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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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