform to existing normative and causal beliefs and criteria of validity. Paradoxically, while the entrance of new actors leads to a fragmentation of global rankings in knowledge governance, it serves to further institutionalize the practice of comparative

numerical assessment. We witness this, first, in the shift toward disaggregate governance measurements that have challenged rankings, secondly in the shift toward rankings of regions and cities that have come to complement the indicators of global scope, and, thirdly, in the novel concepts of measurement such as innovation.

Summary

Rankings govern individual and collective conduct, even when not directly tied to formal decision-making processes. Scorecards and benchmarks of various sorts have the potential to affect the ways we think about governing; the ways domains of governance are constituted, problematized, or depoliticized; the ways we think about reality and ideals; the ways we understand ourselves to be and who we wish to become; and the ways we differentiate between sources of authority complying some but not others.

So far, we have introduced a framework to systematize analyses and debates on the role of numbers in governance. We propose that governing by numbers becomes effective through mechanisms of objectification, (de)politicization, subjectification, and legitimation, empirical instances of quantification often touching them all. These are visible in the field structuration of global ranking as well as its institutional effects (see Chap. 7, Table 7.1).

The following chapters develop the themes we have outlined above. Chapter 3 explores the ideational roots of global rankings in knowledge governance, focusing on its prominent discourses and their interlinkages that have contributed to the development and convergence of different policy-specific rankings. Chapter 4 looks at the emergence of global indicators and shows how they objectify and depoliticize policy issues, while making them shared policy concerns for countries. It also explains why we posit the essential link between quantification and global knowledge governance: we show how the ideology of competition is embedded in the practice of ranking and the formation of higher education policies in Europe.

Chapters 5 and 6 discuss the field development of ranking in knowledge governance, where new indicators and their producers are entering the field of global measurement. This involves the dynamics of field structuration discussed above, where the politicization of indicators, manifest in the critique of existing rankings, leads to fragmentation and regionalization through the entry of alternative measurements. However, as explained in the above section on legitimation, recognized expert authority and epistemic knowledge set their constraints for those wishing to enter the activity. Even with the growing variation in numeric knowledge, we still tend to think that quantification supports more uniformity than diversity, depoliticization than politicization. We also highlight the arguments for entering the scene of knowledge production, including its normative aspects and references to history.

Chapter 7 finalizes our argument that rankings constitute global knowledge governance. Here we also highlight their characteristics as policy scripts and the implications to transnational governance. The focus on the multiple ways in which quantification is connected to governing works as a reminder of the political nature of measurement, irrespective of the origin or the objectives explicated by the producer and the user. Numbers are always connected to thought, the product being knowledge premised on the ideas about the background and on the technical limitations embedded in the methodologies of measurement and ranking. Rankings are effective insofar as they create an impression of precision and objectivity. But this is not enough; quantification alone does not guarantee viability as a governing technique. Rankings are even more influential when they tap into the existing and widely shared ideas and ideologies. And this is our starting point for the next chapter.

Notes

1. For example, the current global drive for transparency has led to the discovery of a long-standing institutional tradition of institutional openness in the Nordic countries, causing national pride over it, but at the same time leading to its reforms according to the performance-laden ideas of transparency (Erkkilä 2012).

2. Gornitzka points to three ways through which the national traditions are accommodating the changes. First, institutional legacies may channel the transnational policy scripts leading to converging national policies. Or, second, they may act as buffers that insulate national policies from external influences. Third, local institutions may filter the transnational policy scripts, meaning that the respective changes are nationally specific (Gornitzka 2013).

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3

Ideational Background of Global Knowledge Governance

Introduction

This chapter tracks the ideational background of global rankings in knowledge governance with empirical examples mainly from the European Union (EU) and the OECD, focusing on the discourses that have contributed to the development and convergence of different policy-specific rankings. At present, the indicators can be understood as an instance of global policy discourse on competitiveness (Erkkilä 2014; Erkkilä and Piironen 2013). The rise of indicators can also be linked to the discourses on the knowledge-based economy, evidence-based policy, and good governance, all highlighting the role of knowledge in economic performance and government efficiency. We see that the use of indicators has helped shape an emerging field of global knowledge governance that is somewhat incoherent conceptually, drawing from several policy discourses. There are two different ways for policy discourses and indicators to interact (cf. Godin 2005, 17). In the first, policy indicators may give rise to policy discourses and concepts, making them global concerns of governance. In the second,

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an emerging policy discourse can lead to perceived need to measure it, sparking new measurements, but rising discourses can also revive existing measurements that are discussed under a new label.

We begin our analysis with the rise of knowledge-based economy in the 1990s, which was closely linked to the use of statistics by the OECD. The debate on knowledge-based economy is a case where a new policy concept together with previously existing measurements helped to create a policy concern about science and technology in the economic performance of states. In the domains of democracy and economic performance, the first global indicators relevant to knowledge governance appeared already in the 1970s, but they were rather marginal until 1990s, when the emerging discourses of competitiveness and good governance drew them into spotlight.

Since the early 1990s, there was a conceptual shift from "democracy" to "good governance". This also took place with a change of producers of the comparisons. While academic scholars made the measurements of democracy, the new rankings on good governance were produced by international organizations and nongovernmental organizations (NGOs) (see Chap. 4). The shift "from democracy to good governance" implies a new perception of institutions as a central element of state performance. This is also apparent in the measurements of economic performance—in terms of national competitiveness and innovation—that have grown in scope, now encompassing various aspects of governance, including education and access to government information.

Emerging in the early 2000s, global university rankings share most of the ontological assumptions of the previous rankings and are ideationally aligned with them. Moreover, their reading is done against the predominant narrative of economic competitiveness constructed by the rankings of good governance and economic performance of states. The global university rankings have sparked a discourse on the "world-class university", where knowledge and higher education become perceived as central elements in how states fare amid economic globalization. Recently, such rankings have been complemented by those of innovation that assess the role of knowledge and education in the global competition for innovations, wealth, and well-being. These rankings are

clearly ideationally linked with the previous ones. Generally, the indicators are also linked to the trend of evidence-based policymaking and related demands for expertise.

Global rankings are based on an atomistic ontology that constructs reality as economic competition between states, regions, and institutions. Owing most notably to rankings of national competitiveness, this economic reductionism concerns most of the rankings available, and issues such as higher education and good governance are now also perceived through the lens of economy. We could just as well perceive them as matters of social mobility and democracy. This is due to current ideas of institutional economy that now also influence the perceptions of higher education drawing on codifications of good governance. This chapter summarizes the main ideational elements of the above rankings, showing their similarities and ideational overlap. We will begin by setting our analysis of rankings and knowledge governance within the framework of evidence-based policymaking that has come to define developed countries' governance over the last two decades.

Evidence-Based Policymaking and the Globalization of Numeric Knowledge

Although there is nothing new in attempting to base decision-making on best possible knowledge, including statistics, it is fair to say that research, expert assessment, and statistics have now been adopted globally as its basis (see Chap. 2). The recent trend for governing through evidence was strengthened in 1999 when the Blair government published a White Paper, *Modernizing Government*, which institutionalized the discourse and practice of *evidence-based policymaking*, first in the United Kingdom and soon after in foreign and international arenas.

Since 2001, the European Commission has been committed to an evidence-based impact assessment of all major legislative proposals (European Commission 2001; Lee and Kirkpatrick 2006). The most sought-after type of information for purposes of policy planning, monitoring, and evaluation is quantitative time-series data, which

often allow international comparison and benchmarking (Arndt and Oman 2008). Comparative knowledge is now commonly recognized as a useful tool for improving policy outcomes and a resource for public communication—whether for purposes of justifying reform, collecting plaudits, or scapegoating. There is also growing demand on global comparative assessments.

It is assumed that international policy coordination—for mitigating problems that individual countries are not able to deal with alone—has amplified the demand for internationally oriented knowledge (Haas 1992, 1) and is helping to carve out political spaces for multilevel governance (see Hooghe and Marks 2003). Within the EU, for example, the increased use of the Open Method of Coordination—first introduced to coordinate employment and social, education, and culture policies—has applied indicator data in its benchmark type of steering (European Commission 2006). In a similar fashion, the enormous databases of various international organizations such as the World Bank and OECD can be justified as vital tools for international management.

But if international cooperation and coordination play a role in the increased demand for indicator data, so does international competition. Globalization is often identified as a significant cause of accelerated competition between various *economic* entities. With the presumed competition comes the need to enhance economic performance, acquire best practices, and—simply—to give an appearance of being successful. This line of thinking sees states compete with one another in a similar fashion as corporations do (Krugman 1994, 29). Inherent in this thinking is the need for comparison to benchmark one's position, quality, quantity, and performance in relation to others (see below).

Statistics are increasingly being produced in the international context for the purposes of supranational governance. Oded Löwenheim (2008, 256) has argued that an important function of statistical comparisons is to reproduce hierarchical structures of international system not only by subjecting states to (self-)evaluate their politico-administrative conduct by standards set in the industrial West, but also by constructing a representation of states as ethical actors capable of enacting responsible policies. As such, unit-level comparisons help to sever the discursive linkages between powerful international actors and a wide

variety of political, social, and economic problems, which come to be treated as "domestic" and responsibility for their alleviation foisted on national governments.

While we are not suggesting that the use of numerical techniques is merely aimed at the promotion of private interests, we nevertheless believe that there is reason to put more emphasis on the interests and tactical considerations of index producers when looking at the production of governance data. A need for new actors to establish themselves as experts on the governance field seems to be an important supply-side incentive, as many actors wish to engage in producing quantitative data (Kauppi and Erkkilä 2011; Espeland and Stevens 2008; Arndt and Oman 2008, 10–11). Governance indices form a fast-evolving field of expert knowledge where international governmental organizations (IGOs) and NGOs are most active. While some are more established than others—the World Bank relies less on public visibility than Transparency International—all urge to be recognized as experts on their field.

One means for attaining such credibility is to produce seemingly neutral numerical knowledge, which helps to legitimate their existence and resourcing (cf. Marcussen 2002, also Gieryn 1983; Gieryn 1999, 23). At the same time, however, quantified assessments represent a type of information that is costly to collect, effectively making the circle of experts engaged in this activity somewhat exclusive. This restrictive effect is furthermore strengthened because it is "difficult for new initiatives—to gain attention, because the most-widely used indicators are well-established and dominate the market" (Arndt and Oman 2008, 11).

The use of indicators is also part of a "modernization" agenda of public governance (Buduru and Pal 2010, 516; OECD 2005) and higher education (see below). Rooted in the New Public Management (NPM) reforms of the 1990s, the modernization discourse has since come to embrace numerical methods of evaluation, auditing, and performance management (Power 1999; Hood and Margetts 2007). These have been actively promoted and circulated transnationally (Sahlin-Andersson and Engwall 2002), also with the help of comparative data. The chart below shows how the references to university rankings and governance indicators have risen since the early 2000s, coinciding with the drive for evidence-based policymaking (Fig. 3.1).

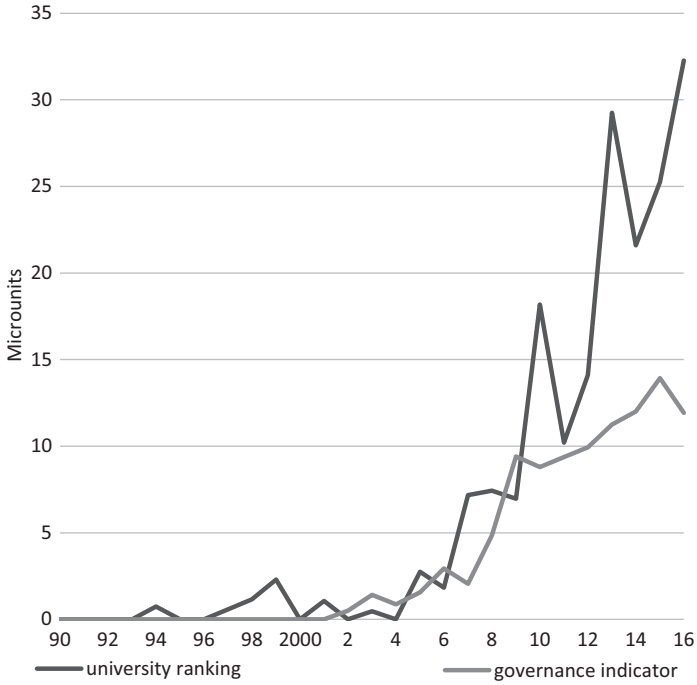

Fig. 3.1 References to university rankings and governance indicators in Web of Science and Scopus.[1]

Since the 1990s, there has been a surge in global rankings and indicators (see Chap. 4). The first popular measurements of global scope emerged already in the 1970s. Published in 1972, the Freedom House's *Freedom in the World* dataset was the first of its kind to measure the state of democracy in countries. Economists were also early applicants of growing base of international data as first methodologies to measure competitiveness of business enterprises and national states were produced in the 1970s and 1980s. The field of global ranking remained rather static until the mid-1990s, when the good governance indicators started to emerge—possibly aided by the mainstreaming of distance-cutting technologies such as the Internet. By the end of 2010, international rankings, scorecards, and benchmarks were everywhere. Policies are justified, monitored

and their impacts assessed in terms of numeric knowledge. Among the relative newcomers also university rankings and indicators of innovation have entered the scene.

But to understand the rise of indicators in knowledge governance, we need to take into account their ideational influences and the discursive environment in which measurement operates. In the following, we will discuss the policy discourses that are linked with the rise of global rankings and indicators. We will begin with the 1990s debate on knowledge-based economy and move on to the discourses on competitiveness, good governance, and world-class university. Our examples primarily cover European policy developments.

Knowledge-Based Economy

The concept of the knowledge-based economy is closely linked to the debate on information society and the major transformations it was to cause for industrial production, organization of labor, and welfare (Castells 1996; Castells and Himanen 2002; Lash 2002). Other related concepts are New Economy or Information Economy, where production was to be revolutionized by the new digital technology and information as a commodity (Zysman and Newman 2006). Figure 3.2, showing references to the key concepts in OECD documents, demonstrates the rise of these discourses in the mid-1990s (in percentage of all documents). As the aggregate line of key words ("all") shows, these discourses have been on retreat since about 2010, but they have nevertheless been important in framing knowledge governance as an economic activity, where the state has a rather limited and specific role as the facilitator of new digital economy (Ottaviano and Pinelli 2004; Zysman 2004).

Discourses and concepts such as New Economy and knowledge-based economy are closely linked to statistics. According to Godin, the international statistics used to measure the rise of Information and Communications Technology (ICT) gave rise to the discourse of New Economy in the 1990s (Godin 2005). In the case of knowledge-based economy, the concept was being actively promoted by the OECD that started producing indicators on the matter in the mid-1990s. The related

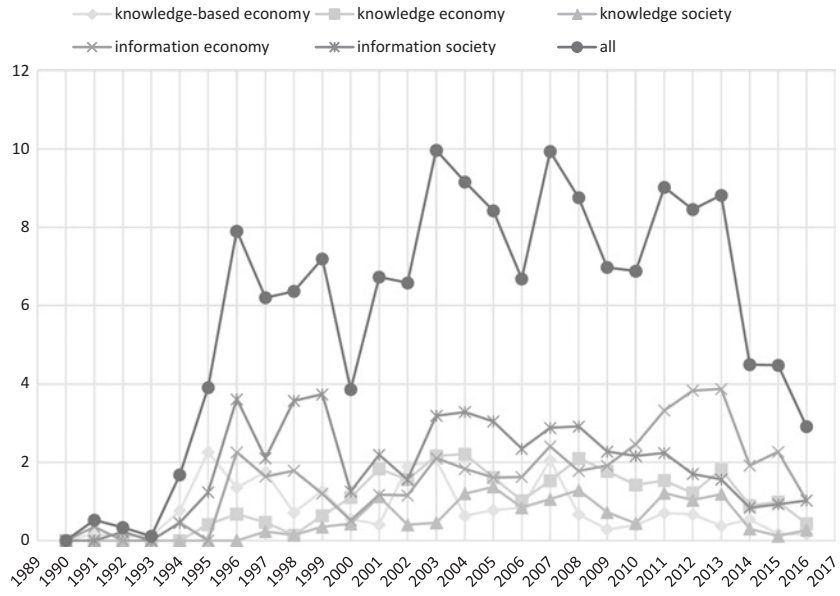

Fig. 3.2 References to knowledge-based economy and related concepts in the OECD documents (percentage of documents). Source: OECD Official Documents.[2]

concept of the knowledge economy had been already coined in the 1960s, acknowledging the national economic importance of science and technology policies, but the OECD's promotion of knowledge-based economy brought the issues back to agenda in the 1990s. The rise of the knowledge-based economy was also supported by peer concepts such as "national innovation systems" that was initially coined to bring in institutions to econometric models. Godin argues that knowledge-based economy became an umbrella concept that subsumed the insights of national systems of innovation, information society, and new economy (Godin 2005). It helped to revive the topics of science and technology policies, but this came with the help of active promotion of the OECD, now backed up by statistics. While the indicators were not novel—in fact the statistics used by the OECD mostly already existed earlier—they were now packaged under a new label that was appealing to policymakers (Godin 2005, 23–24).

As we saw above, the notion of the knowledge-based economy has also brought in state institutions to the assessments of national economic performance. This brings to light an inbuilt tension in the debate. Like most of the information society theorizing, the new economy literature often tends to be dismissive of history, portraying the "emergence" of "digital" or "e"-governance (Forlano 2004). Moreover, this "revolution" (Garson 2004) is seen as bringing major changes and advances in enhanced efficiency, public sector performance, and democratic responsiveness (West 2005).

But the ahistorical perspective is misleading in understanding the knowledge-based economy and governance. From the perspective of information, the rise of the modern state was closely linked to establishing census and statistics, and historically nation-states have been responsible for the accumulation of most of the information resources that the new economy is to build on. The public sector creates and manages vast data sources that are often seen important for digital services. Such historically accumulated data sources include registries on citizens, companies, and real estate, as well as cartographic and meteorological information, which are prime examples of data resources that have traditionally been produced by states. Through digitalization these are increasingly seen as crude material for value-added digital services created by private companies (Blakemore and Craglia 2006).[3]

By the end of 1990s, there was a realization that openness of public administration is a favorable feature of governance in terms of economic competitiveness and performance. Implicit in the attempts at increasing central government's steering capacity in the "information society" (Holliday 2001, 317; Tiihonen 2000), this shift has become most apparent in attempts at imposing new practices of accountability that are based on measures of budgetary transparency and in the attempts allowing the reuse of public information for economic activities. This has also raised global interest toward states' information policies. For instance, the UN e-Government survey includes an e-Government readiness/development as well as e-Participation index. These measure the availability and accessibility of government information and online transparency from the perspective of deliberation (see Chap. 5).

The policy implications of the above discourses can be seen in EU policies on public sector information (PSI). In 1998, the European Commission released a Green Paper on PSI, which portrayed public information as a market commodity. The Green Paper had its ideational roots in the New Economy theorizing, and it was motivated by the perceived competitive advantage of the United States where most of the public information was produced free of user charges, unlike in Europe (European Commission 1998, 28). The Green Paper referred to "reuse" of "PSI". As a result, public information got conceptualized as a "good", either "public" or "market based", as later stated in European Commission's directive on the commercial reuse of PSI (2003/98/EC). The European Commission's policy shared the NPM reforms' presupposition of the applicability of market logic in public information management.

Shortly after the debate on public information in March 2000, the EU launched its Lisbon strategy. According to the strategy, EU was to become "the most competitive and dynamic knowledge-based economy in the world" by 2010. From the perspective of knowledge, the Lisbon strategy mainly considered problems in accessing information and lack of new technologies (mainly Internet) as potential obstacles for becoming a leading knowledge-based economy (The European Council 2000). The strategy also introduced the "education systems" firmly to the policy agenda. This mainly referred to primary and secondary education, but it also singled out research and development and introduced European Area of Research and Innovation. The strategy also called for benchmarking national research and development policies and use of indicators to measure performance, leading to the launch of European innovation scoreboard in 2001 (see Chap. 6).

Interestingly, the Lisbon strategy did not make a single mention of higher education and only mentioned universities in the context of creating a "high-speed transeuropean network for electronic scientific communications" (The European Council 2000). But by 2011, the European Commission had singled out "European higher education" and higher education institutions as a key development area for European competitiveness (European Commission 2011, 2). This shows how the issue of higher education and research has gained in importance in the economic

strategies of countries as well as the EU over the past decade. It is also important to notice that this trend coincides with the rise of global indicator knowledge.

Concerning measurements, the debate on the knowledge-based economy is interesting, as the concept was largely promoted with the help of statistics on general aspects of the information society. But the knowledge-based economy is also linked to measurements of access to government information (see below for good governance), the global university rankings, and measurements of innovation (see Chaps. 4, 5, and 6). On the whole, the "knowledge-based economy" discourse has made way for the debate on "competitiveness". This has come with the help of competitiveness indicators that have received much media attention since early 2000s.

Competitiveness

"Competition" is without doubt one of the most policy-relevant words of the early 2000s due to its frequent use (cf. Krugman 1994, 28–30; Sum 2009, 184). It now frames conduct in all spheres of life, be they private, cultural, social, political, or economic. Most people are (at least unconscious) social atomists, since we often assume that entities are "separable if distinguishable" (Weissman 2000, 2). Moreover, many believe that a competitive environment is necessarily implied and thus competition cannot be escaped. Some liberalists also believe that competition between separate entities will ultimately benefit all. Whatever the case may be, maximization of competitiveness has come to define and justify some of the most important policies and policy reforms in Europe (compare Cerny 1997; Hall and Soskice 2001): all things that want to prosper or survive must compete. We call justification of any concrete policy based on this truism "competitive logic"—a logical deduction from the ideology of competition.

According to Sum (2009, 187), the Reagan administration raised the idea of economic competitiveness in the 1980s by establishing Commission on Industrial Competitiveness (1983) and Council of Competitiveness (1988). A similar development was ongoing in the

OECD, where the work around the theme intensified in the 1980s and was reinforced in the 1990s, coinciding with the European Commission's interest in the topic (Sum 2009, 187–188). Contemporary ideas of competition often draw from scientific authority of economic theory and even evolutionary biology. Both have had an impact on our social and political thinking, and competition often appears as natural and generally beneficial. Competition serves as a general social imaginary upon which actors habitually assess the outside world (Alasuutari and Qadir 2016, 643–645). While explicitly Darwinist applications have not been trendy social thinking for more than half a century, neoliberalism, building on neoclassical economics, has (Cerny 1997; Krugman 1994; Sum 2009). Of course, there has always been resistance against the attempts to make competition an overarching super-ideology to which possibly contradicting values and doctrines are made subordinate. In Europe, the strong social democratic tradition occasionally accompanied with nationalist tendencies was able to delay the strengthening of the ideology of competition until 1980s, at least in policy domains such as public pension schemes (Mahoney and Thelen 2009, 20).

In the late 1980s and first part of the 1990s, competition at the supranational level was discussed in the confines of the creation of the European common markets. This objective was first endorsed by the Single European Act in 1987, a policy which was reinforced by the Maastricht Treaty and the creation of the single currency: various trade barriers were to be removed and harmonization of national regulations affecting competition was to be enacted. The principal task of the Directorate-General for Competition was to create a real competitive environment for European companies. Functioning competition within the European markets was believed to foster efficiency, productivity, economic growth, and general welfare. Indeed, construction of competitive internal markets was the dominating Commission-led policy initiative during the 1990s—the enlargement project trailing behind—with the effect of trumping contradicting policies and objectives (Wallace et al. 2005, 114–115).

Globally, the tendency was much alike: under the General Agreement on Tariffs and Trade (GATT), the Uruguay Round (1986–1994) led to an unprecedented reduction of tariffs and agricultural subsidies and

greatly extended the domain of the negotiations. In 1995, the World Trade Organization (WTO), whose "main function is to ensure that trade flows as smoothly, predictably and freely as possible", was commenced. Everyone was to benefit from the liberalization of global trade. On the other hand, the perspective of competitiveness also emphasizes the role of nation-states, seeing them as key actors in the global trade. Paradoxically, the perceived concern of competitiveness may even lead to expansion of state regulation and intervention (Cerny 1997, 251). This was visible already in the early 1990s, when the head of EU Commission Jacques Delors identified the lack of competitiveness of the EU (vis-à-vis the United States) as a key problem of European economic performance, to which investments in technology and infrastructure were seen as remedies (Krugman 1994, 29). At the same time in the United States, the economic and trade policies formulated by the Clinton administration were strongly guided by the ideas of national competitiveness.

At the turn of the millennium, the ideologies—or realities—of neoliberalism and globalization finally met. Sum (2009) has called *competitiveness* a knowledge brand that emerged in the mainstream vocabulary and political agenda through efforts of various actors on both global and regional levels. The more the markets were opened—regionally and globally—the more the provincial concern for one's own economic achievement proliferated in the Western world (Kettunen 1999; Sum 2009), though this is not self-evident, as Cerny (1997) has pointed out. Moreover, competition was no longer reserved for companies alone: individuals had to start competing for their jobs; nations for investments, workers, and affordable loans; public agencies for skilled employees; educational institutions for funding, top researchers, and talented students. Global competition entails huge risks, and it was acknowledged that not everyone was going to benefit automatically. It became habitual for the governments of the smaller states to assess their national competitiveness.

From 1990s onward rankings of competitiveness have emerged (Chap. 4). The competitiveness rankings have also influenced indicators in other domains, tying them ideationally to the political imaginary of competition. This is notable in good governance (Erkkilä and Piironen 2009) and higher education (Erkkilä and Piironen 2013). The notion of competitiveness brings ideological coherence to the transnational governance of

higher education (cf. Sum and Jessop 2013, 40–41), as universities competitiveness is linked to national and regional competitiveness believed to foster economic goals such as growth, employment, and welfare (see below).

In the assessments of good governance, state institutions are now valued for their positive effects on governance performance. This also concerns the knowledge infrastructure of state: good governance and competitiveness meet in the notion of transparency.

Good Governance and Transparency

In the early 1990s, the concept of "governance" came to complement, and sometimes replace, the hierarchical and statist notion of "government" that had dominated both the discourse and practice of politics and administration, but which lacked the capacity to capture the nature of changed realities of collective decision-making (Peters and Pierre 2006). At the same time, the World Bank, intent to overcome the legal constraints preventing it from interfering in member countries' internal affairs through its lending criteria in the late 1980s, coined the concept of "good governance" (Thomas 2007, 731–736). For an intergovernmental organization, good governance was a practical means of not having to resort to "political" criteria such as democracy. But good governance also had substance of its own. As a management recipe that "marries the new public management to the advocacy of liberal democracy" (Rhodes 1996, 656), it helped to shift the focus from traditional democratic values of governance to instrumental virtues enhancing institutional efficiency and to a specific understanding of economic viability (c.f. Zanotti 2005; Drechsler 2004; Knack and Manning 2000).

Whereas the notion of governance has become somewhat neutral, referring to a standardized set of "steering mechanisms in a certain political unit", "good governance" has not (Drechsler 2004, 388). It is a normative concept that puts emphasis on reducing the reach of the state and on adopting the logic of private enterprise in terms of how governance is conducted. The ethics of the good in "good governance" can be traced to free market economics, which formed the core political ideas of

international financial institutions since the late 1980s (Argyriades 2006, 158–60; Doig et al. 2006, 241; Drechsler 2004; Seppänen 2003, 114; Zanotti 2005, 470). Many of the standards of good governance are identical to the policy prescriptions of NPM initiatives that were launched in the Western World around the same time (Drechsler 2004).[4] This is especially evident in the emphasis put on efficiency and performance as key concerns of governing.

Apart from political science and administrative studies, the question of the most plausible institutional design for a country has been addressed by scholars of economics. The NPM reforms and, as Drechsler argues, initial perceptions of good governance have been centered on the ideas of limited domain of state and public institutions. To an extent, this can be seen in the policies of international financial institutions. From the economics point of view, the picture is more mixed, though. The increased interest in the administrative performance in "ethics", that is, seeing transparency, accountability and low corruption as virtues of governing at present, bears close comparison to the patterns of thought and doctrines of contemporary economic theory. Since the late 1970s, information economics has gained ground among economists, and in the last two decades also, well-performing institutions and the rule of law have been firmly focused on economic agenda, often referred to as "Washington consensus" (cf. Stiglitz 2008).

George A. Akerlof, A. Michael Spence, and Joseph E. Stiglitz have brought up issues concerning imperfect information, corruption, and their transaction costs. As Joseph Stiglitz has put it, this has marked a slight shift in economics paradigm (Stiglitz 2002), highlighting the relevance of information and transparency for market efficiency (Stiglitz 1998, 3). Also the hardcore liberal economic policies are under attack here for failing to see the particular circumstances of countries, which makes the doctrinal adoption of stability and growth pacts difficult (Stiglitz et al. 2006).

Institutional economists have argued for firm institutions as keepers of economic performance for open economies (Rodrik 1998) and also pointed out how differing institutional paths lead to varieties of capitalism (Hall and Soskice 2001). Douglass C. North has also made similar observations from a historical perspective, arguing that the quality of

institutions determines the economic performance of a country (North 2005). North has criticized the libertarian economists and their idea of laissez-faire efficiency based on minimal regulation, such as general conditions of rule of law and effective property rights.[5]

Even if economists disagree on whether institutions can be exported (Przeworski 2004),[6] or on their ideal role and scope, it is obvious that for economics governance public institutions are not simply a matter of democracy but particularly of economic performance. The institutional economic literature merges these two without much hesitation: democracy is somewhat straightforwardly seen to amount to increased (market) transparency and lowered tariffs and transaction costs (Kono 2006; Libich 2006). Previous assessments of the possibly contradictory dichotomization of democracy and efficiency are virtually neglected. In other words, whereas the scholars of political science and administration have previously seen these two to be potentially at odds with each other (Jessop 1998, 42), the newly emerging ideas of political economy of institutions seem to bypass this trade-off.

When looking at the new numerical objectifications of administrative virtues, it seems apparent that the feasible and sought-after qualities favor economic performance over traditional ideas of democracy or administration. The drive for good governance has also had a concrete influence on the knowledge institutions of state. Whereas openness and access to government information was for a long time seen as potentially at odds with efficiency and economic performance, the above-discussed paradigm shift in economics has paved way for the novel understanding of transparency as a central element of market efficiency (Erkkilä 2012; Stiglitz 2002). Consequently, there has been a global drive for transparency (Blomgren and Sahlin 2007), and countries have rushed to adopt freedom of information legislation. Figure 3.3 shows how the number of information access laws has developed globally, coinciding with the global policy prescriptions of good governance and transparency.

Transparency is aligned with the current pursuit to establish institutions that are both democratic and efficient (Erkkilä 2012). The access to government information is often seen to enhance both the performances of government but also allow citizen participation and control of government. While the information access laws are an important element in the

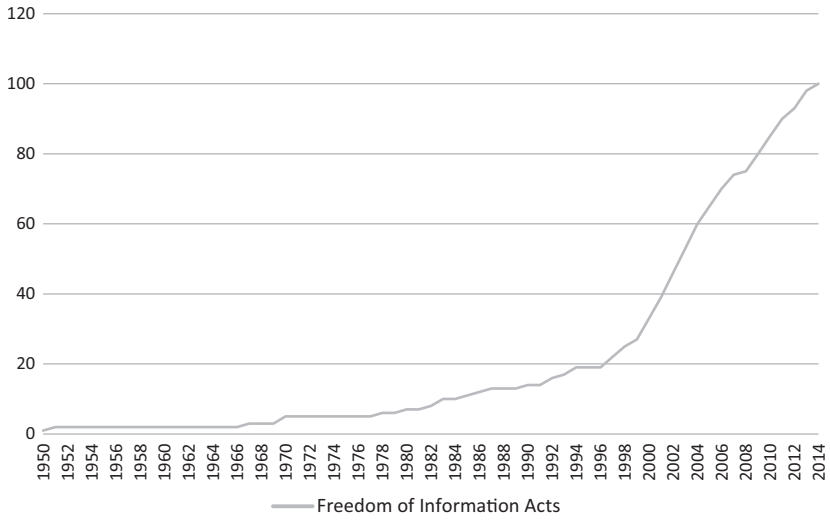

Fig. 3.3 Number of countries with freedom of information acts. Sources: Fringe Special, FreedomInfo.[7]

current assessments of economic competitiveness, it is also important for the knowledge-based economy and innovation. Without such legislation in place, the digital services using public information would be difficult to organize. The information access laws are therefore also at the heart of current developments in information technology and innovation.

Transparency has also become an attribute of global measurements. At present, there are some 15 different indicators of global scope that assess transparency of state institutions in some respect (see Chap. 5). While these measurements were initially part of broader indicator sets of good governance, there is a recent development toward detailed and focused measurements of particular aspects of transparency, such as budget transparency (Erkkilä 2016). While academics have criticized the measurements for their methodology (Michener 2015), there is also keen interest into making such comparative assessments, particularly from the economic perspective (Williams 2015). Alongside democracy, transparency is currently seen as a key element of economic competitiveness and development of nations. Solid national institutions are also seen as an important element of innovation.

Innovation

Innovation is often talked about in terms of the innovation environment, a paradigm discussed already in the early 1990s, stressing innovation as a foundation for countries economic competitiveness (Lundvall 1992). If concern for competitiveness dominated international policy agenda in the first part of 2000s, it was supplemented by the catchword, of innovation, later in the decade. Innovation was a convenient tag as it neatly elaborated the existing paradigm toward a specific solution. An innovation and the capacity to innovate are generally seen in a positive light (Gripenberg et al. 2012). Innovation implies a new idea with proven utility. An innovative firm gets the upper hand in market competition; a society that fosters innovation reaps the benefits of productive public sector and thriving economy. Already at the turn of the 2000s, research on innovation started to consider the dynamics of innovation, where university–industry–government relations (the so-called triple helix) were seen as a decisive factor for innovation. Furthermore, distinguishing this perspective on innovation from previous ones, it was argued that "the university can play an enhanced role in innovation in increasingly knowledge-based societies" (Etzkowitz and Leydesdorff 2000, 109). This also implied a new role for the university in regional and national economic development (Etzkowitz et al. 2000).

The EU has been important in promoting innovation as a European priority. The Commission launched its *First Action Plan for Innovation in Europe* in November 1996. The first common framework for innovation policy in Europe identified not only need for new products and services, but also highlighted innovation as a necessary ability to maintain competitiveness and employment. The action plan identified three areas for action: to foster innovation culture, to establish a framework conducive for innovation, and to better articulate research and innovation. The role of the EU was coordinative; responsibility lay with member states and public and private actors (European Commission 1997). As an Open Method of Coordination measure, the new Innovation Policy Directorate of DG Enterprise and Industry has, from January 2000, produced the *Trend Chart on Innovation in Europe* with concise

information and statistics on innovation policies, performances, and trends in the EU member countries. The flagship product of the Trend Chart is the European Innovation Scoreboard (see Chap. 6.).

In 2004 Wim Kok's high-level group submitted its damning mid-term review *Facing the challenge* on the lack of progress in implementing the 1997 *Lisbon Strategy.* The report pointed out that urgent action was needed to take advantage of the promises of the "knowledge society": to attract talented researchers, to boost R&D, and to promote ICT. The group expressed its concerns for lacking business friendliness and recommended that the administrative burden be reduced, legislation improved, and start-ups facilitated (High-level Group 2004). Retrospectively, all the components are present—concern for competitiveness, productivity, knowledge society, R&D, education, intellectual property rights, and capacity to transform research into marketable products and processes—but the dots are not yet connected by the terminology of innovation.[8]

It was only two years later that the vision became clearer, as the *Innovative Europe* report by the European Commission-mandated Aho Group was published in 2006. The group was, in the spirit of the Kok's report, tasked with providing suggestions on how to reinforce EU's research and, now explicitly, innovation performance. The report identified a lazy, unsustainable, and inflexible Europe that is being challenged by increasing global competition. Arguably, the "report is about putting research and innovation at the centre of the endeavor to recapture the entrepreneurial vigor and value-creation that are needed to sustain and improve the European way of life" (European Commission 2006, 4). As a final word, the group warned Europe and its citizens that their time is running out, but the "path to prosperity through research and innovation is open" if action is taken "before it's too late" (ibid., 30). The European Innovation Scorecard is cited to show how Europeans are lagging behind the United States and Japan (ibid.)

The actions the Aho's group recommended were very similar to earlier suggestions: Europe should be transformed into an innovation-friendly market fostering investment for research and innovation. Research excellence should be fostered and talent attracted; industrial R&D and science-industry nexus should be supported; international mobility of individuals, financial assets, processes, and knowledge

should be encouraged. The group expects that the productivity of the research system would increase especially if governments showed "a willingness to cut sub-standard or low priority research to free up resources to be spent on the best" (ibid., 20).

Innovation was the key theme also in the report *Europe 2020: A strategy for smart, sustainable and inclusive growth* (European Commission 2010) in which the development of knowledge and innovation is presented as necessary drivers of growth. The tone is alarmist. Europe's decline is framed by comparing European levels of R&D spending, levels of education, and academic performance in relation to the United States and Japan. To support the Agenda 2020, the Commission put forward seven flagship initiatives that include "'Innovation union' to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs" (ibid., 5). The initiative, among others, encourage member states to reform national R&D and innovation systems to foster excellence and specialization; to support cooperation between universities and business; to ensure a sufficient supply of science, math, and engineering graduates; and to prioritize knowledge expenditure through tax incentives and other financial instruments (ibid., 12–13).

The goals are carried into higher education policy papers. The *Supporting growth and jobs—an agenda for the modernization of Europe's higher education systems* (European Commission 2011): "education, and in particular higher education and its links with research and innovation, plays a crucial role in individual and societal advancement, and in providing the highly skilled human capital and the articulate citizens that Europe needs to create jobs, economic growth and prosperity" (ibid., 2). Boosts in innovation are tied to the modernization agenda of European higher education. Strengthened innovativeness makes many demands for member states and higher education institutions: curricula that is sensitive to the emerging labor market needs, performance-based funding of research, institutional flexibility and, of course, more assessment and audition. The paper also announced that the Horizon 2020 programme "the Framework Programme for Research and Innovation" would bring the varied existing research and innovation (R & I) funding under a single framework.

The 2014 *Research and innovation as sources of renewed growth* (European Commission 2014) is a testament to the now well-established ideational convergence between the concern for competitiveness and the remedies of innovation and research. It again repeats the consensus about causal ideas stipulating that modernization of European higher education systems and institutions in terms of a set of specific parameters will drive innovation, competitiveness, and prosperity. R&D spending should be increased but only hand in hand with reforms of R & I systems. The report urges for governments to engage in strategic planning and steering of higher education and research. It also encourages prioritizing competitive and entrepreneurial funding mechanisms for research and innovation. These measures, it is believed, will lead to improved quality, efficiency, and impact of R & I spending, and thus help to improve the European competitiveness and prosperity.

All in all, innovation and innovativeness are high on the European policy agenda. It is one building block in the idea sphere that steers and conditions European policymaking in various policy domains, including higher education.

World-Class University

Rankings as technologies for governing should not been separate from the surrounding discourses. In a way rankings are manifestations of the idea of economic *competitiveness* that now covers academic competition and the pursuit of the "world-class university" (Shin and Kehm 2012; Salmi 2009). The key elements of competitiveness, good governance, and innovation have also entered the debate on higher education, with universities increasingly being perceived accountable for their research output in terms of innovation and national economic performance (Erkkilä and Piironen 2013). Ever since their launch a decade ago, global university rankings have been keenly followed by higher education policy experts and scholars (Cheng and Cai Liu 2006; Cheng and Liu 2007; Hazelkorn 2008; Marginson and van der Wende 2007; Salmi 2009).

Much of the research on university rankings has concentrated on the methodology they use (Dehon et al. 2009a, b; Shin et al. 2011). But rankings also have deep impacts on higher education institutions

(Hazelkorn 2011), reshaping the higher education landscape (Erkkilä 2013; Kehm and Stensaker 2009; Münch 2013), and global governance (King 2010; Shin and Kehm 2012).

The rankings have caused a particular policy concern in Europe due to the somewhat poor ranking of European universities and Europe's declining role in the global economy. What is interesting about this development is the role of the European Commission, which has been active in drafting policies for "European higher education", a policy domain that traditionally has not come within the EU's ambit. These initiatives have been closely linked to the EU's economic ambitions. The relatively poor global ranking of European universities also provides a contrasting image to long-standing academic traditions in Europe (for history, see Ridder-Symoens 2003a, b; Rüegg 2004, 2010).

Concern for European and national competitiveness has also turned the focus on the competitiveness of higher education systems, which are now seen as an element of economic competitiveness (see Chap. 4). As we explain more carefully in the next chapter, rankings are used to identify the top-ranking American universities as models for lower-ranked European institutions. The rankings are also used to single out institutional factors to explain the differences, and strengthened market-oriented institutional autonomy is identified as central for improving the performance of European universities. This is evident in university reforms in Europe, where direct public regulation of higher education institutions is replaced by alternative mechanisms of accountability and transparency such as performance management, auditions, accreditations, and rankings.

The rankings increasingly provide an ideational input for higher education policies at the EU level. They also inform university reforms at national and institutional levels. Largely owing to the political imaginary of competitiveness, the current drive for the institutional autonomy of higher education institutions in Europe has been conceptualized in economistic and market-oriented terms at the expense of the traditional attributes of university autonomy in influencing policies and institutional practices. In a similar fashion, the notion of competitiveness has informed the measurements of good governance that are closely linked to economic performance of countries. This also underlines the link between the new

demands for accountability and transparency in higher education. Though the organizations producing the league tables possess no apparent norm-giving authority, they have nevertheless come to steer decision-making. The mechanisms of influence will be explored more fully in Chap. 4.

Global rankings are also part of a discourse on quality, serving as evaluative tools. This is most notably linked to international attempts to define the attributes of *good governance* and measure them. The concept of good governance is also closely related to competitiveness, as they both emphasize institutional performance and its benefits for economic activities. Through the notion of quality, the criteria of good governance have spread to the sphere of higher education; "academic quality" is often linked to notions of "accountability" and "transparency". The higher education institutions are increasingly seen accountable for their performance through research output and innovations, now measured by university rankings that are an instance of transparency. As policy instruments (Salmi and Saroyan 2007), the rankings are part of a "modernization" of public governance (OECD 2005) and higher education (European Commission 2011). Global university rankings are part of the transnational drive for evidence-based decision-making (Djelic and Sahlin-Andersson 2008) and global knowledge production (Mittelman 2004; Schofer and Meyer 2005). As will be discussed in the empirical chapters of this book, the idea of the world-class university is also tangled in the notions of competitiveness and innovation, as well as their measurements.

Conclusions

One should exercise caution over the generally appealing arguments of grand processes such as "new" public management, information society "revolution", "modernization", or "globalization" (Hood 1998, 208–19). There is often no single rationale to the above-mentioned processes, but many. This is also true of the rise of global indicators, which have many ideational sources, discussed above. Global indicators are closely linked to a set of smaller and bigger ideas, ideologies, and policy discourses. In this

chapter, we have identified and examined the concepts of the knowledge-based economy, evidence-based policymaking, competitiveness, good governance, innovation, and world-class higher education. These ideas, we think, are not separate but parts of a system that makes them meaningful, as our empirical examples from the EU and the OECD demonstrate.

But the prescriptions inscribed in these ideas and discourses are only realized in practices, mechanisms, and technologies (Dean 2010). Quantification, as explained in the previous chapter, helps to mediate ideas into policies: "The events and phenomena to which governing is to be applied must be rendered into information—written reports, drawings, pictures, numbers, charts, graphs, statistics" (Miller and Rose 1990, 168). Although we have focused on the ideational background—ideas and discourses traceable in policy papers, for example—we have kept our sights on the techniques that make them relevant for governing. In the following chapters our focus will be directly on numbers, statistics and rankings. We show that numeric techniques are not neutral vehicles for objectification. Not only do they make politicization and depoliticization possible, they have a logic of their own, which essentially supports economic competitiveness, which we see is the encompassing idea currently structuring the system for the steering and dissemination of knowledge in Europe.

Notes

1. Results are displayed as proportions of all entries found in the two databases where microunit stands for one part per million hits
2. [http://www.oecd.org/officialdocuments/], accessed 25.8.2017
3. In recent years, a technological transition has caused the digitalization of administrative data and processes in most of the states (Castells 1996; Lash 2002). But the states still differ significantly with regards to their institutional trajectories (Castells and Himanen 2002). Due to information society theorizing, we have perhaps come to lose the sight of the historical peculiarities of government information, such as registry data. Even though most of the countries have the means for (re)organizing their management of public data in technologically uniform manner, there are great differences in the data infrastructure and cultural traditions in its use (cf. Newman and Bach 2004). Also public records of countries differ in

their scope, coherence, and integration, but most notably also in their accessibility.

4. Several other international organizations also grew interested in administrative ethics. The OECD, which through the late 1980s and early 1990s had been active in promoting NPM in Europe, notes the following in a 1996 document on administrative ethics (see, e.g., OECD 1996, 60). In the EU, the European Commission's White Paper of European Governance defined the good governance that was to be expected from the EU institutions and member states alike (European Commission 2001).
5. Pointing to the early-2000 scandals such as Enron and WorldCom, North argues that market efficiency is more a complex matter than the neoliberal thinking would perceive it to be (North 2005).
6. Marking a division in the ideal role of institutions in a given country, the new emphasis on the institutionalism has also brought their endogenous nature to fore. Institutions matter, but can they be exported or engineered (Przeworski 2004)?
7. FreedomInfo [http://www.freedominfo.org/]; Fringe Special: Overview of all FOI laws, 30 September 2012 [http://www.right2info.org/resources/publications/laws-1/ati-laws_fringe-special_roger-vleugels_2011-oct]
8. The term "innovation" is used in the report only to denote a benefit of increased interaction between universities, scientists, and researchers on the one hand and industry and commerce on the other.

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4

Rise of Global Rankings and the Competitive Logic

Introduction

This chapter has several tasks. Empirically, it shifts first the focus from policy ideas to the rise of global indicators that measure the knowledge governance of states, concentrating especially on the early (pre-2000) rankings of democracy, good governance, and competitiveness. Methodologically, it expounds on the logic of measurement—conceptualization, operationalization, and aggregation. Analytically, it attempts to provide sound evidence to the argument about objectification and depoliticization laid out in the previous chapter. Overall, the chapter sets the scene for the analysis of more recent developments: methodological progress—movement toward disaggregation and customization—and conceptual and geographical fragmentation. We will examine these in Chaps. 5 and 6.

Our fundamental premise is that rankings and indicators now constitute a relatively coherent framework within which to assess and steer national production and dissemination of knowledge. This is evident, of course, in what comes to global measurements of knowledge, higher education and innovation (Chap. 5). But these do not cover the field alone.

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In conjunction with the narrative on rankings' ideational background, we show how university and innovation rankings share data and underlying ideological premises with preceding comparative assessments of (good) governance and national competitiveness. Together they make up a more or less unified network that governs—in the Foucauldian sense—the conduct of individuals and institutions with respect to knowledge, research, and (higher) education. In the end, we show how this works in the field of higher education in Europe.

The development of the numbers-based knowledge governance framework is a relatively recent undertaking. Before 2000, the worldwide ranking of governance virtues was concentrated on relatively few nodes (Table 4.1). Academic researchers and international organizations produced international datasets of various types, but compared to nowadays there was only a handful of governance-related *rankings* that could claim continuous global visibility beyond the confines of academia. In the 1990s Freedom House's *Freedom in the World*—which even today is the most popular comparative assessment of liberal democracy—was widely known, and Transparency International's Corruption Perception Index, World Economic Forum's (WEF's) Global Competitiveness Report, and Institute for Management Development's (IMD's) World Competitiveness Yearbook (WCY) were starting to emerge in international media coverage. The field development in global ranking seems to have intensified starting from early 2000s, when we see a rapid increase in the number of measurements. Previous research has mostly looked at the measurements in a specific policy domain, effectively overlooking the links between them.

For us, the growing number of measurements is a result of a development, where new index producers are entering the field of measurement with further topics of assessment, enhanced methodology and data, or simply with the argument of adding an alternative level of assessment. The dynamics of this development will be discussed in the following chapters, but the first global measurements discussed in this chapter have been particularly influential, as they have set the stage for the political imaginaries and policy problems constructed by global rankings. This has also effectively come to narrow the horizon for alternative problematizations and imaginaries. As we argue throughout this study, competitive-

ness has become an underlying ideational component that now brings coherence to the various indicators that link to knowledge production and its governance, be they measurements of good governance, innovation, or higher education.

As we noted in the first chapter, sociopolitical rankings serve as powerful means of objectification. Aggregated scores and "proxy" variables fix the parameters of complex ideas, ideals, and realities. They help to construct very specific representations. These ideas, in turn, may or may not influence practices and policies, and the formation of subject categories and identities. Our analysis has shed light on the processes producing knowledge concerning democracy and good governance (for an overview, Piironen 2016). We have also shown how numeric knowledge depoliticizes contested ideas and representations: if comparative datasets have reinforced certain types of conceptualizations of democracy (Piironen 2005), good governance rankings have been able to neutralize the multiplicity of normative decisions and background assumptions the concept is bedridden with (Erkkilä and Piironen 2009).

Importantly, we argue that measurements of good governance—especially the most dominant dataset, Worldwide Governance Indicators (WGI) by the World Bank Institute (WBI)—were heavily influenced by economistic premises that reflected the discourse of amplified global competition and stressed the need for nation-states to improve their competitiveness (see Chap. 3). Indeed, the WGI rely heavily on data borrowed from global competitiveness datasets. Similar economistic ideas also underlie the more recent developments in the field of quantifying governance: new measures focus specifically on accountability, transparency, and openness. The few dominant international competitiveness rankings are being supplemented with a number of innovation indexes and city-level comparisons (Table 4.1; Chaps. 5 and 6). And finally, research and education—the main facets of knowledge production—are increasingly treated as attributes of competitiveness. As the causal beliefs behind many of the figures draw from similar kind of economistic ideas, it is not surprising that index producers collaborate closely and along ideational similarities. Data is shared and cross-utilized (Erkkilä and Piironen 2009, 2014b).

Table 4.1 Knowledge governance—field development and selected rankings

	1970	1980	1990	2000	2010
Democracy Good governance/ transparency	Freedom in the World (1972)	Freedom of the Press (1980)	Corruption Perception Index (CPI) (1995) Worldwide Governance Indicators (WGI) (1996)	Fringe Special (2001) Press Freedom Index (2002) UN E-Government Readiness/ Development Index (EGRI/ EGDI) (2003) UN E-Participation Index (2003) Global Integrity Report—Global Integrity Index (2006) Open Budget Index (2006) Open Net Initiative (2007) Actionable Governance Indicators—Public Accountability Measures (2008) Government at a Glance (GG) (2009)	Global Integrity Report—Integrity Scorecard (2010) Global Right to Information (RTI) Rating (2011) Implementation Assessment Tool (IAT) (2011)
Competitiveness	Global Competitiveness Report (1979)	World Competitiveness Yearbook (1989)		Global Business Competitiveness Index (2000) Growth Competitiveness Index (2000) Global Competitiveness Index (2004) Worldwide Centers of Commerce Index (2007) Rich States, Poor States (2007) A.T. Kerneys Global Cities (2008) Global Power City Index (2008)	EU Regional Competitiveness Index (2010) Hot Spots 2025 (2013) The Competitiveness of Cities (2014)

(*continued*)

Table 4.1 (continued)

1970	1980	1990	2000	2010
Higher education			Academic Ranking of World Universities (2003) Times Higher Education Supplement (2004) Webometrics Ranking of World Universities (2004) Affordability and Accessibility Comparison of Global Higher Education Rankings (2005) Performance Ranking of Scientific Papers for World Universities (2007) The Leiden Ranking (2008) The SCImago Institutions Ranking (2009)	QS World University Ranking (2010) Times Higher Education—Thomson Reuters (2010) High Impact Universities (2010) The U-Multirank (2011) The Assessment of Higher Education Learning Outcomes(AHELO) (2012)
Innovation			European Innovation Scoreboard (2001) Global Innovation 1000 (2005) Global Innovation Index (2007) Innovation Cities Index (2007) Innovation Union Scoreboard (2008) International Innovation Index (2009)	The Bloomberg Innovation Index (2011) The Startup Ecosystem Report (2012) Thomson Reuters Top 100 Global Innovators (2011) The Global Cleantech Innovation Index (2012) Top 100 Innovative Universities (2015) Contributors and Detractors (2016) Top 25 Global Innovators—Government (2016)

While democracy indexes, the predecessors of good governance indicators, were mostly produced for explanatory research needs, the most visible good governance indicators have been produced by international organizations. However, there is a shift toward topic-specific indicators produced by smaller nongovernmental organizations (NGOs), which relates to "fragmentation", a process we deal with more fully in Chap. 5. Measurements of good governance are rarely directly concerned with questions of education, research, or innovation, but they often gauge proximate conditions, such as freedom of speech, transparency, and access to information.

Measures of economic competitiveness have mostly been produced by academic institutions and foundations, but also increasingly by media companies and consultancies. They mainly aim to provide benchmark information for decision-makers and investors. Initially, these measures focused on countries, but they are increasingly concerned with regions and cities. Currently pervasive ideas of competitiveness and economic performance build on a holistic assessment of various institutional aspects of governance, including knowledge. The measurements of competitiveness link to good governance indicators that assess the quality of governance, often from a performative perspective where democratic qualities of governance are highlighted less. The embedded assumption is that the better education and research a measured entity offers and produces, the more competitive it is with respect to its peers.

In the wake of the above measures—and of the embedded causal rationality—global university rankings were launched for the purpose of comparing higher education institutions. Produced by university research centers and consultancies, they too are greatly focused on the performance of these institutions in terms of research. University rankings are important in framing higher education policies by defining goals and outlining standards of successful (i.e., highly competitive) universities, whose organizational structures and institutional practices they present as models to be copied by others. To complement university rankings that point to organizational attributes, innovation indices have emerged, at first benchmarking national innovation systems but more recently cities and regions too. As with competitiveness indicators, innovation indices are rooted in ideas of competition and economic

performance. They see innovation as a driver of economic and social development. Unlike the more traditional competitiveness indexes, measurements of innovation are heavily output oriented, emphasizing the value that investments in research and education have actually generated. Thus, a diploma is worthwhile only insofar as it contributes to innovation.

We will now look more closely at some of the most prominent in each category in terms of their composition, linkages, and ideological background. We find significant ideational overlap in the figures. Their references to knowledge are fairly consistent and depict it as a logical part of performance. The review we present in the chapter is limited to what we call first-generation indexes, which are characterized by league table presentations and typically first published in the pre-2000 period. More recent measurements are more carefully introduced in the later chapters as their entrance highlights our argument related to field structuration, fragmentation, and regionalization.

But let us first take a look at the logic of constructing rankings.

Conceptualization, Measurement, and Aggregation

Munck and Verkuilen (2002, 7–14) have conveniently distinguished between three "challenges that are sequentially addressed" in the construction of measures for democracy. Their account is suitably applicable to other abstract social scientific concepts—good governance, competitiveness, academic performance, and innovation—as well. The three challenges are those of conceptualization, measurement, and aggregation. We omit here a technical discussion of data sources, data types, and problems related to missing data, as this is more fully dealt with elsewhere and is not our main concern.

In developing a ranking, the researcher must first identify the attributes that are constitutive of the concept to be quantified. For example, if you try to measure government performance, you must first clearly define what the concept denotes. What are the characteristics of a well or a badly performing government (cf. Huff 2011)? Giovanni Sartori

(1970/2009, 18) maintained that "concept formation stands prior to quantification", but was quite aware that much political research neglects adequate concept analysis. This is evident in many of the prominent sociopolitical indices. The definitions are either so ambiguous that one needs to analyze the indicators in order to get a picture of what is actually measured, or the definition of a contested concept is simply stated without paying proper attention to competing conceptualizations. The former situation resembles the case of "over enthusiastic quantification", which Sartori dealt with, while the latter risks becoming a means of depoliticization by narrowing the scope of a nuanced concept.

The second challenge concerns the measures themselves (Munck and Verkuilen 2002). The researcher must choose the relevant indicators, working from the lowest level of abstraction. This operationalization involves identifying a set of observable indicators that are presumed to tell us something about the directly unobservable reality. In technical terms, the selected indicators should be as valid and reliable as possible. They should rigorously and impartially measure the occurrence of the phenomena captured by the abstract concept. As Munck and Verkuilen (2002, 18) point out, however, it is important not to conflate validity and reliability. Not all aspects of validity can be tested simply by looking at the extent to which different measures produce similar results. Such tests may exclude the possibility of nonsystematic biases in measurement, but fail to say anything about the content validity of the measurement. Conceptual critique should accompany measurement of contested concepts as problems might be less technical and more theoretical.

The second series of judgments is related to scientific methods concerning decisions on missing data, rescaling, weighing, and aggregation, all of which have the potential of greatly affecting the results—composite indicators and rankings (OECD 2008, 31–33). Weighing is an important factor affecting the character of the measurement and scores of actual cases. Weighing always takes place when there is more than one indicator present. We can decide, for example, to give more weight to reliable data sources, emphasize certain features due to theoretical considerations, or mitigate effects of double counting in cases of collinear indicators. Implicitly, weighing takes place even when indicators are given equal weight (ibid., 31).

According to Munck and Verkuilen (2002, 22–27), aggregation can be understood as the reverse of conceptualization and operationalization. An aggregation decision affects weighing and the other way around. The researcher has to decide in which form to present the raw data: should the variables be kept separate (possibly emphasizing the multidimensional nature of the object under scrutiny) or should the raw data be aggregated for the sake of parsimony and applicability. There cannot, of course, be any single answer to this. The main point is that both the developer and user/reader should understand how and why the aggregation is made. What is lost or included in the aggregation? Which attributes are stressed and which are given less emphasis? Different decisions concerning aggregation may lead to different results, perhaps, to altered orders of ranking.

"Good" Governance Indicators

Since the Second World War, in conjunction with a growth in the number of independent nation-states (and the general proliferation of social scientific research), various different types of studies gauging the quality of state decision-making, governance, and administration have been planned and executed with methods varying from international citizen surveys to qualitative case studies (see Table 4.2). The first empirical governance studies enabling comparison between countries were attempts to assess the degree of democracy in national decision-making. Such measurement methods were scientific in the sense that political scientists developed them for the purposes of explanatory analyses; league tables allowing simple comparison were merely by-products of producing variables for testing causal hypotheses. For those developing them, they were also "scientific" in the sense that the logic of their inquiry followed closely positivist methodological guidelines (Lipset 1959).

Although the methodological debate has softened over the years and scholars carrying out quantitative research have become more conscious of the caveats concerning their approach, the methodological bases for measuring social and political variables have remained much the same. Researchers seem to have quite a restricted range of

Table 4.2 Classification of governance assessments

Type of assessment	Producer	Use	Normative standards	Representation
Democracy indices and single-case assessments	Universities, foundations, research institutes, media companies, consultancies	Descriptive and causal research (scores as variables); ideological motivations	Rankings: usually ranging from minimalist electoral democracy to liberal democracy Assessments: ranging from liberal to participatory and deliberative ideals	Aggregate rankings most common format of representation; Freedom House's Freedom in the World Index dominates the field
Governance indices (first-generation governance measurements)	IGOs, INGOs, private firms	Politico-administrative development/ improvement, resource allocation criteria	The notion of good governance is rooted in governance performance and efficiency. Democratic qualities of governance are less highlighted.	Depoliticization of assessment, seeming neutrality, technical discourse, composite indicators, and rankings
Governance datasets (second-generation governance measurements)	IGOs; a shift toward topic-specific measurements of transparency that are produced by small NGOs	Politico-administrative development/ improvement; public resource allocation criteria; recently, there has been a shift toward making the indicators actionable, meaning that they are actively used in policy reform	Intergovernmentally endorsed standards of efficient governance	Partial (re) politicization; technical discourse, a shift toward the so-called actionable indicators that are nonaggregated figures

movement for creating their datasets, and the sequences, challenges, and viable solutions are much the same as those described by Munck and Verkuilen (2002, see above).

Practically all the early measures of liberal democracy were based on a Schumpeterian minimalist definition of democracy, reducing it to more or less "free and fair" elections (see Lipset 1959, 71; Cutright 1963, 255; Neubauer 1967, 1004–5). From the 1970s onward, the minimalist measures of democracy acquired more substantive indices, when attributes of political rights and civil freedoms were included in some of the new measurements (e.g., Smith 1969; Freedom House; Bollen 1980; Gasiorowski 1990; Hadenius 1992). Freedom House's Freedom in the World index came to dominate the field, although the more minimalist Polity dataset succeeded in maintain its popularity among the research community. Almost all of the conceptualizations behind the indices of democracy have more or less remained within the paradigm of the liberal Anglo-American tradition of democracy. Only the recent and ambitious project on "Varieties of Democracy", conducted by the University of Gothenburg, has seriously introduced into the comparative (but disaggregated) dataset of democracy qualities linked to a variety of different theories of democracy.[1]

The conceptual shift from democracy to good governance described in the previous chapter was supported by operational activities in the field of measurement. As the academic world was—and has been—hesitant to adopt good governance as an analytically sustainable category, it was up to semi-academic institutions to lead the way in producing comparative datasets for good governance. New indicators were developed and marketed by international organizations for the purposes of improving policy planning and implementation—not primarily for the purposes of causal research. In addition, organizations that provide information for investors have included measurements of social stability, political participation, administrative transparency, and level of corruption in their indices. It is typical that basic liberal democratic procedures, formal freedoms and public accountability are assumed to be beneficial for business by lowering investment risks (such as Bertelsmann and Standard and Poor's).

By far the most ambitious and effective dataset has been WBI's WGI. This dataset covers over almost all countrives in the world. It is a

composite measurement, meaning that it does not produce raw data of its own but draws on some 400 indicators produced by over 30 public and private organizations (see Table 4.3). The data is perceptions based and includes both survey data and more in-depth expert assessments. The authors define governance as "the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored and replaced; (b) the capacity of the government to effectively formulate and implement sound policies; and

Table 4.3 Data sources used in 2015 update of Worldwide Governance Indicators[3]

Source	Type[4]	Coverage
African Development Bank Country Policy and Institutional Assessments	Expert(GOV)	54
Afrobarometer	Survey	22
Asian Development Bank Country Policy and Institutional Assessments	Expert(GOV)	28
Business Enterprise Environment Survey	Survey	30
Bertelsmann Transformation Index	Expert(NGO)	129
European Bank for Reconstruction and Development Transition Report	Expert(GOV)	33
EIU Economist Intelligence Unit Riskwire and Democracy Index	Expert(CBIP)	183
Freedom House	Expert(NGO)	198
Transparency International Global Corruption Barometer Survey (CPI)	Survey	115
World Economic Forum Global Competitiveness Report (GCI)	Survey	144
Global Integrity Index	Expert(NGO)	62
Gallup World Poll	Survey	161
Heritage Foundation Index of Economic Freedom	Expert(NGO)	183
Cingranelli Richards Human Rights Database and Political Terror Scale	Expert(GOV)	194
Rural Sector Performance Assessments	Expert(GOV)	98
iJET Country Security Risk Ratings	Expert(CBIP)	197
Institutional Profiles Database	Expert(GOV)	143
IREEP African Electoral Index	Expert(NGO)	54
Latinobarómetro Survey	Survey	18
International Research and Exchanges Board Media Sustainability	Expert(NGO)	71
International Budget Project Open Budget Index	Expert(NGO)	100

(*continued*)

Table 4.3 (continued)

Source	Type[4]	Coverage
World Bank Country Policy and Institutional Assessments (CPIA)	Expert(GOV)	136
Political Economic Risk Consultancy Corruption in Asia	Survey	17
Political Risk Services International Country Risk Guide	Expert(CBIP)	140
Reporters Without Borders Press Freedom Index	Expert(NGO)	177
US State Department Trafficking in People Report	Expert(GOV)	185
Vanderbilt University Americas Barometer	Survey	26
Institute for Management and Development World Competitiveness Yearbook	Survey	59
World Justice Project Rule of Law Index	Expert(NGO)	97
Global Insight Business Conditions and Risk Indicators	Expert(CBIP)	203

(c) the respect of citizens and the state for the institutions that govern economic and social interactions among them." The WGI consists of six dimensions: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. An aggregate score is counted for each of the six dimensions.[2]

Overall, democratic values are not highlighted. Only voice and accountability deal with traditional issues of representation, inclusion, and political rights. Other dimensions emphasize public sector accountability, private property rights, and comprehensive business friendliness. Values and policy measures deemed detrimental to regulatory quality or governmental effectiveness, such as economical sustainability or heavy taxation—in the opinion of business executives—drew good governance scores downward at least in pre-2010 editions of the datasets (Fougner 2008, 320; Erkkilä and Piironen 2009; Piironen 2016, 40–42). Indeed, the WGI relies heavily on indicators both from the WCY (Institute for Management and Development) and from the Global Competitiveness Index (GCI by WEF). In an earlier study, we found out that the WGI aggregate score strongly correlated (r = 0.89)

with the GCI (Erkkilä and Piironen 2009, 138). We furthermore argued that correlation not necessarily exposed a causal relation nor a natural association but, more likely, mirrored conceptual and operational alignment. Good governance was defined and measured in a way that approximated international competitiveness as understood by neo-institutional advocates of liberal order.

How does the WGI measure qualities linked to knowledge? *Voice and Accountability* (VA) captures perceptions of the extent of freedom of expression and free media: indicators include Freedom House's Civil Liberties and Political Rights scores and Press Freedom Index and independence of media; the WEF's Freedom of the Press and Transparency of government policymaking indicators; Institutional Profiles Database's (IPD) Freedom of the Press, Genuine Media Pluralism, and Freedom of access, navigation, and publishing on Internet assessments, in addition to degree of transparency in public procurement; Global Integrity's Access to Information and Openness assessment; Reporters Without Borders' Press Freedom Index; International Budget Project's Open Budget Index; IMD's Transparency of Government policy; and World Justice Project's Open Government assessment. The *Government Effectiveness* (GE) component includes measurements such as WEF's quality of primary education indicator; Gallup World Poll's satisfaction with education system, IPD's assessment of public school coverage; Afro-barometers' government handling of public services (such as education) indicators; and Global Integrity's public integrity in health and education provision. *Rule of Law* (RL) includes indicators such as the Economist Intelligence Unit's intellectual property protection; WEF's IPR protection indicator; IPD's respect for intellectual property rights indicators; and IMD's patent and copyright protection indicator. *Control of Corruption* (CC) includes the African Development Banks's transparency, accountability, and corruption in public sector indicator; Freedom House's (Countries at Crossroads) anticorruption and transparency assessment; International Fund for Agricultural Performance Assessment (IFD) assessment of accountability, transparency, and corruption in rural areas; and World Bank Country Policy and Institutional Assessment data concerning transparency, accountability, and corruption in public sector.[5]

Clearly, most indicators directly relating to knowledge assess public sector transparency, freedom of press and protection of intellectual property rights. Only a few indicators directly measure aspects related to education, and most of these deal with basic government's capability to provide basic education in the first place. There is not a single indicator in the whole dataset that measures higher education or research-related attributes. Although we observe strong and direct linkages to competitiveness measurements (see below), links to higher education rankings remain weak. However, competitiveness, operationalized and objectified in global datasets, seem to put all into shared frames, giving meaning to both good governance and higher education.

The first generation of good governance indices, especially the WGI composite, quite successfully depoliticized the contested notion of *good* governance. Emphasis was on neoliberal virtues couched in new institutionalist economic assumptions. Instead of discussing values and objectives, policymakers could now just adopt the right measures that would allow the values and objectives fixed in the WGI and other rankings to be realized. In the next chapter, we will take a closer look at the variety of transparency and accountability datasets which are becoming increasingly numerous and conceptually fragmented, some of which are now focusing on aspects of transparency and accountability in e-governance and data management (see Chap. 5). Are these able to take more distance from the economistic logic that defines the first-generation measurements?

Ranking Economic Competitiveness

The market economy presupposes competition between business enterprises. Neoclassical economic theory points to the benefits free markets offer to the mass of consumers. Similarly, geoeconomic thinking assumes that nation-states, striving to secure their territorial integrity and national wealth, will inevitably compete against each other. As long as it does not imply use of military force, the neoliberal economic doctrine provides a normative reasoning for peaceful international competition. Competition

is not only inevitable but also beneficial for the great majority of people, if not for all. To improve competitiveness is not only about survival but contributing to the general welfare by the way of increasing (cost-)efficiency. Such *an ideology of competition* has dominated political thinking in the Western world since the 1990s and can be applied to all levels of social life (see Chap. 3). It is not only companies and states that need to worry about their competitiveness, but individuals and nonprofit organizations too.

All cross-country comparisons, or global rankings, reinforced the ideology of competition, but none the more than international competitiveness indexes. The WEF and the IMD Competitiveness Center are the two leading producers of competitiveness data with a global reach (see Table 4.4). The two institutions cooperated with one another until 1995, after which they decided to produce independent publications. While the WEF has a long history of measuring national competitiveness going back to 1979 and its "The Competitiveness of European Industry Report" (16 economies), it was only in 2004 that previous work by economists Jeffrey Sachs and Michael Porter was integrated into a comprehensive dataset called the GCI by Xavier Sala-i-Martin, today comprising a total of 138 countries (World Economic Forum 2016).

The IMD went global by publishing the first World Competitiveness Report/WCY in 1989: from the original 32 countries (comprising 22 OECD and 10 newly industrialized economies), the WCY has almost doubled its scope to cover 63 economies in 2017 (IMD/WCY Methodology and principles of analysis [https://www.imd.org/globalassets/wcc/docs/methodology-and-principles-wcc-2017.pdf]).

The GCI methodology was revised in 2004, and again in 2008, but the definition of competitiveness has remained more or less the same across the years: "*the set of institutions, policies, and factors that determine the level of productivity of an economy*, which in turn sets the level of prosperity that the country can achieve" (World Economic Forum 2016, 4). The GCI comprises 114 indicators that are grouped into 12 attributes. Reflecting the contemporary causal idea linking knowledge to productivity, the GCI has since 2008/2009 grouped its indicators into three subindexes that are given different weights depending on the level of development of the economies: "More developed social infrastructure

Table 4.4 Global competitiveness rankings

	World Competitiveness Yearbook (WCY)	Global Competitiveness Report[6,7]
Institutions	IMD World Competitiveness Center	World Economic Forum (WEF), Global Competitiveness and Benchmarking Network
Year	1989 (22 OECD countries and 12 newly industrialized economies) 2015 (61 economies)	1979 (The Competitiveness of European Industry report, 16 economies) 2015–2016 (Global Competitiveness Index, 140 economies)
Conceptualization of competitiveness	*"analyses how nations and enterprises manage the totality of their competencies to achieve prosperity or profit"*[8] Academic definition: "*analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people".* "Virtuous circle" of national competitiveness, rather than linear causality.	Definition: "*the set of institutions, policies, and factors that determine the level of productivity of a country* […] *in the long run, productivity is the most fundamental factor explaining the level of prosperity of a country and hence its citizens"*.[9] Broad understanding of competitiveness based on Total Factor Productivity (TFP) with a wide range of determinants on both micro level and macro level, where "any effort to identify one single factor that matters above others is misguided". Determinants divided into 12 pillars for sake of clarity and to "provide guidance to policymakers".
Type of assessment	Rankings Country profiles Statistical tables Interactive database	Global Competitiveness Index (GCI) and rankings Country profiles

(*continued*)

Table 4.4 (continued)

	World Competitiveness Yearbook (WCY)	Global Competitiveness Report[6,7]
Assessment criteria	Four main competitiveness factors, each divided into five subfactors. The 20 subfactors comprise more than 300 different criteria.[10] • Government efficiency • Business efficiency • Economic performance • Infrastructure Intended revision of the index based on an understanding of competitiveness as the *"ability of a country to facilitate an environment in which enterprises can generate sustainable value"*.[11] Sustainable value creation (aggregated measures) National level: • Environment criteria (green-tech/regulation) • Employment criteria (education/health) Enterprise level: • Sustainability (practices/processes) • Talent dynamics (development practices/job satisfaction)	Twelve pillars of competitiveness (114 indicators) Basic requirements subindex (key for factor-driven economies): • Institutions • Infrastructure and connectivity • Macroeconomic environment • Health Efficiency enhancers subindex (key for efficiency-driven economies): • Education • Product and service market efficiency • Labor market efficiency • Financial market efficiency • Technological adoption • Market size Innovation and sophistication subindex (key for innovation-driven economies): • Ideas ecosystem • Ideas implementation

(*continued*)

Table 4.4 (continued)

	World Competitiveness Yearbook (WCY)	Global Competitiveness Report[6,7]
Methodological issues	Data for the new conceptualization currently incomplete, but "we believe in the process for achieving a new and holistic understanding of competitiveness needs sufficient time to construct a stronger conceptual basis to develop the tools necessary to go about operationalizing it".[12]	Aggregated measures, weighted scores for subindex depending on the country's stage of development
Data collection	2/3 of indicators are "hard" statistical data gathered from various sources (competitiveness over specific time period), and 1/3 of criteria's are from an executive opinion survey (competitiveness as it is perceived)	Indicators are mainly from the WEF annual Executive Opinion Survey, but data is also gathered from various sources
Trends	Movement toward a holistic understanding of competitiveness Customization and commercialization of the generated data (special reports, e-shop, plans on company reports)	Current reviews to the index in order to capture the "complex relationship between competitiveness and sustainability, measured by its social and environmental dimensions". Parallel strand of analysis measuring the competitiveness of cities
Organizational aspects	Network of partner institutes worldwide to facilitate data collection	Network of 160 partner institutes worldwide to facilitate data collection Series of structured multistakeholder dialogues, transformative agenda

(*continued*)

Table 4.4 (continued)

	World Competitiveness Yearbook (WCY)	Global Competitiveness Report[6,7]
Key events	1989—first competitiveness report 1994—first global competitiveness ranking (44 countries) 1996—name changes and coproduction of reports with WEF ends 2001—revision of methodology (grouping into four key factors) 2004—launch of online interactive database and addition of key regions 2007—regions in separate publications, number of countries increased 2008–2012—methodology revised[13]	1979—first competitiveness report 2000—Growth Competitiveness Index (by Jeffery Sachs) and Global Business Competitiveness Index (by Michael Porter) introduced[14] 2004—First GCI (by Xavier Sala-i-Martin) 2008—New "fully integrated" GCI[15] and external audit of the GCI 2012—External audit of the GCI, highlighting possible cultural bias 2013—launch of a review process 2016—updated GCI

and political institutions make it more likely that companies can compete on efficiency or even innovation. Weaknesses on SIPI, in contrast, often relegate companies to compete on resources or cheap labor" (World Economic Forum 2008, 55).

For factor-driven economies, emphasis is placed on indicators that cover institutions, infrastructure, macroeconomic environment, health, and primary education. For efficiency-driven economies, the emphasis is on indicators that gauge higher education and training, goods market efficiency, labor market efficiency, financial market development, technical readiness, and market size. The scoring of innovation-driven economies puts weight on business sophistication and innovation indicators. The GCI include hard data from international sources (IMF, the World Bank, UN agencies such as UNESCO and the WHO), but the main bulk of data (approx. 70%) is survey based and derived from WEF's own Executive Opinion Survey (World Economic Forum 2016). This makes it possible to include countries from which hard statistics is difficult to acquire.

The IMD first published its findings in the form of a simple league table in 1994 together with the WEF. In 1996 the institute launched its WCY. The WCY is based on a very similar definition of competitiveness as its main challenger (GCI): "Competitiveness of nations is a field of economic knowledge, which analyzes the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and ultimately for its people".[16] The WCY divides the national environment into four attributes of competitiveness: economic performance, government efficiency, business efficiency, and infrastructure. Each attribute—and the 20 lower-level subfactors—are equally weighted in the aggregate competitiveness score. The WCY is comprised of some 340 indicators, of which two-thirds are hard data and one-third is based on IMD's executive opinion survey. Because it is difficult or impossible to acquire reliable and comparable hard data for some countries, the sample of 61 economies is only half of that of the survey-reliant GCI.[17]

Both leading datasets include variables related to knowledge. This type of data can be divided into two groups. The first deals with attributes and indicators similar to good governance (WGI), transparency, openness, accountability, and intellectual property rights. These are general institutional virtues that are seen to endorse competitive conditions. The second set of indicators deals directly with education, research, and development. A good R&D system—including higher education and academic research—is given instrumental value as it boosts innovation, attracts investment, and enhances productivity.

WCY's scientific infrastructure category includes indicators that gauge amounts of R&D expenditure and personnel, scientific achievement in terms of Nobel Prizes, scientific articles, and degrees in science and engineering.[18] Survey data deals, for example, with perceptions concerning the quality of research both in academic and private institutions. In addition to the 25 R&D indicators, 18 cover attributes related to education: GDP spending, student-teacher ratios, mobility, educational assessment (PISA), and perception-based data on the degree the education system can meet the needs of competitive economy.[19] The GCI takes a somewhat similar approach to knowledge. Nevertheless, relying almost entirely on survey data, it seem to take even more

restricted view to knowledge than WCY: indicators in GCI's education and skills pillar more distinctly point to the value of research and education only as far as they are satisfying the "needs" of businesses (World Economic Forum 2016, Technical Notes and Sources). All in all, many of the indicators have much in common with those that measure academic performance proper.

In recent years, both the WEF and the IMD have reacted to criticism and challengers who wish to project alternative competitiveness scores. Unlike in earlier years, both now argue that competitiveness should be built on sustainable bases. There seems to be increasing willingness to include social and environmental dimensions into the assessments: the 2012–2013 Global Competitiveness Report incorporated a sustainability-adjusted GCI, while the WCY has taken measures to revise its understanding of competitiveness as the "ability of a country to facilitate an environment in which enterprises can generate sustainable value" (World Economic Forum 2012). Moreover, conceptual shift from knowledge to innovation and the proliferation of innovation datasets after 2010 seem to be affecting the way competitiveness is understood in both organizations. In Chap. 5, we will take a closer look at challengers entering the field and at adaptation by established data producers.

Global University Rankings

Given the prominence accorded to global university rankings in media coverage of higher education, it is striking that such league tables have only been in existence for just over a decade. The Academic Ranking of World Universities by Shanghai Jiao Tong University, Shanghai, was first published in 2003, followed by the publication of the Times Higher Education Supplement (THES) ranking in 2004 (Table 4.5). University rankings have existed in Anglo-American countries for a longer time, but only at national level. The first US evaluations of graduate programs started already in the 1920s, and a ranking of US colleges was published already in 1983. University rankings as a tool of assessment was adopted in the United Kingdom in the 1990s (Harvey 2005). There have also been rankings that cover certain language areas, such as the Centrum für

Table 4.5 The two first global university rankings[20]

	Shanghai University Ranking of World Universities	Times Higher Education Supplement (THES) rankings
Publisher	Center for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University, China	Times Higher Education with career advice company Quacquarelli Symonds Ltd
Published	2003–	2004–2009[21]
Indicators	• Alumni from institution with Nobel Prize or Fields medal (10%) • Highly cited researchers (20%) • Staff from institution winning Nobel Prize or Fields medal (20%) • Papers published in *Nature and Science* (20%) • Science Citation Index and Social Science Citation Index (20%) • Per capita academic performance of an institution (10%)	• Academic peer review (40%) • Citations per research staff (20%) • Employer review (10%) • International faculty index: percentage of international staff (5%) and students (5%) • Faculty staff-student ratio (20%)

Hochschulentwicklung (CHE) in Germany, which was launched in 1998, covering the German-speaking universities, and in Austria and Switzerland. Today there are a wide variety of rankings that measure academic performance (Tables 4.1 and 4.2; Chaps. 5 and 6).

University rankings were first intended to help students and their parents to make informed decisions about what institutions to enroll in. The demand for comparative data soon overtook the initial intention, as policymakers, institutional administrators, and academic financiers have all used such information for their own specific purposes. Rankings, in other words, have started to take on a life of their own. They are *perceived* to be of importance and hence they are. Correspondence between scores and reality are taken as fact and actors, including the institutions themselves, have started to act accordingly.

Ellen Hazelkorn's research (2007, 2009, 2011) covering 41 countries and 202 institutions indicates that rankings are well known to the managers of HE institutions, which commonly respond to them by making

adjustments. For example, 63% of the institutions that took part in Hazelkorn's survey had taken strategic, organizational, managerial, or academic action in response to international rankings (Hazelkorn 2011, 96). Over 80% wanted to improve their position in international rankings (ibid., 86). The findings of Locke et al. (2008, especially chapter 5) concerning British HE institutions (n = 91) paint a rather similar picture.

Having started as an initiative of the Chinese government, the Academic Ranking of World Universities (ARWU or the Shanghai ranking) focuses exclusively on "measurable research performance" (Liu and Cheng 2005, 133). Not surprisingly, the indicators closely resemble the competitiveness indicators by the IMD (WCY) for measuring research and education attributes. Of course, whereas the WCY is composed of nation-level data, ARWU pertains to individual academic institutions. Nevertheless, both rankings take into account Nobel Prizes and number of scientific publications. Moreover, while the WCY also includes subjective assessments of academic quality, the ARWU scoring of institutions is purely based on hard, quantitative evidence.

The second most well-known global ranking system, the THES ranking, was first published in 2004 together with Quacquarelli Symonds (QS) in response to a rising demand for advice on higher education (Jobbins 2005, 137). The two institutions discontinued their collaboration in 2010, after which the THES made serious methodological revisions to its new ranking. Nevertheless, before the separation, the THES, in line with most university rankings, placed great emphasis on immediate research output, meaning publications and citations, whereas competitiveness measurements were given more weight in the conditions that were supposed to improve productivity in the long run. The THES differed from the ARWU by emphasizing peer-view reputation. In this respect, the relationship between the two datasets was similar to the difference between the GCI and the WCY, where one relies more on subjective measurement than the other. Another difference was that while the Shanghai ranking accounts only for the research output, the THES indicators tried to capture also educational attributes (graduate employability and staff-student ratio).

Both leading rankings faced severe criticism, as institutional ranking do in general. The ARWU, which largely identifies performance with

citations, has been criticized for privileging institutions with natural sciences and medical studies due to their customary publication patterns. Moreover, in focusing on high achievement in research—with Nobel prizes at the apex—the ARWU tells us nothing about the educational attainment of institutions, and overlooks pockets of excellence within institutions. The THES, institutional position, being heavily dependent on reputational factors, was especially prone to creating self-fulfilling prophecies. According to Morphew and Swanson (2011, 191), it is extremely hard to lose institutional reputation once it has been established. Still, 70% of the institutions that took part in Hazelkorn's (2011, 86) survey expressed their desire to be counted among top 10% nationally and in the top 25% internationally.

As we saw in the previous chapter, rankings intensify competition between academic institutions. With rankings the logic of competition has crept into the domain of education policies, defining not only the field of action on which higher education institutions have to act, but also their institutional identities as separate entities whose primary function is to compete to survive. At the institutional level, increased "awareness" of the importance of competitiveness is often translated in terms of "internationalization" and "attractiveness". It is thus not surprising that the institutional strategies of European universities are particularly focused on competition for top researchers, students, and funding. Competition has traditionally been a central element in academic research, but there was a different narrative of scientific work as communality and collaboration accompanying it. This now seems to be drowned out by the emphasis on competition between self-sustaining institutions and between individuals.

The rankings are based on the same atomistic background philosophy as the ideology of competition. They reproduce a political imaginary where universities live to compete against one another globally for funding, students, researchers, publications, and even Nobel Prizes. Since the mid-2000s, higher rankings and competitiveness have been ideationally linked in the policy work of the European Commission, where the former were seen to enhance the latter (European Commission 2005b, 2011). Both the European-level strategies (European Commission 2005a, 2006b, 2011) and nationally implemented higher

education reforms (see, e.g., de Boer et al. 2007) evidence a strong thrust toward the *autonomization* of universities, to put more European institutions on par with their rivals in other continents—the relative positions assessed partly in terms of global university rankings (Erkkilä and Piironen 2014a).

Rankings and Ideational Shifts in European Higher Education

Much of the present thinking that has framed higher education policy-making in Europe during recent years boils down to the ideology of competition. A conceptual analysis of the European Union (EU) policy discourse (Skinner 1969; Bacchi 1999), suggests that there is a degree of ideological coherence in the transnational governance of higher education, at least in Europe. The recent trend of increasing universities' institutional autonomy and accountability—effectively meaning increasing financial autonomy of universities and marketization of higher education—has been justified by competitive logic. This logic, in turn, has been strengthened by the practice of comparative ranking: the trend for increasing universities' institutional autonomy has been justified in reference to competitive logic upheld by the practice of comparative ranking (cf. King 2009, 160–162, 191–195, 206–210).

Competition, Higher Education, and University Rankings

For over ten years, the EU's high-level competition strategy has been accompanied by supporting processes related to education policies. According to Corbett (2012, 39–41), the history of European cooperation on education since the Second World War, has been filled with "effort and initiative, success and failure", and comprised with stable ideas such as democracy and respect for cultural diversity but also changes in sector-specific principles and policy goals. Following the ratification of the Maastricht Treaty (1992) and the Treaty of

Amsterdam (1997), which gave the European Commission formal but limited competence on education policies, the links between higher education, research, and competition have been strengthened. The 1999 Bologna declaration initiated a voluntary (non-EU) process for creating the European Higher Education Area (EHEA), which has been central in shaping European educational structures into a less divergent direction and toward a more harmonized educational market (Huisman and van der Wende 2004; Ahola and Mesikämmen 2003). Even if the Bologna process has embedded a diverse set of goals and principles, it seems to have incorporated economistic goals from the beginning (Zgaga 2012, 22–26; Corbett 2012, 54–55). The declaration did not explicitly refer to intensifying economic competition between power blocks, but it did aim, among other things, at increasing the European higher education system's international competitiveness (Nokkala 2012). In a communication given in 2003, the focus was—unlike previously—on the institutional level, on the universities (European Commission 2003).[22] The main problem, according to this interpretation, was the inability of the European universities to attract talents, which led to decreasing levels of excellence compared to US competitors.

Over the last two decades, higher education has been politicized in a new way. It is now seen as an organic part of regional and national growth and survival strategy. The education/research-growth-nexus has been clearly expressed in various strategy and policy papers by the EU serving as a justification for pleas for (and joint declarations promising to) reform national higher education systems (Blomqvist 2007; Robertson and Keeling 2008; Huisman and van der Wende 2004). Consequently, the logic of competition has crept into the domain of education policies, defining not only the field of action on which higher education institutions have to act, but also defines their institutional identities as separate entities whose primary function is to compete for survival. Success in this presumed competition is measured by the amount of funding and prestige, but also, more and more, by ranking in international performance indexes which today are manifold.

As we have seen, the first global university ranking was published in 2003 by Shanghai Jiao Tong University, followed by another global rank-

ing produced by THES in 2004. In the European context, the global rankings have contributed to the construction of the policy problem of "European higher education". In the eyes of the European Commission, the core of this problem is the poor location of European universities in the global rankings (European Commission 2005a).[23] This links to the process of subjectification (see Chap. 1), where the global rankings evoke patterns of identification that are linked to demands for governance and self-governance. The rankings are based on the same atomist background philosophy as the ideology of competition. They reproduce a political imaginary where universities are seen as separate "wholes" in whose nature it is to compete against one another globally for funding, students, researchers, publications, and even Nobel prizes. Since the mid-2000s these two have been ideationally linked in the policy work of the European Commission (European Commission 2005b): to fare well in the competition for higher education, as manifested by a ranking position, is to enhance economic competitiveness.

The response to the rankings has been twofold: the actors are happy to acknowledge the deficiencies and imbalances of the rankings (Rauhvargers 2011), but nevertheless refer to these in their goal setting. The rankings have a peculiar quality, as they not only define goals for higher education institutions (higher ranking) but also identify the attributes for success. The universities are taking notes on the composition of rankings, in trying to "raise their game".[24] But on a more general level, the rankings have led to the emulation of certain success models—the so-called Harvard here effect. This has led to the identification and copying of certain institutional practices that are seen as recipes for success. Indeed, the Massachusetts Institute of Technology (MIT) has served as a model for various university mergers in Europe, such as in Helsinki and Dublin, showing ignorance for the particular institutional history and contextual aspects of the model.

In the EU, university rankings have created a policy problem as there are only very few European institutions among the top-ranked universities, all of them in the United Kingdom. During the 2007 French EU presidency, this state of affairs became an issue of concern that the European Commission has since been intent on correcting. One of the measures was to create a European university ranking of global scope that

would "do justice" to European higher education institutions or take into account the "diversity" in European higher education (European Commission 2007, 5; see Chap. 5).

But what began as a European concern over the limitations of ranking is now becoming part of a wider exercise in higher education assessment. While initially there was a resistance against the use of rankings in the EU context, the global rankings have since become a tool for assessing the quality of higher education in the context of the Lisbon Strategy (European Commission 2008, 2009). The European Commission has a more positive attitude to the use of rankings in higher education. The Commission's growth and jobs agenda, notes that the European universities are standing behind their peers globally. This calls for more "transparency" regarding their performance, that is rankings (European Commission 2011, 2–3).

Autonomy and Accountability

While global university rankings have exposed Europe as an academic underdog in a worldwide competition for research performance, they also point to a specific remedy for the identified policy problem. Arguably, but with dubious empirical backing (see Nokkala 2012, 74–75), it is because of the extensive governmental and legal regulation that European universities fail to compete against their US rivals. Liberation from governmental micromanagement is believed to make the institutions more responsive to external fluctuations by enhancing employer status, empowering strategic leadership, and diversifying funding sources (Paradeise et al. 2009a, b). It is thought that more institutional autonomy—and responsibility—would increase the changes for squeezing top performance out from research institutions. The assumption is that in time the benefit will trickle down to strengthen national competitiveness, economic growth, and welfare (see European Universities Association 2001, 7[25]; European Commission 2005a[26], 2006[27]). Autonomy "is framed as a precondition of competitiveness" (Nokkala 2012, 61).

There is strong evidence supporting the view that the dominant European higher education discourse utilizes the idea of autonomy for

lending support to arguments that advance managerial reforms (Piironen 2013; Christensen 2011; Neave 2009). University autonomy is now discussed primarily in its institutional form, incorporating managerial efficiency instead of collegial deliberation and perceiving obstacles to autonomy as emanating from excessive public regulation of financial and organizational matters, rather than from intolerant public opinion, governmental censure, or the commodification of higher education. It is treated as an instrument for efficiency and quality, or as a prerequisite for survival. Autonomy is increasingly seen as the managerial property of the university leadership, and not as the property of the entire academic community (European Commission 2011).[28]

While rankings cannot be blamed for the selection of the means to increase their autonomy, they certainly reinforce an imaginary where success and failure in academic competition are to a great extent an institutional responsibility. To fulfill the new expectations, unity, in the form of strategic leadership, has been called upon. It is widely assumed that such measures will enhance the competitiveness of European universities and that this will at some point be reflected also in the index positions.

There is yet another link between ranking and reforms to increase institutional autonomy. As freedom must be coupled with responsibility, strengthened autonomy is complemented with demands for more "accountability" as a way of *ex post* enforcement of homogeneity and standardization through mechanisms of assessment and accreditation (Neave 2009, 8–12). The public organizations are increasingly being made responsible for their performance in economic terms, and there is thus an increasing demand for making their activities quantified and calculable. Universities have not been immune to this development. The new institutional autonomy is not about absolute freedom as European Commission is eager to remind: "In return for being freed from overregulation and micro-management, universities should accept full institutional accountability to society at large for their results" (European Commission 2006, 11).

Accountability and autonomy are identified by the European Commission as one of nine measures that would help confront the challenges set out in the Lisbon agenda (European Commission 2006). University autonomy and accountability have institutional implications

as they "cannot be effectively implemented without adapting governance systems", meaning governance reforms (European Commission 2008, 5). Furthermore, accountability and autonomy make a promise for more flexible governance and funding systems in forms of managerialization and privatization. The two concepts have come to signify a group of causal beliefs, now making a full reform agenda, and both are normatively appealing, which allows political change to be legitimated with their help (cf. Skinner 1969).

This leads to a circular activity where global university rankings create a demand for autonomy complemented by accountability, which is assessed against new quality assurance measurements and performance goals, including those set by the global rankings. The above normative ideas of accountability and the related causal beliefs are currently so broadly and uniformly shared by the central actors in European higher education field that the alternative views of the responsibilities of universities—such as sustaining values common to humanity and academic standards (cf. International University Association 1998; UNESCO 1997)—tend to be drowned out by them.

In sum, as the accountability of higher education institutions is now primarily assessed in terms of performance, it becomes a part of the circular logic reinforcing the ideology of competition. In the end, demands for modernizing the European higher education system are strengthened.

Conclusion

In introducing some of the internationally most well-known first-generation indices with worldwide coverage, we see how ranking has worked as a means of objectification and depoliticization, a "closing of horizons". We also see how rankings share ideational and operational elements, which on the whole constitute global knowledge governance, a relatively coherent framework to assess and steer national production and dissemination of knowledge. We can argue that the framework, based on economism and atomism, upholds an ideology of competition that risks contradicting noneconomic values such as democracy, ecological sustainability, and academic freedom.

But this is just the start. First-generation datasets have faced challengers, and today the field of measurement is much more varied than only 15 years ago. The ARWU and THES are no longer the only global university rankings on the market. They have been followed by a plethora of university rankings (Table 4.1). Some of these sought to correct methodological biases, other to refocus the assessments, as the results of existing rankings did not appeal to their producers. Also, novel measurements of innovation have come to complement the rankings of competitiveness and higher education. Alongside knowledge governance, the broad rankings of good governance have been challenged by focused and detailed methods for scoring transparency. In Chaps. 5 and 6 we look at these more recent developments and assess how well new measurements have succeeded in breaking the competitive logic and atomist premises that define the first generation of university rankings. The rest of our study takes a fresh look at the process of field structuration, the new entrants, methodologies, and conceptual innovations leading to the rapid proliferation and fragmentation of indicators.

In Chap. 3 we examined the ideational environment rankings inhabit. In this chapter, we have shown how these ideas have aligned the field of measurement and the pointed to a positive feedback from comparative assessment to the organizing ideas. Lastly, we have seen how this has also influenced European higher education policy thinking. In the chapters that follow, we observe the field development in ranking and global knowledge governance closer to the present day, and find an intensification of the links between the different measurements.

Notes

1. V-Dem: Global Standards, Local Knowledge [http://www.v-dem.net].
2. The table is based on information and classification provided in http://info.worldbank.org/governance/wgi/#doc-sources (accessed May 2017).
3. Types of Expert Assessments: CBIP, Commercial Business Information Provider; GOV, Public Sector Data Provider; NGO, Nongovernmental Organization Data Provider.
4. Worldwide Governance Indicators [http://info.worldbank.org/governance/wgi/index.aspx#doc].

5. Worldwide Governance Indicators [http://info.worldbank.org/governance/wgi/index.aspx#doc].
6. Global Competitiveness Report 2014–2015 [http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf].
7. Global Competitiveness Report 2015–2016 [http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf].
8. IMD. 2014. *World Competitiveness Yearbook.* Lausanne: IMD, page 489.
9. Global Competitiveness Report 2015–2016 [http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf], page 43–44.
10. Methodology, factors and criteria [http://www.imd.org/wcc/world-competitiveness-center-mission/methodology/].
11. IMD. 2014. *World Competitiveness Yearbook.* Lausanne: IMD, page 489.
12. IMD. 2014. *World Competitiveness Yearbook.* Lausanne: IMD, page 489.
13. History of the Center [http://www.imd.org/wcc/world-competitiveness-center-mission/center-history-bris-garelli/].
14. Global Competitiveness Report 2008–2009 [http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2008-09.pdf] page 43.
15. Global Competitiveness Report 2008–2009 [http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2008-09.pdf] page 43.
16. Frequently Asked Questions [http://www.imd.org/globalassets/wcc/docs/faqs.pdf].
17. IMD Methodology and principles of analysis [http://www.imd.org/globalassets/wcc/docs/methodo/methodology-yearbook-presentation2.pdf].
18. WCY List of Indicators [http://www.imd.org/globalassets/wcc/docs/all_criteria_list.pdf].
19. WCY List of Indicators [http://www.imd.org/globalassets/wcc/docs/all_criteria_list.pdf].
20. Sources: http://www.shanghairanking.com/ARWU-Methodology-2016.html; http://universityrankings.ch/methodology/times_higher_education
21. From 2010 onward, the methodology represents the QS World University Rankings.
22. "Indeed universities go about their business in an increasingly globalized environment which is constantly changing and is characterized by increasing competition to attract and retain outstanding talent, and by the emergence of new requirements for which they have to cater. Yet European universities generally have less to offer and lower financial

resources than their equivalents in the other developed countries, particularly the USA" (European Commission 2003, 3).

23. "Two recent surveys emphasising research found that apart from a handful in Britain, there are no European Union universities in the top 20 in the world and relatively few in the top 50. The rapid growth of Asian universities, both public and private, are now also challenging Europe—and the US—in terms of doctoral candidates in science and engineering" (European Commission 2005a, 3).
24. Top 20 ways to improve your world university ranking [http://www.timeshighereducation.co.uk/story.asp?storycode=410392].
25. "European higher education institutions accept the challenges of operating in a competitive environment at home, in Europe and in the world, but to do so they need the necessary managerial freedom, light and supportive regulatory frameworks and fair financing, or they will be placed at a disadvantage in cooperation and competition" (European Universities Association 2001, 7).
26. "The over-regulation of university life hinders modernisation and efficiency. … Minute ex ante control hinders universities. … Universities failing to undertake these changes—for want of drive, power to act or available resources—will create a growing handicap for themselves, their graduates and their countries. … In an open, competitive and moving environment, autonomy is a pre-condition for universities to be able to respond to society's changing needs and to take full account for those responses" (European Commission 2005a, 4 and 7).
27. "In short, European universities are not currently in a position to achieve their potential in a number of important ways. As a result, they are behind in the increased international competition for talented academics and students, and miss out on fast changing research agendas and on generating the critical mass, excellence and flexibility necessary to succeed. These failures are compounded by a combination of excessive public control coupled with insufficient funding. … Universities will not become innovative and responsive to change unless they are given real autonomy and accountability" (European Commission 2006b, 4–5).
28. "The challenges faced by higher education require more flexible governance and funding systems which balance greater autonomy for education institutions with accountability to all stakeholders. Autonomous institutions can specialise more easily, promoting educational and research performance and fostering diversification within higher education systems. But legal, financial and administrative restrictions continue

to limit institutional freedom to define strategies and structures and to differentiate themselves from their competitors. The efficiency of higher education institutions and so the effectiveness of public investment can be enhanced by reducing restrictions: on raising private revenue, on capital investment, on the ownership of infrastructure, on the freedom to recruit staff, on accreditation. Investment in professional management can provide strategic vision and leadership while allowing teachers and researchers the necessary academic freedom to concentrate on their core tasks" (European Commission 2011, 9).

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5

Field Structuration and Fragmentation of Global Rankings

Introduction

This chapter analyzes the field development in global ranking, including the network of international organizations and NGOs that produce global indicators and the rationalities and mechanisms behind the growth of this activity. We argue that the drive for producing global indicators can be understood as field structuration, where new actors joining the activity tend to re-enforce existing practices, even if their intention would be to provide alternative figures. Knowledge is the nexus where the global policy ideas on competitiveness, innovation, higher education, and good governance meet, which is also visible in their numerical assessments.

We further observe the fragmentation of rankings and indicators relevant to knowledge governance: while rankings are gaining importance as policy instruments, they are rapidly growing in number that is also testing their conceptual coherence. However, the fundamental ideas and ideological underpinnings of the indicators still mostly remain the same, as new actors entering the field tend to reproduce the existing practices in the field. Though the indicators are becoming more numerous and fragmented, ranking as a form of evaluation is becoming a standard tool of global comparative assessment, constantly spreading to new domains such

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as innovation, which now has come to complement the measurements of competitiveness and higher education. This has also challenged the established producers of comparative assessments.

We further focus here on the criticism of existing global indicators and how this is used in argumentation for creating alternative measurements. We also observe the politicization of global indicators that have cast an unfavorable light on some of their subjects of measurement. This is particularly evident in the critique of aggregated ranking measurements that allow the naming and shaming of poor performers. As our discussion on indicators of good governance and transparency and university rankings shows, the critique of the measurements has brought changes to methodology that now favors disaggregation of results that is part of a broader shift toward the so-called second-generation indicators. There are also conceptual amendments, particularly visible in global innovation indicators. These perceived limitations in the existing figures have allowed new actors to enter the scene of measurement. But to enter the field, they must validate their knowledge products against the existing measurements and are often compelled to use data from existing sources, as our comparison of Global Competitiveness Index (GCI) and the Global Innovation Index (GII) demonstrates. These dynamics of field development lead to a paradoxical result, where alternative measurements largely come to reproduce many of the existing practices and the prevailing normative and causal beliefs shared by the actors in the field.

Field Structuration in Global Ranking

There are similar patterns of development in rankings of state knowledge in different policy domains. Most notably, there are methodological changes in the indicators, as the critique of ranking has led to the emergence of more sophisticated nonaggregate measurements and "actionable indicators" in university rankings and indicators of good governance. Also, the limitations of ranking economic competitiveness have also been discussed critically. Furthermore, there is also critique toward to the existing rankings in terms of their scope and level of analysis. In supplementing the existing rankings, measurements of innovation have emerged.

In an effort to secure a position in the field, the actors engage in the production of competing classifications of reality, alternative indicators (Kauppi and Erkkilä 2011, 316). This entails political conflict and occasionally the critique of existing indicators can also be interpreted as their politicization (cf. Palonen 2003). But as we will show, this rather serves as a stepping-stone for new actors to enter the field. To argue for the need of yet another indicator, the actors wishing to join the activity seek to demonstrate weaknesses in the existing figures.

Figure 5.1 shows the dynamic between the critique of ranking and field structuration in indicator-based knowledge governance (see Chap. 2). The critique of existing indicators for their methodology and scope allows new actors to enter the scene with their alternative sets of indicators. This also further embeds the use of numerical assessment in transnational governance. One characteristic of structuration is the unintentional reproduction of practices already existing in the field (Baert 1991; Giddens 1984, 5). We observe the field development of global ranking where actors claiming to change existing practices come to replicate them. This owes to the logic of numerical knowledge production—building on social scientific methods and practices of verification—that leads to a boundary work on the validity of measurements (Gieryn 1983, 782).

Being recognized as an individual or organization possessing or having the capability of producing such knowledge lends an element of authority to the actors involved and serves as a mechanism for inclusion and exclusion. To join the activity of governance measurements, new actors need to legitimate their knowledge products according to the criteria set

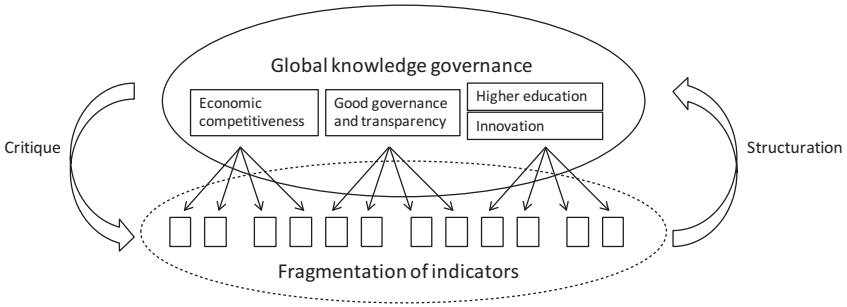

Fig. 5.1 Global knowledge governance: field structuration and fragmentation of indicators

by the epistemic community existing in the field (Haas 1992, 3). As we show, this leads to conformity in the field. Thus, the new indicators come to share the existing normative and causal beliefs and criteria of validity. This is apparent in the shift toward disaggregate governance measurements that have challenged rankings and in conceptual amendments to existing figures.

Methodological Critique of Ranking and Shift Toward Second-Generation Indicators

Recently, there has been a shift in the way governance is assessed globally, as more nuanced and detailed numerical assessments, often referred to as second-generation or actionable indicators, are challenging rankings (Knack et al. 2003; Trapnell 2011). The second-generation indicators are characterized by four criteria (Knack et al. 2003, 350): (1) transparency, meaning that they should be replicable and well documented and that the data sources are not politically controversial; (2) availability, meaning that the data has broad country coverage and continuity over time; (3) quality and accuracy, meaning consistency across countries and validity of measurements; and (4) specificity, meaning that indicators measure specific institutions or output and that exogenous factors do not unduly affect the measurements. Index producers have also called these new types of indicators "actionable" governance indicators because they—unlike rankings—allow close monitoring and development of specific aspect of governance, providing guidance on reforms (World Bank 2009; Trapnell 2011). "Actionable" indicators are detailed nonaggregated measurements and explicit aim for causality—in other words an established link between the use of indicators and the subsequent actions. Second-generation indicators are also often referred to as "mappings", as they allow different representations of data, instead of just single aggregate number.

While rankings produce general information on a systemic level, the second-generation measurements aim to provide detailed information on institutions and processes. Rankings are mostly used for general-level comparisons, but the second-generation measurements are tools for monitoring development. A rankings mechanism of influence is mostly naming

and shaming, which creates a perceived norm to which the ranked entities feel pressure to adhere. Second-generation indicators function more subtly through expert knowledge and peer review, though these can also be linked with funding and more direct means of influence.

The above move toward producing second-generation measurements can be seen in the indicators of good governance and transparency as well as the university rankings, but to a lesser extent in competitiveness indicators. However, this does not necessarily mean that rankings have become less influential. Rather, there has been a rapid rise in the number of measurements, and this highlights the prominence of numerical assessment in transnational governance.

Measurements of Good Governance and Transparency

The World Bank Institute's Worldwide Governance Indicators (WGI), the first of its kind, has been a model and source of ideas for several indicators to follow (see also Chap. 4).[1] The WGI was developed as a tool for general assessment on governance globally. It initially targeted the rather specific problems of global governance, such as corruption. But as several existing measurements of corruption and accountability were not always coherent in their results at the time of WGI's creation, it was arguably developed to neutralize this variance by forming an aggregate number (a ranking) of the available measurements (Erkkilä 2016, 385).

Aggregation, the endeavor to make single ranking numbers, allows comparing countries, and the league table format has drawn media attention on the first generation of governance indicators (Langbein and Knack 2010, 367). At the same time, they have become a subject of criticism. The most visible critiques of rankings—WGI in particular—have been methodological, sparking a lively debate with and between the developers (Kaufmann et al. 2010, 2011; Thomas 2010) and led to attempts at developing more appropriate indicators and methods (Andrews et al. 2010; Gramatikov et al. 2011; Joshi 2011; McFerson 2009). There has been a critique of the validity of the measurements and the measurability of abstract issues (Andrews 2008; Barendrecht 2011; Ginsburg 2011; Neumann and Graeff 2010). Moreover, the global indices might not always be apt for observing grassroots developments (Hinthorne 2011).[2]

There has also been an increasing political critique of the aggregated rankings that tend to lead to naming and shaming. In 2007, nine executive directors of the World Bank representing countries such as China, Russia, Mexico, and Argentina voiced their concerns about the WGI. One explicit concern was China's low ranking in the voice and accountability component of the WGI (Guha and McGregor 2007). This politicization of ranking has led to attempts to readjust the methodology and goal of measurements, a shift toward "second-generation" governance indicators (Knack et al. 2003; Trapnell 2011). Transparency metrics are part of second-generation indicators that are more focused on specific institutions and practices. On the other hand, the rise of transparency indicators also highlights its perceived importance. The ideas of good governance and economic competitiveness now meet in the notion of transparency that is seen to enhance both democracy and efficiency.

Access to government information has come on the agenda of development economics through the efforts of international actors such as the World Bank and the Organisation for Economic Co-operation and Development (OECD), who have promoted the concept of transparency as an element of good governance (OECD 2001, 2003; Drechsler 2004; Zanotti 2005). One could even see the global rankings and indicators as an instance of transparency, now providing comparable information on the performance of countries. The early measurements of good governance, such as World Bank's WGIs and Transparency International's Corruption Perception Index, did not directly measure transparency. Transparency was instead referred to as a precondition, an institutional feature that would explain the quality of governance and low corruption (see Chap. 4).

The methodological development of transparency metrics can also be understood in the context of field structuration in global measurements. The developments in the field demonstrate not only collaboration between the knowledge producers but also competition that becomes apparent only sporadically; different producers of governance indices compete with each other for visibility, users, and funding (Kauppi and Erkkilä 2011; Freistein 2016). On the other hand, the index producers in many respects resemble an epistemic community that shares a policy enterprise with common normative and causal perceptions as well as data sources (Haas 1992; Erkkilä and Piironen 2009).

The first global ranking to assess transparency in some respect was the Freedom in the World ranking by the Freedom House, published already in 1973 (see Chap. 4, Table 4.1). As a general measurement of liberal democracy, Freedom in the World concentrates on civil liberties and political rights, assessing also government openness and transparency. The first indicator to specifically assess transparency was Freedom House's Freedom of the Press ranking that assesses transparency as an element of media environment (published 1980). But these are somewhat unrelated to the rise of good governance indicators and rather part of the earlier wave of democracy indicators.

The first rankings of good governance largely built on the ideas of the so-called Washington consensus, a notion that comprised the key causal beliefs of economic development of past decades, including the idea of avoiding information asymmetries in the market through transparency (Stiglitz 2002). The concept of "transparency" is referred to in Transparency International's fight against corruption and in the World Economic Forum's (WEF's) attempts at enhancing economic competitiveness (Lopez-Claros et al. 2006, 6). Still, only a few of the early governance indices specifically measure transparency. One reason for this is that transparency is very difficult to operationalize and measure (cf. Hazell and Worthy 2010). Another reason for the absence of measurements on transparency has been the predominance of aggregate figures in the early governance indicators, leading to assessments that are highly abstract.

In interviews, the developers of the WGI noted that the decision to use aggregation to begin with was largely due to the limitation in the data available at the time (Erkkilä and Piironen 2014, 352). Arguably the results of different measures used in the WGI were rather inconsistent. Aggregation provided a way to eliminate the "noise" in the data. This had a significant effect for global indicators, however. The WGI as a prominent indicator legitimated the use of aggregation in the "first-generation" governance rankings.

Several rankings specifically assessing transparency emerged in the early 2000s (see Table 5.1): Reporters without Borders published its Press Freedom Index in 2002, and the United Nations E-Government survey produced two rankings in the early 2000s, E-Government Readiness Index and E-Participation Index. As part of the global drive for anticorruption (Ivanov 2009), Global Integrity launched its Global Integrity

Table 5.1 Selected global rankings on good governance and transparency (Source: Erkkilä 2016, 388–389)

	Corruption Perception Index (CPI)	Worldwide Governance Indicators (WGI)	Press Freedom Index	UN E-government survey, the E-Government Readiness/ Development Index (EGRI/EGDI)	UN E-government survey, the E-Participation Index	Global Integrity Report, Global Integrity Index
Producer (Year)	Transparency International (annually since 1995)	World Bank Institute (1996–2002 biannually, since 2002 annually)	Reporters without Borders (since 2002)	United Nations (annually 2003–2005, since 2008 biannually)	United Nations (annually 2003–2005, since 2008 biannually)	Global Integrity (annually 2006–2009)
Focus	Perceptions of corruption	Governance performance	Press and media freedom in countries	Government's application of transparency-enhancing ICT	Government provision of information to citizens and interaction with stakeholders	National anticorruption mechanisms and government accountability

Index in 2006. These are all aggregate figures that present their results as rankings. They all measure rather general aspects of governance on an abstract level.

Moving toward the present, rankings have been complemented and challenged by second-generation governance indicators produced by smaller NGOs. There are new indicator sets entering the field with a specific focus (see Table 5.2). For instance, the transparency of finances has been a topical issue in good governance debates, and the International Budget Partnership has been collecting an Open Budget Index since 2006. Though the Open Budget Index represents the move toward second-generation measurements in terms of its specific focus, it still aggregates its results and provides a ranking of countries. But the shift toward disaggregated measurements begins in 2007, when the Open Net Initiative produces a mapping of government censorship and filtration of the Internet. Also, the Global RTI Rating by the Center for Law and Democracy is a representative of second-generation governance indices that have opened the way for smaller actors in the field. Interestingly, these NGOs tend to be of North American origin, mostly building on the ideas of the so-called Washington consensus (see Chap. 3) that sees increased transparency to benefit both democracy and economic efficiency. In other words, the new indicators largely adopt the existing normative and causal beliefs in the field but rather offer more nuanced and methodologically advanced tools for measuring transparency.

There are exceptions however. Already in 2001, Roger Vleugel launched a Fringe Special initiative that compares freedom of information laws around the globe, collected by a network of Dutch and foreign journalists. Fringe does not produce an indicator, but it could nevertheless be considered as an early form of an issue-specific "mapping". Because of the shift toward actionability, the Fringe listing has gained new users recently. [3]

Also, the OECD has decided to produce second-generation indicators on government performance. The OECD's Government at a Glance (GG, launched in 2009) is more sophisticated than the rankings of governance performance or competitiveness (GCI, WGI, Corruption Perception Index [CPI]), as it aims for a multidimensional assessment. As a newcomer to the production of governance indices, the OECD has argued strongly for the need of this new knowledge product on the basis

Table 5.2 Selected second-generation measurements of transparency (Source: Erkkilä 2016, 391–393)

	Open Budget Index	Open Net Initiative	Actionable Governance Indicators—Public Accountability Measures	Government at a glance	Global Integrity Report, Integrity Scorecard	Global Right to Information Rating
Producer (Year)	International Budget Partnership (since 2006 biannually)	Open Net Initiative (since 2007)	World Bank (since 2008 biannually)	Organisation for Economic Co-operation and Development (since 2009)	Global Integrity (since 2010)	Centre for Law and Democracy (since 2011)
Focus	Public availability of budget information	Government-run Internet filtration and censorship	Government transparency and accountability	Government performance	Scope and effectiveness of anticorruption mechanisms and citizen access to these	Access to information and strength of the legal framework for guaranteeing the right to information

that as nonaggregate figure it marks a methodological improvement to the existing rankings, most notably to the WGI (OECD 2006c, 7, 60; OECD 2007, 3). The OECD's critique of other indicator sets, particularly the WGI, evolves during the process of developing the GG data set. To justify its alternative figure for measuring governance, the OECD's 2005 feasibility report for GG refers to the methodological problems of the existing indices and rankings (OECD 2005, 6). The OECD's initial criticism concerns insufficient validity and reliability of the data of the existing indicators.[4] The attempt of forming single accumulated ranking is not as such criticized, but rather the low quality of the data used is a problem for aggregation.[5]

In a 2006 technical paper, aggregation is seen preferable and the possibility of engaging in collaboration with other data producers is proposed (OECD 2006a, 7, 32–33). Another technical OECD document from 2006 sees aggregation as a means for improving output quality (OECD 2006b, p. 34). In 2006, the OECD's critique primarily concerns the composite indicators, meaning that the data is derived from various sources (such as the WGI). This is seen to entail two types of risks. First are "political risks", meaning that the debate is not analytical enough, while the second risk of composite indicators is their potential for imprecision (OECD 2006c, 7, 45). The existing rankings are criticized for expressing only slight variations on the same themes (OECD 2006c, 60). There is also a conceptual critique of the notion of "governance", which is seen to lack theoretical grounding (OECD 2006c, 60).[6] In line with our arguments on field development of global ranking, the OECD notes that there is a "sense that each [development] agency needs its own signature index" (OECD 2006c, 60).

However, in 2007 the OECD became critical of "aggregate assessments", such as World Bank WGI and Transparency International's CPI (OECD 2007, 3). In legitimizing its entry into the field of good governance measurement with the GG, the OECD argues to provide more "nuanced" picture of countries than the existing rankings do.

> The World Bank Worldwide Governance Indicators and Transparency International Corruption Perceptions Index provide aggregate assessments of governance at the country level. By contrast, "Government at a Glance"

> will provide data with which a country can assess itself. [—]. Like other OECD "At a Glance" publications, the data collected allows for some nuanced distinctions to be made between OECD countries, reflecting their distinctive administrative and social traditions. More aggregate indicators tend to show all OECD countries as being similar in most dimensions. (OECD 2007, 3.)

When we look at the OECD's GG measurement, it is interesting that the OECD makes a case for its product against the existing measurements. The GG is significantly different from the existing products and rather builds on traditional statistics produced by national statistical bureaus and the Eurostat, which are its collaborators. GG data is provided by the national governments, and fewer countries are compared (OECD member states only). Also, the presentation of data is different, as the GG is a mapping, allowing flexibility in the parameters of comparison. The fact that the OECD needs to position itself with the existing index producers and distinguish its product from their work in methodological terms is telling in terms of the dynamics of field development described above.

When it prepares the GG dataset, the OECD uses the existing rankings as sources of ideational input and even discusses potential collaboration. But in the end, identified methodological shortcomings of the existing rankings make an argument for the OECD to produce an alternative figure (OECD 2009, 10). Hence, there are elements of competition and collaboration involved. To enter the field of measurement, the index producers are compelled to challenge the existing products, but they must also validate their products against the standing practices of measurement. Interestingly, in the case of GG, there was keen collaboration between the World Bank and the OECD. A central figure in the OECD GG development team was a World Bank employee on a leave, working for the OECD (Erkkilä 2016, 395).

The OECD's GG initiative raises valid concerns about measurability and methodology. Nevertheless, as with WGI, GG measures governance in terms of its economic qualities (Erkkilä and Piironen 2014) and the assessments of transparency focuses on collection, allocation, and use of performance information. The OECD's "boundary work" (Gieryn 1983, 782) allows it to enter the field of measurement. However, the GG does not mark an opening for reconsidering the constituents of "good" gover-

nance, as it shares most of the normative and causal beliefs, concepts, and ontology of the previous indicators.

While the shift toward nonaggregated figures has marked an entry of smaller NGOs to the arena of governance measurements, it has also caused shifts in the activities of established index producers. In 2010, Global Integrity decided to discontinue the Global Integrity Index, which was already a widely cited ranking. To replace the ranking, Global Integrity now publishes its annual Global Integrity Report with an Integrity Scorecard, which maps selected aspects of government integrity. When giving reasons for discontinuing its ranking, Global Integrity (2011, 7) argued that the number of countries ranked had diminished and the ranking was no longer global. In addition, Global Integrity states that the assessments through rankings were too blunt to have apparent effects (Global Integrity 2011, 7). This also underlines the actionability of second-generation measurements that aim at being more concrete tools of monitoring and reform.

In 2007, the World Bank responded to the methodological and political criticism of the WGI by publicly endorsing the use of "disaggregated and actionable indicators" (World Bank 2007, ix). Related to this, the World Bank has developed a set of indicators, named Actionable Governance Indicators (AGI) alongside its WGI (see Table 5.2). This new set of indicators is reform oriented and strives for close observations on selected issues of governance (Trapnell 2011). Also in the earlier documentation of the WGI, there is a rising awareness of methodological concerns. These range from the technical problems of measurements (Kaufmann et al. 1999a, b) to discussions on subjective measurement methodology and consequences of alternative weighing rules (Kaufmann et al. 2007) and warnings against reading the WGI scores without considering the margins of error (Kaufmann et al. 1999a; cf. Kaufmann et al. 2003, 25–26).[7] Finally, in 2008 the ranking of countries based on their WGI aggregate scores is denounced (Kaufmannn et al. 2008, 5).

To summarize, the field of global indicator knowledge is evolving through new measurements that are entering the field. This has marked a move toward the so-called second-generation measurements that are more issue specific and responsive to methodological concerns, including the aggregation of results. Transparency has become an active subject of measurement, evident in the number of indicators that now focus on its

different aspects. Though the field development of good governance indices might first appear as a competition between different data producers, it is perhaps best understood as an evolving epistemic community that shares many normative and causal beliefs on good governance as well as related policy objectives.

While the early rankings were informed by the so-called Washington consensus and had institutional ties to the major organizations of economic development, the second-generation indicators are in many ways part of the same movement, now only mostly produced by smaller NGOs. In the case of transparency metrics, there are hardly challenges to the ideological premises of the rankings and the actionable indicators are in many ways reproducing the market-oriented core beliefs of good governance (cf. Drechsler 2004; Zanotti 2005). Though the critique of ranking may have politicized the aggregate indicators in terms of data presentation, the attributes of "good governance" and "transparency" as subjects of measurement have remained largely unchallenged.

The rise of transparency as a subject of measurement also highlights the perceived importance of information and knowledge for democracy and efficiency. Also, higher education and the research performance of universities have become an issue of economic importance, now measured by increasing number of rankings. We are also witnessing methodological debates similar to the good governance indicators.

University Rankings

As we saw in Chap. 4, the first publication of the Academic Ranking of World Universities in 2003 by Shanghai Jiao Tong University marked a shift in the transnational politics of higher education. Although the Academic Ranking of World Universities—also known as Shanghai ranking—did not aim at attaining international attention, it came to spark a new policy discourse on "world-class" higher education. Having started as an initiative of the Chinese government, this ranking exclusively focuses on "measurable research performance" (Liu and Cheng 2005, 133). The second most well-known global ranking—the Times Higher Education (THE) ranking—was first published in 2004 in response to a rising demand for advice on higher education (Jobbins 2005, 137). The

THE, like most rankings, also emphasized the research output, meaning publications and citations. In fact, the indicators that have followed the Shanghai list share most of its premises, measuring higher education institutions (not national systems) and emphasizing research performance in terms of bibliometric analysis.

The international recognition that the Shanghai ranking has attained was perhaps unintended, making it a "standard by accident" in global higher education. However, the development of global university rankings is closely tied to the general drive for evidence-based policymaking (see Chap. 3). The various rankings of good governance and national competitiveness have paved the way for all kinds of global policy assessments. The Shanghai ranking was, in effect, the first to provide higher education with a comparative measure that was already commonplace in other policy arenas. Rankings are now part of global higher education, involving huge investments and markets as well as policy harmonization through approaches such as the Bologna Process in Europe (see Chap. 4). Also, from the perspective of global power shifts, it is not surprising that the first university ranking originated from Asia, given the significant investments in higher education in the region (Reinalda 2013).

Since the publication of Shanghai ranking there has been a surge in the number of global university rankings. At present, there are about a dozen university rankings of global scope, though many of them enjoy little media publicity (see Table 4.1). For example, there are attempts at measuring the web presence of universities by the Webometrics Ranking of World Universities, also using Google Scholar publication data. There are also rankings of national higher education institutions in Taiwan (Higher Education Evaluation and Accreditation Council of Taiwan, HEEACT), the Netherlands (Leiden University), and Australia (University of Western Australia) that tend to focus on the research output of universities while giving less emphasis to teaching and learning (see Table 4.1). SCImago research group's measurement also emphasizes research output in bibliometric terms, based on Elsevier's Scopus database of peer-reviewed publications.

From the perspective of field development in the measurements of higher education institutions, it is interesting to see how the number of global rankings multiplies within a few years. Table 5.3 shows selected global university rankings. In arguing for the benefits of their products,

Table 5.3 Selected global university rankings

	Webometrics Ranking of World Universities[8]	Affordability and Accessibility Comparison of Global Higher Education Rankings[9]	The Leiden Ranking[10]	The SCImago Institutions Ranking[11]
Publisher	Cybermetrics Lab at the Consejo Superior de Investigaciones Científicas (CSIC), Spain	Educational Policy Institute (EPI), North America	The Centre for Science and Technology Studies (CWTS), Leiden University	The SCImago research group, Spain
Year	2004– (twice yearly)	2005, 2010	2007–	2009–
Indicators	• Presence (10%): size (number of pages) of the main webdomain of the institution • Visibility (50%): external backlinks to the institutions webpages • Transparency (10%): number of citations from top authors (Source: Google Scholar Citations)[12] • Excellence (30%): number of papers among the top 10% most cited articles in 26 disciplines (Source: SCImago)	Accessibility indicators: • Participation Rates • Attainment Rates • Educational Equity Index • Gender Parity Index Affordability indicators: • Education Costs as a percentage of Ability To Pay (ATP) • Total Costs as a percentage of ATP • Net Costs as a percentage of ATP • Net Cost After-Tax Expenditure as a percentage of ATP • Out-of-Pocket Costs as a percentage of ATP • Out-of-pocket Costs After-Tax Expenditures as a percentage of ATP	• Number of publications (Source: Web of Science) • Size-dependent versus size-independent indicators • Impact indicators (citations and their relative frequency) • Collaboration indicators (coauthored publications)	Research: • Publication output (Source: Scopus) • International collaboration with foreign institutions • Normalized impact (field normalized citation score) • High-quality publications • Excellence (publications among top 10% cited papers) • Scientific leadership • Excellence with leadership • Scientific talent pool Innovation: • Innovative knowledge (scientific output cited in patents) • Technological impact (percentage of publication output cited in patents) Societal impact: • Size of institutions web domain • Domains inbound links

(*continued*)

Table 5.3 (continued)

	QS World University Ranking[13]	Times Higher Education—Thomson Reuters[14]
Publisher	Quacquarelli Symonds	Times Higher Education and data provider Thomson Reuters
Year	2010–	2010—
Indicators	• Academic reputation (40%) • Employer reputation (10%) • Student-to-faculty ratio (20%) • Citations per faculty (20%) • International faculty ratio (5%), international student ratio (5%)	• Teaching (the learning environment): 30% • Research (volume, income, and reputation): 30% • Citations (research influence): 30% -International outlook (staff, students, research): 7.5% • Industry income (knowledge transfer): 2.5%

the new ranking producers again have to justify and contrast their efforts against the existing products. For example, the Webometrics development team argues for having learned from the innovations of Shanghai ranking while mending its methodological deficiencies with their 2004 launched ranking that aims to "promote academic web presence".[15]

There is also direct criticism for the use of bibliometrical analysis and reputational surveys that the prominent rankings have used:

> Research only (bibliometrics) based rankings are biased against technologies, computer science, social sciences and humanities, disciplines that usually amounts for more than half of the scholars and students in a standard comprehensive university. Webometrics also measure, in an indirect way, other missions like teaching or the so-called third mission, considering not only the scientific impact of the university activities, but also the economic relevance of the technology transfer to industry, the community engagement (social, cultural, environmental roles) and even the political influence. […] Webometrics uses link analysis for quality evaluation as it is a far more powerful tool than citation analysis or global surveys. […] Surveys are not a suitable tool for World Rankings as there is not even a single individual with a deep (several semesters per institution), multi-institutional (several dozen), multidisciplinary (hard sciences, biomedicine, social sciences, technologies) experience in a representative sample (different continents) of universities worldwide.[16]

The use of bibliometric analysis prompted heavy criticism already shortly after the publication of the Shanghai ranking (Liu et al. 2005; Raan 2005a, b), but it has nevertheless settled as the primary work horse for the index producers of global university rankings. The global university rankings tend to use same data sources for their bibliometric analysis. For instance, the Leiden Ranking uses Thomson Reuters/Clarivate Analytics Web of Science publication data, as does the Shanghai ranking (Science Citation Index—Expanded and Social Science Citation Index). The SCImago and THE rankings use Elsevier's Scopus publication database, as does the QS ranking.

The methodological choices are presented against other rankings in the field, with the ARWU and THE ranking being the most prominent

models. For example, when presenting the methodology for 2011/2012 Leiden ranking, the development team compares their product against the ARWU (Shanghai list), THE, and SCImago rankings (also QS ranking and Webometrics are briefly mentioned). Described as "global university ranking based exclusively on bibliometric data", the Leiden ranking distances itself from the ARWU and THE rankings that are criticized for using aggregate indicators, while SCImago is likened to the Leiden ranking for refraining from aggregation (see below). Moreover, the reputational surveys of the THE ranking are heavily criticized. When we consider the citation below, we again see apparent similarities with the methodological debates in the domain of good governance regarding the second-generation indicators.

> Compared with other global university rankings, in particular the popular ARWU and THE rankings, the Leiden Ranking offers a number of important advantages. First, the Leiden Ranking refrains from arbitrarily combining multiple dimensions of university performance in a single aggregate indicator. Second, the Leiden Ranking does not rely on data supplied by the universities themselves and also does not use questionable survey data. And third, the Leiden Ranking is extensively documented, making it more transparent than many other rankings. (Waltman et al. 2012, 2431.)

In general, the THE rankings' use of reputational surveys has been criticized for opacity in terms of how the experts were chosen, for the experts' ability to reasonably assess such an amount of institutions as well as for creating a self-fulfilling prophecy where rankings from previous years influence the perceptions of experts (Saisana et al. 2011, 168; Waltman et al. 2012, 2421). Starting in 2010, THE changed its ranking provider and began collaborating with Thomson Reuters. The THE rankings methodology is also revised, and though it still includes reputational surveys under its teaching and research component, the citations (research influence) now receive slightly more prominent role than before. The earlier version of the THE ranking continues as QS World University Ranking, named after Quacquarelli Symonds, the previous ranking producer.

What is interesting from the perspective of knowledge governance is that the new THE ranking now contains a category of Industry income (knowledge transfer), which links the universities with industry innovations. As we discuss below, the new innovation measurements, as well as regional and city-level competitiveness rankings, are also highlighting the role of academic research. The inclusion of this assessment category in THE also implies a normative assessment of what universities should be doing and what its "core mission" is about.

> *A university's ability to help industry with innovations, inventions and consultancy has become a core mission of the contemporary global academy*. This category [Industry income] seeks to capture such knowledge-transfer activity by looking at how much research income an institution earns from industry (adjusted for PPP), scaled against the number of academic staff it employs.[17] (emphasis added)

In a similar fashion, the SCImago ranking now also contains an Innovation subindex, which measures citations of scientific out (i.e., publications) in patents as well as their "technological impact", meaning the institutions' percentage share of total citations in patents. Notably, the SCImago ranking also provides data for the Webometrics ranking. And, vice-versa, the societal impact subindex of the SCImago ranking bears similarities to Webometrics, and there are also references to the work of its developers (cf. Aguillo et al. 2010),[18] typical for the field development.

Attempts at creating guidelines for global ranking of universities were started already in 2006, when the International Ranking Expert Group—founded by the UNESCO European Centre for Higher Education (UNESCO-CEPES) and the Institute for Higher Education Policy (Washington, DC)—proposed the so-called Berlin principles for rankings and league tables.[19] These basically list criteria for the clarity and transparency of assessments and sound methodology, also emphasizing the recognition of diversity and differing value base of higher education institutions. There is a specific section on the

presentation of data that emphasizes end users so that they would have clear understanding of the variables and their weighting and that they should also be given the opportunity to weight the indicators according their own preferences. In many ways, the Berlin principles resemble the criteria outlined for the second-generation indicators of good governance.

The attempts to regulate the measurements are also telling of the rapid development of global higher education assessments, which have become highly competitive, concerning actors as diverse as university research centers, newspapers, and consultancies. There are also two recent additions to the field of ranking related to the rise of concerns over single aggregation of results in the rankings (see Table 5.4): the European Commission-funded U-Multirank by the Consortium for Higher Education and Research Performance Assessment (CHERPA) and the Assessment of Higher Education Learning Outcomes (AHELO) by the OECD. U-Multirank aims to provide a new type of mapping tool for comparing higher education institutions globally. The main difference is that U-Multirank does not provide an aggregate figure (ranking) but instead allows its user to choose the aspects of comparison. AHELO

Table 5.4 Global university mappings

	The Assessment of Higher Education Learning Outcomes (AHELO)[20]	The U-Multirank[21]
Publisher	Organisation for Economic Co-operation and Development (OECD)	Consortium for Higher Education and Research Performance Assessment (CHERPA)
Year	Feasibility study 2013	2014
Indicators	• Generic skills of students • Discipline-specific skills (economics and engineering) • Contextual information	• Teaching and learning • Research • Knowledge transfer • International orientation • Regional engagement

assesses learning outcomes in higher education, not research output.[22] Its feasibility study was published in 2013, covering 17 countries and 248 higher education institutions. The AHELO does not provide a ranking and instead of league tables, it allows the participating institutions to benchmark their performance against their peers.

The publication of the Shanghai list and THE ranking aroused concern about higher education in Europe (see Chap. 4). While the pressure to adapt to global competition in higher education is particularly felt in the smaller members states of the European Union (EU) (Dakowska 2013; Erkkilä and Piironen 2013), it also concerns major European countries, such as France and Germany, which have launched measures such as excellence initiatives to improve their universities' global ranking (Saisana et al. 2011, 168). In the German and French case, the new global datasets were criticized for not considering the research done outside universities in research institutes (such as the Max Planck Institute and the CNRS). Global rankings also track English-language publications and favor publications in peer-reviewed journals, which has been seen as a disadvantage for many European higher education systems as well as humanities and social sciences as disciplines (Mustajoki 2013). Such concerns were arguably also behind attempts to create the U-Multirank, launched during the French EU presidency in 2008 (Saisana et al. 2011, 168). The European Commissions' Director General of education Odile Quintin was quoted as saying that the project would aim at creating an alternative ranking that would "do justice" to European universities (quoted in Dubouloz 2008, 1).

In 2009, the CHERPA consortium was selected to design the alternative figure that was to be a multidimensional ranking, or mapping, of universities that would allow flexibility over assessment criteria (CHE 2009).[23] Building most notably on the work done at the development team of the Leiden ranking and the Centrum für Hochschulentwicklung (CHE) that had earlier produced a ranking on German-speaking universities, the new U-Multirank initiative was to fulfill the Berlin principles. In its justification for the initiative, the European Commission as the funding agency argues for the methodological improvements that are largely in line with the Berlin principles (see above). Again, according to

the European Commission, the methodological issues in the existing figures demand yet another indicator:

> *The potential of European higher education institutions to fulfil their role in society and to contribute to economic and social development is underexploited.* More transparency is needed so that different stakeholders—students, institutions, businesses, policy makers—can deepen their understanding of how higher education institutions are performing. *U-Multirank is a key tool for this: it is more comprehensive and user-driven than any existing ranking, showing more clearly the performances of a much wider range of universities and their potential to contribute to growth and jobs.* It includes much-needed information for policymakers, for students and for institutions themselves.[24] (emphasis added)

This shows the dual logic of the European Commission. The existing rankings have exposed the poor performance of the European higher education institutions in global comparisons. In doing so they have helped to identify a policy problem of "European higher education" where the universities are seen to underperform in terms of economic and social development. To address this problem, the Commission calls for U-Multirank to be produced, as this would provide better assessment tools than the existing rankings. This is basically reproducing an account from the Commissions 2011 Supporting Growth and Jobs strategy (European Commission 2011; see also Chap. 4).

An interesting aspect about the EU Commissions' critique is the stubborn commitment to the ranking ontology—to criticize the flawed figures, you need better numbers. This further cements the use of indicator knowledge in the comparative assessment of higher education. In addition, it is interesting to see how the rankings have helped to frame higher education as an element of economic growth, where the European universities are seen to underperform their duties toward the society at large, as the above quote from the European Commission testifies.

Launched in 2014, the U-Multirank claims to provide methodological improvements to the existing figures (U-Multirank 2017). It includes more assessment criteria than the earlier rankings, assessing teaching and learning, research, knowledge transfer, international orientation, and

regional engagement. It refrains from making a ranking list of universities but instead allows the user to set the criteria for comparison with an online tool. It combines institutional and field-specific data, claiming to show the diversity of institutions. It also emphasizes comparing institutions that have similar profiles and uses performance groups (not league tables) in representing the results of comparisons. The data sources consist of self-reported data from the institutions (questionnaire), student survey, bibliometric (Web of Science) and patent data, as well as "prefilling", referring to the use of publicly available data (for the United States and the United Kingdom).

There has been a rapid expansion of global measurement of universities. Yet the new figures on higher education, including U-Multirank, provide only methodological improvements without challenging the premises of existing university rankings. Like previous rankings, they mostly also emphasize research output using bibliometric analysis, assume English as publication language, and hold higher education institutions as their unit of analysis. It is particularly interesting that while most global rankings in the beginning of 2000s focused on national systems (comparing countries), the policy field of higher education has solely focused on the institutional level, measuring the research performance of individual institutions. After all, in the field of primary education the focus has rested firmly on national systems, largely owing to the OECD PISA ranking. This shows how objectification and initial framing of a "policy problem" ("world-class university") comes to steer the future debate and rule out other plausible problematizations (cf. Bacchi 1999).

Though the OECD's AHELO initiative draws attention to learning outcomes (see Table 5.4), it also builds on the atomistic ontology of competition and benchmarking. Similarly, while the U-Multirank initiative allows the user to choose and weigh the elements of analysis, it does not challenge the underlying premises of comparing universities for their research performance already existing in the field. This shows how the existing figures come to shape future assessments. While the new actors entering the field aim to provide alternatives to the existing figures, they largely come to adopt the basic assumptions and causal beliefs already prevailing in the field.

In fact, the U-Multirank also contains a dimension where higher education is considered in terms of its potential to enhance innovation and economic competitiveness, as indicated by the knowledge transfer dimension of the U-Multirank, which includes indicators such as the number of patents awarded, private research funding received, co-publications with the industry, publications cited in patents, spin-offs, and companies founded by graduates. It is also worth noting that already in 2006 an independent expert group appointed by the European Commission found it important to "facilitate the transfer of knowledge and intellectual property from publicly-funded institutions to industry" in Europe (European Commission 2006, 7). The U-Multirank also introduces a dimension on regional engagement that considers the role of university from the perspective of employment, regional research funding, and publication activities.

As already noted, practically all global university rankings compare the research output of the universities. The North American Educational Policy Institute makes an exception by having produced the only global ranking to assess national systems instead of higher education institutions, and focusing on the affordability and accessibility of higher education. This provides an alternative view of the matter of higher education rankings, where the Nordic and Central European university systems are ranked higher than the Anglo-American and Asian ones. But the North American Educational Policy Institute's assessment is marginal and mostly not even known to the actors in the field. It has been only published twice, in 2005 and 2010. Drowned out by the assessments on the research performance of higher education institutions, the attempts to consider the role and mission of universities from another perspective have little chance of attaining visibility.

The global university rankings have steered the international debate toward focusing on individual institutions and not higher education systems. This has emphasized an individualistic understanding of higher education in which individual institutions are conceptualized as competing globally. It is important to note that rankings focus on higher education institutions rather than national systems and, as such, cannot fully assess regional differences in higher education. Yet the rankings have strong geographical implications, showing for instance European, African, and Latin

American universities, among others, in a questionable light as they are underrepresented among the top-ranked institutions. This is visible in the new regional ranking initiatives that we discuss in Chap. 6.

To summarize, the field of global university rankings is ideationally linked with the rankings of good governance and economic competitiveness, seeing higher education as a competition on research output between higher education institutions. As with good governance indicators, there are methodological shifts toward disaggregated figures, but no real challenges to the epistemic knowledge shared by the actors. Nevertheless, the field of global ranking is fragmenting through the entrance of new indicators and actors producing them. Small actors that have entered the field of ranking before them are effectively eclipsing prominent international actors such as the EU and OECD. The global university rankings have also been actively linked to the ideas of competitiveness and innovation, where their results and methodology are now actively being used.

Competitiveness Indicators

The World Competitiveness Yearbook produced by IMD World Competitiveness Center since 1989 and Global Competitiveness Report by the WEF since 1976 were the first comparative assessments for competitiveness (see Chap. 4). From 1989 to 1995, the two reports were produced together, but this collaboration ended in 1996. Both index producers now publish a ranking figure to compare the competitiveness of countries: World Competitiveness Ranking (IMD) and GCI (WEF). After the collaboration ended, the two indicators relied on slightly alternative conceptualizations of competitiveness also weighing the attributes differently, leading to differences in the rankings of countries (Cho and Moon 2000, 197–200). Despite their differences, these rankings have promoted the discourse of competitiveness (Sum 2009, 192–194), creating a strong political imaginary of globalization as economic competition between nations. The above competitiveness measurements enjoy broad visibility globally and have influenced the rankings in other domains.

Over the past two decades the measurements of economic competitiveness by the WEF and IMD have become broader in scope, now focusing also on knowledge resources of the state and the innovation environment. The conceptualization of competitiveness now comprises a holistic view of governance and institutions that enhance economic performance, and the role of knowledge is increasingly being acknowledged as its critical component. Instead of measuring the mere price competitiveness of countries, the GCI aims to be a holistic measurement of competitiveness that focuses on "the set of institutions, policies, and factors that determine the level of productivity of a country" (World Economic Forum 2014, 4).

Since 2008, the GCI has merged the previous macroeconomic Growth Development Index with the microeconomic Business Competitiveness Index assessing now both aspects of national competitiveness. This shift also coincided with an external audit of the GCI that was published in 2012, acknowledging that there was a potential "cultural bias" in the Executive Opinion Survey that makes part of the index along the more traditional economic data (World Economic Forum 2015, 78). Conducted by WEF's 160 partner institutes globally, the executive respondents in different parts of the world are asked to evaluate the quality of their operating environment. The questions are mostly scaled from 1 to 7, containing assessments from worst to best situation perceived. As a response to the critique the survey respondents are now asked to answer the questions "in view of the country they are assessing based on international comparison" (World Economic Forum 2015, 78, 82).

The above critique of the index is again important, as it shows the political character of numbers that are seemingly neutral (Desrosières 1998; Porter 1996). The critique is also related to other indicators as the Executive Opinion Survey data is used by other index producers, for instance by Transparency International in its Corruption Perception Index. Also the World Competitiveness Ranking by IMD has undergone methodological changes (2001 and 2008–2012), becoming a more holistic measurement of competitiveness, also covering the issues of knowledge production and innovation (IMD 2017).

When we look at the development in global measurements of competitiveness, we see that it plays out somewhat differently compared to

measurements of good governance and university rankings. In fact, the dominant figures have largely remained unchallenged by alternative figures on a global level. But how have the existing figures of global competitiveness managed to remain so hegemonic without getting much competition over the years? One aspect of this could be the active attempt to sustain critique by modifying the index according to the shifts in the economic paradigm. When we consider the development of GCI over the years, it is plain that it has come to incorporate new perspectives into its measurements, most recently innovation. This endeavor is also captured in the citation from the 2014–2015 Global Competitiveness Report that links the GCI to the scientific history of economics:

> Many determinants drive productivity and competitiveness. Understanding the factors behind this process has occupied the minds of economists for hundreds of years, engendering theories ranging from Adam Smith's focus on specialization and the division of labor to neoclassical economists' emphasis on investment in physical capital and infrastructure, and, more recently, to interest in other mechanisms such as education and training, technological progress, macroeconomic stability, good governance, firm sophistication, and market efficiency, among others. (World Economic Forum 2014, 4.)

This portrays the WEF GCI in the continuum of academic history of economics (cf. Skinner 1969), tying GCI's conceptual and methodological changes to the paradigm shifts of the discipline. One apparent theme that has emerged in the GCI is that of sustainable development, a reflection of increasing concerns over the environmental aspects of the global economy.

In the 2011–2012 report it was noted that "despite much work in the area of sustainability, there is not yet a well-established body of literature on the link between productivity (which is at the heart of competitiveness) and sustainability. However, at the World Economic Forum we believe that the relationship between competitiveness and sustainability is crucial" (World Economic Forum 2011, 52). It is, moreover, suggested that the way forward is to integrate long-term drivers of productivity to the measurement exercise (ibid., 53). As a result, the GCI is complemented with the new Sustainable Competitiveness Index (SCI) that tries

to capture the long-term prospects for growth of productivity. Ominously, however, the 2014–2015 report is the last that discusses sustainability-adjusted competitiveness (World Economic Forum 2014, chapter 1.2). Perhaps due to lack of sufficiently reliable worldwide data, the publication of sustainability-adjusted GCI scores seems to have been discontinued, at least for the moment, by the WEF.

But the changes in the global competitiveness indicators are also related to the general development in the field of measurement. While the above rankings of economic competitiveness have not been challenged by other global measurements to the extent seen in the context of good governance indicators and university rankings, there have been a shift toward global measurements of innovation that conceptually are closely linked to competitiveness (see below). This has also brought in new knowledge producers and data sets, such as the GII (first published in 2007) and Bloomberg Innovation Index (since 2011). These have sparked a trend for assessing the innovation capacities of nations, which also covers research, education and knowledge. There have since been several indicators for innovation that have come to complement the rankings of universities, economic competitiveness, and quality of governance.

Interestingly, the 2015–2016 Global Competitiveness Report lays foundations for future revisions concerning WEF's measurements of competitiveness introducing "relevant new concepts that modernize our thinking on specific elements—mainly in the domains of innovation, education, and finance" (World Economic Forum 2015, 43). The revisions are further discussed in the 2016–2017 edition of the Report, where the WEF highlights the role of innovation and education for competitiveness. The preliminary results for the pillars that will be revised most—education and skills, business dynamism, and innovation capacity—are shown in the 2016–2017 report.

Altogether, the WEF is planning on reorganizing its 12 pillars (see Chap. 4) under four subindexes (World Economic Forum 2016, 56):

1. *Enabling environment* subindex assessing institutional quality, infrastructure, and macroeconomic conditions determining the environment in which companies operate
2. *Human capital* subindex measuring health and skills of the labor force

3. *Markets* subindex measuring product, labor, and financial markets supporting firms and their ability to reorganize
4. *Innovation ecosystem* subindex measuring technology adoption, business dynamism, and innovation capacity

There is an apparent shift toward the increased importance of innovation, education, and human capital, which is also widely acknowledged in the WEF report (e.g., World Economic Forum 2016, 54, 56). This is most interesting from the point of view of global knowledge governance and the field development of indicators. The 2016–2017 Global Competitiveness Report discusses the updated index in the context of a major change that it calls as the Fourth Industrial Revolution, basically referring to automatization and digitalization (World Economic Forum 2016, 51). The WEF also cites methodological and conceptual critique of its measurements.[25]

> The increased complexity of today's economy is arguably making our current statistical tools outdated, both conceptually and methodologically. […] Measuring the drivers of prosperity likewise requires a conceptual and methodological rethink. When the Global Competitiveness Index (GCI) was introduced in 2006, the effects of the Fourth Industrial Revolution had not yet started to arise. Today, although the main drivers of competitiveness identified at that time remain generally valid, they may affect the development process in a different way than they did a decade ago. (World Economic Forum 2016, 51–52.)

The assessment of innovation is moving away from knowledge creation and number of patents applied, and to a broader assessment of innovation environments, where the connectivity between individuals and institutions is called for. The WEF Report's grand narrative of Fourth Industrial Revolution finds a historical reference point in the Renaissance (see quote below). The references to history evoke invented traditions that supposedly help nations to face the uncertainties of the Fourth Industrial Revolution (cf. Hobsbawm 1987).

> Innovation capacity, in addition to measuring the accumulation of knowledge produced by formal research and patenting activity, also captures a country's capacity to encourage creativity, interaction, and collaboration

> between individuals and institutions; and the aptitude of its companies to commercialize new products. This way of thinking about innovation emphasizes how breakthrough ideas emerge from contrasting and applying concepts across diverse industries, cultures, departments, and disciplines. A similar process was observed during the Renaissance when the cultural environment provided the conditions for painters, sculptors, scientists, philosophers, financiers, and architects to influence each other's work and produce remarkable progress in both arts and science. (World Economic Forum 2016, 60.)

The above shift in the measurement of global competitiveness is interesting as it highlights the role of innovation. The descriptions of the innovation environment and interlinkages between different actors and environmental aspects also resemble the rankings of city competitiveness and innovation, a new parallel activity of the WEF and other knowledge producers (see Chap. 6). This also finds a parallel development in the field of global ranking, where innovation indicators have emerged to complement the measurements of competitiveness (see below).

Global Innovation Indicators

Table 5.5 shows selected global innovation rankings. Typical for their composition is the focus on input and output side of innovation. The GII is perhaps the most prominent global measurement of innovation. Launched in 2007 it is produced by Cornell University, INSEAD Business School, and World Intellectual Property Institution (WIPO). The GII claims to provide a "holistic framework for measuring innovation performance" (INSEAD 2007, 28). Like the competitiveness measurements, its Innovation Input subindex covers extensively the institutional aspects of innovation alongside infrastructure and market sophistication. Human capital and research are assessed too. The Innovation Output subindex covers knowledge and technology output as well as "creative outputs". The first report on GII refers to "globalization" as the reason for the apparent need to measure national potential for innovation (INSEAD 2007, 26). This grand narrative is

Table 5.5 Selected global innovation rankings

	Global Innovation Index[26]	International Innovation Index[27,28]	The Bloomberg Innovation Index[29]	The Global Cleantech Innovation Index[30]	Global Talent Competitiveness Index	Contributors and Detractors: Ranking Countries' Impact on Global Innovation[31]
Institutions	Cornell University, INSEAD Business School for The World, World Intellectual Property Organization (WIPO)	Boston Consulting Group, The Manufacturing Institute	Bloomberg	Cleantech Group, WWF, Swedish Agency for Economic and Regional Growth	INSEAD Business School, Human Capital Leadership Institute, Adecco Group	Information Technology and Innovation Foundation
Year	2007–	2009	2011–	2012, 2014	2013–	2016
What is assessed?	Innovation capacity of countries.	Innovation performance and inputs of countries	Innovative countries/ economies	Countries' potential to produce entrepreneurial Cleantech start-up companies	Countries' ability to grow, attract and retain talent	Countries contribution to the global innovation system

(*continued*)

Table 5.5 (continued)

	Global Innovation Index[26]	International Innovation Index[27,28]	The Bloomberg Innovation Index[29]	The Global Cleantech Innovation Index[30]	Global Talent Competitiveness Index	Contributors and Detractors: Ranking Countries' Impact on Global Innovation[31]
Units	141 economies	110 countries and 50 US states	Initially 200 economies, but narrowed down to 84 due to data loss	40 countries	118 countries	56 countries
Type of assessment	Ranking Innovation efficiency ratio Innovation input subindex Innovation output subindex Country profiles	Ranking/index	Ranking (top 50) and index	Ranking/index	Ranking	Ranking

(*continued*)

Table 5.5 (continued)

	Global Innovation Index[26]	International Innovation Index[27,28]	The Bloomberg Innovation Index[29]	The Global Cleantech Innovation Index[30]	Global Talent Competitiveness Index	Contributors and Detractors: Ranking Countries' Impact on Global Innovation[31]
Assessment criteria	Innovation input subindex Institutions Human capital and research Infrastructure Market sophistication Innovation Output Subindex Knowledge and technology output Creative outputs 79 indicators	Innovation input subindex fiscal policy other policies innovation environment Innovation performance R&D results business performance public impact innovation Creative outputs	The assessment is based on seven factors 1. R&D intensity 2. Manufacturing value added 3. Productivity 4. High-tech density 5. Tertiary efficiency 6. Researcher concentration 7. Patent activity	Inputs General innovation drivers Cleantech specific innovation drivers Outputs Evidence of emerging CT innovation Evidence of commercialized CT innovation	Six pillars: 1. Enable 2. Attract 3. Grow 4. Retain 5. Vocational and Technical Skills 6. Global Knowledge Skills Three indices: • Talent Competitiveness Input subindex (pillars 1–4) • Talent Competitiveness Output subindex (pillars 5–6) • Global Talent Competitiveness Index (pillars 1–6)	14 "contributors" taxes, R&D and technology 13 "detractors" balkanized production markets, IP protection and balkanized consumer markets 27 indicators in sum

linked to concrete examples of the US Council of Competitiveness's concern about innovation in the United States, the EU's Lisbon Agenda (published in 2000) as well as China's boosting of its R&D expenditure (compare Chap. 3).

In 2009, Boston Consulting Group and the Manufacturing Institute publish an International Innovation Index that ranks 110 countries and 50 US states. Like the GII, the International Innovation Index also contains Innovation Input subindex that is complemented by Innovation Performance subindex. However, the International Innovation Index is not continued and several years pass before other measurements emerge. Launched in 2011, the Bloomberg Innovation Index joins the assessments of global innovation by ranking innovative countries against seven factors.[32] The tertiary efficiency factor refers to enrolment in tertiary education, share of labor force with tertiary degrees, and annual numbers of science and engineering graduates. The researcher concentration refers to professionals (PhD students included) who are engaged in R&D activities.

The Global Cleantech Innovation Index (published 2012 and 2014) takes a somewhat more focused look at the matter. Tracking countries potential to "produce entrepreneurial cleantech start-up companies which will commercialise clean technology innovations over the next 10 years", it focuses closely to specific type of innovations.[33] It is produced by the Cleantech Group, Swedish Agency for Economic and Regional Growth (Tillväxtverket), and the World Wildlife Foundation. The Global Cleantech Innovation Index seeks to measure "the involvement of various actors to not only 'push' technology supply but also promote the 'pull' of market demand".[34] The rise of measurements to include sustainable development as an element of assessment also finds a parallel in the WEF's Global Competitiveness Report, which has discussed the theme regarding its measurement in recent years (see above).

The INSEAD Business School published its second measurement on innovation in 2013, now labeled Global Talent Competitiveness Index (together with Singapore Human Capital Leadership Institute and Adecco Group), ranking 118 countries' ability to grow, attract, and retain talent (see discussion below). The last entry to the field listed in the Table 5.5 is the Contributors and Detractors ranking that assesses countries "on the extent to which their economic and trade policies either

constructively contribute to or negatively detract from the global innovation system" (Information Technology and Innovation Foundation 2016, 1). The ranking claims to provide a novel opening for comparing the measurements available in the field:

> Most studies comparing countries on innovation rank them on innovation capabilities and outcomes. But no study has assessed the impact of countries' innovation policies on the broader global innovation system. This study assesses this by inquiring whether countries are attempting to bolster their innovation capacities through positive-sum policies such as investments in R&D, education, or tax incentives for innovation that contribute positively to the global body of knowledge and stock of innovation; or if they are trying to compete through negative-sum "innovation mercantilist" policies such as localization barriers to trade, export subsidization, or failing to adequately protect foreign intellectual property (IP) rights[.] (Information Technology and Innovation Foundation 2016, 1.)

This adds a new perspective to the assessment of innovation, namely the "global innovation system", while the focus so far has been on "national innovation systems" or "ecosystems". Though contributing to the global innovation system is presented as potentially altruistic behavior of countries that are competing with each other, the new ranking is nevertheless legitimized by pointing out that it receives high correlations with the GII (Information Technology and Innovation Foundation 2016, 5). The above logic is typical of knowledge producers entering the field, as at the same time they are keen to posit the novelty of their dataset, while highlighting the similarities of results compared to existing indicators. The use of correlation analysis also lends methodological credibility to the results obtained.

Looking at the data sources of the Contributors and Detractors ranking, they are very similar to other measurements of innovation and competitiveness, consisting of data produced by organizations such as the UNESCO, World Bank, OECD, WTO, and WEF (Global Competitiveness Report). The ranking contains 14 contributing factors (contributors), half of which are focused on research and education: Education Expenditure per Student, Science Graduates, Top-Ranking

Universities, Researchers per Capita, Government R&D Expenditure per Person, Research Citations, and Government Funding of University Research. For Education Expenditure per Student and Researchers per Capita, the Contributors and Detractors ranking uses data from GII. Data for top-ranking universities comes from THE world university rankings, while research citations are based on SCImago data (see above).

On the whole, the innovation rankings are composite indicators that draw their sources from existing datasets. This is already apparent from the GII, as it attempts to create a "holistic" measurement of innovation, an expression used also in the GCI of the WEF. This roughly means an assessment of the larger institutional context for innovation, or competitiveness. Consequently, the data is likely to be drawn from various sources available. But as there is only a limited amount of data produced on global level, there is a strong ideational convergence between different composite indicators.

Below, we present a comparison between the GCI and the GII, which shows the great overlap in the producers of data used by the two datasets (Table 5.6). In fact, some 90% of the data used by GCI and GII are produced by same ten organizations. It is important to note that this selection does not mean that the two datasets use the exactly

Table 5.6 Overview of Global Competitiveness Index (GCI) and Global Innovation Index (GII) data providers

	GCI		GII		Overall	
Source	Number of variables	%	Number of variables	%	Number of variables	%
World Economic Forum	82	71.9	5	6.1	87	44.4
World Bank	10	8.8	17	20.7	27	13.8
UNESCO	3	2.6	14	17.1	17	8.7
IMF	5	4.4	3	3.7	8	41
ITU	6	5.3	2	2.4	8	4.1
WTO	2	1.8	6	7.3	8	4.1
United Nations	0	0.0	7	8.5	7	3.6
WIPO	1	0.9	6	7.3	7	3.6
ILO	1	0.9	2	2.4	3	1.5
Thomson Reuters	0	0.0	3	3.7	3	1.5
Sum	*110*	*96.5*	*65*	*79.3*	*175*	*89.3*

Table 5.7 Pillars of Global Innovation Index and Global Competitiveness Index: conceptual overlap and similarities

Pillar	GII pillars	GCI pillars
1	Institutions	Institutions
2	Infrastructure	Infrastructure
3	Human capital and research	Health and primary education Higher education and training
4	Market sophistication	Macroeconomic environment Goods market efficiency Labor market efficiency Financial market development Market size
5	Business sophistication	Business sophistication
6	Knowledge and technology output	Technological readiness
7	Creative outputs	Innovation

same indicators, but rather that they rely on a very limited amount of knowledge producers, thus leading to significant ideational overlap.

The most notable link between the two organizations is the Executive Opinion Survey (EOS) produced by the WEF. The GCI builds heavily on perceptions, as over 70% of its data sources are mostly based on this survey. In addition, the GCI has ten indicators from World Bank (six from Doing Business and four from World Development Indicators) and five indicators from the International Monetary Fund (World Economic Outlook Database). Other organizations whose data the GCI uses includes International Telecommunications Union (six indicators), UNESCO (three indicators), World Trade Organization (two indicators), World Intellectual Property Organization (one indicator), and International Labor Organization (one indicator).

When we consider how both measures have been laid out, their conceptual overlap becomes evident. The indicators have been organized around the notion of conceptual "pillars", which alone indicates potential link between the two knowledge products, as this is not a conventional term in the field of statistics. Table 5.7 below shows the pillars of the GII and GCI organized by the order of the GII pillars. Most apparently, both measures contain "pillars" called institutions, infrastructure, and business sophistication. But the conceptual overlap can also be traced to pillars that are

named slightly differently. The GII pillar of human capital and research comes close to the two GCI pillars of health and primary education and higher education and training. The GII measures market sophistication, while similar issues are measured under GCI pillars macroeconomic environment, goods market efficiency, labor market efficiency, and financial market development, though these are apparently broader in scope. Ideationally, the GII pillar knowledge and technology comes close to GCI pillar technological readiness. Finally, the GII pillar creative output finds its counterpart in the GCI pillar that is bluntly named as innovation.

There is also direct overlap in terms of data sources. GCI is largely based on the WEF's Executive Opinion Survey (some 70% of data sources), which is also used by the GII. The following GII subindexes are based on the Executive Opinion Survey: intensity of local competition, university/industry research collaboration, state of cluster development, Information and Communications Technologies (ICTs) and business model creation, ICTs and organizational model creation. The first three of these also appear in the GCI.

There are also interesting links with other information producers. The GII contains indicators from World Bank's WGI (four) and Doing Business datasets that make its institutional pillar (political, regulatory, and business environment). The GII subindex assessment in reading, mathematics, and science is based on the OECD PISA. In addition, the GII has a subindex that uses the QS university ranking average score of top three universities in a country. This shows how the notion of innovation has become a nexus of knowledge, education, and competitiveness, where those entering the field with new measurements are using existing global indicators of knowledge governance.

While the new measurements arguably provide an alternative to the existing figures, they are conceptually very close to the previous measurements, as the comparison of GII and GCI shows. It seems that instead of providing a real alternative, the GII reproduces many of the ideas and presuppositions that the measurements of competitiveness and global university rankings share.

The blurring between the measurements of competitiveness and innovation is even more apparent in the newcomer to the field of global measurements, Global Talent Competitiveness Index, which like the GII is

produced by the INSEAD Business School (together with Singapore Human Capital Leadership Institute and Adecco Group). Launched in 2013, this ranking aims to measure countries share of talented workforce and ability to attract it (INSEAD 2013, 21). Discussed here as an innovation index, it in many ways overlaps with measurements of competitiveness. The new ranking builds on the narrative of the global mobility of skilled workforce for which not only companies but also countries are competing. Similar to the 2016–2017 WEF Global Competitiveness Report, that talks about a major global process of automatization (World Economic Forum 2016, 51), the 2017 Global Talent Competitiveness Index also highlights the same themes (INSEAD 2016); while the WEF describes the development as Fourth Industrial Revolution, the 2017 report of Global Talent Competitiveness Index contains a chapter by authors representing McKinsey Global Institute that talks about "Second Machine Age" (INSEAD 2016, chapter 3).

The Global Talent Competitiveness Index uses 22 survey questions of the WEF's Executive Opinion Survey that serves as the basis for the Global Competitiveness Index. Given that the Global Talent Competitiveness Index contains 65 variables, some 33% of its data sources come from the WEF survey. In addition, the Index contains a variable based on WEF Global Gender Gap Report. The index also uses ILO, UNESCO, and OECD PISA data, like many other measurements of innovation. The World Bank's WGIs and Doing Business Report are also used as data sources, much as in other rankings. Transparency International's CPI is used as an indicator for corruption. Data from the GII is also included as the Global Talent Competitiveness Index contains the whole Innovation output subindex of the GII. The data on universities is based on the QS World University Ranking.

In short, the Global Talent Competitiveness Index effectively merges data, subindexes, and full-ranking scores of the prominent global measurements of good governance, competitiveness, innovation, and higher education, discussed in this and the previous chapter. While this certainly is worthy as a "holistic" measurement, it prompts us to ask what exactly is being measured. As the composition of the rankings is strongly overlapping, there is a genuine risk of them becoming general measurements of everything that are not clearly focused and rooted conceptually.

Conclusions

Rankings, their methodology, the data producers, and their ideas are not isolated but interlinked and networked. In making these connections and their consequences visible through our analysis, we propose that there is a field development in global ranking concerning knowledge governance. The measurements of academic performance, national competitiveness, good governance, and innovation meet in their assessments of the institutional arrangements concerning the creation and allocation of information in a society. As we have also argued, it is no coincidence that we find important similarities between rankings of these different policy domains.

We identify a pattern in the field development apparent in the above cases, where organizations entering the field are doing so with the pretext of providing an alternative figure that expands the conceptual limits of measurement or simply amends the methodological flaws of existing indicators. To enter the field of measurement successfully implies certain premises where the actors promoting a new indicator must verify and validate their knowledge product against the measurements already on the market. This boundary work (Gieryn 1983, 782) creates a certain conformity with the field of measurement, where actors share most of the ideological underpinnings, normative, and causal beliefs as well as rites of verification bearing similarities to an epistemic community (Haas 1992).[35]

One characteristic of the field development is the politicization of rankings. There is increasing awareness that the numbers are by no means apolitical but contain ideological baggage. In addition, rankings have faced methodological critique. As with rankings of good governance, aggregate figures for comparing higher education institutions have been criticized for being conceptually vague and seeking media attention. This shows both the politicization of global university rankings and the methodological changes that allow new actors to enter the field. The new nonaggregate measurements, also known as "mappings", are arguably more nuanced and methodologically advanced than the previous rankings.

This critique of ranking and aggregate figures has also marked an entry point for several new indicators sets. Here we see established interna-

tional actors such as the EU or OECD (and occasionally also the World Bank) being challenged and even outweighed by small NGOs, research institutes, and consultancies. In the fast evolving field of global ranking, the datasets that have entered the field in early stages often enjoy greater visibility than the later entries. The media visibility of rankings (compared to disaggregated indicators) is also relevant here.

However, concerning the ideational foundations of the field development, we see the new indicators providing only small incremental changes to the existing figures, while the ideational premises and causal and moral beliefs guiding the activity seems to be largely shared by the actors. Nevertheless, we observe a fragmentation of rankings and indicators relevant to knowledge governance in higher education, economic competitiveness, innovation, and good governance. This is evident in the number of indicators, which has grown rapidly over the past decade. But there are also concerns about the conceptual aspects of rankings. Despite the shift toward second-generation indicators or mappings in good governance and higher education, there are new entries to the field that are composite indicators of very broad scope, aiming for holistic assessments at the potential cost of conceptual clarity. This is particularly evident in the blurring of the line between the measurements of competitiveness and innovation. However, quantification itself seems to have become a standard in the global comparative assessment. Paradoxically, the fragmentation of rankings has further deepened the field structuration of global ranking. The invention of "innovation" has not severed the linkage between knowledge and competitiveness, for example, but made it stronger than ever before. Though the scope and focus of indicators is becoming less coherent, they are becoming more embedded in transnational governance as policy instruments.

While we began our discussion with the development in good governance indicators, where the measurements are moving toward specificity and conceptual clarity, the novel rankings of innovation seem to contain many of the problems that the early rankings of good governance were criticized for. We conclude that there is a fragmentation in the global field of measurements, as the measurements are multiplying in number. But there is also increasing confusion about the focus of indicators as they are conceptually overlapping, most evidently in competitiveness and innova-

tion. Moreover, these measurements now also build on the measurements of good governance and global university rankings. The new figures that enter the field are effectively being woven into the existing fabric of rankings, through their concepts, methodological choices, cross-references, and use of data.

As discussed above, the scope and level of the indicators has been a point of critique for the global indicators of competitiveness and innovation. Related to this, several indicators focusing on cities and regions have emerged recently. Also, global university rankings are now complemented by regional rankings. We take a closer look at this development in the next chapter.

Notes

1. The World Bank has used Country Policy and Institutional Assessment (CPIA) tool since mid-1970s for assessing the eligibility for funding.
2. Also the use of the good governance indicators has drawn interest, most notably with regards to development funding (Hammergren 2011; Knoll and Zloczysti 2012; Saisana and Saltelli 2011). Here, the indicators such as the Worldwide Governance Indicators are seen instrumental for development aid, while also attracting attention on the local level (Morgan 2011; Stubbs 2009). While the World Bank has not used the WGI in its allocation of funding, the index has obtained such uses. The most prominent user of the governance indices in development funding has been the US government through its Millennium Challenge Corporation (MCC) that was established in 2004.
3. Most notably, the Millennium Challenge Corporation uses Fringe Special (and Open Net Initiative) for its financing criteria since 2012, having previously used WGI Voice and Accountability data.
4. The indices explicitly criticized were the World Bank Governance Indicators, the European Central Bank's Public Sector Efficiency Study, the World Economic Forum's Public Institutions Index in the Global Competitiveness Report, and the "Government Efficiency" Indicator developed by the International Institute for Management Development in the World Competitiveness Yearbook.
5. "There is a significant growth in broad measures of "governance", including some comparative data concerning public sector bureau-

cratic quality. However, most of these data are based on subjective assessments, and were not initially collected with comparative analysis of public management as a principal aim. […] Reviews of these data note that these indicators incorporate significant methodological problems. The data often do not adequately measure what they claim to measure, and can aggregate many diverse indicators, achieving statistical quality at the price of significant loss of conceptual precision. Often data amount to broad subjective evaluations combined with service-specific performance indicators. The former can be excessively impressionistic and the latter cannot be aggregated in any meaningful way" (OECD 2005, 6).

6. "The absence of a well-accepted theoretical framework for governance ensures that any composite indicators are largely devices for communication—for crystallizing concerns about corruption etc. into a single short and pithy summary" (OECD 2006c, 60).
7. "More generally, recognizing the importance of margins of error and the imprecision of country rankings, we do not follow the popular practice of producing precisely ranked 'top ten' or 'bottom ten' lists of countries according to their performance on the WGI, recognizing that such seemingly precise 'horse races' are of dubious relevance and reliability" (Kaufmannn et al. 2008, 5).
8. 2017. Ranking Web of Universities. January New Edition, [http://www.webometrics.info/en/node/178], date accessed 30 June 2017.
9. http://www.educationalpolicy.org/pdf/global2005.pdf, date accessed 28 February 2013.
10. CWTS Leiden Ranking 2017 Indicators, [http://www.leidenranking.com/information/indicators], date accessed 30 June 2017.
11. SIR Methodology, http://www.scimagoir.com/methodology.php, date accessed 30 June 2017.
12. Transparent Ranking: Top Universities by Google Scholar Citations [http://www.webometrics.info/en/node/169], date accessed 30 June 2017.
13. https://www.topuniversities.com/qs-world-university-rankings/methodology, date accessed 30 June 2017.
14. https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2016-2017, date accessed 30 June 2017.
15. "In 2003 after the publication of the Shanghai Jiatong University breakthrough ranking, the Academic Ranking of World Universities (ARWU),

we decided to adopt the main innovations proposed by Liu and his team. The ranking will be built from publicly available web data, combining the variables into a composite indicator, and with a true global coverage. The first edition was published in 2004, it appears twice per year since 2006 and after 2008 the portal also includes webometrics rankings for research centers, hospitals, repositories and business schools." Webometrics Methodology, [http://www.webometrics.info/en/Methodology].

16. Webometrics Methodology, [http://www.webometrics.info/en/Methodology].
17. THE World University Rankings 2016–2017 methodology [https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2016-2017].
18. SCImago Institutions Ranking methodology, http://www.scimagoir.com/methodology.php.
19. Centrum für Hochschulentwicklung, Berlin Principles on Ranking of Higher Education Institutions [https://www.che.de/downloads/Berlin_Principles_IREG_534.pdf].
20. http://www.oecd.org/.
21. http://www.u-multirank.eu/project/.
22. Testing Student and University Performance Globally: OECD's AHELO—OECD, [http://www.oecd.org/edu/skills-beyond-school/testingstudentanduniversityperformancegloballyoecdsahelo.htm].
23. The CHERPA consisted of five partners: Centrum für Hochschulentwicklung (CHE, Germany), the Center for Higher Education Policy Studies at the University of Twente (Netherlands), the Centre for Science and Technology Studies (CWTS) at Leiden University (Netherlands), INCENTIM research division at the Catholic University of Leuven (Belgium), and the Observatoire des Sciences et des Techniques in Paris.
24. "U-Multirank—Education and Training—European Commission". *Education and Training*. [https://ec.europa.eu/education/initiatives/u-multirank_en].
25. The WEF report names few concrete examples of perceived problems such as the methods for calculating physical sales of goods and services that do not consider virtual platforms and nonmonetary exchanges of services as well as measurement issues in GDP as an indicator of economic progress (World Economic Forum 2016, 51–52).

26. https://www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2015-v6.pdf
27. https://www.bcgperspectives.com/content/articles/innovation_manufacturing_innovation_imperative_in_manufacturing/?chapter=3
28. http://www.themanufacturinginstitute.org/~/media/6731673D21A64259B081AC8E083AE091.ashx
29. http://www.bloomberg.com/graphics/2015-innovative-countries/, http://www.bloomberg.com/news/articles/2016-01-19/these-are-the-world-s-most-innovative-economies, https://www.bloomberg.com/news/articles/2017-01-17/sweden-gains-south-korea-reigns-as-world-s-most-innovative-economies
30. http://www.cleantech.com/wp-content/uploads/2014/08/Global_Cleantech_Innov_Index_2014.pdf
31. http://www2.itif.org/2016-contributors-and-detractors.pdf, http://www2.itif.org/2016-contributors-and-detractors-executive-summary.pdf?_ga=1.249958406.127216268.1464961189
32. The seven factors are R&D intensity, manufacturing value added, productivity, high-tech density, tertiary efficiency, researcher concentration, and patent activity.
33. http://www.cleantech.com/wp-content/uploads/2014/08/Global_Cleantech_Innov_Index_2014.pdf, page 3.
34. http://www.cleantech.com/wp-content/uploads/2014/08/Global_Cleantech_Innov_Index_2014.pdf, page 10.
35. Haas further identifies joint policy enterprise as criteria for epistemic community (Haas 1992). This might apply in the field of good governance, where the actors are often explicitly committed to governance reform. However, in the domain of university rankings the motivations for creating the figures are less clear.

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6

From Global to Local: Regional- and City-Level Alternatives to Global Rankings

Introduction

Global rankings have been criticized for their scope and level of assessment. Most notably, there have been regional alternatives to challenge the existing rankings. As in the case of methodological critique of aggregation (see previous chapter), we see changes in the producers of indicator knowledge as new players enter the field. Also, here the indicators are increasingly specialized and differentiated in terms of focus. We identify the rise of regional rankings in all policy domains observed. The regional alternatives are most visible in higher education and competitiveness, where innovation assessments and city rankings have also appeared to challenge the previous comparative assessments.[1]

On the one hand, the regional rankings can be understood in the context of a global spread of numerical assessment, which is now reaching the regional and city levels. Governments and transnational actors such as the European Commission are also adopting the logic of evaluating their performance by indicators, or are at least more receptive to this kind of information. On the other hand, the rise of regional rankings can be understood as a politicization of global rankings. The results obtained from the global rankings can be highly stigmatizing for developing

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countries, potentially even influencing their eligibility for aid and loans or ability to attract foreign direct investment. In addition, the ratings also resonate with national or regional identities, where there may be major tensions between national self-understanding and the results of global measurements. The measurements also tend to echo the divisions and inequalities between the global South and advanced industrial countries. The attempts to create regional rankings tend to follow these lines, as they are often more sensitive toward the needs and challenges of developing countries.

The regional- and city-level measurements of competitiveness and innovation highlight the concern over ones' performance that many governments now share. However, there is also increasing awareness that the different aspects of competitiveness and innovation tend to privilege institutional arrangements that also stem from certain cultural and ideological premises. This can lead to attempts at improving their methodology or providing alternative data that would better fit local realities. But again, there is the instrumental aspect of providing measurements that directly assess the local conditions for innovation in a specific region or the performance of cities instead of nations. The subnational measurements of innovation and competitiveness highlight another shift in the global measurements, as they stress the importance of innovation hubs and cities as drivers of economic competitiveness. But they also indicate a change in the very thinking of competitiveness, where the focus is shifting from good governance and sound institutions to the institutional aspects of innovativeness. Knowledge and education remain at the heart of the subnational measurements of competitiveness and innovation. There is also very little change in the underlying premises of these measurements compared to the previous global indicators.

University rankings focus on higher education institutions rather than national systems and as such cannot fully assess regional differences in higher education. Yet the rankings have strong geographical implications, showing for instance European, African, and Latin American universities, among others, in questionable light as they are underrepresented among the top-ranked institutions. This has been a particularly pressing policy concern in Europe, but universities in other relatively poorly performing regions are also picking up the discourse of world-class university

and global higher education (Salmi 2009). Competition as political imaginary for higher education is reaching even those countries whose academic institutions are not being ranked globally (Kamola 2014).

One aspect of global rankings that is equally important for their political message and instrumental usefulness is the question of who gets ranked. This is a particularly pressing concern in the global university rankings that, depending on the ranking, include some 400–700 best performing universities, leaving most of the world's universities unmentioned. Being subjected to external numerical assessment is becoming an issue of prestige. This makes the demand for regional rankings even more pressing.

The university rankings have come to serve as a bridge between global and regional measurements. As innovation hubs are often centered on higher education institutions residing in metropolitan areas, the university rankings and their methodology become a logical element in the new subnational measurements of competitiveness and innovation. On the whole, the rankings of competitiveness, innovation, and higher education are closely aligned. This is also apparent when comparing the results of various rankings. We will begin with the regional measurements of innovation and competitiveness, now also reaching cities, and then move to discuss the shift from global to regional university rankings.

Ranking Competitiveness and Innovation of Cities and Regions

The rankings of competitiveness and innovation have an increasingly regional flavor, focusing on specific innovation environments and cities (Tables 6.1 and 6.2). They include assessments of knowledge, talent, and human capital. Table 6.1 shows selected subnational competitiveness assessments. When we look at their producers, we see that there are a lot of newcomers to the field of measurement, along with the World Economic Forum (WEF), which has produced a prominent global ranking already earlier. There are also other recognized authorities on economic information among the producers of city rankings on competitiveness, most notably the Economist Intelligence Unit. Other organizations that produce

Table 6.1 Selected subnational competitiveness assessments

	Worldwide Centers of Commerce Index[2]	Rich States, Poor States[3]	A.T. Kerneys Global Cities[4]	Global Power City Index[5]	EU Regional Competitiveness Index[6,7]	Hot Spots 2025[8]	The Startup Ecosystem Report[9]	The Competitiveness of Cities[10]
Institutions	MasterCard	American Legislative Exchange Council (ALEC)	A.T. Kerney	The Mori Memorial Foundation	Joint Research Centre	The Economist (Intelligence Unit)	CrunchBase, Compass	WEF
Years	2007–2008	2007–	2008–	2008–	2010, 2013, 2016	2013	2012, 2015, 2017	2014
What is assessed?	"Leading global cities and their instrumental role in driving the global economy"	Competitiveness of states in the United States	City performance and outlook	City "magnetism"	Competitiveness of regions (NUTS 2)	City competitiveness	Startup ecosystems or "a metropolitan city or geographic area with a shared pool of resources"[11]	City competitiveness
Units	75 cities	US states	125 cities	40 cities	Regions in the EU	120 cities	40 ecosystems, but results are reported for a top 20	33 cities
What is assessed?	The assessment focuses on what factors constitute a thriving center of commerce	Current economic performance and economic outlook.	A combination of "Current performance" and "Future potential"	"Comprehensive power which allows [cities] to attract creative individuals and business enterprises from every continent and to mobilize their assets in securing economic, social, and environmental development."[12]	Competitiveness as "the ability to offer an attractive and sustainable environment for firms and residents to live and work"[13]	Competitiveness as the "ability to attract capital, businesses, talent, and visitors"	Ecosystems assessed on several factors, such as performance of the startup ecosystem.	Competitiveness as "the set of factors—Policies, institutions, strategies and processes—that determines the level of sustainable productivity of a city".[14]

(*continued*)

Table 6.1 (continued)

	Worldwide Centers of Commerce Index[2]	Rich States, Poor States[3]	A.T. Kerneys Global Cities[4]	Global Power City Index[5]	EU Regional Competitiveness Index[6,7]	Hot Spots 2025[8]	The Startup Ecosystem Report[9]	The Competitiveness of Cities[10]
Type of assessment	Index and ranking	ALEC-Laffer State Economic Competitiveness Index[15] State profiles	Comprises two indices (ranks and scores):[16] Global Cities Index (GCI) Global Cities Outlook (GCO)	Index and rankings profiles	Index and ranking	Index Benchmarking competitiveness at present and in the future (2025)	Global Ecosystem Index The index is designed enable informed strategic decisions of stakeholders (investors, entrepreneurs, policy makers)[17]	Cases
Assessment criteria's	Seven dimensions:[18] 1. Legal and political framework 2. Economic stability 3. Ease of doing business 4. Financial flow 5. Business center 6. Knowledge creation and information flow 7. Liveability 43 indicators and 74 subindicators	Economic Outlook Ranking (15 indicators, which all can be "influenced by state lawmakers through the legislative process"[19]) Economic Performance Ranking (3 indicators)	GCI: 1. Business activity 2. Human capital 3. Information exchange 4. Cultural experience 5. Political engagement GCO: 1. Personal well-being 2. Economics 3. Innovation 4. Governance	Six functions 1. Economy 2. Research and development 3. Cultural interaction 4. Liveability 5. Environment 6. Accessibility	11 pillars of competitiveness with a total of 73 indicators	8 thematic categories: 1. Economic strength 2. Physical capital 3. Financial maturity 4. Institutional character 5. Human capital 6. Global appeal 7. Social and cultural character 8. Environment and natural hazards	Five major components[20]: 1. Performance 2. Funding 3. Talent 4. Market Reach 5. Startup experience	Taxonomy of four mutually interacting factors:[21] 1. Institutions 2. Policies and regulation of the business environment 3. Hard connectivity 4. Soft connectivity

(*continued*)

Table 6.2 Selected regional and subnational innovation rankings

	European Innovation Scoreboard (EIS)/ Innovation Union Scoreboard[22]	Global Innovation 1000[23]	Innovation Cities Index[24]	Top 100 Global Innovators[25]	Top 100 Innovative Universities[26]	Top 25 Global Innovators—Government[27]
Institutions	The European Commission	PwC and Strategy&	2thinknow	Reuters & Thomson Reuters Intellectual Property & Science From 2016 Clarivate Analytics	Reuters & Thomson Reuters Intellectual Property & Science	Reuters & Thomson Reuters Intellectual Property & Science
Year	2001–2008/2008–	2005–	2007–	2011–	2015, 2016	2016, 2017
What is assessed?	Country or regional innovation performance	Flows of R&D spending among companies and countries[28]	Cities potential as innovation economies	Innovative companies based on patent and citation data[29]	Ranking of universities based on a series of proprietary patent and scientific-literature-based metrics.[30]	Identifies and ranks the publicly funded institutions advancing science and technology[31]

(*continued*)

Table 6.2 (continued)

	European Innovation Scoreboard (EIS)/ Innovation Union Scoreboard[22]	Global Innovation 1000[23]	Innovation Cities Index[24]	Top 100 Global Innovators[25]	Top 100 Innovative Universities[26]	Top 25 Global Innovators—Government[27]
Units	EU member states/ regions	1000 largest companies around the world in terms of R&D spending	445 cities	Large amount of units (companies) gradually narrowed down to a top-100 listing	More than 500 organizations eventually narrowed down to 100 universities	More than 500 organizations eventually narrowed down to 25 government-run or -funded research organizations
Type of assessment	Innovation index	Mainly mapping but includes rankings	The index and report are part of a wider set of commercial products aimed at growing the innovation opportunities of cities	Ranking	Ranking	Ranking

(*continued*)

Table 6.2 (continued)

	European Innovation Scoreboard (EIS)/ Innovation Union Scoreboard[22]	Global Innovation 1000[23]	Innovation Cities Index[24]	Top 100 Global Innovators[25]	Top 100 Innovative Universities[26]	Top 25 Global Innovators—Government[27]
Assessment criteria	Enablers • HR • Open, excellent research systems • Finance and support Firm activities • Firm investment • Linkages and entrepreneurship • Intellectual issues Outputs • Innovators • Economic effects	Based on R&D spending	3 factors: cultural assets, human infrastructure, and networked markets 31 segments and 162 indicators	Criteria linked to patents as a proxy for innovation.[32] Patent and citation data assessed across four main criteria: • Volume • Success • Globalization • Influence	9 criteria related to articles in scholarly journals and patent applications filed by the institution	9 criteria related to articles in scholarly journals and patent applications filed by the institution

such measurements are mostly private companies and consulting firms (MasterCard, A.T. Kearney), business information providers (CrunchBase, Compass), and nonprofit organizations (the Mori Memorial Foundation, American Legislative Exchange Council). The only public organization included is the Joint Research Centre, the EU's science and knowledge service.

The first subnational competitiveness measurement, the Worldwide Centers of Commerce Index by MasterCard, was published in 2007–2008 but contains many ideational elements that later feature in other sets of indicators. As we saw in the previous chapter, the prominent global measurements of competitiveness, most notably by the WEF, have mostly gone unchallenged, but the regional- and city-level measurements of competitiveness started to emerge in 2007, somewhat unobtrusively, and the development continued in 2008 with the appearance on the scene of A.T. Kearney and the Mori Memorial Foundation. These were then shortly followed by the EU regional competitiveness index (2010), Hot Spots 2025 (2013), and Competitiveness of Cities report (2014). As such they have come to supplement the earlier measurements of competitiveness, but now also provide a broader context for analyzing higher education and academic research.

There are also borderline cases in the competitiveness measurements, such as the US specific measurement Rich States, Poor States by American Legislative Exchange Council (ALEC). While its inclusion on this list can be faulted for its single country focus, it serves to demonstrate how the early subnational competitiveness measures have evolved. Launched in 2007, this ranking measures competitiveness of states in the United States. The Startup Ecosystem Report (first published 2012) by Crunchbase and Compass measures startup ecosystems referring to metropolitan cities or geographic regions with shared pool of resources. This shows a novel focus in the fabric of competitiveness, namely the ecosystem of various actors, both private and public. While these measures bear similarities—particularly in conceptual terms—to the selected subnational competitiveness assessments, they are nevertheless more limited in scope than, and not necessarily fully comparable to, the other indicators. We nevertheless list them here as examples.

Table 6.2 shows selected regional and subnational innovation rankings. The European Union's (EU's) Innovation Union Scoreboard was published already in 2001, in the wake of the EU's Lisbon strategy (see Chap. 3). Now published under the title of the European Innovation Scoreboard, it now also includes other European countries outside the EU.[33] The annual report also contains a brief section on the global standing of the EU as a bloc vis-à-vis its competitors such as the United States and the BRICS countries (i.e. Brazil, Russia, India, China, and South Africa) (European Commission 2016).

There are also new innovation indexes that focus specifically on cities, such as the Innovation Cities Index, published by 2thinknow, which calls itself the "world's first innovation agency".[34] The Innovation Cities Index was first launched in 2007, measuring "cities potential as innovation economies". This currently measures 445 cities globally and provides a broad overview of their standing against each other. The index and the report are part of wider sets of commercial products that 2thinknow provides its paying customers.

Table 6.2 also contains indicators that are difficult to classify. Global Innovation 1000 measures the world's 1000 largest companies in terms of their R&D spending. However, the data is grouped into regions and countries. In similar fashion, the Thomson Reuters Top 100 Global Innovators launched in 2011 measures private companies' innovativeness based on patent and citation data, but the results are also presented according to regions and countries.[35] Within the same series, Top 100 Innovative Universities (since 2015) and Top 25 Global Innovators Government (since 2016) measure the innovation capabilities of universities and government research institutions, bordering on university rankings. The Top 100 Innovative Universities measures the innovativeness of higher education institutions, making it hard to classify the measurement as a university ranking or a measurement of innovation. The government innovators are public research organizations, which in the Top 25 report are again analyzed under regions and countries (Reuters 2017). In a similar fashion, the SCImago ranking (see Chap. 5) not only ranks universities but also lists government research institutions and research-focused health and private institutions.[36]

These cases of innovation indicators show the difficulty of classifying measurements, as they increasingly cross the conceptual categories and levels of measurement. There are also plenty of innovation indexes that focus on cities or companies that are not international in character and so are left out of the above classification.[37] On the whole, it is difficult to distinguish between measurements of innovation and competitiveness, as they stand conceptually very close to one another, as we see below. But let's first look at how these knowledge products are promoted by their producers, many of whom are entering the global field of measurement for the first time.

Entering the Field of Measurement

To enter the field of knowledge production, the organizations again must make a case for a specific need for their regional- and city-level indicators. This is particularly apparent with competitiveness indicators. When we look at the argumentation strategies of the contenders, we see repeated references to "urbanization" with future implications. Already in 2008, MasterCard identified urbanization as a global process that demands new types of measurements focusing on cities. This is cited as a motivation for developing the *Centers of Commerce Index*. In 2013, the Economist Intelligence Unit argued in the executive summary of its *Hot Spots 2025* ranking for the centrality of cities in the global economy (The Economist Intelligence Unit 2013, 2).[38] It refers to urbanization as a future development that warrants a measurement focusing on cities. Also A.T. Kearney's *Global Cities* measurements are promoted with the same rationale—urbanization requires measurements of its own (A.T. Kearney 2015, 1).[39] This again shows the dynamic of field development in measurements, where the perceived limitations of previous figures enable new actors to enter the field.

> MasterCard developed the Centers of Commerce Index after recognizing a notable milestone in global urbanization: *In 2006, for the first time in human history, more people lived in cities and towns than in the rural countryside.* In fact, a recent listing of the world's urban centers indicates that there

> are 161 urban regions containing 2.5 million or more people—together encompassing a population larger than that of 97 of the world's countries" […] "*Together, these trends, insights and statistics called for a new method of understanding how global cities connect markets and impact the world economy.* (Mastercard 2008, 1.) (emphases added)

The rise of subnational competitiveness indicators can also be read as a critique of the existing global rankings on competitiveness, where the focus on countries as units of analysis has come to overlook the real actors, cities. The new type of regional and city rankings can be interpreted as having challenged or complemented the existing measurements. This development has created competition for the WEF, which has hitherto enjoyed a relatively unassailable position as *the* expert organization on global competitiveness as the producer of the Global Competitiveness Index. It is therefore interesting to note that the WEF started to produce an assessment on city competitiveness in 2014. In the case of subnational measurements, the point of critique has been the scope of measurement that has so far been on a global level. The WEF outlines its new city assessment in the 2014–2015 Global Competitiveness Report, depicting it as "recognition" of "other geographical levels" (World Economic Forum 2014a, 4).[40] Again, the grand narrative of urbanization is reproduced by the WEF in its *Competitiveness of Cities* report (World Economic Forum 2014b, preface).[41]

The discourse on urbanization speaks for a path-breaking development that concerns the future. But there are also references to the past. The historical narratives of cities and the political imaginaries of the global economy are evoked by knowledge producers when they advocate a new mind-set for approaching competitiveness and innovation, which is now seen in the context of cities, not states. The political imaginary of competition now also encompasses the cities that are competing with one another like nation-states. The references to history and tradition also make the case for change, pointing to historical times when cities were drivers of the global economy. This makes the apparent link between the perceived contemporary challenges of city competitiveness and urbanization in the past. Such use of history evokes invented traditions that provide seeming help and horizons of expectations for navigating the

uncertain future (Hobsbawm 1987; Koselleck 2004), as the extract from a WEF report demonstrates. Moreover, in the current imaginaries of global cities, urbanization is conflated with competition (The Mori Memorial Foundation 2015, preface; Kangas 2017).[42] This links to the theme of subjectification (see Chap. 2), where cities are identified as hotbeds of innovation, now in competition with each other.

> *For most people, the map of the global economy that comes to mind is of nation states* interconnected through flows of trade, capital, people and technology. However, before the ascendancy of the Westphalian nation state in 1648, the primary political, economic and cultural unit was the city. *An alternative map of the global economy comes to mind: one of cities* connected across land borders, seas and oceans through the exchange of goods and services, foreign direct investment, migrant and short-term workers, and border-hopping technology. (World Economic Forum 2014b, 7.) (emphasis added)

The organizations that produced country rankings in the past now need to position their new city-level indicators vis-à-vis their previous knowledge products. This becomes turned into an argument over expertise. For example, the WEF reminds us of its eminent position in the field of measuring competitiveness on national level, which lends it credibility as an expert organization, now also providing alternative data to its country ranking. The WEF's Competitiveness of Cities report based on case studies is deemed as complementary to the existing assessments (also by the WEF), providing more detailed accounts of the same development. A.T. Kearney offers a similar line of argument, as after being a reliable source on country information for long it now opts to produce a *Global Cities* index (A.T. Kearney 2015, 6).[43]

> *The World Economic Forum has been studying competitiveness for over 30 years* by focusing on the assessment of the productive potential of countries in The Global Competitiveness Report series. *To complement this strand of work*, the Forum created the Global Agenda Council on Competitiveness. […] In 2012, Council Members identified the leadership role that cities are taking in stimulating the competitiveness of countries and regions as a key issue for further study. (World Economic Forum 2014a, preface.) (emphasis added)

In effect, the organizations that have produced country rankings in the past are sustaining the potential critique of missing out grassroots development by producing new assessments on the competitiveness and innovation of cities. They argue for a continuity of their work, which also seems justified in conceptual terms, as the comparative assessments on city level mostly share the premises and causal assumptions of previous global rankings. Interestingly, A.T. Kearney's Global Cities report highlights the growing availability of city-level data as a motivation for engaging in this activity (A.T. Kearney 2015, 6). This is also a major factor behind the emergence of new figures, as they are mostly composite indicators that build on various data sources.

Indeed, in just a few years many organizations have shifted their focus toward measuring cities. Despite the abundant referencing to the historical processes of urbanization, there is also undoubtedly great awareness of other actors' activities in the field. Although the measurements have emerged over a relatively short period, they are still able to argue for the novelty of their products and not necessarily compelled to enter the methodological critique of existing products. As such, the argument for a need to focus on cities implies a critique of the country rankings. At the same time, the new rankings in many ways echo the previous ideas and concepts of competitiveness. One aspect that is on the rise is the role of knowledge and education.

Measuring Knowledge, Competitiveness, and Innovation: Conceptualization and Concerns Over Data and Methodology

As the brief overview of the assessment criteria shows (see Table 7.1), the regional measurements of competitiveness now contain elements such as "human capital" (Hot Spots 2025, A.T. Kearneys Global Cities), "soft connectivity" (Competitiveness of Cities), "talent" (The Startup Ecosystem Report), "information exchange and innovation" (A.T. Kearneys Global Cities), "research and development" (Global Power City Index), and "knowledge creation and information flow" (Worldwide Centers of Commerce Index). These broad categories highlight knowledge and education as drivers of economic competitiveness.

The relatively young nature of city rankings becomes apparent when we look at how the above categories have been conceptualized and what data and methodology have been used. There is a certain resemblance to the early measurements of good governance, which were composite indicators, using data from various sources (see Chaps. 4 and 5). The city-level measurements mostly use available public data sources, instead of producing data themselves. The city rankings are also criticized for using country data in the absence of city-level data (Leff and Petersen 2015).[44] In the absence of data, the rankings also keenly borrow data from one another. For instance, the data sources for A.T. Kearney's 2014 Global City Index are shortly summarized as a collection of available data, including other rankings (Leff and Petersen 2015, 12). In the 2015 and 2016 reports, it is merely noted that "sources are derived from publically available city-level data" (A.T. Kearney 2016, 9). In addition, the firm acknowledges in a general disclaimer "in the few cases when city-level data is not available, country-level data is used" (ibid.).

The Human Capital dimension, referring to education levels, comprises 30% of A.T. Kearney's Global Cities Index. The 2014 report opens the Human Capital dimension by stating that it "evaluates a city's ability to attract talent based on the following measures: size of foreign-born population, quality of universities, number of international schools, international student population, and number of residents with university degrees" (A.T. Kearney 2014, 14). The quality of universities subindicator has a clear ideational link to university rankings, but the exact data source is not named. In addition, the index contains a dimension of Information Exchange (15% of the rank score), meaning access to information through Internet and other media sources (A.T. Kearney 2015). Ideationally, this links back to the measurements of transparency presented in the previous chapter. Concerning the indicators used, the 2014 data appendix states "information exchange examines how well news and information circulate within and outside the city, based on: accessibility to major television news channels, Internet presence (capturing the robustness of results when searching for the city name in major languages), number of international news bureaus, freedom of expression, and broadband subscriber rate" (A.T. Kearney 2014, 14). While the data source for freedom of expression is not named, there is at least a clear ideational link to the measurements of Freedom House (see previous chapter).

The governance dimension of the Global Cities Outlook contains indicators on transparency, quality of bureaucracy, and ease of doing business, which also bear close ideational resemblance to governance indicators discussed in the previous chapter, though the data sources are not named in the report. In its discussion of the 2016 result on Global Cities Outlook, A.T. Kearney provides a link to Global Innovation Index (GII) as further information on global innovation. The linked document, the 2015 GII report, welcomes A.T. Kearney as its new Knowledge Partner, also indicating the close collaboration between the different knowledge producers in the field (Cornell University, INSEAD and WIPO 2015, preface).

The Mori Memorial Foundation's Global Power City Index is divided into six 'functions'[45], one of which is Research and Development. As we show in Table 6.3, this function of the index is further divided into three indicator groups: Academic Resources, Research Background, and Research Achievement. When we look at the indicators and their sources, we see heavy referencing of existing country data as well as global university rankings. The Times Higher Education's (THE's) World University Rankings is used as a source for the "World's Top 200 Universities" indicator (see Academic Resources), but the THE rankings subscores also provide data for the "Readiness for Accepting Researchers" indicator in the Research Background indicator group, though this is also complemented by questionnaires. Also, the UNESCO country data is used in assessing both number of researchers (Academic Resources) and research and development expenditure (Research Background). The OECD's Programme for International Student Assessment (PISA) average science and math literacy country scores are used for the cities residing in that country. The Research Achievement indicator Number of Winners of Highly Reputed Prizes bears great resemblance to the Academic Ranking of World Universities (ARWU; Shanghai list) subindicators that count winners of Nobel Prizes and Fields Medals, thought the measure by Mori Memorial Foundation includes three other science and technology awards. The number of patents—a relatively standard element in assessments of innovation—is again counted by using an estimate based on country data.

Table 6.3 Global Power City Index: Indicators and Sources of the Research and Development function (Source: The Mori Memorial Foundation 2016, 356–357)

	Academic resources	Research background	Research achievement
Indicators and sources	1. *Number of Researchers*: • Estimate for the city based on the UNESCO Institute for Statistics' country data. 2 *World's Top 200 Universities:* • Ranking score of universities located in the city, which are in the top 200 of Times Higher Education's World University Rankings	1. *Academic Performance in Mathematics and Science:* • OECD's PISA average science and math literacy score for the country in which the city is located 2. *Readiness for Accepting Researchers*: • THE World University Ranking International Outlook score and Research score for each top-400-ranked university located in the city • Questionnaires for residents and workers and for experts in the target cities. 3. *Research and Development Expenditure:* • Estimate for the city based on the UNESCO Institute for Statistics' country data	1. *Number of Registered Industrial Property Rights:* • Number of patents in the city estimated from country figures. 2. *Number of Winners of Highly Reputed Prizes*: • Number of recipients within the last ten years of five major science and technology-related awards (Nobel Prize, Balzan Prize, Crafoord Prize, Nevanlinna Prize, and Fields Medal). 3. *Interaction Opportunities between Researchers*: • Number of academic conferences in the city listed on Conference Alerts.

The above assessment shows how the new city-level measurements are struggling to get data on cities and are compelled to use country data instead, or at least to make estimates based on it. This further solidifies the links between the previous measurements and the emerging city

indicators, which in conceptual terms alone are closely aligned to the premises and causal and normative beliefs standing in the field of global ranking. Closest to the analysis on "institutions" or "governance", the 'Economy' function of the Global Power City Index also draws sources from existing indicators such as World Bank's Ease of Doing Business, Moody's credit rating, Heritage Foundation's Index of Economic Freedom, and the Global Talent Competitiveness Index by INSEAD (see Chap. 5).

The WEF's Competitiveness of Cities builds on a four-part taxonomy with "soft connectivity" as one of its parts. Education is named as "the ultimate soft connectivity" (World Economic Forum 2014a, 5), with education and training systems as one of its highlighted elements (World Economic Forum 2014b, 13). Though the Competitiveness of Cities contains case studies instead of quantitative measurements, its comparisons on comparing education and training systems are conceptually aligned with the standing measurements on higher education. Understood broadly as social capital, another element of soft connectivity is "open society".

> [Soft connectivity] concerns an atmosphere of tolerance, free expression and cosmopolitanism, all characteristics of what the philosopher Sir Karl Popper called the "open society". Today, they are highly conducive to the generation and dissemination of ideas, and to entrepreneurship, innovation and economic growth, just as they were in cities at the heart of the pre-modern European and Asian "miracles". (World Economic Forum 2014b, 13.)

The above reference to the open society taps onto the global drive for transparency as well as attempts to measure it (see Chaps. 3, 4, and 5). Again, we see references to the past (Hobsbawm 1987), where Karl Popper leaps over time to make an argument for the future and where the developments of premodern European cities and Asian miracles of the past are evoked as evidence on how to tackle the current global urbanization. This is problematic as it disregards the context of ideas and draws intellectuals from the past into debates that they originally were not part of (Skinner 1969; Koselleck 2004). The above use of history also

highlights subjectification, where the measurements of cities not only render them governable but also link identities to proposed action (cf. Kangas 2017). This becomes apparent in the WEF 2016 White Paper that highlights policies that can be put in place to enhance competitiveness of cities in connection to global value chains (World Economic Forum 2016).

The Regional Competitiveness Index of the EU measures the competitiveness of regions within EU member states based on the so-called NUTS 2 regional categories. In terms of methodology, the Regional Competitiveness Index "builds on the approach of the Global Competitiveness Index by the World Economic Forum" (Paola Annoni, Dijkstra, and Gargano 2017, 2), and aims for a holistic perspective. Referring to conceptual critique of applying the concept of competitiveness to nations and regions, the EU defines regional competitiveness as "the ability of a region to offer an attractive and sustainable environment for firms and residents to live and work" (Paola Annoni et al. 2017, 2). In its measurements of national institutions, the EU's Regional Competitiveness Index uses data from the World Bank's Worldwide Governance Indicators (all six dimensions), the World Bank's Ease of Doing Business scores for the countries measured, as well as selected (eight) indicators from the WEF's Global Competitiveness Index.[46] The measures for education are mostly from Eurostat, though OECD PISA results are also used for basic education. The indicators on innovation are predominantly coming from Eurostat, except for scientific publications indicator that is based on Scopus data. Also two indicators from the EU's Regional Innovation Scoreboard (see below) are borrowed by the EU Regional Competitiveness Index. In terms of the sources of the EU index on regional competitiveness, it contains a lot of EU-level data together with selected indicators from existing global rankings. While it is ideationally closely aligned to the earlier measurements, it provides more detailed data on the region.

The measurements of regional innovation (see Table 7.2) are conceptually close to the measurements of competitiveness, containing also elements from global university rankings. The European Innovation Scoreboard contains three main types of indicators, divided further into eight innovation dimensions. Of these, the Enablers is most relevant to knowledge

governance, measuring main drivers of innovation external to companies, meaning the innovation environment. The Enablers are divided into three dimensions: (1) human resources, (2) open, excellent, and attractive research systems, and (3) finance and support. The human resources dimension measures the availability of educated workforce using Eurostat data on the number of new doctorate graduates per 1000 population (aged 25–34), percentage of population with tertiary education (aged 30–34) and percentage of youth (aged 20–24) that have attained at least upper secondary-level education. The finance and support dimension of the enabling environment contains figures on R&D expenditure and venture capital investment (sources Eurostat and Invest Europe). The "Open, Excellent, and Attractive Research Systems" dimension used from 2016 onwards Thomson Reuters' Web of Science data measuring international scientific copublications (per million population) and the share of scientific publications among the top 10% most cited publications worldwide.[47] This marks a change from previous years, when the 2015 European Innovation Scoreboard still used Scopus data by Elsevier. The above data producers also provide data for global university rankings.[48]

The Innovation Cities Index by the 2thinknow builds on three factors: cultural assets, human infrastructure, and networked markets, which are further divided into 31 segments and 162 indicators. Its list of standard indicators shows apparent similarities between the measurements of city competitiveness, though there are also other elements that measure "general livability". Knowledge and education also feature prominently in the indicator, particularly visible in the Education, Science & Universities segment, which has indicators on different types of education programs (arts and business education), science, and engineering facilities and competitive position of city, and university commercialization in terms of technological innovations. Also, the size of the student population is counted, as is the "breadth of university offerings" in the city. However, the data sources are not specified and the methodology is a proprietary product that is sold to customers. Also in the context of knowledge governance, the Government & Politics segment contains many ideational elements similar to the good governance indicators, stressing government responsiveness, transparency, open data, and eGovernment initiatives, but again the sources are not named.

In general when discussing its methodology, 2thinknow lists seven data types, including statistics, commercial sources, rankings, classifications, algorithm based data, index scores, and estimates. The description of these data types underlines the role of 2thinknow in data manipulation and weighing data when generating the index. Concerning rankings as a data type, the organization notes "2thinknow indicators rely on rankings for universities, cities, businesses and industries that are then adapted to be city-level data. 2thinknow standardize the rankings from this multitude of sources so you can compare rankings at the city level."[49] It is further specified that "[w]ithout 2thinknow process of standardization of rankings for City Benchmarking Data, data may not be comparable across cities. We also take national rankings and through our standard process acclimatise and adapt them to city indicators."[50] The Frequently Asked Questions pages of the index also contain a short note concerning the aggregation of data, noting that "[2thinknow aggregates] others data, applying unique processes to standardize and benchmark it. We have in the past used city surveys in a limited capacity. We can sometimes further breakdown aggregate data into more detail using ratios and algorithms."[51]

The above statements highlight the issues of using national-level data in city-level measurements, but also the limited public documentation of the measurements. While other indicators' producers often perceive this as a potential limitation of their measurement, the 2thinknow has turned the manipulation and compiling of various types of data into city-level information into its commercial product. The company says explicitly that detailed information on data and methodology is restricted to paying customers: "[o]ur methodology is proprietary and subject to commercial restrictions".[52]

The university rankings and their methodology are conspicuous in the measurements of innovation. This is apparent in the innovation measurements of Thomson Reuters, the current producer of the THE ranking, and Clarivate Analytics (formerly known as Thomson Reuters Intellectual Property & Science). Building on patent data, the Top 100 Global Innovators measures the innovation performance of organizations in terms of volume, success, globalization, and influence of innovations patented by the organization. The use of patent data as a proxy for innovation is

commonplace for the measurements of innovation and competitiveness, but the Top 100 Innovative Universities[53] and Top 25 Global Innovators–Government go further by combining data on research output with patents. Innovativeness is assessed against nine criteria related to articles in scholarly journals and patent applications filed by the university or research institution analyzed. The data is based on Thomson Reuters Web of Science and other in house measures of patents by Thomson Reuters' sister company Thomson Reuters Intellectual Property & Science.

This example shows how the regional measures of innovation are increasingly difficult to distinguish from rankings of universities, as they use similar bibliometrical data and methodology, though combined with patent information. It is also interesting to note that the Thomson Reuters Top 100 Innovative Universities measurement has also led to two further measurements: Europe's Most Innovative Universities[54] and Asia's Most Innovative Universities.[55] These regional rankings are based on the Top 100 Innovative Universities ranking, with slight modification of the methodology. They are as such part of another development, namely the shift toward regional university rankings that is discussed below.

To summarize, the measurements on competitiveness and innovation are now very much aligned. They also in many ways overlap with the global university rankings, building directly on their results or using similar data and methodology.

Methodological Critique

Their limitations become apparent when we assess the regional-level measurements of competitiveness and innovation against the criteria of second-generation indicators (see Chap. 5).[56] Concerning the transparency of measurements, there are major limitations in the documentation of data sources and weighting of data. Some data producers simply do not disclose this information or regard it as their proprietary product. We should stress that the organizations that have been producing indicators earlier are mostly documenting their data sources better, while some newcomers to the field provide very little information on their assessments. There are also apparent problems of data availability, as the regional-level

measurements often build on global-level measurements, either directly or as estimates based on them. The continuity over time might be a problem as many of the data sources are new and data from different years might be used. Also the quality and accuracy of data has great variation, with some indicators better than others.

In general, the EU measurements are by far the most qualitative ones, based mostly on Eurostat data. The other organizations providing regional indicators apparently lack similar data sources. Moreover, the new regional- and city-level measurements are not very specific in nature, as they often aim at making general assessments of very abstract concepts of innovation and competitiveness. In short, whereas the global indicators (see Chap. 5) are improving in the above terms, most of the measurements that have come to replace them on regional and city levels are suffering from the limitations that were previously identified in the global rankings, leading to their criticism.

This is somewhat surprising, as the closer geographical focus on cities would in principle allow the city rankings to adopt the principles of second-generation indicators aiming for a specificity of indicators. But the result is the opposite, as the city-level measurements are mostly composite indicators that often base their analysis on available country data. This is probably because their producers have limited resources to produce data themselves. Moreover, the second-generation indicators' demand on transparency of data sources and weighting of indicators resonates poorly with the business strategies of producers of city-level data that are private consultancies.

As we saw, the methodological critique has not been prominently used in the argumentation for producing alternative datasets in competitiveness and innovation on regional and city levels. Interestingly, when WEF publishes its Competitiveness of Cities report that is based on case studies, it distances itself from previous indicators on city competitiveness:

> The approach is qualitative and descriptive, based on case studies of individual cities around the world. *The intent is not to try constructing another index of city competitiveness*. Several are already available, such as the Global City Competitiveness Index of the Economist Intelligence Unit, A.T. Kearney's Global Cities Index, CityLab's Global Economic Power

> Index and the Mori Memorial Foundation's Global Power City Index. *With focused case studies for drawing useful comparisons and lessons, this report complements rather than replicates quantitative-based studies*. (World Economic Forum 2014b, 7.) (emphasis added)

The similar strategy of distinction has been used already in the context of first-generation democracy measurements, where organizations committed to comparative analysis opt for qualitative assessments to contrast prominent quantitative datasets (Beetham et al. 2002). It is important to note that while the global-level indicators are increasingly moving toward nonaggregated measurements, the city-level measurements produced at about the same time are mostly aggregated rankings. There is a certain similarity here with the early years of global ranking, where information sources were scarce, leading to exchange of information between the knowledge producers and use of aggregation as means for reducing "noise" in the data (see Chap. 5).

However, the issue of disaggregation has also recently been discussed in the context of city rankings on competitiveness. In 2015, the World Bank published a report on competitive cities, arguing that there is a growing consensus about their global importance (World Bank 2015, 19). The report stresses the significance of cities as subjects of analysis for competitiveness instead of countries. It also takes a closer look at the available measurements of city competitiveness and argues that the existing indicators have a rich country bias. Furthermore, the report states "A better answer comes from disaggregating the indexes and supplementing them with new data" (World Bank 2015, 37). This shows how the idea of the benefits of disaggregation and second-generation indicators is diffusing between different policy domains and levels of measurement.

Interestingly, though World Bank has been criticized for using aggregation in the global measurements of good governance—Worldwide Governance Indicators (see previous chapter)—it is now promoting disaggregation in measurements of city competitiveness.[57] The above criticism of aggregate figures could mark yet another expansion of indicators, namely the entry of disaggregated indicators comparing cities. In fact, the 2thinknow consultancy markets customized benchmarking to its clients with a perceptible similarity to the "mapping" user interfaces provided by

some index producers (for instance, U-Multirank or Actionable Governance Indicators). But bearing in mind the opacity of 2thinknow's Innovation Cities Index, this is not to be confused with a second-generation measurement.

The above report by the World Bank highlights different patterns for becoming a competitive city and distances itself from the mostly Western-dominated rank lists of cities, not only in its critique of ranking but also by presenting country cases from the global South (World Bank 2015, 23), which is tapping on a new demand for regional knowledge, as the BRICS countries in particular have been keen on seeing themselves being measured in the global rankings. For example, India's ranking in the GII (see Chap. 5) has been closely followed in the country (The Economic Times 2012). In 2016, a sudden jump of 15 places in the GII received great attention, as India's ranking had been declining in the past. The newspaper *The Economic Times* reports the 2016 results with a detailed technical description of the GII measurement that is described as "holistic" (Pulakkat 2016). There is an interview with one of the index developers Soumitra Dutta, accompanied by a close reading of the aspects measured by the indicators and how India fares in the different subindexes, such as the one based on the QS university ranking. This shows a keen reflexivity over the figures and detailed understanding of the different attributes of GII. In the reporting, India is mostly compared to China, highlighting the perceived need for tracking the development of peers and the most apparent competitors among the BRICS countries.

As reported by news media, in August 2016 the Indian Minister for Commerce and Industry Nirmala Sitharaman made a statement on modifying the methodology of the GII, so that it would better reflect "the needs and conditions existing in developing nations" (The Economic Times 2016). As one of the several items of potential collaboration, the Government of India proposed the coproducer of the GII, the World Intellectual Property Organization (WIPO), to open an external office in India. The above criticism shows the apparent dissatisfaction with the existing figures that, again, leads to calls for modifying the methodology. The attempt to revise the existing figures is also typical in the field development of governance measurements. This is also apparent from the announcement in 2017 of the planned India Innovation Index, made after the above criticism.

However, despite the criticism for existing figures, when a new data set is to be developed, the producers of existing indicators are the trusted partners. India Innovation Index would be a joint effort by WEF, WIPO, Cornell University, and the National Institution for Transforming India (NITI Aayog), aiming at measuring innovation in different states of India, with the GII pillars as a general outline of measurement (The Economic Times 2017a). When India Innovation Index was announced at the WEF's meeting at Davos, the Director-General of WIPO Francis Gurry was quoted as saying that his organization is very excited to collaborate on the India Innovation Index and hopes that the partnership would also provide new data for the GII. According to a WEF press release, the new index that is based on the GII "will be tailored to better reflect the ground reality of India and include metrics well suited to the Indian context" (World Economic Forum 2017). On launching the India Innovation Index in February 2017, the NITI Aayog claimed that the data collected for the new index helps to improve the existing "data gaps" in the GII, but also makes the basis for the new index that merges the GII indicators with India-specific data (The Economic Times 2017b).

The above accounts show reflexivity over the figures by the subjects of measurements. This is also apparent in the context of university rankings, where we witness a similar shift towards regional measurements. As the global drive for innovation and competitiveness reaches regional and city levels, there is now demand for even more detailed information on the performance of academic institutions. While the global university rankings in principle provide this information, they have serious limitations in terms of the number of universities covered. Indeed, only a fraction of the world's higher education institutions are included in the global comparisons of universities. This has also prompted a development toward regional alternatives for global university rankings.

Regional Alternatives for Global University Rankings

At present, there are about a dozen university rankings of global scope, produced by actors as diverse as university research centers (Shanghai Jiao Tong, Leiden, CHE, Taiwan), newspapers (THE), consultancies (QS, Thomson

Reuters), and international organizations (OECD, European Commission). However, the global university rankings only analyze the top 400–700 institutions (depending on the ranking). Most of the world's 18,000 academic institutions are left out (International Association of Universities 2014). In short, the rankings come to focus on a very limited number of higher education institutions, providing a very exclusive and unrepresentative perspective on what the world of higher education is. The institutions that are left out of the rankings suffer from the negative image of not being ranked.

A recent comparison of the 2013 results of ARWU, THES, and QS shows an apparent regional bias in the rankings (for further details, see Erkkilä 2016). In the ARWU ranking, there is a clear predominance of North American and European universities. Among the top 20 ranked universities, there are 17 institutions from North America and 3 from Europe. North American lead continues in the top 50 and top 100 categories of the rankings. However, the more institutions one includes in the ranking, this standing becomes less pronounced. When we compare the top 500 ranked institutions, there are more European Universities (200) than North American (173). By comparison, 90 Asian universities and 24 higher education institutions from Oceania were acknowledged in the 2013 ARWU ranking. There are only 9 South American and 4 African universities ranked to be among the top 500 institutions in the world.

The THE ranking (2013–2014) provides a similar picture (Erkkilä 2016). In the top 20, there are 16 institutions from North America and 4 European universities. North America's lead is clear in the top 100, but already among the top 200 there are more European than North American institutions. In the top-400-ranked institutions, there are 128 North American and 181 European universities. Similar to the ARWU, the THE ranking includes more European institutions in the top 400 than Northern American ones. There are 61 institutions from Asia and 24 from Oceania. Both Africa and South America have three universities in the top 500 institutions.

The QS ranking (2013–2014) covers 700 institutions, 162 of which are located in North America and which dominate the top 100 positions. Among the 700 institutions compared, there are 282 European institutions listed, which is a large number by comparison. Interestingly, there are also 165 institutions from Asia, slightly more than those from North

America. In the QS ranking, there are 44 South American and 11 African ranked institutions within the top 700 universities (Erkkilä 2016).

It is peculiar that the readings of the rankings tend to focus on the top 100, with little attention to the overall number of universities ranked. This makes it clear that we are indeed comparing individual institutions and not higher education systems. As noted in the theoretical framework, in the contemporary Western cultural climate, the optimal seems to have become the main benchmark instead of the "normal" or "average". This is particularly important, given that the idea of the "world-class research university" as the institution of greatest importance, as discursively constituted by the rankings, might actually be somewhat misplaced.[58]

There are also several ongoing projects to create regional university rankings that can be seen as a potential competitor for the global rankings. Most notably the BRICS countries have been a special focus for such regional initiatives. The QS consultancy and Interfax Group have been working on a specific BRICS university ranking since 2012 (QS 2013). Previously Webometrics had produced a specific ranking for the BRICS countries, with mostly Chinese universities in the top ten. The QS has also recently published a university ranking on the Arab region, where countries invest heavily in higher education (QS 2015).

The THE has also been active in the matter, arguing that the BRICS countries are punching below their weight in global rankings (Times Higher Education 2014b). It has since published rankings on Asian universities in 2013 and BRICS and Emerging economies in 2014 (Times Higher Education 2013, 2014a). There are also initiatives in Latin America to rank the universities of that region. While these rankings might provide little improvement in methodological terms, they carry a strong symbolic message, again highlighting political sensitivity over global rankings. The regional rankings evidently address the problem that most of the world's universities, particularly those in developing countries, are not ranked at all by the global rankings.

BRICS countries face the difficult question of either accommodating the global measurements and trying to compete in them or creating alternative ones. In Russia, the so-called 5-in-100 initiative aims at getting 5 Russian higher education institutions to rank within the top 100 in the major global university rankings. Though the achievability of the 5-in-100

initiative has been questioned (Marginson 2014, 15), its creation shows the prestige of global rankings. For Russia, the ability to compete in global education is an element in the effort to restore its position as a great power (Mäkinen 2016). However, within the discourse of global competition in higher education, there are also critical voices that deem the global university rankings as "alien" to the Russian tradition as they are based on the Anglo-American research university model (Mäkinen 2017).

This has also led to initiatives to make an alternative ranking of higher education institutions that would be Russian based (Mäkinen 2017). The idea for establishing an alternative ranking rests on the perceived peculiarities of Russian higher education system that is seen different from their global counterparts regarding several factors. Arguably, the research has mostly been traditionally conducted in the Russian Academy of Sciences, not in universities. Russian has been the predominant language for teaching and research, overlooked by the global rankings that focus on English-language publications. Moreover, Russian universities tend to focus on particular fields of research, which is likely to have a negative effect on their ranking in global assessments. (Mäkinen 2017, 18.) Initially proposed by the rector of Moscow State University (MGU), a Russian-based university ranking would arguably take better account of the peculiarities of the Russian higher education system; the initial criteria of the ranking, planned for 2017, would include "the role of the university in society, employment of graduates, employer review and the role of university for the region and culture, in addition to citations and recognition" (Mäkinen 2017, 19). The ranking would be "international" in scope, covering primarily universities from CIS countries and Europe.

There is a clear parallel to the logic of the European Commission that on the one hand has argued for the alarming state of European higher education based on the relatively poor ranking results, but at the same time has rushed to help launch a competing comparative tool (U-Multirank) that would "do justice" to European universities (see Chap. 5). The critique in the EU context bears similarities to the Russian one: work done in research institutes such as Max Planck and CNRS are not acknowledged and non-English-language publications are overlooked.

While the responses to either adopting or abandoning global rankings seem at odds with one another, they converge in that they highlight identity

and sense of tradition. While the global rankings allow the European Commission to evoke a notion of "European" higher education or "European" university ranking (Erkkilä 2014, 201), there seems to be a similar discourse on "Russian tradition" of higher education and "Russian" ranking. These references are in many ways to be interpreted as invented traditions (Hobsbawm 1987), where "traditions" are evoked as remedies to apparent future challenges. Somewhat surprisingly, this also helps to accommodate the novel transnational policy prescriptions. This links to our theoretical framework that is highlighting identity as an element in the process of subjectification where rankings are becoming effective as policy instruments.

By creating measurable and comparable objects, the indicators come to evoke political imageries that resonate with nationalistic or regional patterns of identification. The rankings also help to identify new peers in the global competition, be they the unlikely comparisons between Nordic countries and East-Asian Tigers (that are often ranked somewhat similarly) or among the BRICS countries. While the attempts at creating new indicators are seemingly a critical approach toward the existing rankings, they in effect come to further cement the use of ranking in global assessment of higher education. On a general level, this can be interpreted as an unintended consequence of ranking overall, where its ontological dimensions are reproduced rather than challenged.

The effort to develop new regional rankings as a response to global rankings does not address the underlying limitations of rankings in general. Like global rankings, regional rankings are often justified as providing the information necessary to help students and scholars to find their place in the global higher education context. However, rankings mostly fail to cover teaching and learning outcomes as an element of evaluation (Kehm 2014, 102–103). While rankings are often also defended as a means of providing accountability and ensuring that universities take into account social demands, they reduce higher education to the role of enhancing economic competitiveness, seeing research output as the key competitive advantage in global knowledge economy (Erkkilä & Piironen 2013, 10–11). This marks a striking shift from the traditional idea of academic researchers being primarily responsible to their peers in terms of scientific progress.

In short, the regional university rankings share the premises of the global rankings, providing only a mild contrast to the previous comparative assessments of higher education institutions. They consider the universities as the subject of measurements. This is noteworthy, because assessing different national systems would most probably give a dramatically different picture of global higher education. While the current rankings come to idealize the top institutions in the United Kingdom and North America, these regions would most likely not rank equally well if national higher education systems were compared instead of top institutions. Also, the regional rankings are in many cases produced by established ranking producers, providing no real alternative other than the scope of analysis.

As noted above, the rankings on city competitiveness and innovation now increasingly overlap with university rankings. Thomson Reuters Europe's Most Innovative Universities[59] and Asia's Most Innovative Universities[60] further blur the line between the innovation measurements and regional university rankings. They are based on the Top 100 Innovative Universities ranking (see above), with a slight modification in methodology. Indeed, countries—and now also regions and cities—are now being measured by dozens of indicators. Looking at the matter from the perspective of competitiveness, innovation, and higher education, there is now a whole range of measurements reaching from global to city level that now objectify knowledge governance as a policy concern for countries, innovation hubs, and cities.

Conclusions

As the measurements on competitiveness and innovation now concern regions and cities, the focus is increasingly turning toward the performance of higher education institutions that have a remarkable impact on the performance of regions and cities. Indeed, higher education institutions reside predominantly in urban environments, making them a logical element in the assessments of innovative and competitive cities. This is now reflected in their measurements of human capital, research and development, and talent.

The regional- and city-level indicators further enforce the shift toward measuring innovation instead of competitiveness. These measures are particularly intent on comparing cities, seeing them as hotbeds of innovation, rather than states. University rankings provide a logical bridge for the move. Mostly based in major urban areas, the higher education institutions measured by the standing global university rankings are used in the composite indicators of innovation, or their methodology is copied. As in the previous cases discussed above, we again see new actors entering the field with city-level measurements, while some of the established global index producers are also reassessing their focus.

In principle, the regional- and city-level measurements provide an alternative in terms of the locus of their analysis. Still we see no major changes in the conceptualization of competitiveness and innovation, but rather incremental changes. As in previous cases, to enter the field of ranking the actors adopt many existing practices and ideas prevailing in the field. Consequently, they further strengthen the established order instead of providing alternatives to it. While the policy feed may become less coherent and more regionally focused, the underlying ideas of economic competitiveness will remain dominant.

In methodological terms, it is interesting that the city-level rankings are not part of the second-generation indicator movement. In many ways, they would be ideally suited for this and the measurements would very much benefit from more specific analysis of institutions. Instead, they are predominantly composite indicators carrying most of the methodological problems that were earlier identified in the good governance indicators (see Chap. 5). It seems that the peculiarities of knowledge production are at least partially to blame here. Produced mainly by actors with limited resources, the city-level measurements are compelled to use the datasets available instead of producing it itself, as for example the use of country data in the Research and Development function of the Global Power City Index would indicate. Moreover, the opacity of indicators used is also partially linked to the business strategies of some of the producers.

As a result, the city-level indicators largely suffer from the similar problems that were identified in the early rankings of good governance. This

hampers their relevance as policy instruments, as they are hardly suitable for evaluation tools. This has not prevented such uses of these indicators, however, as we see in the next chapter. Overall, the role of knowledge is becoming more central for the measurements. As will be argued in the next concluding chapter, the indicators have helped to construct a global policy script on knowledge governance that traverses countries, regions, and cities.

Notes

1. There are also assessments on quality of governance addressing specific regions such as Africa and Latin America or groups of countries in transformation (by World Economic Forum, Bertelsmann Foundation and Mo Ibrahim Foundation).
2. http://www.mastercard.com/us/company/en/insights/pdfs/2008/MCWW_WCoC-Report_2008.pdf
3. https://www.alec.org/app/uploads/2016/04/2016-ALEC-Rich-States-Poor-States-Rankings.pdf
4. https://www.atkearney.com/research-studies/global-cities-index/2015
5. http://www.mori-m-foundation.or.jp/gpci/index_e.html
6. https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/eu-regional-competitiveness-index-rci-2013
7. http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf, page 25
8. http://www.citigroup.com/citi/citiforcities/pdfs/hotspots2025.pdf
9. http://www.businesslocationcenter.de/imperia/md/blc/service/download/content/the_global_startup_ecosystem_report_2015.pdf
10. http://www3.weforum.org/docs/GAC/2014/WEF_GAC_CompetitivenessOfCities_Report_2014.pdf
11. http://www.businesslocationcenter.de/imperia/md/blc/service/download/content/the_global_startup_ecosystem_report_2015.pdf, page 143
12. http://www.mori-m-foundation.or.jp/pdf/GPCI2015_en.pdf
13. http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf
14. http://www3.weforum.org/docs/GAC/2014/WEF_GAC_CompetitivenessOfCities_Report_2014.pdf, page 12
15. https://www.alec.org/periodical/rich-states/

16. https://www.atkearney.com/documents/10192/5911137/Global+Cities+201+-+The+Race+Accelerates.pdf/7b239156-86ac-4bc6-8f30-048925997ac4, page 1–7
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27. http://www.reuters.com/article/us-innovation-rankings-idUSKCN0WA2A5
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31. http://www.reuters.com/article/us-innovation-rankings-idUSKCN0WA2A5
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33. In 2016, benchmarking against other European countries and regional neighbors was done against the following non-EU countries: Switzerland, Israel, Iceland, Norway, Serbia, Turkey, the Former Yugoslav Republic of Macedonia, and Ukraine.
34. 2thinknow [http://www.2thinknow.com/].
35. Since October 2016, the unit responsible for the index, Intellectual Property & Science has no longer been part of Thomson and Reuters group, and the Top 100 Global Innovators Report is now produced by Clarivate Analytics, though the index seems largely unchanged (Clarivate Analytics 2016; Thomson Reuters 2016).
36. SCImago Ranking [http://www.scimagoir.com/rankings.php].
37. Such indexes include Oklahoma Innovation Index, Accenture innovation index, NYCEDC Innovation Index, GiveEasy Innovation Index, The Index of the Massachusetts Innovation Economy, California Green Innovation Index, Streetwise City Innovation Index, Kalypso/David Eccles School of Business Innovation Index, Forbes—The World's Most Innovative Companies, Boston Consulting Group—The Most Innovative Companies, and UK Innovation Index.
38. "One hundred years ago only two out of ten of the world's population were living in urban areas. By the middle of the twenty-first century, seven out of ten people will be living in cities. *Already global business is beginning to plan strategy from a city, rather than a country, perspective.* Understandably so: well over half of the world's population lives in cities, generating more than 80 per cent of global GDP. Standard population projections show that virtually all global growth over the next 30 years will be in urban areas. The number of people living in the world's cities is growing by nearly 60 m every year" (The Economist Intelligence Unit 2013, 2) (emphasis added).
39. "More than half of the world's population lives in cities, and by 2025 that number is projected to reach 60 percent. As the world urbanizes, A.T. Kearney's *Global Cities 2015* takes a look at the growing influence of cities across six world regions" (A.T. Kearney 2015, 1).
40. "Since 2005, the World Economic Forum has based its competitiveness analysis on the Global Competitiveness Index (GCI), a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness. *Recognizing that competitiveness may also be analyzed at other geographical levels, the Forum* […] *has engaged in a parallel strand of work to analyze the drivers of competitiveness at the level of the city*" (World Economic Forum 2014a, 4) (emphases added).

41. "*As leaders look for ways to make their economies more competitive* and to achieve higher levels of growth, prosperity and social progress, *cities are typically identified as playing a crucial role*. Today, more than half of the world's population lives in urban areas ranging from midsize cities to mega-agglomerations, and the number of city dwellers worldwide keeps rising" (World Economic Forum 2014b, preface) (emphases added).
42. "Major *cities* around the world *today are caught up in intense and complex competition*. The stakes in these processes of global inter-city interaction are extremely high" (The Mori Memorial Foundation 2015, preface) (emphases added).
43. "For many decades, A.T. Kearney has focused on globalization opportunities, with a wide range of capabilities to inform business and government strategies, including our Global Business Policy Council, Global Retail Development Index, and the Foreign Direct Investment Confidence Index. A common theme that runs through these capabilities and both the Global Cities Index and the Outlook is an *increasing appetite for expansion and investment at the market level—often defined by city boundaries—rather than at the country level. This trend can be tracked by the growing availability of city-level data*" (A.T. Kearney 2015, 6) (emphases added).
44. For instance, the Financial Maturity score in EUI index is based on a compiled data from other resources (Leff and Petersen 2015).
45. The six functions are Economy, Research and Development, Cultural Interaction, Liveability, Environment, and Accessibility.
46. The EU Regional Competitiveness Index 2016: indicators description [http://ec.europa.eu/regional_policy/sources/docgener/work/rci2016_indicators.xls].
47. Also the Firm Activities indicator group contains a Web of Science–based indicator: Public–private copublications per million population.
48. The Leiden Ranking uses Thomson Reuters/Clarivate Analytics' Web of Science publication data, as does the Shanghai ranking. The SCImago, THE, and QS rankings use Elsevier's Scopus publication database.
49. 2thinknow Data Types, [http://www.citybenchmarkingdata.com/data-types].
50. 2thinknow Data Types, [http://www.citybenchmarkingdata.com/data-types].
51. 2thinknow FAQs, [http://www.citybenchmarkingdata.com/faqs/2905].
52. 2thinknow FAQs, [http://www.citybenchmarkingdata.com/faqs/2905].

53. Methodology: Top 100 Innovative Universities 2016 [http://www.reuters.com/most-innovative-universities-2016/methodology].
54. Thomson Reuters Europe's Most Innovative Universities [http://www.reuters.com/most-innovative-universities-europe].
55. Thomson Reuters Asia's Most Innovative Universities [http://www.reuters.com/most-innovative-universities-asia-2016].
56. As discussed in Chap. 5, there has been a recent shift in the global indicators on good governance, where the so-called second-generation indicators are challenging rankings (Knack, Kugler, and Manning 2003; Trapnell 2011). The second-generation indicators are characterized by four criteria: (1) transparency of data sources, (2) availability of data, (3) quality and accuracy of data and measurements and (4) specificity of indicators. Moreover, the second-generation indicators often favor non-aggregated presentation of results as opposed to rankings (see previous chapter).
57. It is noteworthy that since the publication of the Actionable Governance Indicators the World Bank has emphasized disaggregation in comparative assessments (see above).
58. Even within the US higher education system (Cohen and Kisker 2010, 435–442), there are many tiers of institutions. Only one of these tiers (public and private research institutions) closely fits the model of higher education represented in the global rankings, where the Ivy League institutions are emphasized.
59. Thomson Reuters Europe's Most Innovative Universities [http://www.reuters.com/most-innovative-universities-europe].
60. Thomson Reuters Asia's Most Innovative Universities [http://www.reuters.com/most-innovative-universities-asia-2016].

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7

Rankings and Global Knowledge Governance

Introduction

In this final chapter, we draw some conclusions against the theoretical framework that was introduced in the first chapter. We maintain that rankings and indicators constitute global knowledge governance. While this book reads as a narrative of field development in ranking, it is also an account of the increasing importance of knowledge and higher education in global indicators. Knowledge governance is the nexus where all the above-discussed indicators meet. By measuring the institutions and processes that govern and steer the production and dissemination of knowledge in a society, the rankings also come to define the scope and attributes of knowledge governance. This renders the national institutional legacies visible and makes them governable, thus influencing policies on national level.

The measurements construct a global policy script on knowledge governance (cf. Meyer et al. 1997, 149–151), identifying its critical elements and providing measured entities information on their standing. Furthermore, the indicators provide subtle policy prescriptions

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through their attributes that help to identify issues of concern and potential elements of reform. This also has constitutive effects (Dahler-Larsen 2013), as policies at national level and the production of indicators in the field of global measurement are increasingly conditioned by the numbers.

As we have argued, indicators and rankings obtain instrumental characteristics through the mechanisms of *objectification*, *(de)politicization*, *subjectification*, and *legitimation* (see Chap. 2). We highlight these concepts in the following discussion. We will also consider the institutional effects and field development in global knowledge governance. We maintain that rankings constitute institutional effects that can often be surprising and even unintended, but that this can be understood by close examination of the figures and the rationalities behind them, including the motives and aims for those producing the figures. We observe significant changes in the global indicators, where the field of measurement is fragmenting both due to growing number of measurements and in conceptual terms. Nevertheless, the dynamics of field development in global ranking lead to a further institutionalization of numerical comparative assessments in transnational governance (cf. DiMaggio and Powell 1983).

As summarized in Table 7.1, this concluding chapter looks at the rankings and global knowledge governance from two different perspectives that are elaborated below. First, we consider the field development from the perspective of knowledge production as a process, covering the changes in the producers of information, rationale behind the figures, as well as their focus and presentation. Second, we assess the result from the perspective of global policy script of knowledge governance, providing also a general comparison on ranking results of selected countries and innovation hubs: Netherlands (Amsterdam), Denmark (Copenhagen), Hong Kong SAR (Hong Kong), Chile (Santiago), Singapore (Singapore), Israel (Tel Aviv), and Sweden (Stockholm). We then discuss what kind of political imaginary do the rankings and indicators promote. How is knowledge governance as a social practice constructed? What normative and political implications does this have? Finally, we conclude with a short note on where we stand, surrounded by numbers, and how to look ahead.

Table 7.1 Indicators' mechanisms of influence and institutional effects

	Field development in global measurement	Global policy script of knowledge governance
Objectification	Shifts in measurements, their focus and methodology	Knowledge governance as a nexus where the measurements of good governance, competitiveness, higher education, and innovation meet
(De)politicization	Tacit normative assumptions, particularistic choices and shared beliefs behind measurements that only become visible through occasional conflicts	Instrumental rationality and seemingly apolitical policy prescriptions based on rankings that may be contested
Subjectification	Grand narratives and references to knowledge producers own position in the field	Nationalistic reflexivity over results
Legitimation	Expert position legitimated through the use of indicators, cross-references to the work of others	Rankings used as points of reference in legitimating various reforms and results of governance, though they also allow critique of government

Field Development in Global Measurement

Table 7.2 presents a summary of the knowledge governance assessments that have been discussed in previous chapters, organized by their focus, producers, normative assumptions, representation of indicators, as well as the role of knowledge in the measurements. The types of indicators in Table 7.2 construct a self-reinforcing system of representation, a numeric domain of global knowledge governance. One way of reading the table is to consider it as a continuum (top-down), where the ideas of good governance become entangled with the holistic measurements of competitiveness. The university rankings may have risen as a somewhat separate field of measurement, but they are in many ways influenced by the previous measurements. University rankings share the general atomistic ontology

Table 7.2 Summary of knowledge governance assessments

	For what? By whom?	Normative assumptions	Representation of indicators	Role of knowledge
Good Governance Indices	Assessing quality of governance. Produced by international organization and NGOs. Recently a shift toward topic specific measurements that are produced by small NGOs.	The notion of good governance is rooted in governance performance and efficiency. Democratic qualities of governance are less highlighted. Furthermore, performance and democracy are often conflated, so that increased performance is perceived to have positive effects on democracy as well.	Initially, the indicators on good governance and transparency have been rankings, but recently there has been a shift toward the so-called actionable indicators that are nonaggregated figures.	The good governance indicators are increasingly focusing on access to information and the openness of governance.

(*continued*)

Table 7.2 (continued)

	For what? By whom?	Normative assumptions	Representation of indicators	Role of knowledge
Competitiveness Indices	Benchmarking the competitiveness of countries, as well as regions and cities. Produced by universities, foundations, research institutes, media companies, consultancies.	Rooted in ideas of competition and economic performance. The holistic nature of competitiveness and the importance of institutional factors are increasingly acknowledged.	Predominantly rankings. Methodological challenges of measuring abstract concepts are generally discussed, but limited attention is paid to the political nature of the assessments. Recently, qualitative assessments of city competitiveness have emerged.	Data related to knowledge can be divided into two groups: (1) attributes and indicators linked to good governance such as transparency, openness, accountability and intellectual property rights (institutional context) and (2) indicators that deal directly with education, research and development (innovation environment).

(*continued*)

Table 7.2 (continued)

	For what? By whom?	Normative assumptions	Representation of indicators	Role of knowledge
Higher Education Indices	Benchmarking higher education institutions Produced by university research centers, consultancies, international organizations, media outlets	University rankings tend to assume Anglo-American research university as their model. Building on assessments of research output, rankings idealize publication patterns of natural sciences and medical studies. Underlying assumptions of financial autonomy and external accountability of research institutions.	Predominantly rankings. However, these have been recently challenged by nonaggregated measurements that are called "mappings".	The global university rankings are very much focused on research output of higher education institutions, measured in terms of publications produced and their citations.

(*continued*)

Table 7.2 (continued)

	For what? By whom?	Normative assumptions	Representation of indicators	Role of knowledge
Innovation Indices	Benchmarking innovation potential of organizations, cities/regions and countries. Produced by consultancy firms, universities, research institutes, media companies, foundations, and NGOs. Often collaborative efforts.	Rooted in ideas of competition and economic performance. Generally, an unchallenged Schumpeterian depiction of innovation as a driver of economic and social development. There is often a transformative agenda to enhance performance and enable commercialization and economic development.	Depoliticized representation of rankings, albeit the difficulties of measuring innovation and innovation systems are acknowledged.	Innovation environment, focusing on education levels, research performance, information exchange, transparency, and openness.

of competition, a political imaginary enforced by the rankings in competitiveness, but the higher education indices also link to the ideas of transparency and accountability that are at the heart of good governance. Finally, the innovation indices combine many of the previous perspectives on sound institutions, competitiveness, academic research, and higher education. This reading also corresponds with the genealogy of indicators and their ideational shifts and interlinkages as we see it.

From the perspective of objectification, shifts in the measurements over time are important as new policy concerns emerge and are constructed with the help of the indicators. This is also increasingly linked to the logic of knowledge production and the numerical ontology. As we have proposed (see the Chaps. 1 and 2), the structuration of the field of governance measurements evolves through classification struggles (Kauppi and Erkkilä 2011), where new entrants to the growing list of measurements argue for methodological improvements or novel conceptual grounds. In Chaps. 4–6, we see an abundance of examples of this. But though knowledge producers strive to create alternatives, there is strong conformity in the measurements, as the new indicators come to share the premises and often even data of existing measures, as is apparent in the cases discussed throughout the book. This is typical for structuration, where actors—often unintentionally—tend to reproduce existing norms and practices through their reflexivity (Giddens 1986, 5; Baert 1991). Moreover, the creation of valid epistemic knowledge builds on rites of verification and acceptance of the broader community of index producers (Haas 1992; Gieryn 1983).

Thematically, the focus of measurement has shifted over time, as the early measurements of good governance and economic competitiveness have been followed by measurements of universities and innovation. Also, the level of assessment has changed as the global rankings have been complemented by regional- and city-level indicators. However, as we have shown, the previous measurements are by no means being abandoned or losing importance. On the contrary, the new measurements actively use them as reference or directly as source of data. The new composite indicators of innovation in particular build on the previous assessments of good governance, competitiveness, and higher education.

Though the new regional- and city-level measurements in innovation, competitiveness, and higher education claim to take a different focus than the global measurements, they often use the global-level data of previous assessments in the absence of regional- or city-level data sources. Nevertheless, shifts in the focus of measurement have come to further objectify the policy concerns over national competitiveness, quality of governance, and state of higher education and innovativeness in a country or region. As we saw, the measurements now overlap conceptually though new entries to the field claim to open new venues of assessment. This creates a certain vagueness in the measurements but also further embeds the practice of ranking in global knowledge governance.

There has been a significant shift over the years concerning the measured objects. The early measures of good governance and competitiveness aimed at being holistic measurements that emphasized institutional aspects of governance. From the perspective of knowledge, this coincided with the global drive for transparency that was a remedy against the information asymmetries of market activities. Transparency has become a key element in the functioning of global markets, allowing also companies to reconsider the location of their business activities as well as countries to attract foreign direct investments (Azubuike 2008). Being part of the movement toward second-generation governance indicators, the rapid development of measurements in transparency in the first part of 2000s is telling of the perceived need to assess countries for their institutional openness.

As we discussed in Chap. 4, the early measurements of good governance and competitiveness were already linked conceptually and through shared data sources. However, despite the movement toward second-generation governance indicators (see Chap. 5), we see the conceptual overlap intensifying, particularly in indicators of competitiveness and innovation on different levels of measurement (global, regional, and city levels). Moving toward present, the measurements increasingly focus on higher education and academic research as the source of competitiveness and innovation. Chapters 5 and 6 explain how the development of the measurements is conditioned by the mechanisms of field development, where the sharing of data and common rites of verification create conformity on the one hand, while the methodological debates spur the arrival of new knowledge products on the other.

Overall, the subnational measurements of competitiveness now in many ways overlap with the measurements of innovation. The above concepts are also closely related to the measurements of higher education that are increasingly seen being on the pulse of competitiveness and innovation. Their measurements directly use data from existing global university rankings or methodology typical for them. In a sense, the university rankings act as a bridge between the global and local levels of measurement. The university rankings are explicitly not comparing the education systems of nation-states, but the performance of individual higher education institutions that predominantly reside in major cities. They have hence become a central component in the city-level assessments.

We began our analysis by citing a shift from democracy to good governance, where the measurements of democracy have been replaced by more general assessments of government quality and performance. This was followed by a convergence in measurements that found their common denominator in competitiveness, a concept that gave coherence to different assessments of knowledge governance discussed in this book. But we now identify a shift from competitiveness to innovation, which is now expanding the conceptualization of economic performance. As our analysis shows, this has largely come about with the help of existing numbers. The use of numbers allows you to identify new policy concerns and makes them governable through objectification. But it seems that the dynamics of field development is currently creating an inertia in the knowledge products, setting the limits of what is (perceived as) possible to measure. It would be difficult to create holistic measurements of competitiveness and innovation without preexisting indicators of good governance. Equally, the measurements of innovation and competitiveness, at global and local levels, are somewhat dependent on the university rankings. The new figures entering the field are woven to the exiting fabric of measurements—the constitutive effects (Dahler-Larsen 2013) of measurements hence involve also global production of indicator knowledge. This intensifies the interlinkages between the knowledge producers and their products and makes them appear unified, despite of the conceptual vagueness that results from the ideational overlapping of different indicators.

From the perspective of (de)politicization, the normative standards and underlying assumptions of rankings are important, as the indicators are often mistaken for neutral and apolitical descriptions of reality. The normative assumptions behind the measurements stress performative aspects of governance. In many ways, competitiveness becomes an organizing concept for the measurements, regardless of their policy domain. While we could equally emphasize democratic aspects of governance, social impacts of education and sustainability in innovation, the focus on measurement, or at least their dominant interpretations and uses aim for enhancing economic performance. Furthermore, the particularistic choices behind the measurement, such as the idealization of the Anglo-American research university in the university rankings, mostly remain uncovered. Table 7.2 summarizes the underlying assumptions and normative underpinnings of the measurements discussed in this book. They mostly point toward economism, where different social institutions are reduced to their economic qualities.

The discussion in Chaps. 5 and 6 indicates numerous occasions where the political characteristics of the measurements have become apparent, politicizing the indicators and the concepts and methodological choices behind them. This is mostly related to aggregated rankings that have been challenged by national governments, though the EU has also voiced concern. But the reactions have not led to the abandoning of the numerical assessments tools, but rather have sparked further contributions to the field of measurement. Moreover, the measurements that have risen as result have not marked a departure from the underlying premises of measuring knowledge governance—it is persistently treated as an issue of economic competitiveness and innovation.

The presentation of results has proven critical for the measurements, as the rankings have obtained the most media visibility. At the same time, this has drawn criticism that also feeds into the field development of indicators, as there are new entries of disaggregated measurements, particularly on good governance and higher education. When we look at the measurement issues that have emerged in global knowledge production, it becomes clear that many of the shared challenges are experienced when moving to a new level of measurement. The issues of early global rankings are in many ways inherited by the city-level measurements that follow

them. This ultimately returns to accessibility of data and attempts to work around it, which has implications for transnational governance by numbers (see discussion below).

Another important aspect in the field development is the question of who produces the information, which links to the theme of legitimation. Producing indicators has become a high-stake competition, where even NGOs or university research institutes can become major global players. As the cases we look at have shown, international actors such as the EU or OECD are at times overshadowed by relatively small actors that have entered the field of ranking in early stage. At the same time, various organizations are now under pressure to produce their signatory index, as they are competing for visibility and funding (cf. Freistein 2016), as well as credibility as knowledge brokers. It is also interesting to see how organizations that have secured a position in a certain niche of measurement protect it by accommodating the new perspectives and ideational shifts in the field. This is most apparent in the domains of good governance and economic competitiveness that have come to alter their measurements to sustain presented or potential critique. In addition, the regional and local assessments are often produced by the same organizations that have made global indicators previously. Hence, changes in measurements remain limited.

Though subjectification, linking identities to prescriptions for action, is usually identified in the national reactions to rankings, we also see elements of this in the behavior of knowledge producers. The use of history and recurring references to grand narratives of globalization, global higher education, urbanization, and the Fourth Industrial Revolution (or Second Machine Age) demand action and creation of new indicators. Despite its forward-looking argumentation, this rhetoric tends to reproduce standard items of the debate on global megatrends, often with a considerable time lag. This use of historical narratives also further underlines the perception of the rankings and indicators as maps that help to navigate the future challenges (cf. Hobsbawm 1987; Koselleck 2004). But it also serves as a justification for the organizations to produce the figures that are now portrayed as natural responses to global trends and turmoil. This links to the political imaginaries and policy scripts echoed by rankings.

Global Knowledge Governance: Policy Script and Political Imaginaries

As discussed in Chap. 4, the global rankings have been influential in constructing policy concerns through objectification. Rankings and indicators are very much contributing to the construction of a political imaginary of competition that builds on an atomistic ontology, where different entities—states, regions, cities, innovation hubs, and academic institutions—compete globally. There is a strong sense of economism in the debate, as competition is mostly closely linked to economic advantage. While this owes initially to rankings of national competitiveness, the economic reductionism concerns most of the rankings available. Our analysis shows how knowledge has become a nexus where the various different rankings and indicators meet.

Owing also to the field development in global ranking, there now is a relatively coherent *global policy script on knowledge governance*: competitiveness implies firm institutional conditions enabling transparency, quality educational institutions on all levels but most notably in higher education and research (especially in science and engineering), high-ranking universities with excellent research performance and merited scholars, abundance of educated workforce and ability to recruit it from abroad, functioning and interconnected innovation environments with established ties between research institutions and private companies (coauthored publications, joint patents, private funding), an "open society" in a broader Popperian sense, and openness through global connectivity and information flows.

Due to the shift in the rankings, this policy script now also traverses different levels of governance. While urbanization as a global process serves as the grand narrative leading to the rise of city rankings, it is also important to consider this development from the perspective of objectification. As new regional- and city-level measures are being produced, they also render the domain of urban competitiveness and innovation into a policy problem in need of a solution. The measurements come to further define the attributes of competitiveness and innovativeness of cities. While we could frame urbanization in social or environmental terms,

Table 7.3 Rankings of selected countries and innovation hubs

Ranking	World Competitiveness Yearbook (2016)	Global Competitiveness Report (2015–2016)	International Innovation Index (2008)	Contributors and Detractors: Ranking Countries' Impact on Global Innovation (2016)	Global Innovation Index (2015)	The Bloomberg Innovation Index	The Global Cleantech Innovation Index (2014)	EU Regional Competitiveness Index (2013)	EU Regional Competitiveness Index (2013)	European Innovation Scoreboard (2016)	Regional Innovation Scoreboard (2016)
Type	National competitiveness	National competitiveness	Innovation performance and inputs of countries	Countries economic and trade policies and their contribution to and detraction form the global innovation system	Innovation capacity of nations	Innovative countries	Country potential to produce cleantech companies that will commercialize innovations	Competitiveness of countries	Competitiveness of regions	Innovation performance of countries	Innovation performance of regions
Netherlands (Amsterdam)	8/61 2nd decile	5/140 1st decile	12/110 2nd decile	5/56 1st decile	4/141 1st decile	18/50 4th decile	11/40 3rd decile	2/28 1st decile	5/262 1st decile	6/37 2nd decile	Strong
Denmark (Copenhagen)	6/61 1st decile	12/140 1st decile	11/110 1st decile	6/56 2nd decile	10/141 1st decile	9/50 2nd decile	5/40 2nd decile	4/28 2nd decile	9/262 1st decile	3/37 1st decile	Leader
Hong Kong SAR (Hong Kong)	1/61 1st decile	7/140 1st decile	6/110 1st decile	29/56 6th decile	11/141 1st decile	37/50 8th decile	N/A	N/A	N/A	N/A	N/A
Chile (Santiago)	36/61 6th decile	35/140 3rd decile	37/110 4th decile	40/56 8th decile	42/141 3rd decile	N/A	N/A	N/A	N/A	N/A	N/A
Singapore (Singapore)	4/61 1st decile	2/140 1st decile	1/110 1st decile	4/56 1st decile	7/141 1st decile	6/50 2nd decile	20/40 5th decile	N/A	N/A	N/A	N/A
Israel (Tel Aviv)	21/61 4th decile	27/140 2nd decile	16/110 2nd decile	23/56 5th decile	22/141 2nd decile	11/50 3rd decile	1/40 1st decile	N/A	N/A	12/37 4th decile	N/A
Sweden (Stockholm)	5/61 1st decile	9/140 1st decile	10/110 1st decile	2/56 1st decile	3/141 1st decile	3/50 1st decile	4/40 1st decile	5/28 2nd decile	4/262 1st decile	2/37 1st decile	Leader

(*continued*)

Table 7.3 (continued)

Ranking	Hot Spots 2025 (2013)	A.T. Kerneys Global Cities (2016)	A.T. Kerneys Global Cities (2016)	Global Power City Index (2015)	Worldwide Centers of Commerce Index (2008)	The Startup Ecosystem Report (2015)	Innovation Cities™ Index (2015)	Top 25 Global Innovators—Government (2016)	Top 100 Innovative Universities (2015)	Academic Ranking of World Universities (2015)
Type	City competitiveness	City performance	Outlook	City magnetism	Leading cities	Prominence of startup ecosystems	Cities potential as innovation economies	Publicly funded institutions contribution to advance science and technology	The world's most innovative universities	Ranking of universities research performance
Netherlands (Amsterdam)	13/120 2nd decile	22/125 2nd decile	8/125 1st decile	9/40 3rd decile	10/75 2nd decile	19/20 10th decile	7/442 1st decile	N/A	N/A	98/500 VU University Amsterdam 101–150/500 University of Amsterdam
Denmark (Copenhagen)	15/120 2nd decile	42/125 4th decile	24/125 2nd decile	19/40 5th decile	15/75 2nd decile	Unranked runner-up	15/442 1st decile	N/A	43/100 Technical University of Denmark	35/500 University of Copenhagen
Hong Kong SAR (Hong Kong)	4/120 1st decile	5/125 1st decile	57/125 5th decile	7/40 2nd decile	6/75 1st decile	Unranked runner-up	22/442 1st decile	N/A	N/A	151–200/500 The Chinese University of Hong Kong 151–200/500 The University of Hong Kong
Chile (Santiago)	60/120 5th decile	58/125 5th decile	36/125 3rd decile	N/A	53/75 8th decile	Unranked runner-up	337/442 8th decile	N/A	N/A	301–400/500 University of Chile
Singapore (Singapore)	3/120 1st decile	8/125 1st decile	17/125 2nd decile	5/40 2nd decile	4/75 1st decile	10/20 5th decile	8/442 1st decile	9/25 Agency for Science, Technology & Research	94/100 National University of Singapore	101–150/500 National University of Singapore
Israel (Tel Aviv)	41/120 4th decile	62/125 5th decile	48/125 4th decile	N/A	45/75 6th decile	5/20 3rd decile	19/442 1st decile	N/A	75/100 Tel Aviv University	151–200/500 Tel Aviv University
Sweden (Stockholm)	8/120 1st decile	32/125 3rd decile	7/125 1st decile	15/40 4th decile	16/75 3rd decile	Unranked runner-up	17/442 1st decile	N/A	N/A	44/500 Karolinska Institute 81/500 Stockholm University

the existing rankings have come to frame it as a matter of competitiveness. Consequently, the cities and innovation hubs are drawn into to the global competition, in a similar fashion as happened to nation-states and universities earlier.

Table 7.3 shows the broad outline of rankings and their results concerning seven countries and innovation hubs that are central to national performance. The aim of this exercise is to highlight the multitude of measurements available and the relative uniformity of their ranking results. Moreover, we wish to show how the rankings now traverse the different levels of governance, from national to local. It is now possible to imagine and measure the different aspects of knowledge governance at its various levels. The higher education institutions and cities as innovation hubs are now also firmly part of this reasoning, subsuming them as logical elements of the global knowledge governance.

The case selection focuses on smaller states (see Table 7.3), leaving out federal states and larger nations for sake of comparability. There are states included from different regions, though Europe and Asia are most prominently represented. Moreover, the focus is on countries with clearly identifiable dominant innovation hubs that rank in the current measurements to allow comparisons between different measures. This ultimately leaves out many countries in the global south (most notably African nations), echoing a general problem in international comparisons that come to highlight high performers. Based on these criteria, seven countries and innovation hubs were selected for further analysis: Netherlands (Amsterdam), Denmark (Copenhagen), Hong Kong SAR (Hong Kong), Chile (Santiago), Singapore (Singapore), Israel (Tel Aviv), and Sweden (Stockholm).[1]

Looking at the measurements, the rankings show surprisingly little variance for the measured countries and innovation hubs. Apart from Hong Kong's relatively poor ranking in the Bloomberg Innovation Index and the Startup Ecosystem Report's somewhat differing ranking scores compared to others, the rankings that rate the selected countries and innovation hubs are strikingly similar. There are two possible readings of this. You could argue that the various figures confirm the results obtained. This is also in line with the argumentation of knowledge producers, who often verify their results with high correlations against

other indicators (Erkkilä and Piironen 2009). Another plausible reading of the results, which we would propose, is that these figures are composed with a shared ontology, homogenic conceptual frame, and partially overlapping data, which makes the similarities in the ranking scores understandable.

Despite the argumentation of providing alternative or complementary views to the previous rankings, the new knowledge products largely share the premises of earlier measurements, as the above conceptual and methodological analysis shows. Moreover, because the data sources in many cases tend to overlap, the result is a rather uniform view of governance that now reaches from measurements of national competitiveness and innovation to assessments of performance at city level and by higher education institutions. There is now a rather all-encompassing worldview presented by numbers that revolves around the notion of competition.

This is also apparent in the index producers' descriptions of their measured entities. For example, Netherlands is seen to rank well in Global Innovation Index, but the significant variation of its scores from indicator to indicator is problematized and a weakness is identified in the Tertiary education subpillar as there are arguably too few science and engineering graduates in the country (Cornell University, INSEAD and WIPO 2015, 22). Depicted as a "Schumpeterian" in terms of its contribution to global innovation, Netherlands is grouped with other Northern European countries (Information Technology and Innovation Foundation 2016, 22), though it falls behind in cleantech innovation (Cleantech Group and WWF 2014, 43). Within Europe, Amsterdam is part of the competitiveness divide, where cities in the core Eurozone countries in Northern and Western Europe are on top (the Economist Intelligence Unit 2013, 19). Presented as a top-five European and top-ten worldwide commercial center (Mastercard 2008, 3, 7), Amsterdam is part of "global elite" in terms of city performance and outlook (A.T. Kearney 2016, 3), and hailed for accessibility (the Mori Memorial Foundation 2015, 3). The "Amsterdam-Startup Delta" is the only European newcomer (in 2015) to the list of leading startup ecosystems and aspires to challenge Berlin and London, also due to its "unique life style aesthetics and great startup infrastructure" (Compass 2015, 122). Amsterdam's highest ranking universities—the VU University of Amsterdam (ARWU 98th) and

University of Amsterdam (ARWU 101–150)—have improved and maintained (respectively) their ranking positions over the past years.[2]

Certain themes stand out in the knowledge producers' description of the ranked countries and cities. One interesting theme is the ability to identify new peers and competitors that can highlight somewhat unexpected connections. While it is commonsensical to compare Nordic countries with one another, they are now also contrasted with the Asian Tigers that make them surprising peers in the realm of ranking. For example, already in 2006 the World Economic Forum identified transparency as a key characteristic of the Nordic countries' high ranking in competitiveness (World Economic Forum 2006; Lopez-Claros et al. 2006). This theme is recurring in the reports over the years, portraying also a competition between the Nordic countries and the Asian Tigers such as Singapore and Hong Kong (World Economic Forum 2009, 22).[3] Also an unlikely connection between Santiago de Chile, Singapore, and Tel Aviv is made with the help of rankings, pointing a way forward for others hoping to improve the funding of their startup ecosystem like they have done (Compass 2015, 27).

The ranking reports also highlight policies and institutional aspects that contribute positively to the ranking scores but also identify problems in countries and cities that are being compared. The political imaginary of competition is firmly linked with the policy script on knowledge governance that identifies its key aspects. Subjectification is also relevant here, as the indicators and their reports touch upon patterns of identification that deem action: Netherlands and Amsterdam are top performers and members of highly competitive peer groups, but their performance in global innovation and cleantech innovativeness could still be improved. As a "startup ecosystem", Amsterdam is still behind London and Berlin.

Subjectification stands out in the reports of knowledge producers that comment on the performance of countries. They contain descriptions of reality, portraying social activity as competition among different entities. They also provide real-time information on the relations of measured entities, that is, how these are faring in the figures. The indicators and related reports also construct policy goals to improve your relative position in the rankings, explicitly or implicitly, as the measurements also contain tacit policy recommendations on how to do this. Their attributes

outline issues of concern and imply ways of improving these. When we read the reports of the annual rankings, we see that there are strong reform-oriented narratives on how to improve your ranking. These are echoed in the related nationalistic discourses on "our" national competitiveness, "European" or "Russian" higher education, Innovative Europe, and Innovative India (see Chaps. 4, 5, and 6).

Knowledge governance—the institutional structures and processes that govern and steer production and dissemination of knowledge in society—has also become a domain of active policy interventions with the help of rankings and indicators. There is intense reflexivity over the results of the comparative assessments, as countries but also universities and cities are trying to raise their game. While the use of indicators as public policy instruments has been criticized (Kaplan 2003; Michener 2015), they have been used as such. Competitiveness indicators are used by governments to steer public policies (Berger and Bristow 2009; Lall 2001; Mulatu 2016) and to legitimize policy choices (Joyce 2016; Republic of Mauritius 2016), but also to criticize the government as the case of Hong Kong shows (Thompson 2002).[4] They are also used for aid purposes (Tan 2014; USAID 2016) as are governance indicators (Erkkilä 2016), which has raised much concern (Hammergren 2011; Saisana and Saltelli 2011; Knoll and Zloczysti 2012; Stubbs 2009).[5]

Though the rankings on innovation are very broad in conceptual terms, they are nevertheless being used as policy tools. While some governments are celebrating their good rankings in innovation (UK Government 2015; New Zealand Government 2012; Science Foundation Ireland 2015), others are setting explicit goals for attaining a top ranking by a certain time, involving also the creation of innovation hubs (Mazzarol 2013). With the help of OECD indicators, the Australian government has identified the collaboration between universities and private companies as a problem of its innovation policy (Australian Government 2016, 59–61; Innovation and Science Australia 2016, xi, xiii).[6] This has led to calls for reform by politicians (Sinodinos 2017; Turnbull 2015) and responses by the academic community (Davis 2015).

There are attempts to look beyond the ranking scores and identify relative weaknesses in the subindices of Global Innovation Index (GII) that would allow governments to address these specifically (see Jackson et al.

2016)—the Indian government has even set up a taskforce to work on this (The Indian Express 2016; see also Chap. 6), and its improved ranking in the GII is reported as a result of government's effort to look into the methodology and data points of the index (NITI Aayog 2016). The regional aspect is also becoming visible, as the BRICS countries are particularly concerned about the state of their innovativeness (Gackstatter et al. 2014), and countries' relative success in their own region is becoming an issue of concern (Singapore Ministry of Foreign Affairs 2012; Emirates 24/7 2016). Also, cities, such as Copenhagen, are keen to improve their ranking (Copenhagen Capacity 2016).

The university rankings' effects on higher education institutions have been widely reported, as universities are now entering the global competition (Hazelkorn 2011; Kehm 2014; Shin and Kehm 2012; Erkkilä 2013; Münch 2013b; Kamola 2014; Marginson and Wende 2007; Rauhvargers 2013). But the institutions are increasingly being considered for their regional and national innovation potential, making them responsible not only of their performance but also of their urban and regional contexts. The rising measurements of innovation have also linked the universities to private companies as their collaborators in innovativeness. Also the international outlook of higher education institutions is further stressed, partially because the ability to recruit talent abroad is seen to have positive spillover effects for the whole innovation environment. The performance of universities is increasingly measured in patent applications and not only in research output (publications and citations), as has been standard with university rankings.

Rankings now construct a global script of knowledge governance (cf. Meyer et al. 1997, 149–151), defining its constituents and boundaries, not only ontologically and conceptually but also ideologically. As has been stressed in the theoretical framework, the rankings and indicators also constitute effects (Dahler-Larsen 2013), visible in the dynamics of knowledge production on international level, but most apparent in the activities of national governments and practitioners on city level who are adopting policy measures as a response to the global measurements.

From this perspective, the ideational shifts in the rankings and indicators, as well as their changing focus between global, regional, and city levels, are relevant for transnational governance. Above we have

highlighted themes that are likely to gain importance as a result of the changes in the measurements. The actual policy effects of these shifts are still partially to be seen, as the national institutional context also conditions the way the global policy prescriptions take root and become effective (Gornitzka 2013). To fully appreciate the constitutive effects of rankings and indicators on national level, including the above shifts in measurements, further contextualized analyses are needed. Below, we consider the implications for transnational governance.

Surrounded by Numbers

Concerning the future of rankings, the current shift toward city-level measurements is likely to draw further attention to urban development. But as we have noted, there are problems in the city-level measurements of competitiveness and innovation. Their use of aggregation and data sources from global measurements might lead to another shift toward disaggregation, now on a city level, and there are first voices of criticism to point the way to this direction (cf. World Bank 2015).

At the same time, there are elements in the city-level measurements that have opened new conceptual venues. Innovativeness is now linked with aspects of urban lifestyle and connectivity. We found that because of global university rankings, there is a trend of individualization, where the top researchers and students were seen free-moving actors that essentially made the core of world-class institutions (Erkkilä and Piironen 2015; cf. Moisio and Kangas 2016). This reasoning has also become a paradoxical aspect of university strategies, as it overlooks the institutional histories and organizational culture of institutions. Shifting the focus on the broader environment of innovation activity, the city-level rankings come to link academic research and innovation with certain preconceived models of urban lifestyle and habitus.

Similarly, the aspects of global connectivity and value chains, the ability to participate in global flows of ideas, goods, and services, are also likely to be stressed in future measurements. The themes of digitalization and automatization are increasingly being emphasized. But considering the genealogy of indicators presented in this book, we expect to see incremental

changes to the existing measurements and attempts by their producers to accommodate the new ideational inputs. To provide a true alternative to the existing figures would require their ideational foundations to be reconsidered, including the atomistic ontology behind them.

There are already interesting tensions between the different perceptions of competitiveness and innovation. Considering the institutions of higher education, these have been effectively removed from their local and regional contexts by the discourses on "world-class" higher education and "global university" (compare Chap. 3). In a way, the universities are dislocated from their regional context and drawn into a global competition over ranking visibility, publications, funding, and talented students and researchers. This has also led to the emergence of different tiers of higher education institutions in countries that have introduced the so-called excellence initiatives (Münch 2013a, b). But when we look at the recent shifts in measurements of innovation and competitiveness, we see increasing attempts to assess the local and regional importance of higher education institutions. Though this is done in connection to the global value chains, there is nevertheless a perceivable tension between the two perceptions of higher education and role of universities.

In a sense the measurements of innovation, especially on regional and city levels, provide a potentially contrastive perspective to the atomistic logic of competition that has come to shape much of the global measurements. By stressing the innovation environment, the innovation indicators draw attention to the contextuality of innovation, including its institutional and cultural aspects. At first glance there is a certain tension between the local innovation environment and the global competition of individual institutions or cities. However, the locality becomes subsumed to global competition, where its unique aspects are valued for their ability to enhance the competitiveness of this innovation hub and country, but not for the quality of life of those living there. The atomist ontology of competition again comes to the fore.

While the theme or policy domain of measurements is highlighted by studies on rankings and indicators, the locus of ranking has also been at the heart of the story on global indicators. Having initially focused on states and then on the local and institutional levels, the measurements have strong geographical implications. This, along with the imaginary of competitiveness, makes it difficult to conceive the world in different terms

where the actors—no matter their location—would be contributing to the same social activity. In fact, science is such a social activity. From the perspective of scientific progress and innovation, it does not matter where groundbreaking ideas are conceived. While there is an element of competition, the scientific research is fundamentally also about collaboration. Captivated by the atomist ontology, the existing indicators fail to see the aggregate effects of this activity.[7]

Throughout this book we have stressed upon the importance of rankings and indicators in the constitution of global knowledge governance that encompasses the evolving practices for evaluating and steering the production and dissemination of knowledge in society. It needs to be noted that this development also hinges on the ideas and actors behind the indicator knowledge. But at the same time, the rankings have in an unforeseeable manner enforced the imaginary of competitiveness that now firmly frames knowledge governance. This would hardly have been possible without the help of rankings that seem to have become a universal language of transnational governance, a *lingua franca* of numbers.

The shared numerical standards are important for the field development and policy scripts alike. But the evolving field of measurement and the dynamics that we identify in it are also important in terms of transnational policy and governance. One of the characteristics of numerical knowledge production is its distinctive nature vis-à-vis other types of transnational policy scripts. As we have seen, the rankings have challenged the standing order of international knowledge production. This is closely linked to the logic of the numerical assessment and its different modalities. As the political controversies around rankings are becoming more apparent, it is increasingly difficult for international actors with member states to produce such figures uncontested. The European Union and even the OECD have limited room to maneuver in the field of rankings (see Chap. 5), while NGOs, various research institutes, and consultancies are producing rankings with high media visibility. In fact, to understand the practices of governance that are evolving around the measurements, it is necessary to consider the dynamics of the field development.

At the same time, there is a strong convergence in the knowledge production on global level that is owing to the measurement ontology. In fact, if the global assessments of countries policies were not so predominantly geared toward producing indicators but were to instead take a

more flexible form, we would most probably see more variance in the assessments. The homogeneity in the current comparative assessments is largely due to the logic of numerical knowledge production. As we have seen, there is now a dynamic in the field, where knowledge needs to be validated against the existing measurements. Moreover, the availability of data sets strong constraints on the emerging composite indicators that are compelled to use the existing data. Whereas the previous international statistics were predominantly produced by the UN organizations, the OECD, or the EU, which could rely on national statistical bureaus (and Eurostat), many of the organizations that are now producing global indicators have no such capabilities or contacts. These factors lead to a conformity in the measurements that is difficult to overcome.

To appreciate how commonplace and influential the rankings and indicators have become, you only need to consider how transnational governance on knowledge and innovation might look like without them. The leading actors most likely would be different than at present, with traditional international organizations more prominently presented. Though there certainly would be epistemic knowledge shared among the actors, there probably would be less constraints in presenting the results of assessments as well as legacy issues in building on the previous work in the field. In the past, education policies were the domain of national governance and the states most probably would be more present in the knowledge production if it wasn't for rankings and indicators. Indeed, one of the reasons why the rise of global indicators has had such an impact on knowledge governance is exactly their ability to objectify domains such as national innovation and educational policy, which have previously mainly remained under national governance, as the drive for "European higher education" shows (see Chap. 4).

The numerical ontology also has implications for "what is possible" in transnational governance. As we saw in Chaps. 3 and 4, the shifts from comparative assessments of democracy to those of good governance were preceded by the rise of good governance as a dominant policy paradigm. But we increasingly see how the argumentation, using the lingua franca of numbers, builds on existing composition of assessments: for holistic measurements of competitiveness and innovation one needs the institutional measurements of good governance and to make assessments about

innovation environments the university rankings have proved indispensable. The second ideational shift we have identified, from competitiveness to innovation, was largely brought about with the help of numbers (see above). While the move from democracy to good governance indicators clearly followed an ideational shift that had already occurred earlier (see Chaps. 3 and 4), the shift from competitiveness to innovation seems to have been driven more by numbers (cf. Godin 2005).

To be sure, the ideas and actors still matter, but the intensifying logic of comparison as well as its methodological choices is now also constraining the transnational ideas of governance. The instrumental rationality of numerical reasoning now binds the knowledge producers. To overcome this, we would need a politicization of the numbers to think beyond them, marking a genuine opening for alternatives in global knowledge governance.

Notes

1. The case selection was conducted as follows. In the first step, an inspection of the following assessments was conducted: A.T. Kerney's Global Cities, The Economist Hotspots 2025, WEF Competitiveness of Cities cases, MORI Memorial Foundation Global Power City Index, Global Startup Ecosystems Report. The city was included for further scrutiny if it was part of at least two assessments (in total 64 cities). In the second step, cities were excluded if the country in question was a large one with several important cities (e.g., the United States, Germany, China, India), the country had more than 20 million inhabitants, the assessed city was not the single "dominant" city in the country (country representativeness), or if the city was assessed in less than three rankings.
2. http://www.shanghairanking.com/World-University-Rankings/VU-University-Amsterdam.html; http://www.shanghairanking.com/World-University-Rankings/University-of-Amsterdam.html.
3. "The three countries [Sweden, Finland and Denmark] have among the best-functioning and most transparent institutions in the world, ranked behind only Singapore on this pillar, as in past years" (World Economic Forum 2009, 22).
4. World Economic Forum's 2016–2017 Global Competitiveness Report presents cases on how countries such as the Dominican Republic and Colombia use Global Competitiveness Index as public policy tool, setting

their policy goals in terms of their ranking in the indicator (World Economic Forum 2016, 6).

5. The WEF Global Competitiveness Index scores are also linked to foreign direct investment (Dunning and Zhang 2008).
6. We would like to thank Arthur Lau (Australian Government, Department of Industry, Innovation and Science) for his kind help with the public documents.
7. The Global Contributors and Detractors indicator could be seen as an outlier here, but in many ways it focuses on similar aspects of innovativeness as the other innovation rankings, but rather takes a more normative stand on their global standing (see Chap. 6).

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