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Socio-Political Aspects of Higher Education and Knowledge Production: The Case of University Rankings

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Alexander Dmitrishin

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The dissertation of Alexander Dmitrishin is approved.

Program Coordinator: Prof. Giovanni Orsina, LUISS Guido Carli.

Supervisor: Prof. Giliberto Capano, University of Bologna

Tutor: Dr. Antonio Masala, IMT Institute for Advanced Studies, Lucca

The dissertation of Alexander Dmitrishin has been reviewed by:

Prof. Marvin Lazerson, University of Pennsylvania; Central European University.

Prof. Ildiko Hrubos, Corvinus University of Budapest.

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Abstract

The dissertation deals with the topic of academic rankings. Unlike other works in the field, it analyses the rankings as a part of the academic knowledge production system. The main question of the dissertation is how the emergence of various measurement systems, including the rankings, influenced the global academia.

The impact of academic rankings is studied through the prism of incentives that the rankings produce on various levels. The three levels that are studied in the dissertation are policy, institutional, and individual level.

The research shows a considerable skew that the rankings introduce into the academic system. On the policy level the rankings promote institutional mergers, re-distribution of resources in favor of more influential institutions, and priority funding of STEM disciplines. On the institutional level, the rankings lead to gradual separation of teaching and research, better funding of STEM departments, faculty head-hunting. On the individual level, the rankings promote prioritization of certain research topics and marginalization of other topics, quantitative tilt, and investment into development of research rather than teaching skills.

In addition to the aforementioned impacts, the rankings have an impact on a whole set of sociological issues, such as power and rhetoric in global academia. Taken together these trends change the traditional features of the academic system and push it into a certain direction. To a large extent this direction is determined by the logic of the market.

Introduction

The idea for this research was conceived in somewhat unusual way. The first concept of the thesis came from a research into dependency and world system theories. While the theories alleged that there exists an unfair system of international economics relations, none of them explained how this unfair system manages to persist despite an unfair treatment of developing countries. The question thus born was how certain social paradigms entrench and maintain themselves in the global discourse.

The question of paradigms led to investigation into the sources of social discourse production. A suggestion of a colleague from a history institute in Spain was to turn the question upside down. Instead of looking at the social paradigm creation from the macro-level of competing ideas, the suggestion was to look at this issue from the micro-level of idea creation. Since the most influential discursive paradigms were created within the academia, it was reasonable to study the system of higher education and research. Within the academia there seemed to exist an informal hierarchy of domains that contributed the most to the formation of social paradigms. The most influential disciplinary domains were those that created ideas easily convertible into policies. At the time, economics was by far the most influential of these disciplinary domains.

The shell of the dependency theory eventually came off. Three things came together at that point of time: a long standing interest in higher education issues, knowledge production, and history of social ideas. In higher education, one of the

most interesting issues was inconsistent performance of higher education institutions in the global university rankings. Some universities that seemed to be well esteemed did not place that well in the rankings, while other, less esteemed universities, fared surprisingly well. In the area of knowledge production, some research methodologies seemed to be more welcome than the others. In the area of social ideas, certain ideas came to gain acceptance while others marginalized without the obvious connection to their intrinsic merits. Eventually, an intuition emerged that all of these questions are a part of a bigger puzzle, and that they could be answered within the borders of one research.

The shape that the project acquired was to investigate socio-political influences on higher education and knowledge production through the prism of global university rankings. The rankings here served as a case study to answer various questions. Why higher education institutions that produce certain sort of research tend to place lower in the rankings regardless of their productivity? Does the social system privilege some forms of knowledge over others? Are there mechanisms to encourage choices of research valuable for the social system on various levels?

To answer these questions a complex research agenda was devised. It included investigation of the rankings, but also their functions in the wider system of higher education and knowledge production. The research was structured along these axes. Each chapter, thus, serves a particular purpose. Together the chapters combine into an investigation of how academic rankings impact higher education, and how this inputs into the changing directions of higher education and knowledge production.

The first chapter provides the overview of the evolution of higher education system in Europe, with particular emphasis on the European university. This is done in order to identify the development of the contours of the contemporary higher education system, and it involved a historical research into the development of institutionalized knowledge production in Europe and social interests that accompanied this process. It is suggested that the European knowledge production has always been subjected to strict social controls. Although, direct checks on the higher education system were eliminated, the market overtook the regulatory function.

In the rest of the chapter, the main pillars of institutionalized knowledge production are identified as a prelude to the investigation of the rankings. The two later sections deal with existing research on academic rankings, and with a detailed explanation of the dissertation's structure and methods. The gaps in the existing research on rankings are identified, and the main objectives of the dissertation are explained in great detail.

The second chapter of the research deals with the emergence of the academic measurements. It surveys the history and methodology of academic rankings. As the research into the university rankings proceeded, there was an intuition to look into auxiliary systems of measurements. That is the rankings of journals and rankings of individual researchers. This intuition proved to be quite important. Various types of rankings turned out to be connected in multiple ways. Their mapping allowed for deeper insights into how the system of academic measurements, of which various academic rankings are related elements, works and steers the knowledge production system.

The chapter is the first original contribution of the dissertation. Unlike the previous works, the dissertation made an attempt to look at seemingly unrelated academic rankings as a part of a bigger system. It allowed identifying common trends in the system of academic measurements. These trends translate into a very peculiar set of incentives that affect the system of higher education and knowledge production in significant way.

The third chapter is the crux of the dissertation. It builds upon the theoretical understanding of the ranking trends identified in the previous chapter. In particular, it deals with behavioral incentives that rankings create on every level of higher education and research production. These incentives emerge out of concrete benefits involved in complying with the logic of academic rankings.

Three principal levels of the incentives are identified here: policy level, institutional level, and personal level. Each of these levels is connected to the next one. Priority government funding of particular disciplines promotes strengthening of corresponding departments on institutional level. The strengthening of the departments changes preferences of student and researcher applicants. Such connections are ubiquitous for widely divergent academic issues. Together these incentive levels combine into pushing the system of higher education and knowledge production in a particular direction.

The main achievement of the dissertation is that it makes the relationship between these levels explicit as a part of wider academic system. The original contribution of the dissertation is investigation of micro-impacts of incentives that the rankings create on the various levels of knowledge

production system. Although the research also makes considerable contributions to the study of macro-impacts that the rankings have, investigation of the micro-impacts is principally novel and has never been conducted before.

To analyze the micro-impacts of academic rankings, the research uses an original methodological frame. Game theoretical modeling is used to show how ranking incentives converge to marginalize minor research fields. The case for the model is heterodox economics. The conclusion is that, even assuming perfect ideological neutrality, there is a large disincentive to pursue heterodox economics research for graduate students. Abstracted from this concrete case, the conclusion of the chapter is that the rankings create incentives for maintaining and reinforcing dominant research paradigms and against developing marginal theoretical domains. This situation is quite dangerous in that it undermines any challenge to dominant discursive paradigms and may lead to ossification of the knowledge production system in the absence of healthy competition.

Finally, the fourth chapter of the dissertation deals with implication of the incentives that academic rankings create for the present and future of the academic system. A step back is taken here to look at the general picture. The chapter deals with the prognosis of trends in the academic system. It also identifies discursive impacts of academic ranking, and it shows how the rankings impact the main pillars on which the academic system rested before. The last chapter mirrors the first chapter in that it returns the more detailed discussion of the previous chapters into the discussion of more general trends that the academia has been undergoing recently. The fourth chapter is the most theoretical in the whole

dissertation, and it should be treated as a philosophical appendix.

Multiple original ideas are elaborated in the chapter. Although both the rankings development scenarios and the study of fundamental changes in international academia are of considerable originality, the most novel part of the chapter is the discussion of the discursive impacts of the academic rankings. The section discusses how university rankings transformed a particular discourse into a concrete set of incentives, and how the discourse of rankings in general defines the order of power in the global academia. It is a sociological chapter, and it provides a set of ideas rather than a set of answers. However, the ideas presented could be quite useful for the future research into the wider impact of academic rankings.

The dissertation concentrated on some less explored issues surrounding academic rankings. It did not answer all of the questions concerning the impacts of the rankings on higher education and knowledge production, and it did not intend to. However, the dissertations filled some gaps that had been present in the research on rankings. Furthermore, it led rankings research into new domains. Some of these steps into the undiscovered issues of academic rankings had long been due, while others would come as completely unexpected. In the process of answering some questions, more new questions emerged. These questions will be answered in further research for which this dissertation could serve as a solid basis. Hopefully, this dissertation will also provide a reading as exciting as was its writing.

Chapter 1. Academic Rankings and Higher Education: Background, Literature Review, and Research Outline.

1.1. Higher Education and the European University.

Higher education in Europe has been confined to the institution of university from the middle ages. The origins of the first European universities can be traced back to the universities of Paris and Bologna. The principal difference between the universities established in Paris and Bologna was the issue of corporate control. The University of Paris, which was established by rogue maîtres of church schools, was primarily faculty-led. The University of Bologna, established by students from different parts of Europe, was entirely student-controlled. This entailed countless differences in the university organization and administration. After the rise of modern nation-states the faculty-led model of the university gradually overtook the student-led one.

Before that moment, however, universities had undergone centuries of evolution. After the first European universities emerged, more and more universities arrived on the continent. The origins of the first universities are dissimilar although the initial impulse came either from scholars looking for better fortunes or from political authorities. The first university of English speaking world – the University of Oxford (1167 AD) originated from a murky political situation prohibiting foreigners to attend the University of Paris. Its famous rival – University of Cambridge (1209 AD) was in turn the result of a mass exodus of scholars from Oxford due to a conflict between the townsfolk and the university scholars.

The University of Naples had a different origin. It is a prime example of a university established because of political reasons. Frederick II decreed to establish a university in Naples in 1224, as an alternative to the University of Bologna, which was located in the unfriendly Papal States (Rudy, 1984: 27-28). In medieval Europe university was a matter of political prestige. In 1348, Charles IV established the University of Prague – the first university in Central and Eastern Europe – close to his power seat in Bohemia.

The colonization of Americas brought the export of the European higher education model overseas. The first university of Americas – the University of San Marcos was established in 1551 in what is now Peru by a royal decree of Charles V. The same year another university – Royal and Pontifical University of Mexico was founded in North America. By the end of XVIIth century Europe alone had more than a hundred universities. The highest concentrations of universities in XVIIth century can be found in German territories, Italian lands, France and Spain respectively (Frijhoff, 1996: 104). By the end of XIXth century there were hundreds of universities spanning every continent of the globe, except for Antarctica. The university prevailed as the dominant institution of higher education and knowledge production in the world.

Two important developments in the history of the university can be identified at this stage. The first of these events is the so-called *Recovery of Aristotle* – the rediscovery of Aristotle's scholarship and its introduction into universities' curricula. It was a gradual process spanning both XIIth and XIIIth century (Dod, 1988: 45-79). Highly rational and naturalistic thought of Aristotle influenced the direction of scholarly inquiry in

medieval universities and undermined traditional educational orthodoxy (Huff: 185, and 235-236). Theological texts were now reinterpreted through the prism of naturalistic philosophy. The way to interpret the world through naturalistic lenses signified no less than the onset of the scientific revolution (Grant, 1984: 68-102).

The impact of Aristotle's thought on the university education and knowledge production is hard to underestimate. It had some quite important implications for the university. The first implication is the emerging idea of the autonomy of scholarly inquiry which was born out of hard battles waged between those who wanted to introduce Aristotle to the university and their conservative opponents (Perry, Chase, Jakob and Jakob, 2008: 261-262).

The second implication concerned a change of universities' curricula. Previously taught areas of Trivium and Quadrivium were gradually substituted by a more precise division of disciplines, based on Aristotle's classifications (Huff, 2003: 179-188). It is at this point that instead of teaching general skills to scholars, the universities start to specialize their scholars in particular areas of inquiry. Thus, the vision of "the researcher" can be directly traced to the medieval epoch.

Another watershed moment for the university's history is the advent of a new paradigm of higher education in the XIXth century. This paradigm was based on ideas of Friedrich Schleiermacher, a German philosopher and theologian, and Wilhelm von Humboldt, a Prussian minister of education. They envisioned a model of higher education involving independence from the state, close interaction between a student and his tutor, and applied character of the university education (Fallon, 1980: 10-20).

Von Humboldt is credited with the further development of the idea of "academic autonomy" (Scott, 2006: 20). Humboldtian model of the university was first utilized to create the University of Berlin in 1810. It was since borrowed world-wide and influenced the whole system of higher education and research (Ibid: 22-23). Johns Hopkins University is one of the first examples of a direct application of this model in the United States.

The Humboldtian model also affected the way in which higher education was structured. Instead of direct transmission of knowledge to students, the model implied a degree of involvement of the students in the process of knowledge creation. Instead of teaching, based on pre-authorized materials, the professor was now supposed to share results of his research with his students, preparing the student for an independent knowledge creation. The lecture as a linear way of knowledge transfer gives way to the seminars and laboratories. By the end of the XIX century, the institution of the university becomes the dominant organization for scientific research (Ruegg, 1996: 3-42).

The university as we know it owes a lot to the Humboldtian paradigm shift. This shift was directly intertwined with the ongoing scientific revolution. There is no agreement on the timeline of the revolution, and some authors are skeptical of its very existence (Shapin, 1996). However between XIIth and XIXth centuries there was a profound change in the way the universe was perceived and studied. At the center of this change is a new form of empirical inquiry that is known as "the scientific method." This method, based on building and testing hypotheses, firmly established itself in the universities during the XVIIIth and XIXth centuries and contributed to a

long-standing association between the university and science that is still current nowadays.

After the scientific revolution and the advent of the Humboldtian model, the idea of the university independence from social and political realities got a firm hold of social imagination. It is true that unlike many other institutions of knowledge production, the university was a legally autonomous corporation. The legal autonomy of the university, however, does not necessarily translate into academic autonomy. Restrictions arise from the way socio-political system works. It is on this level that those critical of dominant knowledge paradigms are either marginalized or face outright ban. To illustrate this idea, let us revisit the main stages in the development of the European university.

The University of Paris, decreed by Philippe August in 1200, was put under direct authority of the church (Verger, 1995: 13). Its students and professors were treated as clergy; its organization and curriculum were decreed by papal bulls (Denifle, Chatelain, 1889: 136-139). The situation of the University of Bologna, a legal entity since 1158, was somewhat different. It was however still directly accountable to the authority of the Church, since it was under direct jurisdiction of the Papal States. The incorporation of universities certainly gave them a wider space to maneuver in the medieval society. Nevertheless they were far from independent from dominant social and political trends.

An early example of restrictions that medieval universities were facing is the "Condemnations of 1210-1277". The recovery of Aristotle brought to light many ideas contradicting some of the basic teachings of the Church. As a reaction the teaching of Aristotle was prohibited at the

University of Paris. According to a passage from Chartularium Universitatis Parisiensis "Neither the books of Aristotle on natural philosophy nor their commentaries are to be read at Paris in public or secret, and this we forbid under penalty of excommunication (cited in Thorndike, 1944: 26-27)". Thomas Aquinas eventually reconciled the teachings of Aristotle with the doctrine of the Church, which brought Aristotle back to medieval universities (Perry, Chase, Jakob and Jakob, 2008: 261-262).

The age of scientific revolution once again exposed the conservatism of the universities in Europe. As Richard Westfall noted "in 1600, the universities gathered within their walls a group of highly trained intellectuals who were less apt to welcome the appearance of modern science than to regard it as a threat both to sound philosophy and to inspired religion (Westfall, 1977:106)."And this time Aristotelianism was one of the main obstacles to the acceptance of new ideas.

Ideas of Aristotle fitted well with teachings of the Church. The geocentric model corresponded to the idea of mankind as a centerpiece of creation. Alternatives to mainstream theories were not well taken. Biographies of such figures as Galileo Galilei evidence clearly to the conservatism of medieval universities, and their unwillingness to contradict the Church. According to Westfall "With the exception of some doctors, virtually none of the leading scientists held university chairs, and the scientific revolution was created more despite the universities than because of them (Ibid: 107)." The traditionalism of the universities led many scholars to conduct their research in alternative institutions, such as emerging scientific societies (Ornstein, 1928: 298-304).

The growth of capitalism and the rise of the nation states somewhat changed the orientation of the European universities. With traditional forms of authority displaced, the university finally got a breath of fresh air. It is at this point of time, however, that the control over the organization and content of universities' teachings was simply passing from one authority to another. According to Hastings Rashdall "universities throughout Europe in the course of the fifteenth century tended in the same direction – towards the nationalization of Paris as of all other universities (Rashdall, 2010: 553)". Over the course of XVIIIth and XIXth centuries universities were gradually integrated into the machinery of the modern state. New, more sophisticated mechanisms of control were created to assure the university's compliance to dominant socio-political interests.

The state control over universities was exercised through various means – finances, administration, and certification. The loss of private financial resources of the universities was a gradual process extending from the late Middle-Ages to the XXth century. It involved complete or partial loss of original endowments that the universities had. According to Paul Gerbod "In less than a century and a half from the end of the French Revolution to the beginning of the Second World War in 1939, almost all university establishments, some earlier and some more radically than others, reached the stage where they lost their financial independence (Gerbod, 2004: 84)." As a result, many nation states started to finance their universities. The state funding of the university, ironically, came at a cost.

In the XVIIIth and XIXth centuries, strict administrative controls were established over universities. Ministries of

education were set up to oversee learning in general and higher learning in particular. Appointments of the university's administration were now handled by the state bureaucracy. In some countries even appointments to professorship became an exclusive domain of the state.

A related mechanism of control was the introduction of educational standards. They allowed the state to control smallest aspects of higher education. Students and professors alike now had to undergo various examinations set in line with discretions of the state. This involved corresponding changes of curriculum and internal organization of universities. John Scott commented on this tendency that "[In the early modern universities] the newly consolidated state began to increase visitations, intervention, regulation (curriculum, subjects taught, and publications allowed), and appointment of chancellors (Scott, 2006: 10)".

Where indirect controls did not suffice, nation states could always resort to their monopoly on violence. Famous examples of such actions are university purges in France in the XIXth century, which saw, among others, the dismissals of Francois Guizot and Victor Cousin (Gerbod, 2004: 97). Similarly, the Russian tsarist government subjected universities to occasional purges throughout the XIXth and the early XXth century (Flynn, 1971: 598-614; Whittacker, 1978: 148-167). In Prussia in 1819 the king issued an order that individuals posing ideological danger to the state should not to be tolerated within the universities (Pinkard, 2001: 440). Gerbod noted in this respect that "State interference in the functioning of the universities and schools thus intensified. As a result, university autonomy diminished during the nineteenth century (Gerbod, 2004: 121)."

The rise of communism and division of the world in two political blocs saw an extreme polarization of universities along ideological lines. The two superpowers ardently battled "subversive ideas" in their influence zones. Ideologically unfit university intellectuals were marginalized discriminated or purged by their respective overseers. Examples here are numerous in both ideological blocks[1].

The collapse of the Soviet Union and the triumph of the capitalist system once again seemed to grant universities much coveted academic autonomy. However, this autonomy was not complete. The modern states were crumbling piece by piece under the onslaught of free-market, which, like a large black hole sucked every social relation in its orbit. It is the workings of the market that determines to a large extent the direction of the university today. The issue of university rankings illustrates this situation quite well.

1.2. Research on University Rankings: Literature Review.

The topic of academic rankings is becoming more and more prominent in higher education discourse. Few have not heard about the rankings or have not commented on the topic. Numerous articles have been dedicated to the issue. Plethora of conferences, round tables, and workshops are organized to discuss university rankings annually. The issue of rankings received so much attention that it is now monitored by a non-governmental organization[2]. A whole

[1] See Ellen Schreker's research on effects of McCarthyism on United States' universities (Schrecker, 1986) or John Connely's account of purges in Eastern Block Universities (Connelly, 2000).

[2] See, for instance IREG Observatory that was created with a specific goal of monitoring ranking systems (http://www.ireg-observatory.org/).

business industry has been gradually forming around the rankings.

Despite a constant surge of interest in academic rankings, the main focus of various parties is on scope and method of academic rankings. Very few issues are being considered beyond that focus. Hence, academic rankings are often treated in isolation from the system that they attempt to measure. Yet, they are an inherent part of the academic system, and they influence directions of its development.

Similarly, agendas that are pursued in the research on rankings are usually quite narrow. A multitude of works have been dedicated to the analysis of history, methodology, and policy impacts of academic rankings. Much fewer works analyze rankings as a part of the system of knowledge production. This situation is likely due to the fact that, although numerous articles are published each year, there are but a handful of comprehensive works of sufficient length to analyze ranking issues in their proper context. In the following part of this section, the principal works that have shaped academic discourse on the international university rankings are reviewed.

Two main groups of works could be distinguished in the field of rankings research. The first group comprises works that provide multidimensional analyses of university rankings. Most of these books are nothing more than collections of articles by different authors. There are only few single-author books in the field. The second group of works comprises articles dedicated to the analysis of separate aspects of rankings, ranking methodologies, their advantages and faults. Most of these works are purely technical, but few do take a

closer look on implications of ranking methods for the global academic system.

One of the most thorough works that provides a comprehensive overview of university ranking systems is the report *Global University Rankings and their Impact* (Rauhvargers, 2011). The report was written by Andrejs Rauhvargers, senior adviser to the European University Association (EUA). It provides a thorough analysis of principal ranking systems, their potential implications, and their problems. Rauhvargers's report includes five main sections: introduction, ranking methodologies, analysis of results, conclusions, and guidance to interpreting ranking results. To date it is one of most important reference points in rankings research. The reason for the work's reference value is that, despite not offering much new information on implications of rankings, it integrates insights from various sources into one of the most complete overviews of global university rankings.

Rauhvargers's report is focused primarily on institutional rankings. The work does not provide analysis of auxiliary rankings – rankings of research productivity, or academic periodicals. The overview of rankings' methodologies and rankings' flaws is fairly standard. However, the analysis of implications of international ranking systems is quite interesting. In this respect, one of the most trenchant sections of the report is its concluding part, where the actual analysis of results is made. There are a number of important points in the conclusion, dealing with research missions of the universities, rankings biases, and rankings implications.

The main focus of Rauhvargers's report is on institutional and policy impacts of ranking systems. The bias towards natural

sciences is identified, including criticism of field normalization techniques and impact factor problems. Other problems that are discussed in the report include peer-review, language and regional bias. More relevant to this dissertation, however, is the attempt of the report to analyze distortions that rankings produce on institutional level. The analysis is done in a perfunctory manner, as the report pursues other goals. Three main distortions that are identified by the report is tilt towards better funding of natural sciences and medicine, incentives to tinker with the submitted data, and possible attempts to attract Nobel Prize winners. Rauhvargers does not go into as much detail on these categories as it is done in this dissertation. Furthermore, he does not provide any analyses on how rankings may impact individual incentives.

The popularity of the Rauhvargers's report prompted the author to issue the second version of the report (Rauhvargers, 2013) "with the intention of documenting the new developments that have taken place since 2011 (Ibid: 6)." The report, originally intended as a short addition to the first part, analyzes evolution of main ranking systems over the last years and provides an important perspective on policy responses and institutional strategies produced by the rankings. It is this latter part of the report that is of particular relevance to our work.

The new report consists of two parts. The first part lists recent changes in various ranking systems. An important addition to the report is an analysis of new developments in the ranking audit, particularly in regards to *The International Ranking Expert Group* (IREG). Additionally, the first part analyzes the main trends of the rankings and their policy impacts. These

latter sections are very interesting as they somewhat intersect with certain parts of our analysis. The second part of the report is more technical and concerns analysis of new players in the ranking business, as well as detailed analysis of updates to principal ranking methodologies.

As has already been mentioned, the ranking trends and policy impacts identified by Rauhvargers are especially relevant to our research. Among the trends of the university rankings, Rauhvargers lists focus on elite universities, neglect of humanities and social sciences, inadequate description of methodology and poor indicators, English language bias, and consolidation of ranking systems (Rauhvargers, 2013: 17-21). While some of these points are debatable, the others have already become well-established elements of the rankings discourse.

A more interesting part of the Rauhvargers' report concerns the impact of rankings. Rauhvargers notes that qualification recognition, eligibility of partner institutions for cooperation agreements, and mergers proliferation as some of the important policy effects that rankings have (Ibid: 21-26). Of these, only proliferation of mergers is directly related to our research and the author does not dwell on this issue much. Rauhvargers also analyses institutional responses to rankings. The two most important points that he makes are that global universities use rankings for strategic planning and that the universities adjust their strategies to suit the main ranking indicators (Ibid: 25). This directly supports the point that the rankings determine choices on the institutional level, elaborated in the latter parts of this dissertation.

Ellen Hazelkorn's book *Rankings and Reshaping of Higher Education: The Battle for World Class Excellence* (Hazelkorn,

2011) is one of very few comprehensive works dedicated to the analysis of rankings' impact on the international higher education. Unlike other analyses of global university rankings, which are often concentrated on immediate advantages and disadvantages of various rankings, Hazelkorn's account goes further to analyze implications of rankings for the future of higher education industry. She conducted numerous surveys and interviews with principal stakeholders in higher education sector, including students, government officials, funding agencies etc. Most important for this dissertation is that Hazelkorn's book provides a detailed analysis of institutional responses to incentives that academic rankings create.

The book consists of six chapters. The first chapter "Globalization and Reputation Race" provides an excellent overview of relations between globalization pressures and rising market competitiveness in higher education sector. This, according to Hazelkorn, is a function of three main factors. First, the narrative of the knowledge society established knowledge as a cornerstone of modern economy (Hazelkorn, 2011: 6). The second factor concerns competition for qualified professionals as an essential component of the success in the knowledge economy (Ibid: 7-8). Hazelkorn avers that the changing perspectives on higher education placed the sector at the core of attempts to build productive economy (Ibid: 8). Finally, she states that growing demands of higher education consumers practically pushed the system towards simple comparative measurements (Ibid: 9-10).

In the second chapter, Hazelkorn explains how rankings measure higher education institution's performance and how measurement proxies work. She provides detailed analyses of

rankings' methodologies and indicators. This is mostly a technical chapter, a prelude to the rest of the work. The third chapter provides a background for the next two chapters. It argues that rankings impact student and policy choices. Hazelkorn finds that institutions, as well as students are generally well aware of the rankings. Students may use them in choosing a suitable program, while institutions observe the rankings as influencing potential funding, accreditation and collaboration decisions (Ibid: 82-120). In the chapter Hazelkorn also identifies key stakeholders of the HE sector and researches their attitude towards the rankings.

Chapters four and five of the Hazelkorn's book develops her research on impacts of rankings on the student's choice and HE policy making. The fourth chapter is dedicated to the student choice. The empirical part of the chapter is based on interviews with international students. She finds that many students' choices are affected by the reputation of the prospective institutions. The reputation is in turn partly based on the position of an institution in domestic and international rankings (Ibid: 121-153). She also notes a constant increase in the influence of rankings on student choices over the last years (Ibid: 150). Similarly, in the fifth chapter Hazelkorn analyses impacts of rankings on policy choice. She conducts country by country study and shows importance of international rankings for policy making. Hazelkorn distinguishes two models of strategic positions that countries take in regards to rankings. The neo-liberal model aims to create a handful of research powerhouses, while leaving teaching and locally important research to less important universities (Ibid: 185). The social-democratic model aims to promote diversified system of higher education while keeping the global focus (Ibid: 185-186). In both cases, ranking have

contributed to a growing importance of higher education for the global economic competition.

Finally, in the last chapter of her book, Hazelkorn analyses how ranking reshape higher education. Higher education institutions are learning to reap the benefits of their position or visibility within the rankings. They are restructuring their organization, strategy, recruitment policy, and pedagogy in order to improve their position (Ibid: 153-186). The restructuring trends that Hazelkorn mentions confirm the idea of this dissertation that institutions factor their ranking performance into the choices they are making. Hazelkorn provides a list of effects that rankings have on various stakeholders of higher education. Some of these effects, such as "relieve best researchers of teaching," "increase output," and "reward faculty publication in highly-cited journals," are quite similar to the impacts that are identified in this work (Ibid: 202-203).

Hazelkorn's book is one of the very few attempts to look beyond the immediate impact of the global academic rankings on the system of higher education and research. First of all, the ranking are treated in the context of wider changes in the higher education system that happened over the last decades. Second, Hazelkorn actually shows how the rankings could potentially affect the system of knowledge production as a whole. In this respect, the book of Ellen Hazelkorn comes the closest to the purpose of this dissertation's analysis, albeit with different focus and conclusions.

Another comprehensive work on rankings is *University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education*, edited by Jung Shin, Robert Toutkoushian, and Ulrich Teiler (Shin, Toutkoushian, Teiler, 2011). It is the

first of multi-author works that are reviewed in this section. The three main chapters of the work are: "Organizational Effectiveness, Quality, and Rankings," "Methodological Issues of University Rankings," and "Social Impacts of University Rankings."

The first part of the work gives a general overview of the rankings. In the opening section of the work, Shin and Toutkoushian give a brief overview of problems that the rankings research deals with. They analyze history and rationale behind the rankings and their social effects. Among the problems of the rankings the authors distinguish emphasis on attracting students, lack of attention to different universities' missions, and promotion of particular disciplines. To rectify the problem the authors suggest creation of more nuanced rankings in the future (Shin, Toutkoushian, 2011: 1-16).

Shin also wrote another chapter for the first part. In this chapter, he claims that although rankings generally correspond to the logic of measuring organizational effectiveness "There is no clear evidence that ranking contributes to institutional quality, while ranking appears to have many negative effects on higher education institutions (Shin, 2011: 31)".

Another interesting chapter of the work is written by Ulrich Teiler. The chapter takes a critical approach and summarizes main problems of ranking systems. Teiler concludes that "The popularity of rankings is not positively related to their 'quality' and normative 'acceptability.' There is even a "law" of a negative correlation, namely, the lower the quality and the more biased the normative basis, the higher the popularity of a ranking study is likely to be (Teiler, 2011: 67)".

The second part of the book deals with ranking methodologies. Longden reviews ranking indicators and weights. He claims that ranking methodologies could often be confusing and cannot really measure complexity of higher education institutions (Longden, 2011: 73-104). Webber analyzes faculty productivity, which is quite important for the arguments of this thesis. In line with our ideas, she finds that productivity as measured by the amount of publications is the main quantitative indicator of faculty performance (Webber, 2011: 118). Toutkoushian and Webber aver that measurements of research performance are still fairly primitive, rely on hardly reliable mix of indicators, and tend to favor quantity over quality (Toutkoushian, Weber, 2011: 140-141). Trigwell draws attention to an almost complete absence of teaching measurements in the principal ranking systems, which parallels our conclusions on potential impacts that the rankings may have on academic profession (Trigwell, 2011: 165-181).

The third part of the book is particularly interesting to this research, as it analyzes social impacts of university rankings. Morphew and Swanson point out that the rankings are going to stay an important part of higher education system. Thus, it is important to pay attention to them, but without "falling to their allure" and losing sight of the institutional mission (Morphew, Swanson, 2011: 196). Arimoto analyzes reactions in academic profession to university rankings. Her chapter is quite interesting for our work. It provides insights into impacts of the rankings on changing system of knowledge production. Among the most important impacts Arimoto distinguishes growing importance of research, decline of teaching, and a tendency to measure academic productivity exclusively by research (Arimoto, 2011: 229-258). Finally, the

concluding chapter, authored by Ulrich Teiler is dedicated to the future of university rankings. He suggests various possible scenarios in the development of ranking systems. The important part of one of scenarios is that "if main stream rankings are biased towards the research functions, there is potential for serious problems in the quality of teaching and learning (Teiler, 2011: 264-265)." As it will be demonstrated in the following chapters, one of the most important impacts of rankings is precisely the undermining of the university's teaching component.

Another collection of works on rankings is *The World Class University and Rankings: Aiming beyond Status* (Sadlak, Nian Cai, 2007), edited by Jan Sadlak and Nian Cai Liu. The work consists of three parts: "Characteristics and Criteria of the World-class University," "Evaluation and Ranking of World-class Universities," and "Building a World-class University." Only the second part of the collection is applicable to the topic of the dissertation.

In the second part Jan Sadlak provides the general overview of connections between the global rankings and the trends defining higher education in the last years (Sadlak, 2007: 75-87). The entries of van Raan, Bellon, and Zitt and Fileatreau discuss methodologies of principal rankings systems. Van Raan reiterates the point that peer-review is somewhat unreliable, and simple metrics do not quite represent the complexity of educational institutions. Bellon draws the attention to the point that rankings are essentially external to the institution, and draws a line between internal and external evaluations. Zitt and Fileatreau point that the ARWU rankings tend to prioritize larger institutions over smaller ones. In other words, they show that ARWU is strongly size-

biased. Finally, the entry by Liu and Ying continues the long tradition of their other accounts of methodologies and problems of the ARWU ranking. The rest of the articles mostly analyze specific rankings and are less relevant to our research.

Similarly diverse work on the university rankings is *University Rankings, Diversity, and the New Landscape of Higher Education*, edited by Barbara Kehm and Bjorn Stensaker (Kehn, Stensaker, 2009). The work also includes entries by multiple authors. The volume is split into two main parts: "Methodology" and "Implications".

In the first part, the entries are dedicated to methodologies of rankings, their uses and misuses. The book provides a refreshingly critical perspective on the ranking matters. Proulx, for instance, point out multiple problems of ranking methodologies, as well as their homogenizing character, unreliable indicators, and reputational dependency (Proulx, 2009: 35-46). Similarly, Federkeil points to various problems of reputational rankings. He notes that there is a certain correlation between reputation of a university and its research performance; however, in individual cases the correlation might be quite inaccurate (Federkeil, 2009: 19-34).

The second part of the book is smaller and includes an analysis of various implications of the global rankings. Simon Marginson provides an analysis of how university rankings influence distribution of private and public goods in higher education. One of his conclusions is that rankings often work according to their own logic, rather than the logic of the higher education system (Marginson, 2009: 85-96). The article of David Dill also points to the increasing tendency of rankings to be valuable as a tool of prestige, rather than the

real measurement of the system of knowledge production. In his opinion, such situation could lead to the higher costs of education for its consumers and the degradation of rankings to a sort of simple screening mechanism as universities vie for dominance in the global system (Dill, 2009: 97-116).

Another notable report on international university ranking is *A World of Difference: A Global Survey of University Ranking and League Tables* by Alex Usher and Massimo Savino (Usher, Savino, 2006). It is considerably smaller than the previous works. The report is primarily concerned with methodology of rankings and consistency of their results. The authors conclude that "league tables are only in their infancy, and all of them can clearly benefit from greater analysis of the assumptions implicit in their own schemes. This is particularly the case with respect to international league tables, which, as noted above, have a restricted range of possible indicators due to the lack of available cross-national comparative data. To the extent that international ranking schemes are taking on a quality assurance role in the growing international student market, this is a matter of no small import, and suggests that the global higher education community needs to begin to look at how best to collect and report data on institutions so as to permit thoughtful and responsible inter-institutional comparisons (Usher, Savino, 2006: 38)".

Among the works that treat rankings in passing are Ben Wildavsky's influential book *The Great Brain Race* contains a chapter dedicated to university rankings (Wildavsky, 2010). The chapter called "College Rankings go Global" provides valuable information on issues behind the main university rankings. In particular, Wildavsky gives a good insider's

account on the beginnings of the THE-QS ranking. The chapter gives a standard overview of the principal ranking system's history, and a passing reference to their methodology (Ibid: 100-140). Wildavsky also provides an overview of some of the national responses to the global rankings. The biggest merit of the chapter, however, is that it treats international rankings as a reflection of global competition for talent. "If rankings ultimately spur universities to improve the quality of the research they produce, as well as the education their students receive, then the much-disparaged metrics will have succeeded […] in providing their very own version of added educational value (Ibid: 140)."

Jamil Salmi's work *The Challenge of Establishing World Class Universities* is another work that deals with rankings (Salmi, 2010). The book shows connections between the knowledge society narratives and global rankings. The work treats rankings in somewhat perfunctory manner as a reflection of some preexisting excellence. Salmi's approach in this respect is very much similar to the organization he represents (The World Bank). Although Salmi admits "methodological limitations" of rankings, he states "world-class universities are recognized in part for their superior outputs. They produce well-qualified graduates who are in high demand on the labor market; they conduct leading-edge research published in top scientific journals; and in the case of science-and-technology–oriented institutions, they contribute to technical innovations through patents and licenses (Ibid: 5)." The work of Salmi goes little further than to imply objective reality behind the ranking systems, and it does not provide deep reflections on their possible impact. Yet, it is one of the

reference points in many other papers dealing with global rankings.

The technical papers on the issues of rankings are plentiful. They discuss concrete criteria of various academic rankings. One of the most notable papers here is "Academic Ranking of World Universities" written by the creators of the ARWU ranking Nian Cai Liu and Ying Cheng (Liu, Cheng, 2005). The paper provides the list of measurement indicators beyond the ARWU rankings and explains the reasoning behind the choice of these indicators. It also gives a brief historical overview of the emergence of ARWU. The paper is especially valuable because it gives the perspective of the people behind one of the most important ranking systems.

A paper providing an important critical point on the ARWU ranking is "Irreproducibility of the Results of the Shanghai Academic Ranking of World Universities" by Razvan Florian (Florian, 2007). The paper receives less attention that it deserves. Yet, it puts forth a claim that the results of the ARWU ranking are not reproducible independently, based on the official criteria and the weights assigned to them. Considering that the paper is methodologically sound, its claims are a serious challenge to the ARWU ranking.

Anthony van Raan, one of the major critics of the ARWU rankings, published an early critical account of the rankings. In the paper, he pointed both technical and methodological problems of ARWU. On the list of the problems identified are non-matching references, institutional discrepancies, biases of citation databases, and English language bias. Many of the problems identified in van Raan's study have also been mentioned in later papers. The paper caused a fervent exchange of opinions when Liu and Cheng pointed out

inaccuracies in claims made by van Raan (Liu, Cheng, 2005). This in turn led to van Raan's publishing a response paper in which he stood by his most important conclusions emphasizing, in particular, the problems of citation databases (van Raan, 2005). He stated that "Bibliometric analysis for evaluation purposes or for studies of science in general is and must be much more than just using what is readily available in databases. This is a crucial element of advanced bibliometric research, development and practical application (Ibid: 112)."

Another critical point of view on ARWU is presented in the paper "Should you believe in the Shanghai ranking?" by Jean-Charles Billaut, Denis Bouyssou, and Philippe Vincke (Billaut, Bouyssou, Vincke, 2010). The authors contend that the criteria of the ARWU rankings "only very loosely connected with what they intended to capture (Ibid: 249)." In addition, they point out that the aggregation methodology of the ARWU ranking is flawed. Although the paper provides a very good criticism of ARWU, it does not go beyond the disagreement with the ranking methodology. Since everyone is entitled to their own opinion, a simple statement that criteria are not robust enough is hardly a relevant point, considering that Liu and Chang pre-empted such criticism by stating "Any ranking is controversial, and no ranking is absolutely objective (Liu, Chang, 2009: 3)."

Among the various ranking systems THE-QS, which later evolved into the QS rankings, attracted most criticism by far. In particular, the system of peer review was heavily criticized based on its unreliability and fluctuations (see, Ioannidis et al., 2007). Another often mentioned fault that the QS shares with ARWU is the reliance on citation databases that due to

their peculiarities undermine the importance of social sciences and humanities (Rauhvargers, 2011: 64).

Neither the THE, nor the QS rankings have been analyzed extensively in a separate account. Most of their methodological advantages and faults are discussed in comparative papers contrasting multiple ranking systems. The relatively greater attention to the ARWU ranking may have been due to its earlier appearance. The most important subset of the works on methodology of various ranking, thus, concerns the works that compare the principal ranking systems. These works often aim either to claim advantages of one ranking system over another or to compare their results.

"Comparing University Rankings (Aguillo et al, 2010)" is an important article on the international rankings. Its results are interesting in regards to the THE-QS ranking (the predecessor of the QS ranking). The authors identified that the reputational rankings tend to bias towards institutions of certain countries, such as UK and Australia (Ibid: 255). At the same time they concluded that the THE-QS and ARWU are surprisingly similar when it concerns citation counts (Ibid). This point is important as it demonstrates that the research productivity is often calculated similarly by various rankings.

One of the earlier papers discussing the role of rankings is "Dilemma of Ranking (2006)" by Philip Altbach. In the article Altbach made multiple points that are still relevant to the ranking issues. He pointed the quantity bias of ranking measures stating that "the number of articles published does not necessarily relate to the quality or impact of the articles (Ibid: 2)." Furthermore, he identified natural science bias, lack of consideration for teaching quality, and the exclusive orientation of rankings towards research intensive

universities as the principal problems of main ranking systems.

Altbach reiterated his position in another article "The Globalization of College and University Rankings (Altbach, 2012)." He again pointed to the research orientation of ranking systems and the absence of reasonable teaching measurement from the university rankings, as well as a certain dominance of natural sciences. An important point that Altbach made is that the rankings create new centers and peripheries. The privileged position of some institutions could be a result of advantages that have nothing to do with the institutional quality. For instance, Hong Kong's tradition of English language academia, as well as the US and UK access to global academic networks constitute important advantages for ranking higher. According to Altbach "while the barriers between centers and peripheries are more permeable, they nonetheless remain formidable (Ibid: 30)".

Ellen Hazelkorn's paper on "the Impact of Global Rankings on Higher Education Research and the Production of Knowledge (Hazelkorn, 2009)" is another important source for our analysis. Except for already traditional overview of ranking methodologies and policy responses, Hazelkorn provides an interesting opinion on how rankings reshape the system of knowledge production. She distinguishes five main impacts of rankings. First, there is the focus on narrow definition of knowledge and scientific disciplines by which Hazelkorn essentially means limited focus on harder sciences as indexed by main citation databases. Another impact is focus on traditional outputs which involves measurement of quality as defined by narrow academic community rather than society in general. She mentions "focus on bio-sciences

and related (sub) disciplines (Ibid: 9)," the category in which Hazelkorn puts multiple ideas such as head-hunting for academic scholars, focus on measurable research and research productivity. This idea somewhat parallels ideas elaborated in third and fourth chapter of this dissertation. However, Hazelkorn does not ponder on it in great detail. The issue of "measuring 'fundamental' or 'basic' research (Ibid: 10)" refers to the fact that rankings tend to privilege tangible scientific research over intangible impact as that of humanities and creative/cultural industries. Finally, she mentions "Building World-Class Universities vs. World-Class Systems (Ibid)" as a tendency to use one set of criteria to measure HEIs with different roles and functions.

As the discussion above demonstrates there is a large number of works dedicated to the analysis of rankings. Due to limitations of space, only perfunctory analysis of the vast body of articles is presented. However, up to the author's knowledge most of the fundamental works to date have been reviewed above. Despite the vast amount of research dedicated to analyses of academic rankings, there is a surprising shortage of substantial works looking beyond the immediate impacts of rankings. Most works on the topic are in the form of research articles. These articles by virtue of their format are unable to delve deeper into the issues resulting from the immense influence of measurements in academia. The few books that attempt to investigate impact of the rankings in greater details do not go into much detail on wider implications of rankings and measurements.

The main conclusions of various analyses are quite similar. The same points are repeated by both established researchers and newcomers to the field. Only some of these researchers

go further than stating well-known points on wider effects of rankings and ranking systems. For instance, rankings treat humanities unfairly. This point has been raised by Rauhvargers, Hazelkorn, Altbach, and others. However, what does this situation mean for the future of the academic system is beyond the scope of most analyses. In the same way, many researchers have pointed out that rankings best measure research activities and underplay teaching. Again, how this situation affects and will possibly affect the academic system is not elaborated. It is clear that most of the researchers try to stay away from a speculative analysis of what the future will bring. However, hypothesizing about prospective impact of various incentives that rankings introduced to the academic system is only a logical outcome of the previous analyses.

Furthermore, there is a certain tendency to treat university rankings apart from other ranking systems. Most of the works analyze either national and international higher education institutions rankings or other rankings that in this thesis are called "auxiliary". The auxiliary rankings include, for instance, journal rankings and individual research productivity rankings (H-Index). To the knowledge of this author there are no papers that treat various rankings as separate instances of a common system of measurements. Yet, an analysis of auxiliary rankings is necessary to understand effects of higher education rankings better. One reason for the analysis is that higher education rankings often take into account data from the auxiliary rankings. Another reason of the auxiliary rankings; importance is that understanding methodology of these rankings is essential in order to highlight methodological particularities of university rankings. Finally, a comprehensive picture of the changes that rankings introduce into the academic system is only possible

if incentives of both institutional and auxiliary rankings are taken into account.

Finally, the whole range of literature on the academic rankings is focused mostly on institutional and policy impacts of international rankings. Since global rankings measure the performance of higher education institutions, this approach seems reasonable. However, this vision is somewhat limited. The fact that the rankings create certain incentives for institutions means that they create incentives that permeate higher education institutions from top to bottom.

If institution participates in the global measurement race, it has to goad its departments to perform well in this race as well. This line of reasoning extends further. Institutional departments also have an incentive to goad their faculty performing well on particular indicators. Therefore, rankings pervade all the levels of academic system from education policy to recruitment decisions of departments. While some references are made to the impact of rankings on the individual choices, no systematic investigations have been done in this direction. The focus of works that actually investigate impacts of ranking on individual choices is mostly on student choices, while the impact of rankings on researcher choices is barely mentioned. This issue also refers back to the necessity of analyzing institutional rankings together with auxiliary rankings, which elucidate better the effects measurements on the individual level.

1.3. Identifying the Problem: Structure and Methodology of the Research.

In light of the issues mentioned in the previous sections, this thesis aims to fill the existing gap in the research on academic

rankings. To fulfill this goal, it is necessary to follow a multidirectional research agenda. Thus, this research has to address the following issues: elucidate interrelationships between the principal institutional and auxiliary rankings, analyze principal incentives that rankings create on various levels of academic system and their relationships, and hypothesize the impact that academic rankings have had and will have on the transformation of the academic system.

The structure of the thesis is determined by these three goals. To understand what kind of incentives academic rankings create on various academic levels, it is necessary first to see how the principal ranking systems work and how they interact with various auxiliary rankings. The measurement methodology of both principal and auxiliary ranking system should, thus, be explained and analyzed. Once the task is done, it is possible to proceed to the analysis of various incentives that the rankings create. The dissertation will recap main policy and institutional incentives, before proceeding to outline individual incentives that rankings create. The relationship between various incentive levels is another important issue for the present analysis. In the final section of the dissertation, the impact of the aggregated incentives of the academic rankings on the direction of knowledge production is analyzed and discussed.

To fill the aforementioned gaps the dissertation uses a variety of research methods. These methods include surveys to gather empirical data, game theory to construct behavioral models, and a comparative analysis to contrast methodologies of various rankings systems. The meta-theoretical framework of the research is rational choice or methodological individualism. The thesis assumes the importance of

economic incentives for public, individual, and institutional choices.

The thesis follows the inverted pyramid model of organization. This means that it starts with an overview of the sub-field of our research before proceeding to identify a research question. The thesis proceeds from general to specific issues eventually culminating with the elaboration of the principal questions of our analysis. After the questions have been tackled, the work returns to more general implications of our findings. In the concluding chapter the inverted pyramid is reversed as the work proceeds from analyzing immediate implications of our finding to the meanings that these findings have for the sub-field of our research.

It is necessary to explain the structure of this work in relation to the inverted pyramid scheme identified above. The work starts with an overview of the evolution of the European system of higher education and knowledge production throughout the history. This is the most general part of our research and its aim is to demonstrate how the main features of the academia have formed[3]. The section is important to demonstrate how the academic rankings challenge the very pillars on which the European system of knowledge production has traditionally rested. The section is based mostly on secondary historical literature, although some primary sources are occasionally used. Higher education and knowledge production are two systems that have traditionally coevolved. The implication of the section is that these systems have also been influenced by various socio-political processes.

[3] An extended version of the section was also published separately (Dmitrishin, 2013a).

The rest of the chapter identifies one process that currently affects the system of higher education and knowledge production – the emergence of global university rankings. The literature review shows the state of research in the field, and the current chapter outlines the research structure. The goal of the research is to go beyond the immediate impact of the rankings and see how the rankings affect knowledge production as a system. Three main directions of our analysis are: to identify the interactions between methodologies of main ranking systems and auxiliary academic rankings; to show how rankings affect incentives on multiple levels (individual, institutional, policy), and how the various incentives levels are connected; and to discern fundamental impacts that rankings have and will have on international academia. The next three chapters follow this tri-partite analysis.

The second chapter is dedicated to the analysis of history and methodology of main ranking systems. The three main sections of the chapter are: history of ranking systems, methodology of main ranking systems, and overview of auxiliary rankings. The section on the history of the ranking systems is quite useful to set the global rankings in context and show how their methodologies evolved out of previous attempts at ranking higher education institutions. The second section provides analysis of methodologies of the principal ranking systems: THES, ARWU, and QS. Other ranking systems are consciously left outside of the analysis. This is done for two reasons. The first reason is that the three ranking systems draw the most attention by far. The second reason is that most university rankings employ a very similar mold of analysis to the three ranking systems, and thus they are redundant to the arguments of the thesis. Finally, the third

section of the second chapter deals with rankings of journals and individual researchers to show how the major academic measurement systems are connected.

Although this material is quite well studied, the chapter goes beyond traditional analyses in that it shows interactions and fundamental similarity between the principal ranking systems and auxiliary rankings. The effect that the rankings have on the system of knowledge production could only be understood if incentives from various rankings are analyzed together to provide a complete picture of an incentive network that the global system of measurements creates. The results of the chapter are illustrated in the form of a scheme in the final section.

The primary source of the analysis is the information provided by the ranking systems themselves, which can be found on their websites. A significant amount of information is drawn from various secondary sources. In particular, the information on methodological problems and tests of the principal ranking systems is often drawn from various articles. Similarly, the works of Hazelkorn, Rausvargers, and others served as a useful reference on methods of various rankings and their implications. Analytical comparisons between the ranking systems are done primarily by the author and constitute one of the original contributions of this work. The scheme is also made by the author and aims to provide a succinct overview of the relations between main rankings, auxiliary rankings, and principal databases on which the rankings are based.

The third chapter constitutes the theoretical nucleus of our work. It is the largest chapter by volume, and it presents the bulk of theoretical contributions that this dissertation makes.

It is divided in six sections and utilizes various methods to tackle the impact of rankings on the network of incentives in the academia. The goal of the chapter is to demonstrate that the rankings pervade various levels of decision making in the academia. The combined effect of these incentives significantly affects the direction of the knowledge production system.

The first section aggregates evidence that good performance in the rankings is extremely beneficial for higher educational institutions and countries where these HEIs are located. The section aims to demonstrate why there would be any incentives to perform well in the rankings in the first place. The reason for these incentives is actual economic benefits associated with decent performance of national HEIs in international rankings.

The second section opens the discussion of incentives that rankings create on various levels. It shows that on the policy level there are incentives for particular policies to improve the performance of national higher education institutions in international rankings. It identifies mergers, new flagship institutions, excellence initiatives, and better funding of STEM disciplines as the principal policy responses to the growing importance of ranking systems. Examples from various developed and developing countries are used to demonstrate how these policy responses are implemented in practice. The discussion of the section is not entirely new. Hazelkorn gave multiple examples of policy responses on governmental levels (Hazelkorn, 2011). In our case, however, the focus is mostly on interactions between policy, institutional, and individual incentive levels, rather than on measures taken by public authorities in response to the rankings.

The third section continues the discussion by showing how policy incentives shape incentives on the institutional level. Furthermore, the section discusses incentives peculiar to institutions participating in the ranking race. An important idea of the section is that the more an institution is engaged in the global competition, the more it needs to follow the rules of the game that the rankings create. The larger contribution of particular disciplines, methodologies, and types of research for ranking performance is elucidated in the section. Many ideas of the section develop a well-known point that global rankings measure certain fields and research cultures better than others. Although this idea has long been wandering around the ranking literature, its implications have not heretofore been studied in depth. This thesis fills this gap by providing original insights into the issue.

The fourth section continues the analysis of incentives that the rankings create. It analyzes micro or individual level incentives. It is one of the most important contributions of this research, as except for student choices, the implications of rankings for individual choices have not been researched as of yet. The section studies the impact of rankings on individual behavior through the prism of both institutional and policy incentives of ranking systems. It demonstrates how multiple incentive levels interact to determine and guide individual choices. Except for the common conclusions that rankings undermine humanities and disturb traditional balance of teaching and research, the section finds other interesting implications of the rankings for the system of knowledge production. In particular, the tendency of rankings to marginalize minor strands of research is brought to fore. This process is elaborated on the case of heterodox economics. The section demonstrates that rankings create a set of incentives to

select more established research against marginal research areas. While this does not seem to be an important problem, it could potentially skew the system of knowledge production in the direction of low-risk, low-yield research and discriminate against bolder, riskier, but higher-yield projects.

To demonstrate how this process works in practice, the section five presents a model where both individual and institutional incentives are put together. Methods of game theory are employed to illustrate behavioral choices under the incentives that global academic rankings create. The model is based on standard assumptions of rationality of the players, where aggregate behavior is expected to yield predicted outcomes. The payoffs are assigned randomly and are based on the ordinal utility logics. The model attempts to analyze recruitment choices of junior recruitment committees in economics when faced with a choice of a candidate working in mainstream economics strands, and a candidate working in non-standard (heterodox) economics strands. It is shown that the committee would prefer the mainstream candidate if the ranking incentives are taken into account. Although the section analyzes a very specific case, the logic of this scenario can be extrapolated onto the larger institutional context. If an institution or a department wishes to be ranked higher in international rankings, it is better to opt for more established research fields. This finding has important implications for international academia, as it shows a certain skew in the system of knowledge production. Whether this skew is introduced by the rankings, or the rankings simply reflect the preexisting skew is an important question that will have to be investigated in the future.

The sixth section of the third chapter is dedicated to the empirical analysis of the game-theoretical model from the previous section. To test whether the model could withstand the reality check, we have conducted a series of surveys aimed at graduate students in economics and members of junior recruitment committees. The questions that the surveys asked were related to the assumptions and conclusions of the model. Although the assumptions were based on the information provided in preceding sections, it was important to see whether the actual situation would correspond to the predictions of our model.

The surveys were conducted anonymously. Almost three hundred responses from graduate students were registered. The surveys aimed at wide geographical audiences. In line with our assumptions that global higher education institutions are more eager to participate in the system of global competition, we had focused mostly on US, European, and Chinese universities. Admittedly, this constitutes a certain bias. However, keeping in mind that the majority of academic research in economics is produced in these regions, it is reasonable to focus on the regions in the surveys. The distribution of respondents was equally wide. More than thirty HEIs were randomly selected from a list of top economics departments according to the RePEc list[4].

The results of the survey largely confirmed the assumptions of our model. Some discrepancies had to be analyzed and explained in the section. The overall picture confirms a selection bias against heterodox economics. How important this bias is an open question, however. The main implication

[4] RePEc/IDEAS, Top 25% Economics Departments, http://ideas.repec.org/top/top.econdept.html

of the survey is rather the existence of incentives, realized by the principal game players, to select against marginal strands of research, which in future could have detrimental effects on the system of knowledge production.

Analysis of the possible impacts on the system of knowledge production is conducted in the fourth chapter of the dissertation. The chapter is divided into three sections, reflecting the pyramid structure. It progresses from more specific effects of rankings on international academia to more general ones, culminating in an analysis of implications of the effects identified in the previous chapter for the future of the European higher education and knowledge production model. The chapter presents a theoretical discussion and proposes some scenarios of future directions of the knowledge production.

The first section of the chapter discusses the problems and potentials of rankings in relation to the findings of the previous chapters. The skew in the system of knowledge production is identified and possible scenarios of the future of rankings are discussed. The chapter is thus reminiscent of Teiler's discussion of the future of the ranking systems (Teiler, 2011). Unlike Teiler, however, the discussion of the section is rather specific and aims to show how diversification of ranking systems could possible solve the skew that the system of knowledge production currently has.

The second section of the chapter is rather more sociological. It discusses construction of the order of power in international academia and what it means for the future of knowledge production. The rhetorical effect of rankings is the issue of focus in the section. The section describes and dissects the space of international academic discourse. Multiple ideas here

are borrowed from theoretical discourse analysis and sociology of power. Among the questions that are asked in the section are: who is allowed to speak in the academia, whose voice is more important, and how knowledge is shaped by various rules of discourse.

Finally, the third section of the fourth chapter is dedicated to the impact of rankings on international academia on the macro-level. It, thus, completes the hourglass schemes, that started with a history of development of the system production in Europe. The final section of the paper refers back to the contours that the international academia had until now, and explains how these contours are being gradually diluted. The three main processes here are the demise of humanities, fission of traditional academic roles, and subjection of knowledge production to new social forces. Without any exaggeration, the academic system is undergoing revolutionary changes. The system of knowledge production that was born out of philosophy and humanistic reasoning is sidetracking its traditional basis in favor of more sterile, technological solutions. The Humbolt system of unity between teaching and research crumbles piece by piece. The knowledge production itself is not subjected to direct political guidance anymore; however, it is now in thrall of multiple socio-economic processes that are often called "the market." The future of academia is unclear. The section tries to get a gist of the numerous processes that will determine the future of the academic system and make reasonable predictions.

The short outline of the dissertation presented in this section shows a variety of problems that are being addressed and multiple methods used to tackle them. At the core of our discussion are global academic rankings. However, academic

rankings are just a prism for a broader analysis. The dissertation constantly refers back to wider issues surrounding transformations of the global academia. It is only in this context that the rankings could be understood outside of their immediate impact. Although there is still much to be done in this research field, the thesis provides a valuable entry point for further analyses.

Chapter 2. History and Methodology of Rankings in Higher Education and Research.

2.1. History and Context of Global Ranking Systems.

We live in the world where everything is measured. Since the project of Enlightenment, measuring has been the instrument of choice in determining desirable parameters of a unit. The mechanistic assumption behind the measures is that the social system is perfectly comparable to the natural world; hence, the attempts to measure all the forms of social relations became commonplace in our society.

This tendency did not spare the educational system. For decades there have been attempts to create a set of measures to evaluate institutions of higher education and research production. The first of these measures go back to the end of the XIX century. In the US, the first measurements of higher education system were conducted already in 1870, when the Bureau of Education started to publish statistical data on US universities (Snyder, 1993).

Another chapter in the story of measurements was opened in 1910 when James M. Cattell published a study of one thousand prominent American scholars, including their education and institutional affiliation (Cattell, 1921). He developed his study by dividing the number of the prominent scholars by the total number of faculty that each institution had, opening a door for comparisons between these institutions. By the second part of 20th century, higher education rankings had become more prominent in the American higher education discourse (Webster, 1984).

In 1925, the first reputational ranking was published by Raymon Hughes, then a president-emeritus of Miami University. It was an innovative enterprise since it ranked not only universities, but also academic disciplines (Hughes, 1925). However, it is in 1957 that Chesley Manley of *Chicago Tribune* publishes a precursor to full-scale differential rankings. The ranking divided US higher educational institutions into six broad groups: best universities, co-ed colleges, women's colleges, law schools, men's colleges, and engineering schools (Michigan Alumnus, 1956: 321-323). And, finally, in 1983 the *US News and World Report* (USNWR) published a report "America's Best Colleges" that would become arguably the most influential college and university ranking in the United States (Morse, 2008).

The popularity of university rankings in the United States may be explained by confluence of two factors. On one hand, a strong influence of positivist tradition led to a belief in usefulness of social measurements. On the other hand, rising costs of attending college created pressures of assuring the best possible education choice for the money invested.

Nevertheless, United States was not the only country to toy with measurements of universities' performance. Already in 1900, Alick MacLean conducted investigation on prominent personalities of the United Kingdom, including information on the universities that they had attended (MacLean, 1900). In 1986, United Kingdom's University Grants Committee started a process of assessing research performance of its universities. This process, called the Research Assessment Exercise (RAE), has since been undertaken regularly on an approximately 5-year basis. Since 2008, the results have been presented as a league table.

Still, it was in the United States that the system of national rankings was developed the most. By the time other countries started experimenting with rankings, the US had already had a developed system of college and university rankings. It came as a surprise then that the first of the global university rankings came from China.

The first attempt at an international comparison of higher education institutions (HEI) was made by the *AsiaWeek* magazine. In 1997, it compiled a ranking of universities in South-East Asia. Shrouded in a constant controversy and having trouble obtaining data from its focus group, the AsiaWeek ranking was discontinued in 2001 (Salmi, Saroyan, 2007: 40-41). According to Salmi and Saroyan "AsiaWeek attributed the negative reactions partly to the fact that many universities had taken offence to their low ranking and partly to political motivations, as in the case of some Chinese universities upset by the inclusion of Taiwanese universities in the ranking (Ibid: 40)."

The AsiaWeek ranking paved the way for other exercises in comparing higher education institutions. The work on comparing performance of top Chinese universities to those of the United States started already in 1998 at the Shanghai Jiao Tong University (SJTU). According to Ben Wildavsky "Shanghai Jiao Tong administrators, worried about the university's decline from its once-exalted position in prerevolutionary days, began a series of planning meetings aimed at assessing where the university stood compared to others, particularly in the key area of research productivity (Wildavsky, 2010: 112)." Nian Cai Liu, one of the authors of the SJTU ranking, states that "From 1999 to 2001, Dr. Ying Cheng, two other colleagues and [he] worked on the project

of benchmarking top Chinese universities with four groups of US universities, from the very top to ordinary research universities, according to academic or research performance and based on internationally comparable data (Liu, 2010: 146)."

This work led to publication in 2003 of the first global university ranking – *Academic Ranking of World Universities* (ARWU) – that aimed to measure research performance of international higher education institutions. The asserted goal of this ranking was to provide Chinese universities with a reference point for further development (Liu, 2009: 2-3). Initially, the ranking was conducted under the aegis of Shanghai Jiao Tong University, and it is still often referred to as the "Shanghai ranking".

As the interest of Chinese knowledge policies lay predominantly in the area of natural and applied sciences, the methodology of ARWU ranking was specifically designed to measure universities' research in these disciplinary domains. It ignored the disciplines of arts and humanities and sidetracked social sciences. It also neglected indicators that were not specifically connected with research. But, as has been pointed out by its authors "Any ranking is controversial and no ranking is absolutely objective (Liu, Cheng, 2005: 13)."

ARWU attracted a great deal of attention from various stakeholders in higher education. It has been both praised and criticized. However, the initial response was allegedly quite positive. In the words of the authors "The Ranking Group have received numerous emails, about one third of the emails simply applaud ARWU, 60% of them are positive about ARWU and offer suggestions on improving ARWU. Only about 5% of the emails have negative views on ARWU (Ibid:

2)." Peculiarly, many of the laudatory evaluations came from the countries where ARWU's highest ranked universities were located.

Having had quickly realized that they tapped into a goldmine, the authors of the ARWU ranking divorced themselves from their institutional affiliation with the SJTU in 2009. The new institutional husk, Shanghai Ranking Consultancy, strengthened ARWU's claim to objectivity.

The immediate acceptance of ARWU both by its proponents and its critics may be explained by two factors. In economic terms, ARWU filled an empty market niche and satisfied hitherto unidentified demand. In political terms, the elite higher educational establishments that placed high in the ranking were quick to accept ARWU's legitimacy. This move supplied ARWU with a reputation boost and cemented the position of the ranking. In a backward loop it also cemented the position of the high-ranking higher educational establishments in the global system of knowledge production.

At the same time, the ARWU rankings were not spared of strong criticism. Some noted the failure to evaluate teaching quality of the universities, while others criticized demonstrative disdain towards humanities and humanistic social sciences. Complaints – as expected – came mostly from the fringe and, thus, were easier to discard. According to Helena Spongenberg "France has long called for a European alternative to current global league tables, arguing that the selection criteria of existing rankings favour Anglo-Saxon higher education institutions to the disadvantage of French and other European universities (Spongenberg, 2010)." The bitterest defeat, however, is the one bordering on victory. The

winners in the eyes of everyone but themselves set off to redress a glaring injustice.

The precise moment that the British higher education establishment started to work on alternative ranking system is not known. However, the idea seems to have had been looming in the shadows for a long time. According to Ben WIldavsky, it was in the couloirs of Times Higher Education (THE) that this idea first took shape (Wildavsky, 2010. 214-215). As a partner in this tedious exercise, THE chose an education consultancy Quacquarelli Symonds, in what was the beginning of a wonderful but short lasting friendship.

The first Times Higher Education-Quacquarelli Symonds (THE-QS) ranking saw light in 2004, just a year after the release of ARWU. It applied different research methodology, which drew heavily on universities' reputation. The ranking was more favorable to the European universities. However, the principal benefits accrued to the universities of the United Kingdom and to those of the UK's former colonies.

However, the first mover advantage in the ranking race belonged to ARWU, and the new ranking found itself constantly struggling for legitimacy in the wary world of international academia. This situation was exacerbated by the fact that THE-QS propelled a disproportionate amount of United Kingdom's universities into the top positions.

Unlike its competitor the THE-QS ranking attempted to measure the overall quality of international universities. Despite ostensibly more developed methodology, critics were fast to notice that the ranking placed unreasonably strong emphasis on universities' reputation. What did the reputation have to do with the quality of the university was not

reasonably explained. This question was constantly raised in relations to the THE-QS and its successor rankings.

Furthermore, the placement of some universities was questioned. University College London scored higher than Massachusetts Institute of Technology. Stanford University and University of California, Berkeley ended up in relatively low positions. For instance, Kings College London placed fifteen positions above Berkeley. Commenting on this issue Andrew Oswald stated that "The organizations who promote such ideas should be unhappy themselves, and so should any supine UK universities who endorse results they view as untruthful (Oswald, 2007)."

Notwithstanding the criticism, the THE-QS ranking performed an important function. It provided a credible alternative to ARWU and, at the same time, fueled the ego of some universities that were not as notable in the ARWU ranking. This fruitful combination played into the hands of THE-QS and allowed it to continue attracting international attention.

The history of the THE-QS was not without its underwater stones. In the period of 2009-2010, THE and QS parted ways, opening the window for simpler abbreviations. The decision apparently came from the management of Times Higher Education. Among the reasons for divorced the management stated that "the survey of academic opinion that makes up 40 per cent of the overall score in our rankings was deemed too

small[5]" and that "our research measures favored the sciences over the humanities[6]."

In its quest to eliminate the factors irrelevant to universities' performance and finally do justice to the humanities, THE was quick to remarry to a reputable consulting firm Thomson Reuters. Their offspring, Times Higher Education World Universities Ranking (THEWUR), first appeared in 2010 and immediately raised a couple of brows. The decrease of a university's reputation impact amounted to little more than 5% (now it constituted 34.5% of the final score). The humanities also did not fare too well in the new ranking. In fact, the THE ranking managed to drown humanities' oriented universities even further.

The new THE ranking also garnered some positive reviews. This time the responses were much less exalted, perhaps due to growing weariness of jaded international public with numerous rankings. Still, some commented positively on the ranking. David Willets, UK minister for universities and science, gave a positive evaluation of the THE ranking saying that "reputation counts for less this time, and the weight accorded to quality in teaching and learning is greater[7]," and that "the inclusion of scaled data and research productivity

[5] Ann Mroz, "Leader: Only the best for the best," *Times Higher Education*, 5 November 2009, http://www.timeshighereducation.co.uk/408968.article.
[6] Ibid.
[7] David Willets, "UK Universities Global Path in the World Rankings," *Times Higher Education*, 16 September 2010, http://www.timeshighereducation.co.uk/world-university-rankings/2010-11/world-ranking/analysis/uk-education.

relative to size have played to the strengths of many of our smaller universities[8]."

Quacquarelli Symonds, at the same time, decided to carry on with the old methodology, renaming the ranking Quacquarelli Symonds World University Ranking (QSWUR). QS did not make much amendments to the old methodology. This obstinacy led to a strong criticism. Philip G. Altbach stated that "The QS World University Rankings are the most problematical. From the beginning, the QS has relied on reputational indicators for half of its analysis […] Whether the QS rankings should be taken seriously by the higher education community is questionable (Altbach, 2012: 30)." In a similar vein David Blanchflower state in regard to the QS ranking that "[their] results are based on an entirely flawed methodology that underweights the quality of research and overweights fluff[9]."

Success of the first university rankings prompted various parties to partake in the ranking business. In the last years, more than a dozen of international rankings have been produced with often puzzling ranking criteria. One of these rankings, Global University Ranking, purportedly independent ranking of universities connected with the Russian academic establishment, managed to place Lomonosov Moscow State University on the fifth place in the world ahead of Harvard and Cambridge. Another peculiar case, Professional Ranking of World Universities, sponsored

[8] Ibid.

[9] David Blanchflower, "The QS World University Rankings are a load of old baloney," *New Statesman*, 05 September 2011, http://www.newstatesman.com/blogs/david-blanchflower/2011/09/world-university-faculty.

by French Ecole Nationale des Mines, launched some French universities directly into the top 20.

Of course, there were also quite reputable attempts at making new ranking systems. Leiden and SCImago rankings, for instance, provide examples of well-designed measurement systems. However, the rankings draw heavily on science-indexed publications, thus practically ignoring research in social sciences and humanities. Despite all its laurels, MIT's placement as the top research institution in humanities and social sciences is somewhat questionable[10].

Various institutions of the European Union have been active in the field of international rankings since the rankings' inception. Constant complains of the European universities about perceived faults of the existing ranking systems prompted the EU to develop its own ranking. This new initiative came to be known as U-Multirank. The ranking attempts to contest the uniform treatment of world universities by other global rankings by taking into account universities' goals and missions, in addition to the traditional set of measures (Van Vught, Ziegele, 2012).

Whatever has been done in the field of international rankings, the dominance of ARWU, THE, and QS on the ranking playground remains virtually unchallenged. Not only they provide the most comprehensive assessment of the international higher education system, but they also benefit from the first-mover advantage. They are highly referenced sources of information about global universities, and they

[10] According to 2013 Leiden Ranking in the field of social sciences and humanities.

champion a particular order of prestige in international education and research.

Martin Enserink, a science journalist, points to multiple cases where ARWU provoked strong national responses. In one case a disagreement over attribution of Nobel Prize winners triggered a bitter conflict between two German universities (Enserink, 2007). In another case, French authorities passed a new law on universities, swayed by dismal performance of French universities in the ARWU ranking (Ibid). Nicholas Bowman and Michael Bastedo observed an even more striking tendency of international rankings to lock an order of power in the hierarchy of world universities (Bowman, Bastedo, 2011).

The development of principal ranking systems is characterized by their diversification and subdivision. THE, for instance, offers not only a university ranking, but also subject rankings, world reputation rankings, and a ranking of universities under 50 years of age. Within the THEWUR, separate rankings in six broad subject domains are available. Similarly, QS now offers various subject rankings of world universities, as well as separate university rankings for Asia and Latin America. ARWU, so far resisted the lure of diversification, although it also offers field rankings and subject rankings.

The growing influence of ranking systems fostered the emergence of international agencies and groups monitoring quality of academic rankings. The first attempts of this sort go back as far as 2002, when an International Ranking Expert Group (IREG) emerged out of a joint initiative of UNESCO-

CEPES and various private partners[11]. In 2004, IREG organized its second conference with the Institute for Higher Education Policy (IHEP) in Washington D.C. where the idea of rankings evaluations was first bandied. This idea developed further on the 2006 IREG Conference in Berlin. Subsequent to Berlin conference a set of principles on ranking higher education institutions was adopted. These principles came to be known in academia as *The Berlin Principles of Ranking Higher Education Institutions* or simply, the Berlin Principles[12].

The Berlin Principles aimed at creating a uniform system of assessing major ranking systems based on multiple criteria. The principal criteria of evaluation include purposes and goals of rankings, design and weighting of indicators, collection and processing of data, and presentation of ranking results. "It is expected that this initiative has set a framework for the elaboration and dissemination of rankings — whether they are national, regional, or global in scope — that ultimately will lead to a system of continuous improvement and refinement of the methodologies used to conduct these rankings. Given the heterogeneity of methodologies of rankings, these principles for good ranking practice will be useful for the improvement and evaluation of ranking[13]," claims IREG's press release.

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[11] IREG Observatory on Academic Rankings and Excellence, http://www.ireg-observatory.org.

[12] "Berlin Principles on Ranking Higher Education Institutions," *IREG*, 20 May 2006, http://www.ireg-observatory.org/index.php?option=com_content&task=view&id=41&Itemid=48.

[13] Ibid.

Following the publication of the Berlin Principles there were attempts to assess the major rankings' correspondence to the principles. Obviously, the first in line of offering its services for a modest fee was the IREG itself. Purely voluntarily, as the IREG website emphasizes, ranking functionaries can hire a team of enthusiastic IREG experts and, provided the positive evaluation, earn a much coveted badge of "IREG approved[14]."

Although the IREG business somewhat resembles a simple tool for making money, some authors see the emergence of audit as a positive development. Rauhvargers suggests that such audits may eventually resolve the problem of irreproducibility of the main rankings mentioned above. According to him "Experience to date [...] has shown that frequent gaps in the published methodologies exist, and most notably the explanation of how indicator values are calculated from the raw data. As a result, those wishing to repeat the calculation to verify the published result in the ranking table have been unable to do so (Rauhvargers, 2013: 17)".

The whole business that develops around university rankings gradually entrenches itself in the international academic environment. Ranking audits, ranking consultants and university officers responsible for data provision are individual cogs of this complex machinery. The rankings are a new form of business feeding on the international academia.

Economic interests are a fecund ground for conflict. Representatives of various interest groups often clash using proxies as weapons. Ranking wars involve squabbles between

[14] "IREG Ranking Audit starts with consultations," *IREG*, 4 November 2010, http://www.ireg-observatory.org/index.php?option=com_content&task=view&id=112&Itemid=137.

various agents of the ranking business. An exchange of reproaches between THE and QS following their divorce is one such incident. Another instance is demonstrated by QS's criticism of the new EU ranking in that it "will be prone to mission capture from continental universities which want measures that display their regional or local missions to best effect[15]". Another example is ARWU patrons' criticism of the inconvenient Berlin Principles. Liu and Cheng stated that "It has been concluded that some items of the Berlin Principles about the selection of indicators cannot be transformed into measurable criteria (Cheng, Liu, 2008: 206)". Paradoxically, this war of all against all may have a positive effect on the development of ranking systems. David Jobbins claimed that the ranking wars may spill into better quality of rankings. In his words "It is evident the league table compilers are falling over themselves to be seen to be responsive to their critics and to the broader academic community[16]."

The triumphant march of university rankings over the last decade is an interesting phenomenon. In just some years global rankings have changed from semi-private initiative of bored scientists into an important playground of the higher education industry with its winners, losers, side-kicks and loudly-independent experts. This situation demands at least an attempt at explanation.

Ellen Hazelkorn credited intensifying global competition with the success of global rankings. In her opinion higher

[15] "New University Ranking from the European Commission," *QS*, 9 March 2010, http://www.topuniversities.com/university-rankings-articles/world-university-rankings/new-university-ranking-european-commission.
[16] David Jobbins, "First shots fired in ranking war," *University World News*, 7 March 2010, http://www.universityworldnews.com/article.php?story=20100305112613216.

education is seen as the key factor of success in the emerging knowledge economy (Hazelkorn, 2008). These ideas are echoed in multiple other accounts[17].

The obsession with knowledge economy of which the university is the new proletarian started with a series of reports by various international institutions, most prominent of which was the World Bank. The first works on knowledge society appeared already in the early 1990s. Peter Drucker was one of the most vocal pioneers of the concept (Drucker, 1966). However, it was not until early 2000s that these ideas took hold of international public imagination. United Nations *Millennium Summit* and the *World Summit on the Information Society* contributed significantly to the popularization of the knowledge society ideas. A pithy summary of these ideas is provided in World Bank report "Constructing Knowledge Societies." According to the report "Knowledge accumulation and application have become major factors in economic development and are increasingly at the core of a country's competitive advantage in the global economy (World Bank, 2002: xvii)." It went on to claim that "the role of tertiary education in the construction of knowledge economies and democratic societies is more influential than ever (Ibid: 1)."

The idea of strong interconnectedness between the higher education and the knowledge economy caught on. Over the first decade of the 2000s, it turned into an obsession. Education, and higher education in particular, was seen as the main driver of growth in the economy and as a shield against precarious character of world economy. According to W. Norton Grubb and Marvel Lazerson "The Education Gospel therefore includes both a conception of economic and social

[17] See, for instance, Wildavsky, 2010; Salmi, Saroyan, 2007.

change and a vision of how to respond to that change through education and training (Grubb, Lazerson, 2004: 2)."

The knowledge society narrative intersected with other trends in the sector of higher education. Salmi and Saroyan associate proliferation of rankings "with the massification, or unprecedented increase in enrolments, in tertiary education around the world [...] (Salmi, Saroyan, 2007: 35)" They state that "the flood of cross border private and distance providers, the trend towards internationalisation of tertiary education, and the related increased stakeholders' demand for greater accountability, transparency and efficiency have all contributed to increased incentives for quantifying quality (Ibid)."

The emergence of international university rankings is a direct result of growing importance of the knowledge society narrative. The world of global economic competition engenders fears of being left behind. Since knowledge is now seen as the driver of economic growth, knowledge production became another platform of international competition.

It comes as no surprise that the first system of measuring universities performance came from China and was developed with the encouragement of the Chinese state. In many ways, the first ranking exercise was a test drive against leading economic powerhouses where many centers of advanced knowledge production are concentrated. It also explains the fact that the ARWU ranking is strongly focused on natural and applied sciences. These areas of knowledge production have the highest applied potential and bring tangible economic benefits.

The story of global rankings is the story of evolving global economy. Their emergence during the first part of 2000s reflects the growing influence of higher education sector in the international economic competition. Under the influence of global marketplace, education becomes nothing more than a product, and like any product it becomes subject to cost/benefit calculations. In this perspective, consumers need to choose the optimal product that would balance their individual utilities against their costs. However imperfect, global university rankings are indispensable in this calculation. The rankings perform an important market function, and they themselves are yet another market product. The global rankings are now deeply entrenched in the academic system. And since they will, most probably, persist, it is imperative to understand what they measure and how they work.

2.2. Methodology of main ranking systems.

In this section the methodologies of principal rankings systems are explained in greater detail. Although the actual data that is used to compile annual university rankings is not disclosed, the measurement criteria can be consulted on the rankings' websites. The section concentrates solely on the three principal rankings. This choice is based on two reasons. First, the three rankings – THES, ARWU and QS – are the most influential in the ranking business. Second, methodologies of alternative ranking systems are often similar to those of the three principal rankings. Thus, for the purposes of our analysis, a detailed elaboration of the three ranking systems would be enough to develop consequent arguments of the thesis.

The main thing that is necessary to understand is that no single ranking system, regardless of what is claimed, directly assesses the quality of higher education institutions. University rankings assess quality indirectly, through a number of proxies that may or may not reflect the real quality of a higher education institution. The rift between the proxies and the actual situation is a subject of numerous research papers, discussions, and disagreements. According to Rauhvargers "it is difficult, if not impossible, to measure and quantify quality itself, and therefore rankings use various proxies – some of which are rather distant from the actual quality of teaching or research (Rauhvargers, 2011: 11)."

Another issue to keep in mind is the limited character of proxies themselves. It is simply impossible to provide a perfectly comparable system of various higher education institutions based on any number of criteria. "How can the activity of a university be reduced to a numerical value? (Teichler, Shin, 2011: 76)" one essay asks. Its authors state that "Anyone who works within a university setting knows only too well that within the one institution, there are pockets of high quality and pockets that are of concern to the institution. Providing a single measure betrays the complexity of the institution (Ibid: 76)."

There will always be a payoff between comparability of data and precision of the institutional assessment. On one pole of this dichotomy are simplest rankings of institutional reputation like the "THE World Reputation Rankings[18]". On the other pole there are attempts to create rankings that

[18] THE World Reputation Ranking, http://www.timeshighereducation.co.uk/world-university-rankings/2013/reputation-ranking.

would measure performance of a higher education institution relative to its mission and goals. The most comprehensive attempt to create such a ranking, the U-Multirank, will be a yardstick against which the pros and cons of more sensitive rankings will be judged.

The right of historical precedence belongs to the Academic Ranking of World Universities. As the first ranking of its kind, ARWU used a distinct set of measures. The main goal of ARWU was to measure research output rather than institutional quality. Therefore, ARWU's methodology was based on very clear indicators of research performance. The clarity of ARWU was consistently praised. Richard Holmes, for instance, stated that "Few people would argue with using the Shanghai ARWU rankings to evaluate universities. Their reliability and methodological stability make them an obvious choice[19]." Yet, it is quite easy to argue against the ARWU rankings; the drawback of their clarity is a limited perspective on higher educational institutions.

To measure the performance of international higher education institutions, ARWU analyses the following criteria: quality of education (10%), quality of faculty (40%), research output (40%), and per capita performance (10%)[20]. At first glance, the ranking provides a multifaceted overview of higher education institutions that it ranks. However, it is important to understand what exactly is meant under each separate

[19] Richard Holmes, "Power and responsibility – The growing influence of global rankings," *University World News*, 01 July 2012, http://www.universityworldnews.com/article.php?story=20120630083447805.
[20] "Ranking Methodology of Academic Ranking of World Universities – 2013," *ARWU*, http://www.shanghairanking.com/ARWU-Methodology-2013.html

criterion, and how the elusive qualities of HEIs are measured in the ranking.

As has already been mentioned, every ranking uses proxies to evaluate higher education institutions. ARWU's measure for quality of education, for instance, uses the proxy of "alumni of an institution winning Nobel Prizes and Fields Medals[21]." ARWU does not use any other proxies for evaluating the quality of education. Noble Prize is given in fields of Physics, Chemistry, Physiology or Medicine, Literature, and Peace; Fields medals are given in mathematics. This creates an absurd situation where liberal arts colleges and universities that specialize in teaching, and do not have any science component, would actually score nil on the quality of education in ARWU, save for those lucky few that educated a couple of Nobel Prize winners.

The quality of faculty, a criterion that determines 40% of the final score, merited a more thorough calculation in the ARWU ranking. This criterion is constituted from two separate proxies having equal weights. 20% of the score is brought in by staff of an institution winning Nobel Prize or Fields Medal. The other 20% is brought by highly cited researchers in 21 broad subject categories. Except for the persistent Nobel Prize and Field medals fetishism, these indicators seem to fit well into the overall purpose of the ARWU ranking. Since the ranking is interested primarily in the research that HEIs are doing, it is reasonable to focus on their sheer research potential.

One problem of the ARWU's approach is that the label "quality of faculty" may be misleading. What ARWU

[21] Ibid.

measures is, at best, the ability of a HEI to attract academic superstars. The presence of a Nobel/Fields medal laureate on the academic staff of an institution would doubtfully increase the quality of its faculty as a whole. However, it would bring the scores to figure in the ARWU ranking. The second proxy, highly cited researchers, is somewhat more accurate, as the presence of such scholars among the institution's faculty must mean the higher quality of research performance of this institution.

Outside of more fundamental concerns, there is an obvious slant towards harder sciences in the ARWU's quality of faculty calculations. On one hand, the already mentioned focus on Nobel Prizes and Fields Medals disqualifies any field that does not have the fortune to be rewarded with these distinctions. On the other hand, indiscriminate calculation of citation numbers ignores subtle distinctions in citation cultures between various disciplines.

Research output brings another 40% into the total score of an institution on the ARWU ranking. This criterion is also split in two. The first indicator is the amount of papers published in Nature and Science, which brings 20% of the final score. Another 20% are dedicated to the papers indexed in Science Citation Index and Social Science Citation Index. Obviating the evident criticism that both Nature and Science are magazines that are focused exclusively on natural sciences, ARWU states that "for institutions specialized in humanities and social sciences such as London School of Economics, [Nature and Science] is not considered, and the weight of [Nature and Science] is relocated to other indicators[22]." This statement, however, leaves open the question what happens

[22] Ibid.

to the universities – like Brown University – that have a historical tilt towards humanities and social sciences, yet also conduct work in natural sciences. Calculation of their performance on the same terms that of the more natural science oriented institutions would seriously hinder their standing in the rankings.

The quality of faculty and research output are the most important criteria of the ARWU ranking that together contribute 80% of the final score of an institution. These criteria are subject to very similar biases of calculation. A superficial acquaintance with the criteria is enough to see that the research in humanities is completely ignored in the ARWU rankings. Only research in social sciences and social humanities has a bearing on the standing of an institution in the ARWU. However, these disciplinary domains contribute disproportionally less than natural sciences to the total score of an institution.

According to Cheng "Many rankings are biased towards universities with strong hard sciences while against those specialized in social sciences and humanities (Cheng, 2010)." He found that there are enormous differences in citation behavior between disciplines, with per-faculty citations standing at close to sixty in biological sciences, around thirty in physics and mathematics, and just five in social and behavior sciences (Ibid). In addition to this discrepancy, the faculty in natural sciences tended to publish more papers than the faculty in humanities. The differences in publishing culture advantage the research in natural sciences over that in social and behavioral sciences. Thus, the adjustment by citation culture could strongly impact the final result of the ARWU ranking.

The final criterion, which brings the last 10% to the total institutional score in ARWU, is the per-capita performance of an institution. This indicator calculates the weighted average scores of the previous indicators divided by the number of full-time academic staff. According to ARWU, this indicator should mitigate the size advantage of large research institutions. In practice, it does not. Its weight is too small to make up for unadjusted proxies of the previous criteria. ARWU's considerable bias towards larger institutions has been continuously pointed out by various authors (Nokkala, Heller-Schuh, Paier, 2011; Rauhvargers, 2011).

The ARWU ranking suffers from a series of flaws. Its assessment of teaching quality is inadequate, to say the least. Its proxy for faculty quality is also not satisfactory. The ranking ignores humanities and undervalues social sciences. Most importantly its choice of criteria leaves a distinct feeling of arbitrariness. According to one report on ARWU's methodology "Our main conclusions are that the criteria that are used are not relevant, that the aggregation methodology is plagued by a number of major problems and that the whole exercise suffers from an insufficient attention paid to fundamental structuring issues (Billaut, Bouyssou, Vincke, 2010: 237)".

In addition to obvious methodological problems, some researches cast doubt on accuracy of the ARWU's measurements. Razvan Florian, for instance, attempted to reproduce the results of ARWU, using the methodology described by ARWU. He demonstrated that the results of the ARWU ranking cannot be reproduced independently (Florian, 2007).

Despite all the aforementioned flaws, the ARWU ranking may be a quite useful tool, if it is used with utmost caution and with an understanding of the criteria behind the ranking. It does not measure an overall quality of a higher education institution or its. It measures precisely what it states on the list of its indicators. Still, rhetorical wrapping of its criteria may be misleading.

The second ranking in order of historical emergence is the THE-QS ranking. Since the infamous split with the Times Higher Education, QS retained the methodology of the original ranking. Hereby, the methodology described in the next paragraphs refers both to the joint THE-QS ranking produced in the period 2004-2009 and the QS World University Rankings, produced since 2010. For simplicity, the ranking will be simply abbreviated as the QS ranking.

The QS rankings came a year later than the ARWU rankings. In response to the criticism of the ARWU ranking, some adjustments were made to make the QS's methodology more representative. Unlike ARWU, the initial THE-QS rankings aspired to measure the overall quality of a higher education institution. This ambitious claim, however, was met with certain skepticism due to peculiarities of the QS's methodology.

The final score of an institution in the QS ranking is composed from six principal indicators: academic reputation, employer reputation, faculty-student ratio, citations per faculty, international faculty, and international students[23]. The combination of the indicators is supposed to give a

[23] "QS World University Rankings," *QS Intelligence Unit*, http://www.iu.qs.com/university-rankings/world-university-rankings/

comprehensive overview of a higher educational institution. Similarly to ARWU, these indicators are proxies for quality of an institution, its faculty, and its students.

The most important indicator in the QS ranking is, by far, the academic reputation of an institution. The ranking assigned 40% of the final score to this measure. The academic reputation, also called academic peer review, is a measure based on worldwide survey distributed to academics. The selected academics are supposed to evaluate top 30 international and top 10 domestic HEIs in their field of expertise, excluding their institution of provenance[24]. In other words the academic reputation is nothing more than a subjective interpretation of international research by the representatives of the profession.

In a way the academic reputation indicator continues the proud tradition of the historical rankings from the first part of the 20th century. How well suited is this idea for the beginning of the 21st century is arguable. Multiple researchers commented on essential subjectivism of the peer-review method and unclear criteria for the selection of peers. For instance it was stated that "it is unlikely that any expert possesses a global view of the inner workings of teaching at institutions worldwide. Moreover, the expert selection process of The Times is entirely unclear. […] In the absence of any guarantee for protection from selection biases, measurement validity can be very problematic (Ioannidis et al. 2007)".

[24] "Academic Reputation," *QS Intelligence Unit,* http://www.iu.qs.com/university-rankings/rankings-indicators/methodology-academic-reputation/

Very similar issues plague another QS indicator: recruiter review. The review was born literally from an academic reputation's rib. In the first QS ranking, half of the final score belonged to the academic reputation. In 2005, 10% of the academic reputation score was reassigned to the recruiter review. The review is similarly based on a worldwide survey of employers on the quality of graduates. This indicator, in the opinion of the QS, should provide a reasonably good estimate on the elusive teaching quality of an institution. There are some problems with the measure. First, there is a reasonable doubt about the employers' ability to measure the overall quality of a graduate. Second, the measure is quite instrumental, as the quality of graduates in this case is reduced to their ability to perform in a corporate environment.

The next indicator of institutional performance in the QS ranking is citations-per-faculty. Compared to other rankings, this indicator has relatively less weight in the QS (20%). The indicator includes the total number of citations per institution for the last five years divided by the number of its full time faculty. The data for calculating the indicator is fetched from the Scopus database. In fact, the indicator of citations-per-faculty seems to be more sophisticated in the QS ranking than in ARWU or the THE ranking. However, it is subject to very similar faults. Various citations cultures are ignored in the QS rankings as well. Institutions that are traditionally strong in biomedical sciences, physics and mathematics would inevitably gather higher scores than institutions specializing in sciences and humanities, even if the latter produce relatively more publications in their field of specialization.

Faculty-student ratio is yet another controversial indicator in the QS ranking system. In theory, the ratio is supposed to be a proxy for teaching quality. However, how well the faculty-student ratio actually measures teaching quality is open to debate. The QS defends the indicator on the basis that "[it] is a commonly used measure in many evaluations and rankings around the world[25]," although the QS also admits that "it is not a satisfactory as a qualitative classroom evaluation as might be considered for a domestic teaching assessment, but it does speak to the notion of 'commitment to teaching', which ought to correlate strongly, if not completely with the level of teaching quality[26]." Understaffed institutions may indeed not perform as well as their more fortunate peers. However, to assign 20% of the final score to this factor is a questionable decision, considering that institutions with various missions historically had different faculty-student ratios.

The rest of the 10% in the final score calculation is assigned to two very similar indicators. The first indicator, proportion of international students, commands 5% of the score. The other half belongs to the proportion of international faculty at an institution. What do these proportions have to do with the quality of an institution is a valid question. In a very remote way the proportion of international students and faculty may show popularity of a higher education institution with the international public. This, of course, may be for the reasons unrelated to the quality of the institution (for instance, low or absent tuition fees or location in international hubs).

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[25] "Student Faculty Ratio," *QS Intelligence Unit*, http://www.iu.qs.com/university-rankings/rankings-indicators/methodology-faculty-student/

[26] Ibid.

The QS ranking received strong criticism from the moment of its inception. In addition to the usual points of undermining humanities and social sciences, critics emphasized inherent unreliability of the QS reputation surveys.

Arbitrary selection of peer-reviewers and large variability of the final results attracted particularly strong criticism. According to Philip Altbach, "[reputational indicator] probably accounts for the significant variability in the QS rankings over the years. In addition, QS queries employers, introducing even more variability and unreliability into the mix (Altbach, 2012: 30)." Another review stated that "Results have been highly volatile. There have been many sharp rises and falls, especially in the second half of the THES [QS] top 200 where small differences in metrics can generate large rankings effects. Fudan in China has oscillated between 72 and 195, RMIT in Australia between 55 and 146. In the US, Emory has risen from 173 to 56 and Purdue fell from 59 to 127 (Marginson, 2006: 5)."

The last important ranking system is another THE-QS splinter ranking, Times Higher Education World University Ranking. Published for the first time in 2010, it is the youngest of the three major ranking systems. The THEWUR or THE ranking revised its methodology after splitting from the QS. However, there is a degree of correspondence between the two rankings as THE actually retained some of the THE-QS ranking's indicators. There is also some correspondence between the THE and the ARWU rankings, since THE partnered with Thomas Reuters consulting, that also provides data for the ARWU ranking. Thus, the THE ranking is a hybrid enterprise combining features from the other principal ranking systems.

The methodology of the THE ranking is based on 13 different indicators grouped into five broad categories: industry income, international diversity, teaching, research and citations[27]. According to Phil Baty "The tables' methodology was determined only after 10 months of detailed consultation with leading experts in global higher education: more than 50 senior figures across every continent provided extensive feedback on our plans, amounting to more than 250 pages of commentary[28]". Like the QS ranking, THE uses z-scores to normalize its results[29].

The first thing that is immediately obvious behind a jumble of multiple indicators is that the THE ranking also strongly relies on institutional reputation. In the research category, reputation amounts to 18% out of total 30%. In the teaching category, reputation amounts to about 15% of the total 30%. Combined these two indicators bring in 33% of the final score in the ranking. Obviously, reputation is given a lower weight in the THE than in the QS ranking. Yet, the reputational scores are still the most influential part of the THE ranking, followed closely by citation scores (32.5%).

Calculations of the reputation scores in both research and teaching is based on the already familiar method of peer surveys. It is thus subject to the same faults as the QS rankings. Except for stating that the surveys are distributed

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[27] "The essential elements in our world-leading formula," *Times Higher Education*, http://www.timeshighereducation.co.uk/world-university-rankings/2012-13/world-ranking/methodology.
[28] "2010-2011 World University Rankings Methodology," *Times Higher Education*, 16 September 2010, http://www.timeshighereducation.co.uk/world-university-rankings/2010-11/world-ranking/methodology.
[29] Ibid.

on invitation-only basis and that at present THE has more than 16000 responses at their disposal, the actual procedures and contents of the THE surveys are not clear[30]. This is a substantial omission, considering that the reputational scores attracted significant criticism of the academic community.

The rest of the THE indicators are quite tricky. Their diversity is supposed to provide a well-rounded assessment of an educational institution. However, this renders the methodology somewhat obscure, and it can often be misleading. According to Andrejs Rauhvargers "the description of the methodology used is less elaborate compared to that of the THE-QS rankings and, indeed, does not allow one to follow the calculation of the final scores from the raw data (Rauhvargers, 2011: 32)."

After the combined reputation indicators, the next important indicator is the citation score. The score is calculated on the basis of data from the Thomson Reuters databases, incidentally also the provider of data for the ARWU ranking. Citations are gathered over the five year period from over 12000 journals and over 6 million articles[31]. The data is normalized to reflect various citation rates among the disciplines. However, the methodology of normalization is not clarified. Additionally, THE ignores the fact that books are a major method of publishing in humanities and that there are on average less journals published in the disciplines of social sciences and humanities.

Papers per academic and research staff (6%), research income (6%) and industry income (2.5%) combine into another

[30] Ibid.
[31] Ibid.

important set of indicators. The indicators belong to different categories, yet they are all proxies for research impact of the university. Together they constitute 14.5% of the total score. The two last indicators, research income and industry income, favor the universities that are technical or natural science focused, as social science institutions tend to have much less cooperation with the industry.

From the analysis of the previous indicators, it is already quite clear that the THE ranking favors the universities with strong research culture and applied orientation. Pure research indicators of the THE ranking constitute 38.5% of the final score. Industrial orientation brings in another 8.5%. In total these two scores sum up to 47%, and they influence heavily the institutional standing in the ranking. The institutions that are particularly advantaged under this system are those that produce applied research. In other words, schools of technology are bound to dominate the THE ranking with the current methodology.

Similarly inclined to favor more research oriented institutions are the indicators of teaching quality. In the order of importance these indicators are the amount of PhD's awarded (6%), staff-to-student ratio (4.5%), doctorate-to-bachelor ratio (2.25%), and institutional income per staff member (2.25%). Both the amount of PhDs awarded and doctorate-to-bachelor ratios favor larger institutions with high proportions of graduate students.

The remaining 7.5% of the score is brought by the international outlook of an institution. This category includes three indicators: international students, international faculty, and amount of papers having at least one international co-

author. Except for the latter indicator, the internalization measures are the vestige of the THE-QS joint enterprise.

In general, the analysis of the THE ranking shows that it is disposed towards well-regarded, research-focused institutions with strong applied potential. Since, the ranking is size independent, it would not distinguish between larger and smaller schools as long as they would have both undergraduate and graduate student populations. The 2012 THE ranking is demonstrative in this case, placing a relatively small research intensive school, California Institute of Technology, on the first place.

Although, the indicators that THE uses are relatively clear, the THE ranking seems to combine many faults of its competitors. Like the ARWU ranking, it prioritizes natural sciences, biomedical sciences, and mathematics. Unlike the ARWU ranking, it gives a strong advantage to schools of technology. Additionally, the ranking has inherited many flaws of the joint THE-QS enterprise. Peer review scores, internationalization assessment, and staff-student-ratio were all heavily criticized by the academic community. Finally, a plethora of indicators and occasional lack of explanation of the exact data collection procedures makes the THE ranking hardly intelligible and often misleading

Some experts raised additional points of criticism of the THE ranking. A group of authors commented that "Several individual indicators from the Times Higher Education Survey (THES) data base the overall score, the reported staff-to-student ratio, and the peer ratings—demonstrate unacceptably high fluctuation from year to year. […] There are far too many anomalies in the change scores of the various

indices for them to be of use in the course of university management (Bookstein et al., 2010: 295)".

All of the three ranking systems that have been analyzed in this chapter have their advantages and disadvantages. Being the clearest and most accessible ranking, ARWU has a quite limited perspective on the international higher education. The QS ranking provides a more rounded overview of higher education, yet it suffers from unreliable indicators and strong fluctuations. The THE ranking, arguably the most sophisticated, has an obvious bias towards applied research institution and lacks necessary transparency. At this point of time no ranking system is completely reliable in assessing the state of global higher education. However, the rankings continue to satisfy an important demand and they are bound to stay in international spotlight.

It is important to note at this point that beyond the jumble of indicators and numerous differences, the rankings have many common attributes. All of the three major ranking systems are based either on measurement of reputation or on measurement of institutional research performance. These two measurements are not as unrelated as they might seem. The hidden connections between them will play an important role in later chapters.

2.3. Auxiliary academic rankings.

The rankings of higher education institutions are well known to the academic stakeholders and to the general public. Of much less celebrity are specialized measurements of academic performance. Yet, these specialized measurements are extremely important for individual scholars and for the

higher education institutions. In academia – much like in the market – measurements become a pervasive fact of life.

One of the most important internal measurements within higher education institutions is the research productivity of academic staff. This measurement includes not only the sheer amount of publications produced by individual members of an institution, but also the perceived quality of these publications. Obviously, the quality tends to evade calculations. The proxy for the quality of research is the amount of citations the published research receives, and the quality of the journal where it was published.

The quality of academic journals is often determined through rankings that group the plurality of research journals into various tiers. These rankings are important for functioning of the academic system. Together with global institutional rankings, they stir the academic system in a particular direction. The rankings of academic periodicals favor publications in particular journals. The short overview of methodology of these rankings is, thus, necessary to give the full picture of the inner mechanisms of the ranking system.

The practice of ranking academic journals goes back to the research of the Institute for Scientific Information (ISI), now part of Thomson Reuters. ISI specialized in academic indexing and analysis, in particular the journal's impact factor. It also maintained citation databases that later became part of the Thomson Reuters' portfolio of services. In fact, three of the most important indexing services – *Science Citation Index* (SCI), *Social Sciences Citation Index* (SSCI), and the *Arts and Humanities Citation Index* (AHCI) – are routinely used by both THE and ARWU rankings in their calculations. Furthermore,

ARWU also uses ISI *Highly Cited Researchers Index*, to determine the highest cited researchers in various fields.

For a long time, impact factor based on citation indices served as the main measure of the quality of academic publications. According to David Pontille and Didier Tony, "Two events have recently changed this situation: the development of databases (typically Scopus and Google Scholar) which vie with those of the ISI, and the rapid increase in loosely correlated indices for measuring the importance and quality of scientific productions (Pontille, Tony, 347)." The impact factor, however, still remains one of the most employed instruments for calculation of the journal quality.

Impact factors are calculated each year as the average number of citations per paper that a journal received in the preceding two years. The impact factor of five, thus, would mean that a given journal had on average five citations per article over the two years preceding the calculation. The largest database for the impact factor calculation is maintained by the Thomson Reuters.

The impact factor is a simple and powerful proxy for estimating the importance of a journal in its field. However, its simplicity makes it unreliable and prone to various manipulations. The impact factor depends strongly on how fast papers get cited in various fields. Erjen Van Nierop discovered great differences in rates of citations over the first 2-3 years since the publication of the article among various disciplines (Nierop, 2009). The impact factor does not take these differences into consideration. Hence, impact factors are hardly comparable between disciplines.

In addition, the impact factor does not discern quality of separate articles in an academic journal, and it is seriously skewed by occasional outliers. In 2004, 90% of the *Nature* impact factor came from just a quarter of its publications. Sometimes, a high impact factor could also be a function of a single article. According to Bob Grant, a single article published in Acta Crystallographica in 2008 raised its impact factor to 49.9 from its usual impact of 1.5/2. This situation was an outcome of one article in the journal cited over 6600 times in various journals[32]. Obviously, it did not influence the long term impact of the journal.

Specific editorial policies and coercive citations could also skew the impact factor. One technique of promoting citations is publishing articles with higher citation potential earlier in the year, so as to gather more citations. Less subtle method of increasing citation rates involves publishing a larger proportion of review articles, which tend to gather more citations. Finally, the outright champion in blunt self-promotion is coercive citation, when authors are encouraged to cite articles from the journal where their publication is accepted; sometimes these articles have very little relevance to these authors' research.

The most established measurement of academic journal quality is Thomson Reuters' Journal Citation Reports (JCR)[33]. It is the simplest measure of journal citation rates, based on the impact factor. The JCR has been constantly criticized for

[32] Bob Grant, "New impact factors yield surprises," *The Scientist,* 21 June 2010, http://www.the-scientist.com/?articles.view/articleNo/29093/title/New-impact-factors-yield-surprises/

[33] Journal Citation Reports, http://thomsonreuters.com/journal-citation-reports/

low levels of transparency. According to one research team: "When we examined the data in the Thomson Scientific database, two things quickly became evident: first, there were numerous incorrect article-type designations. […] Second, the numbers did not add up. The total number of citations for each journal was substantially fewer than the number published on the Thomson Scientific, Journal Citation Reports (JCR) website […]. The difference in citation numbers was as high as 19% for a given journal, and the impact factor rankings of several journals were affected when the calculation was done using the purchased data […] (Rossner, Epps, Hill, 2007: 1092)".

A more complex measure of the academic journal impact is the Eigenfactor[34]. Eigenfactor was developed by Carl Bergstorm, Jevin West and Marc Wiseman in order to overcome the problems inherent to simple citation counts (Bergstrom, West, Wiseman, 2008). According to the authors "citation counts and impact factors do not account for where citations come from: by these measures, citations from prestigious journals are worth no more than citations from lower-tier publications, and no attempt is made to adjust for differences in 'citation culture' between journals and across fields (Ibid: 11434)". Eigenfactor, thus, calculates both an amount of incoming citations and prestige of the academic journals associated with them. The dataset for the calculations is obtained from the Thomson Reuters ISI database.

The measurements that Bergstorm and his colleagues use assign higher weights to citations in more influential academic journals. The influence of journals is measured by nothing else than how many other journals refer to the

[34] The Eigenfactor, http://www.eigenfactor.org.

primary journals, which leaves a distinct taste of tautology. Bergstrom, however, claims that "simple algorithm" could mitigate the circularity of the methodology. In his words "Eigenfactor, accounts for the fact that a single citation from a high-quality journal may be more valuable than multiple citations from peripheral publications […] a citation from a review article that has cursory references to large numbers of papers counts for less than a citation from a research article that cites only papers that are essentially related to its own argument (Bergstorm, 2007: 314-315)". The practical method of analysis is apparently similar to the Google's webpage ranking. In other words, it involves tracing the network of references and cross-references between the journals. The method adjusts for differences in citation cultures, although the effectiveness of this adjustment is arguable.

The Eigenfactor is somewhat more robust than simple citation counts. However, it also poses certain questions. The measurements are strongly influences by the size of a journal. Doubling the size of a journal would, thus, double the score.

A rival system of measuring impact of academic journals is the SCImago journal rank[35]. According to its authors "The SJR indicator is computed over a journal citation network where the nodes represent the scholarly journals in the database and the directed connections among the nodes the citation relationships among such journals (Pereira et al. 2009)." It is obvious that SCImago is quite similar to the Eigenfactor in its methodology. Its authors also credited Google's *Pagerank* with inspiration. Unlike the Eigenfactor, SCImago uses Scopus database, maintained by Elsevier, for its calculations.

[35] http://www.scimagojr.com/

SCImago calculation algorithm is also somewhat different. According to its authors, the process is the following one: "First, each journal is assigned the same initial prestige value 1/N, where N is the number of journals in the database. Then the iterative procedure begins. Each iteration assigns new prestige values to each journal in accordance with three criteria: (1) a minimum prestige value from simply being included in the database; (2) a publication prestige given by the number of papers included in the database; and (3) a citation prestige given by the number and "importance" of the citations received from other journals (Ibid)". Eventually, a stable state is reached, where journals are grouped in order of impact.

Both SCImago and Eigenfactor were well received in the academic community. They were praised for their transparent methodology, sophistication, and more precise results. According to one reviewer "The SCImago journal rank indicator is a novel instrument for the evaluation of scientific journals that may challenge the established premiership of the journal IF in ranking scientific journals. It provides unrestricted (open) access, is based on a larger source journal database, and focuses on the quality of citations that a journal receives by other journals, rather than the absolute number (Falagas et al. 2008: 2626)".

Still, the same authors exercise some caution about the new measurements as "the sophisticated methodology used in the calculation of the SJR indicator needs to be adequately validated, and certain characteristics may need to be reconsidered before definitive conclusions for its applicability could be drawn (Ibid: 2627)."

It is curious to note that both Eigenfactor and SCImago obtain data from the same databases that the global rankings of higher education institutions. The Eigenfactor uses Thomson Reuters' data, exactly like ARWU and THE rankings. SCImago, in contrast, uses Scopus database, which is the choice of the QS WUR.

The last important auxiliary ranking for our analysis is the H-Index. The H-Index, unlike other rankings, measures research production of individual scientists. Although Egenfactor, SCImago and impact factor can also be used to estimate productivity, H-Index is the only specialized measure of individual research performance.

H-Index was conceived by Jorge Hirsch, a physicist at University of California San Diego, initially to measure the research productivity of researchers in theoretical physics (Hirsch, 2005). However, Hirsch suggested that it may be quite useful also for other disciplines (Ibid). Hirsch has stated "I have proposed an easily computable index, h, which gives an estimate of the importance, significance, and broad impact of a scientist's cumulative research contributions. I suggest that this index may provide a useful yardstick with which to compare, in an unbiased way, different individuals competing for the same resource when an important evaluation criterion is scientific achievement (Ibid: 16572)." At present the index can be used to measure performance of individual researchers, research groups, and even separate countries.

The H-index calculates both the number of papers that a researcher publishes and the number of citations these papers receive. According to Hirsch "A scientist has index h if h of his or her Np papers have at least h citations each and the

other (Np – h) papers have ≤h citations each (16569)." A score of 16, for instance, means that a researcher has published 16 papers, and each was cited at least 16 times. The index does not reflect differences in citation cultures between disciplines, and it cannot be used to compare researchers of different disciplines. In 2009-2010 in physics for instance the top 1% of scientists receive more than 2000 citations per year, while for the social sciences this number is barely higher than 150[36].

An advantage of the H-Index is that it can be used with different research and citation databases. Elsevier's Scopus and Thomson Reuter's Web of Science, as well as other databases are equally suitable for the calculation of H-Index. However, calculation using different databases can also produce divergent results. Lokman Meho and Kiduk Yang investigated these differences through a comparative analysis of H-Index results from three databases – Scopus, Web of Science and Google Scholar. They came to the conclusion that although Google Scholar calculates a much wider range of publications (53% more than Scopus and Web of Science), it also tends to index publications of lesser importance, such as conference proceedings and presentations (Meho, Yang, 2007). In contrast, both Scopus and Web of Science provide a more accurate picture of a scholar's impact by calculating publications of relatively higher importance (Ibid).

The H-Index attracted a lot of praise from the academic community. It provides a more sophisticated and robust way of calculating individual research impact than simple citation counts. However, the criticism of H-Index was even more vehement. Many of the crucial critical points were identified

[36] Data from "Essential Science Indicators," Thomson Reuters, http://thomsonreuters.com/essential-science-indicators.

in the articles of Alonso (Alonso et al., 2009) and Wendl (Wendl, 2007).

Among the problems of the H-Index are possibilities for manipulation, lack of distinction for multiple authors' papers, and constraining character of publication numbers. The H-Index can be significantly increased by simple self-citations. It does not discriminate between single and multiple authors papers, nor accounts for various author weights. Finally, the index constrains progression by the amount of publications that author has. Thus, the authors with few publications of extremely high impact will have a low H-Index irrespective of their contribution to their fields. Ludwig Wittgenstein, for instance, would have an H-Index of 3 (over his lifetime he published only three works), despite his immense impact on contemporary philosophy.

Like many other academic ranking, the H-Index also discriminates against research in humanities and social sciences. As has already been mentioned above, the index does not make provision for various citation cultures. In addition, the index counts books and papers equally, which promotes research cultures that emphasize journal publications. For this reason, any comparison of scholars in different fields, using the index is practically impossible.

Finally, there were concerns of general character considering the usefulness of the H-Index. Some authors have pointed out the perfunctory character of both the H-Index and other indicators that are used to evaluate individual research performance. A group of researchers of the International Mathematical Union stated that "The drive towards more transparency and accountability in the academic world has created a 'culture of numbers' in which institutions and

individuals believe that fair decisions can be reached by algorithmic evaluation of some statistical data; unable to measure quality (the ultimate goal), decision-makers replace quality by numbers that they can measure (cited in de la Pena, 2011: 52)." Alan Fersht commented that "The terrible legacy of [the impact factor] is that it is being used to evaluate scientists, rather than journals, which has become of increasing concern to many of us. Judgment of individuals is, of course, best done by in-depth analysis by expert scholars in the subject area. But, some bureaucrats want a simple metric. My experience of being on international review committees is that more notice is taken of IF when they do not have the knowledge to evaluate the science independently (Fersht, 2009: 6883)".

The "in depth analysis by expert scholars" that Fersht mentions is actually used more and more to evaluate both quality of scientific journals and individual research performance. In the most simplified form this method is based on expert surveys. Hence, it is somewhat similar to the reputational measures that the THE and QS rankings use to evaluate research performance of universities. The main concern of such surveys is the elimination of any subjective bias.

Expert surveys compared to other indicators of academic quality are a relatively reliable operation. A team of researchers concluded in 2008 that "Compared to ISI-generated bibliometrics, our tables are less noisy and (probably) more securely based in expert judgements. The high degree of expert consensus, especially at the top of the list, across the three countries is encouraging. […] Our headline message, however, is that expert judgments of

journal rankings are robust and may be used confidently by those tasked with grading people, publications, or university departments (McLean et al. 2009: 35)".

In another case Alexander Serenko and Michael Dohan compared reliability of expert surveys in comparison with the journal impact method in the field of artificial intelligence (Serenko, Dohan, 2011). Among their most important conclusions are "The application of the expert survey journal ranking method favors journals that publish more articles per year (Ibid: 634)" and "The quality of a journal cannot be determined based on its appearance in a single ranking list developed with a single method (Ibid: 635)." They have also noticed a lack of correlation in ranking of academic journals between different approaches and the fact that "survey respondents rely on their previous and current research areas and over-rate the corresponding journals (Ibid)". Concluding the essay the authors cautioned that "In fact, the development of journal ranking lists requires a great degree of expertise and advance planning to ensure the validity of the findings (Ibid: 636)".

The expert survey method is still an imperfect measure of quality. It does not eliminate a possibility of collective error, partisan preferences, and fluctuations of public image. Most importantly, its wider applications are questionable. It is not clear what results would an expert survey achieve in case of multicultural respondents. At the same time ignoring the global audiences would lead to an Anglo-Saxon bias, the issue that has already entrenched itself in the international academia.

The expert surveys are growing in popularity, but they are also costlier and more complicated to conduct. Hence, in the

foreseeable future the most widespread measures of academic quality are bound to be based on simple metrics. These measurements are already used in a wide variety of derivative rankings that collectively constitute a nightmare of an aspiring scholar.

The most important derivative of the citation counts and concurrent measures are academic journal tiers. Tiers are groupings of journals along the lines of their perceived quality, which is usually based on the amount of citations they receive. Accordingly, tier-1 journals would be the most regarded in the discipline, tier-2 journals would be less important and so on ad infinitum. The importance of the tiers comes from the fact that they are often used in academic decision making. For instance, criteria for the employment of new faculty may include a requirement of publications in tier-1 academic journals.

The methods of grouping academic journals into tiers are different, yet predominantly refer to the amount of articles a journal publishes and amount of citations that the article receive. Usually a database is used to determine impact of journals in particular fields. Then, according to their impact, the journals are arranged into a ranking, which in turn is divided into multiple tiers. The rankings are produced for various disciplines and disciplinary domains. Anne-Wil Harzing, for instance, publishes a thorough overview of various journal quality lists, their structure and comparison[37].

Except for intentional tinkering with ranking results, all the rankings based on citation counts are susceptible to common

[37] Anne-Wil Harzing, "Journal Quality List," http://www.harzing.com/jql.htm.

errors. A paper, for instance, may present an extremely arguable or even provocative point of view and many scholars would cite it in an attempt to rebuke it. In this case, the paper would be counted as having the same impact as more influential scholarly works. Methods papers and review papers are usually cited more. The former are used as a methodological set-up in works of other scholars, and the latter are used to confirm a similar opinion. Various solutions have been proposed to mitigate these shortcomings of the rankings. However, such improvements are ought to complicate the calculation algorithms and, so far, have only had a limited success.

The factual information presented above needs thorough systematization. Various rankings have been identified so far. The three principal groups of rankings are the rankings of higher education institutions, the rankings of academic journals, and the rankings of scholars. Although seemingly unrelated, all of the rankings use the same databases and similar methods. They can, thus, be seen as various elements of one system with the same internal logic and similar effects on the process of knowledge production.

Two indicators of the ARWU ranking, contributing 40% of the final score, intersect largely with the calculations of the auxiliary rankings. These indicators are the highly cited researchers and the amount of papers indexed in Science Citation Index and Social Science Citation Index. Similarly, citations per faculty contribute 20% to the total score of the QS ranking. Even more strikingly, the THE ranking's indicator of research influence – "the single most influential of the 13 indicators" – is identical in its calculation method to the calculation of academic journals' influence. Peculiar to both

THE and QS rankings is the expert survey method, which is also used for creating auxiliary rankings.

The superficial connections are just the top of the iceberg. Deeper analysis reveals that most of the rankings, including both higher education institutions rankings and the auxiliary rankings, are based on the same datasets. By far, the most influential among these datasets are Elsevier's Scopus and Thompson Reuter's ISI. Google Scholar is occasionally used for ranking academic journals, but it is far behind in popularity compared with the Scopus and the ISI.

The most striking conclusion of the ranking analysis, however, is that they seem to steer the system of the knowledge production in a particular direction. The success of higher education institutions, academic journals, and individual scholars depends on the same principal criterion. This criterion is the sheer amount of research produced. And as long as minimum quality standards are observed, the system tends to prefer quantity over quality.

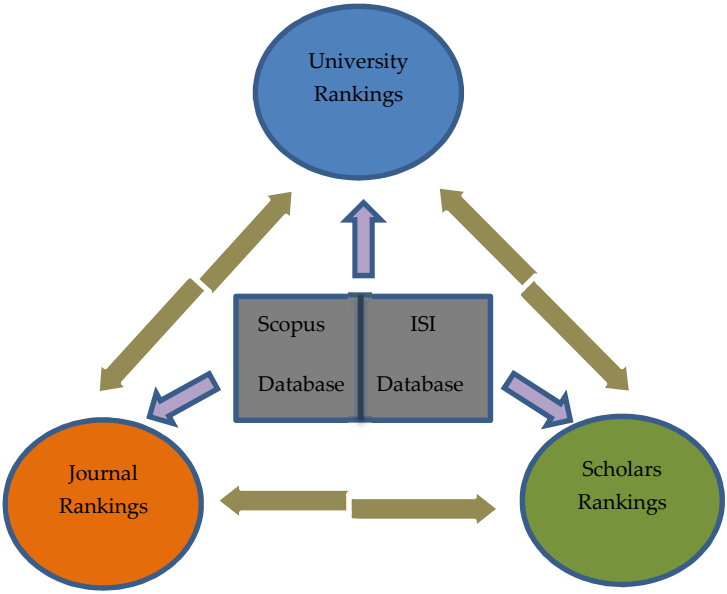
The more papers the institution produces the higher it will be placed, the more papers a journal publishes the more will be its influence, and the more papers a scholar publishes the higher is his H-Index. Most rankings do not make much distinction for the quality of scholarly works. Of more importance is the sheer amount of the works produced and their notoriety in the academic world. This notoriety could be due to a number of reasons, not necessarily connected with a scientific impact of the work.

This conclusion is supported by the analysis of Tobias Opthof and Loet Leydesdorff (Opthof, Leydesdorff, 2011). According to the authors "none of the citation-based indicators is able to

discriminate between the categories "good" and "excellent (Ibid: 6)." This means that for simple metrics quantity is more important than quality. Similarly Toutkoushian and Weber state in this respect that "Although one would think that the optimal construct of institutional research productivity should reflect the quality of research produced, most currently used metrics are based on the quantity of research produced (Weber, Toutkoushian, 2011: 128)".

The implications of this analysis are quite important. More and more countries are using ranking metrics as official tools of evaluating research. David Pontille claims that rankings become important tools of research assessment for various national organizations (Pontille, Torny, 2010). Rankings dominate more and more in the decision taking processes of institutions, journals and individuals[38]. Thus, the system of knowledge production in its current form creates a set of new incentives for scholarly production. These incentives impact the traditional academic system in various ways, changing its dynamics. In the next chapter the implications of these incentive changes are analyzed in greater detail.

[38] Monastersky, Richard. The Number That's Devouring Science. Chronicle of Higher Education. October 14, 2005. http://chronicle.com/article/The-Number-That-s-Devouring/26481



Scheme 1. Relationships between academic rankings.

Chapter 3. University Rankings and Incentives: Theoretical and Empirical Investigation.

3.1. Benefits of Performing in University Rankings.

The purpose of this chapter is to analyze how academic rankings affect incentives on various levels. It starts by examining the implications of academic rankings for public policies in higher education and knowledge production. It then proceeds to an analysis of the impact of the rankings on institutional incentives, with particular attention to hiring strategies. Finally, implications of rankings for individual incentives and choices are elaborated.

According to Ellen Hazelkorn "Almost regardless of which strategy is adopted, rankings in their brief life have already left an enduring legacy and transformed quality assurance and research assessment exercises into tools pursuing world-class excellence. They underpin an almost universal drive by governments around the world to restructure [higher education] system, concentrate resources into more efficient, productive and visible 'Centres of Excellence', and drive differentiation (Hazelkorn, 2009: 8)".

Except for reputation and prestige, higher position of national higher education institutions in global university rankings provides tangible economic advantages for countries. Prestige of a domestic higher education system allows attracting more students, including international students into domestic higher education institutions. International students in many countries (e.g. UK, USA, Netherlands, Russia) usually pay higher fees than domestic students, thus directly benefitting national economy. This is only a part of total benefits that accrue to the nations with good education systems. The

potential flow of international talent – both students and researchers – allows these nations to retain the best and brightest from less fortunate countries. Talented students would then work for the benefit of a national economy. The reverse side of this advantage is a possibility of retaining the domestic talent, which could otherwise wander abroad in search of better educational opportunities. Hence, both actual and perceived prestige of the national academy prevents the brain drain and creates prerequisites for better competitiveness in the global economy.

Finally, number of international students and staff is per-se a factor in some rankings. This is a part of the general rationale for the global higher education competition. To put it in the most basic terms, the more international talent a country attracts the better it fares in the rankings. The more talented researchers there are in the country, the more credited are its educational institutions. The more international students there are in the country, the more widespread will be the reputation and influence of domestic higher education institutions.

Reinforcing this situation is the fact that better positioned universities have more chances to attract funding from national, regional and international sources. European Union research grants could serve as an example here. Policy makers are rarely inclined to carry out an in-depth analysis of institutional performance. They usually want simple metrics – readily provided by the rankings – to make their decisions. If a European higher education institution could demonstrate good performance in major international rankings, its chances to secure European Union funding increase. This creates an incentive for higher education institutions to perform well in

university rankings, and for national governments to provide more resources to their HEIs.

In many ways, the situation has a circular logic. The institutions that have better reputations are ought to perform better, while those that are not as lucky are desperate to do anything to retain escaping talent. Jamil Salmi called this situation "The Red Queen Effect" – a tribute to one Lewis Carroll's allegories – which implies that even to stay in one place countries and their higher education institutions should run as hard as they can (Salmi, 2010).

"There is a strong perception among HE leaders – underpinned by growing international evidence – that rankings help maintain and build institutional position and reputation, good students use rankings to 'shortlist' university choice, especially at the post-graduate level, and stakeholders use rankings to influence their own decisions about funding, sponsorship and employee recruitment (Hazelkorn, 2008: 199)." Considerable benefits that are associated with good performance in university rankings create incentives for actions on various social levels, starting with the level of national policies and ending with personal choices of scholars.

3.2. Policy Incentives of University Rankings.

On the most general level, academic rankings strongly influence higher education policies. Although, the impact of rankings is often treated dismissively, there is copious evidence that the rankings have stimulated reforms of higher education sector in both developed and developing countries. The role of the rankings themselves in these reforms is often not emphasized. Yet, the direction of higher education

reforms clearly indicates strong influence on higher education of either rankings themselves, or underlying systemic tendencies that the rankings reflect.

What could be the impact of the academic ranking system on a disinterested policy maker? Obviously, the position of national higher education institutions in the rankings reflects relative prestige of the national academia in the global higher education order. This position is based on both objective and subjective perceptions. Since a large part of ranking calculations is actually determined by reputational surveys, well-known institutions would have an advantage over the lesser known ones. This is compounded by an additional advantage to the institutions that use English language, if only because such institutions would be better known to international reviewers.

Another part of the ranking scores is actually research productivity and impact. The English language bias would also be present here, as the majority of journals indexed by Thomson Reuters and Scopus database are in English. However, leaving the biases aside, the research productivity scores should be focused on to produce better performance in the rankings. If compounded by research reputation (an important part of the THE ranking), the policies pertaining to research production alone could significantly influence the position of national higher education and research institutions in global rankings.

The simplest strategy of improving the research score of an institution is an institutional merger. Under this scenario multiple higher education institutions are clumped together to create a new institution. Since the sheer research output of the new institution would be higher, it will raise in all the

corresponding measurements. The mergers of different higher education institutions are more feasible in a higher education system dominated by public HEIs. It is harder to convince private schools to merge, whatever is the national benefit.

At the first glance the mergers are too cumbersome to implement. Yet, they became a very popular part of higher educational policies in the last decade. There are at least three national cases that demonstrate wide adoption of the merger policy. Since the appearance of global university rankings the amount of higher education mergers increased.

In Russia, over the last decade the wave of mergers swept through the higher educational sector. Flagship state universities were used as bases for incorporating a range of smaller institutions. The new elite – so called federal universities – are now competing for unprecedented funding from the public budget in an attempt to catch up with the global academic system. The mergers provided a prelude for the Blitzkrieg policy of the Russian state that has as its goal wedging five Russian HEIs into the top-100 of global universities[39].

In a somewhat less disturbing manner, the last decade saw an emergence of various merger projects in France. In 2009, three separate institutions in the city of Strasbourg merged to form a new institution, University of Strasbourg. The institution became a strong contender to the status of one of the best European universities, often entering into the global top-100 in the university rankings. The example of Strasbourg led to an emergence of multiple merger projects. In Paris alone,

[39] The Order of the President of Russia from 7 of May 2012, No 599 "Measures on Realization of Public Policy in the Areas of Education and Science."

seven alliances of the universities have been formed with a long-term objective of complete integration. These projects include Sorbonne Université, Paris Sciences et Lettres, Paris Novi Mundi etc.

To assume that the mergers are an exclusive lot of countries with once lustrous academic traditions that hold strong revanchist sentiment would be quite wrong. United Kingdom was quick to jump on the bandwagon of the global merger trends. In 2007, University of Paisley merged with the Bell College to form one of the largest Scottish institutions of higher education. According to Malcolm Tight thirty percent of UK higher education institutions were involved in mergers in the period between 1994 and 2010 (Tight, 2013).

Obviously, the mergers are not caused by university rankings alone, but the rankings do create incentives to enlarge higher educational institutions, especially for the countries that aim to place their HEIs among the world's best[40]. While bigger does not necessarily mean better, in the global academic system bigger higher education institutions are more noticeable.

The enlargement processes are a part of a trend where national governments invest considerable amounts of public resources into higher education institutions that have a potential of representing the country in global academic system. According to Ellen Hazelkorn "Many governments are taking steps to restructure their higher education systems and institutions, creating greater vertical or reputation

[40] See, for instance: Labi, Aisha. "University Mergers Sweep Across Europe," The Chronicle of Higher Education, 2 of January, 2011. http://chronicle.com/article/University-Mergers-Sweep/125781/

differentiation based on concentrating resources in a small number of elite universities. France, Germany, Russia, Spain, China, South Korea, Taiwan, Malaysia, Finland, India, Japan, Singapore, Vietnam and Latvia – among many other countries – have all launched initiatives with the primary objective of creating "world-class" or flagship universities, often using indicators promoted by rankings to define excellence (Hazelkorn, 2013: 5)."

One way in which this process manifests itself are various excellence policies. In the most basic form, an excellence policy entails the creation of government fund that singles out institutions having world leading potential to give them a financial boost and increase their competitiveness. The idea behind such policies is that only few national universities have a good chance of becoming a part of international research elite and figuring in the global rankings; hence, in order to create the widest national representation, resources should be concentrated in the few institutions that would be able to become globally competitive. The downside of the situation is that the money for funding the national elite is drawn from the rest of the educational system. The ultimate result of these actions is a growing inequality among the higher education institutions and high cost of failure in case national champions would underperform relative to expectations.

*The German Universities Excellence Initia*tive is a good example of an excellence policy. "The Excellence Initiative aims to promote top-level research and to improve the quality of German universities and research institutions in general, thus making Germany a more attractive research location, making it more internationally competitive and focusing attention on

the outstanding achievements of Germany universities and the German scientific community[41]," says the official description of the initiative. The excellence initiative selected 11 out of 140 German universities, as well as multiple graduate schools, for increased funding to become the leading national centers of research. Over the period of 2006-2017, 4.6 billion Euros will be awarded to these research centers[42].

The initiative has attracted increased media attention that called the winners "elite universities" and "German Ivy League[43]." How good such an initiative will be for Germany, a country that traditionally prided itself on the equality of its universities, remains to be seen. The concerns about the initiative grew even stronger after the publication of a report that claimed that the "The Excellence Initiative has not reached its goal[44]."

Despite all the concerns, the German example has been followed by quite a few countries. In Spain, notwithstanding the global financial crisis, resources are, apparently, abundant for the deserving few. In 2008, the Spanish government launched the program *Campus of International Excellence*, as a part of the University Strategy 2015. Almost 600 million euros of the program are supposed to be invested into the

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[41] "Excellence Initiative," *Deutsche Forschungsgemenischaft*, http://www.dfg.de/en/research_funding/programmes/excellence_initiative.
[42] "General Information," *Deutsche Forschungsgemenischaft*, http://www.dfg.de/en/research_funding/programmes/excellence_initiative/general_information/index.html.
[43] Gretchen Vogerl, "A German Ivy League Takes Shape," *Science Magazine*, 13 October 2006, http://news.sciencemag.org/sciencenow/2006/10/13-01.html.
[44] "Excellence Initiative fails to produce diversity," *Wissenschaft Zentrum Berlin*, 12 June 2012, http://www.wzb.eu/en/press-release/excellence-initiative-fails-to-produce-diversity.

development of elite Spanish universities. According to Marius Rubiralta and Luis Delgado, officials of the Spanish ministry of education, "CEI's overarching goal is to make Spanish university campuses among the best in Europe, to promote their international renown and enhance the strengths of the Spanish university system. It aims to improve the quality of teaching and research in Spanish universities, as well as to achieve advances in innovation (Rubiralta, Delgado, 2010: 3)".

Only time will tell, whether the lucky winners of the Spanish university excellence initiative will be able to reach the coveted positions of global research elite, but the program is off to a very ambitious start. A dozen of national institutions have already been selected to benefit from the program and launch extensive educational reforms (Ibid).

The race for excellence did not spare France. According to Ellen Hazelkorn "In 2008, the government launched the €8bn Operation Campus, the objective of which was to establish ten regional centres of excellence by merging universities, research organisations and grandes écoles to enhance capacity and visibility […]. In 2009, the government announced additional funding under the €35bn Investments for the Future programme (also known as the Big Loan, because the money was raised on the financial markets) […] The flagship component of the Big Loan was a €7.7bn Excellence Initiative (Idex) with the emphasis on creating a group of 5-10 world-class research and higher education clusters that could rival those elsewhere in Europe and the United States (Hazelkorn, 2013)."

Another strategy for breaking into the global higher education elite is the creation of new HEIs from scratch. This

strategy is especially popular in the countries that are saddled with bureaucratic obstacles that prevent fast modernization of their higher education sector. In this case, there is an incentive to create a higher education institution with a special status, an experiment whose example may be used to modernize the rest of the system.

Promising role models for these new institutions are new higher education institutions of South-East Asia. Although most of them antedate the global ranking system, they were immensely successful in breaking into the global research elite in just a few decades. These institutions usually have a natural science focus and considerable graduate populations. The most illustrious examples of these paragon institutions are Hong Kong University of Science and Technology, Pohang University of Science and Technology, and Nanyang Technological University.

King Abdullah University of Science and Technology is one example of the greenfield strategy. Created in Saudi Arabia in 2009, the university could already boast an endowment of 20 billion USD[45]. The university pursues the modernizing mission typical for such institutions. Unlike other HEIs in Saudi Arabia, the KAUST is a mixed-gender school, with no religious policing on its campus[46], which is an attempt to model the university along new lines. The university is aimed at providing an example for the rest of the country. It is actively recruiting international students and professors. A

[45] Jeffrey Mervis, "KAUST Names Jean-Lou Chameau As Its Next President," *Science Magazine*, 19 February 2013, http://news.sciencemag.org/2013/02/kaust-names-jean-lou-chameau-its-next-president.

[46] "Saudis open hi-tech science oasis," *BBC*, 23 September 2009, http://news.bbc.co.uk/2/hi/middle_east/8270601.stm.

recent appointment of Jean-Lou Chameau, a former president of CalTech, as its dean demonstrates the university's global ambition[47].

Another notable enterprise in creating new higher education institutions is the Russia's Skolkovo campus. The flagship project of the campus is Skolkovo Institute of Technology, often abbreviated as Skoltech. The new institution, created in cooperation with MIT, is supposed to lead the Russian higher education sector in the fields of science and technology. According to its website, "Skoltech will educate global leaders in innovation, advance scientific knowledge, and foster new technologies to address critical issues facing Russia and the world[48]". Considering, that technological institutions tend to fare very well in the international rankings, Skoltech has a great potential to knock on the door of global research elite. However, the ability of flagship institutions to improve the higher education sector in their home countries singlehandedly is arguable.

Increased funding of elite universities and creation of national champions in higher education are important policy tendencies created by the pressures of global competition. The global rankings provide significant incentives for intensification of these processes. After the emergence of the first university ranking systems, performance of national education institutions became an issue of major concern for policy makers.

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[47] Jeffrey Mervis, "KAUST Names Jean-Lou Chameau As Its Next President," *Science Magazine*, 19 February 2013, http://news.sciencemag.org/2013/02/kaust-names-jean-lou-chameau-its-next-president.

[48] "About Skoltech," The Skolkovo Institute of Science and Technology, http://www.skoltech.ru/about-skoltech.

Nevertheless, the aforementioned tendencies are not the most important issue affecting the global system of knowledge production. By far the most concerning tendency of the recent years is a new disenfranchised status of humanities and humanistic social sciences. The policy incentives that the rankings create work strongly against the disciplines of humanities. There are few reasons to support disciplinary domains that do not contribute or contribute less to performance measures of national higher education institutions. According to Paul Thomson, "We are now living in a decade that is driven by metrics and measures, it's a highly polarised academic environment in which we work and there has been an assumption that the science, technology, engineering and mathematics (STEM) subjects have somehow been deemed to be superior or of greater national economic interest than the arts and the humanities[49]."

The advent of global university rankings coincided with unprecedented cuts of funding for social sciences and humanities. The logic of rankings fits well with the discourse of global economic competitiveness and market-oriented education. So vehement was the criticism of the "useless" humanities and the praise of applied education that economic statistics was completely ignored. The international trade in creative goods and services amounted to 424.4 billion in 2005, or 3.4% of the world trade (UNCTAD, 2008: 5). In the EU, creative industries, nourished predominantly by humanities graduates, contribute 2.6% of its GDP. According to a EU report on creative industries "The economic contribution of the cultural & creative sector is also higher than that of the

[49] Paul Thompson, "Are the Arts and Humanities Relevant to Society?" Intervention at Warwick Higher Education Summit, 28 of January 2012, http://www2.warwick.ac.uk/knowledge/culture/artandhumanities.

sector of food, beverages and tobacco manufacturing (1.9%), the textile industry (0.5%) and the chemicals, rubber and plastic products industry (2.3%) (KEA, 2006: 65)."

In the United Kingdom alone, the sector contributes 5.8% of gross value added to the economy and employs millions of people (UNCTAD, 2008: 30). It is in the creative sector that a large number of humanities graduates find employment. However, the numbers did not matter when in 2010 the UK government decided to cut down the funding of humanities and social sciences. The funding cuts came as a part of the general reduction of spending on education sector. Unlike the other disciplinary domains, humanities lost 100% of its funding[50]. While the funding of STEM disciplines in the UK remained almost the same, arts and humanities – as well as social sciences – were virtually abandoned to fend off for themselves.

In a less drastic manner, other countries also experienced cuts of funding for humanities and social sciences. In the USA, the National Endowment for Humanities (NEH) and National Endowment for Arts (NEA) have been experiencing gradual funding cuts over the last decade. For the 2012 fiscal year alone, the funding to the endowments was cut by 13%, from 168 to 146 million USD[51]. The pressure on humanities and social sciences even forced some universities to close programs in these disciplinary domains. In the widely discussed case of SUNY-Albany five humanities departments

[50] Hannah Richardson, "Humanities to lose English universities teaching grant," *BBC*, 26 October 2010 http://www.bbc.co.uk/news/education-11627843.

[51] "Federal Arts Funding," DC Advocates for the Arts, http://dcadvocatesforthearts.org/federalcutstofy12dcartsfunding.

were closed in 2010[52]. Similarly, the US's National Science Foundation cancelled political science grants starting from 2013[53].

The trend for cutting the funding for humanities is ubiquitous. In the Netherlands 30 programs in humanities (mostly in languages) have been eradicated over the last years[54]. In Canada, the Ontario province cut 42 million from funding of social sciences and humanities[55]. Obviously, a lot of these choices were made under the pressures of global financial crisis. The decision to ditch humanities in the first line of budget cuts is indicative of the wider trend to prioritize STEM disciplines.

The analysis of the problems that humanities and social sciences are facing at present does not suggest in any way that the situation is directly engendered by the global rankings. The distrust to humanities is an ongoing trend that goes back to earlier times. Nevertheless, the impact of the global rankings lies in the creation of incentives for acceleration and

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[52] Margot Adler, "Cuts To University's Humanities Program Draw Outcry," 16 November 2010, *National Public Radio*, http://www.npr.org/2010/11/15/131336270/cuts-to-university-s-humanities-program-draw-outcry.

[53] Beth Mole, "NSF cancels political-science grant cycle," *Nature*, 2 of August 2013, http://www.nature.com/news/nsf-cancels-political-science-grant-cycle-1.13501.

[54] Robert Visscher, "Languages and humanities courses axed as cuts force universities to prioritise," 28 March 2012, *University World News*, http://www.universityworldnews.com/article.php?story=2012032719094144.

[55] Adela Talbot, "Cuts cause pain, but not panic," 19 January 2012, *Western News*, http://communications.uwo.ca/western_news/stories/2012/January/cuts_cause_pain_but_not_panic.html.

intensification of this tendency. The main problem of humanities is that their impact is intangible; hence, it is very hard to measure. This difficulty spreads to the measurements of the humanities' research output. How could a quality of a philosophy book measured? By the amount of citations it would probably be equal to an average science paper. Until the adequate measurement criteria are conceived for humanities and social sciences, they will always be at a disadvantage compared to more applied disciplines.

3. 3. Institutional Incentives of University Rankings.

The next level on which rankings create new incentives is the level of higher education institutions. On this level HEIs are faced with incentives to improve their standing in global rankings. The benefits of these improvements are increased funding, better quality of students and researchers, and elevated prestige.

Hazelkorn conducted empirical research on perceptions of HE institutions regarding influence that the rankings have. She found that "HE leaders believe rankings are influencing key stakeholders in ways which were unanticipated […] Because rankings are often perceived as providing a shorthand 'quality mark' by users and stakeholders, HE leaders fear key stakeholders are drawing broad brush-stroke conclusions which are used to either justify or refuse funding, collaboration and accreditation (Hazelkorn, 2011: 91)." Hence, there are incentives for the institutions to improve their positions in the ranking race. "Because of the circle of benefit which rankings are perceived to bring, they are driving and incentivizing institutional decision-making and academic behavior (Ibid: 190)"

Attracting world-class researchers is an obvious incentive, pre-dating the ranking times. However, in the era of global ranking this incentive may lead to curious institutional policies. An institution that wishes to rank higher may, for instance, try to attract highly cited researchers that are far past their prime. At first glance, research output of such scientist may not be extremely copious. Nevertheless, having Nobel Prize laureates or Fields Medal winners raises the rank of an institution by a simple fact of having them.

Nobel laureates may be a rare commodity, but by the same reasoning higher education institutions have an incentive to attract distinguished scientists that may not produce much research anymore. Big names, even if they publish few articles per year are normally well cited and hence beneficial for their institutions. This is a minor point, as the situation is rather a way for some researchers to acquire a comfortable teaching position, especially if there is a mandatory retirement plan at their home universities. Examples are numerous here.

A more important set of strategies involves incentives connected with numbers of faculty members. Many ranking criteria involve calculations of faculty ratios. For instance, both THE and QS rankings use faculty/student ratio as a measure of teaching quality. The rankings, however, usually take into account only full-time staff. Therefore, by playing with definitions of full-time staff universities can achieve widely divergent results. Marny Scully, director of policy and analysis of the University of Toronto, demonstrated how using the same data for faculty/student ratios could produce results in the range from 6 to 39 students per one faculty

member[56]. This situation according to her stems from the way both full-time faculty and students are counted.

Another strategy engendered by global rankings is creating a particular faculty structure. In some rankings, the amount of research, produced by a higher education institution, is divided by number of its full-time faculty members. Higher education institutions have an incentive of reducing the number of full-time faculty members only to those professors that have the highest research output. At first glance, this trend does not present much concern. Should not high research productivity of the faculty be encouraged? However, in the absence of other limiting criteria, the trend could take a rather perverse form. In practice this situation could lead, for instance, to growing difficulty of obtaining tenure. The universities need to be sure that the new faculty will produce acceptable research output. Thus, the necessity to trace back productivity of every scholar expresses itself in a larger number of intermediate positions that an aspirant scholar has to pass before obtaining tenure.

Another feature of the situation is a trend towards separation of research and teaching, with the former having more privileged status. Since the quality of education is not measured in much depth in the global rankings, the HEIs are skewed towards favoring research over education. In the end, performance of a university is largely measured by its research output, and there are no incentives to invest more into teaching. Faculty hiring committees at large universities

[56] Marny Scully, "University Rankings and Faculty Data," *University of Toronto*, 18 July 2008, http://www.utoronto.ca/about-uoft/measuring-our-performance/university-rankings-and-faculty-data.htm.

tend to give preference to scholars that are good at research, rather than those that are good at teaching. The two are not necessarily exclusive, but the natural constraint of time often forces to excel at one activity only.

Higher education institutions do their best to create the necessary incentives to encourage research productivity. One strategy involves decreasing required contact hours between faculty and students, freeing more time for the faculty to do their research. British universities are particularly famous for this tactics, with students at leading universities rarely actually seeing big names that a university boasts in real life. Less radical strategy includes dumping the majority of a teaching load onto adjunct faculty. In this scenario, universities rely heavily on adjuncts to teach most basic courses, while leaving only advanced graduate seminars to their senior faculty.

Within this new system of institutional policies and structures, internal hierarchies arise between various disciplines. Institutional incentives converge to promote heavier investment into natural and biological sciences. Humanities, due to the predicament of not contributing much to the institutional standing in global university rankings, are relegated to lower position of importance. According to Rauhvargers "If attempts are made to improve research performance solely to improve ranking scores, this may lead to the one sided support of research in medicine and sciences at the expense of the social sciences and by completely excluding research in the humanities (Rauhvargers, 2011: 66)".

Finally, on the ultimate level of zoom, even within separate disciplines rankings create a set of incentives for particular

choices. On the institutional level, these incentives encourage prioritizing more scientifically oriented disciplinary domains. Among the social science disciplines, economics has a particularly privileged status. Obviously, there are many factors that contribute to this status of economics: its applicability and policy potential, its capacity to provide prognoses and forecasts, and its relative technical simplicity. However representative all these claims of reality is arguable. Until the latest financial crisis the reputation of economics as a discipline had remained untarnished, but it has diminished since. Beyond the grander claims, however, economics has another advantage over many social science disciplines, which, so far, has been overlooked.

In its citation culture, the discipline of economics comes the closest to natural and biological sciences. Precluding possible objections, it is necessary to admit that citation rates between economics and other sciences are still incomparable. Yet, in contrast with other social sciences and humanities, economics has a more active publication culture. Most of research output of the discipline comes from papers and conference proceedings. The situation is very different in humanities and humanistic social sciences, where books and established journals still play the predominant role. The same is true for citation cultures. On average economists tend to cite much more often than scholars in other social disciplines.

These features of economic scholarship may not seem important, yet they contribute immensely to a bigger institutional picture. The distinct culture of research renders economics better suited for ranking measurements, which for higher education institutions means a higher placement in general and specialized rankings. The measurements of

institutional performance in social disciplines tend to be lumped together under the label "social sciences." Furthermore, humanities are often added to the cocktail diluting the individual contributions of various disciplines. In this scholarly panache, economics can singlehandedly pull up the standing of an individual institution in the global rankings.

The evidence for this situation is that institutions having strong economic research components tend to be ranked much better than their less economics-oriented peers. Barcelona Graduate School of Economics, pertaining mostly to the Pompeu Fabra University, is consistently ranked among the top economics institutions in the world. The school has figured prominently in multiple specialized rankings. In RePEc rankings it has been placed between 15 and 20 best economics institutions in the world, and among the top 15 economics departments[57]. Similarly, an independent study by a group of economists placed the school 3rd in Europe (Lubrano et al. 2003).

The question is, however, not how high the Barcelona GSE has been ranked, but what does it mean for the Pompeu Fabra University. Since most of the faculty at the school hold joint appointments with the faculty of Economic and Business Science, their research output is counted as a part of the social science production of the university. Subsequently, Pompeu Fabra University is ranked among the top social science

[57] "Top Economics Institutions," *RePEc*, http://ideas.repec.org/top/top.inst.all.html.

institutions in the world[58], and as the top social science institution in Spain. Considering that it is one of the smallest universities in the country that has only four social science departments, the situation demonstrates immense advantages of having strong economics research orientation.

Obviously, economics is not the only strength of the UPF. However, its only other faculty that figured in some international rankings is the faculty of political and social sciences. A curious peculiarity of the faculty is that it has a strong culture of quantitative research. Quantitative social science, modeled along the lines pioneered by economics, is another gross donor to institutional standing in global rankings. Quantitative social research gradually converges with economics, forming multiple border fields including political economy, institutional economics, labor and demographic studies.

It is striking how similar the research culture is between seemingly different fields of computer science, economics, and quantitative social science. There is a strong output orientation (publish or perish), most of the research production, especially at the junior level, is done in form of research papers, presentation papers, and journal publications. Citations are relatively widespread. Such a situation contrasts with humanities and humanistic social science approaches. Foucault, for instance, famously supplied only a few citations to his copious volumes. Obviously, for the global system of measurements, quantitatively oriented disciplines are suited much better. This situation refers back

[58] "University Subject Ranking," *QS*, http://www.topuniversities.com/node/4538/ranking-details/university-subject-rankings/2013.

to the tendency of global rankings to privilege particular research and citation cultures.

Books are a relatively rare form of publishing in quantitative disciplines, which is partly an outcome of quantitative research specifics. Unlike qualitative research, where arguments are based on laborious rhetorical constructions, quantitative research relies on modeling and collection of data to support the model. This produces concise publications, where the largest part of text is dedicated to an explanation of a model. The format is obviously much better suited to fit the fast pace of publications and citations demanded by the global measurement system. Consequently, there is an incentive for higher education institutions to encourage quantitative research even within social sciences.

Academic rankings create new incentives even within the same discipline. The case of economics is once again quite illustrative in this regard. Since institutional position in rankings is determined mostly by the amount of research it produces and amount of citation it receives, the incentive is to hire scholars that would not only be productive, but also be able to publish their research and attract the largest public to read their product. All the other factors being equal, the larger is their peer audience, the more opportunities there are to publish research and the more attention a scholarly work will receive. In the discipline of economics, the largest peer audiences are in mainstream strands of economics. Thus, for an institution that wants to assure measurable productivity, it is much more beneficial to hire a scholar working in mainstream economics, at least in the short term.

Before proceeding to illustrate this idea in more detail, it is necessary to give a brief overview of the current situation in

the discipline of economics. Unlike many other social sciences where a variety of different approaches and methodologies are vying for dominance, the scores in economics were settled some time ago. The bloodstained victors of hard-fought intellectual campaigns are neoclassical economics and neoclassical synthesis. The two approaches are somewhat different in that the latter attempts to integrate Keynesian macroeconomic ideas with those of neoclassical approaches. The resulting progeny is a loosely riveted system using mostly neoclassical models for microeconomic analysis and Keynesian models for macroeconomic analysis. It is necessary to mention that the mainstream economics is not totally homogeneous; however, it is cohesive enough for purposes of this analysis.

As the mainstream approaches prevailed, alternative strands of economics thought have been mostly moved to the fringe of economic discourse. These strands were branded "heterodox economics," and they include approaches as varied as institutional economics, econophysics, and feminist economics. According to Robert Solow "there are always dissenting fringes within academic economics. Marxism is only the most persistent. There is an Austrian persuasion (a sort of extreme individualism), there are post-Keynesians and neo-Ricardians, and there are many other people who just don't like what is going on in the mainstream[59]."

Yet, evolutionary and institutional approaches, which until quite recently had been lumped together with other heterodox approaches, gradually get more and more accepted

[59] Robert Solow, "The Wide Wide World of Wealth," *The New York Times*, 20 March 1988, http://www.nytimes.com/1988/03/20/books/the-wide-wide-world-of-wealth.html?pagewanted=all&src=pm.

by the mainstream economics. Despite constant attempts to present the ascendance of mainstream economics to dominance as a proof of its superior quality, there is little evidence that heterodox economic approaches are strongly inferior to those of mainstream economics. The state of economics scholarship is a result of a particular discursive and political situation rather than the inherent superiority of one of the approaches.

The situation in economics is directly relevant to the issues of our analysis. Since there is no proof that heterodox economic approaches are worse in their explanation of social reality, an objective system of knowledge production would not discriminate between the two. In other words, for a higher education institution there should be no difference whether to hire a heterodox or an orthodox economist. Yet, economics faculties of higher education institutions include only a small number of dissenting economists. Naturally, the main reason for this is the discursive dominance of mainstream approaches that already tilts the higher education system towards particular choices. However, global ranking system creates additional incentives for furthering this tendency.

The idea can be well illustrated on a hypothetical faculty recruitment event. The assumption is that there are only two candidates for a junior faculty position, one working in mainstream economics and other, in heterodox economic strands. Assuming that the institution is neutral in its preferences, and the candidates have comparable qualifications, the institution would be indifferent in its choice, provided no other incentives would affect its choice. That is precisely where the ranking system comes into play.

Since rankings stimulate particular forms of research productivity, there is a certain advantage for a higher education institution to favor those researchers that would produce more papers and more citations irrelevant of the quality of these publications. Two factors would be considered at this point.

The first factor is that there are more mainstream economic journals. A team of researchers identified 64 heterodox journals among the 254 economic journals analyzed (Lee, Cronin, McConnell, Dean, 2010). However, in the RePEc/IDEAS ranking, depending on definition of the discipline, there are only 50-100 heterodox journals out of 1208[60]. Thus, there are more articles published in mainstream economic strands, and more possibilities to get accepted for at least a minor journal (it is necessary to keep in mind that university rankings do not take into account quality of a journal).

The second factor is that there are larger audiences in mainstream economics. Thus, ceteris paribus, larger citation numbers can be expected for every publication. The research of Lee, Grijalva, and Nowell support this idea. According to the authors "This is the situation in economics where the population of mainstream journals and articles is quite large compared to heterodox journals and articles, with the outcome that many mainstream journals have impact factor scores four or five times that of any heterodox journal. The situation is further skewed in that articles in heterodox journals cite mainstream journals whereas articles in mainstream journals do not cite heterodox journals. Thus population size combined with the one-sided academic

[60] http://ideas.repec.org/top/top.journals.simple.html.

engagement between mainstream and heterodox economics pushes the SSCI impact factor scores towards mainstream journals (Lee, Grijalva, Nowel, 2010: 1348)." Under these circumstances, at least for the initial part of an economist career, it is better to pick a mainstream economist over the heterodox one.

Even if the heterodox economist demonstrates outstanding talent, for the first part of his career they would simply have less opportunities for publishing their output. Their ideas may create a breakthrough in some years, but over a short time period it is reasonable to estimate lower research outputs as defined by principal university rankings.

For any neutral institution, thus, recruitment would be strongly tilted towards the mainstream choice. If the heterodox economist would prove their worth, their recruitment may not pose a problem in the future. The first few years, however, are essential for the start of any research career. Thus the fact that the entrance to academic market is simpler only due to the choice of research topic should strongly affect individual choices. This idea provides an excellent entry into the next chapter of this work.

3.4. Individual Incentives of Global University Rankings.

It may seem unusual to analyze individual incentives when global academic rankings are concerned. Most rankings aim to measure the performance of higher education institutions, journals, research groups, or departments. Only few rankings measure individual research performance, like the H-Index. However, the impact of the H-Index on individual incentives is most straightforward. The other rankings affect individual

incentives indirectly, through governmental policies and institutional behavior.

There are three main ways in which rankings create new incentives for individual choices. On the junior level, government investment into harder disciplines would engender incentives for applicants to choose better funded disciplines. On the level of specialization, the incentives are to choose those specializations that are more supported by an institution.

Finally, on the graduate level even within particular disciplines, there are incentives to opt for a particular research topic. University rankings reinforce these incentives indirectly, through incentives to which governments, institutions and departments are subjected.

On the macro level, increased government funding of some fields and disciplinary domains creates incentives for choosing to study disciplines that are better funded. A high school graduate wishing to pursue English literature would doubtfully change his mind to go into natural sciences, but a person choosing between history and economics may. How strong is the sway of increased funding in natural sciences and decreased funding in humanities would be an interesting topic for a separate investigation. However, an importance of funding for sustaining particular disciplinary domains has already been demonstrated in history.

The case of Area Studies illustrates this point quite well. The discipline of Area Studies emerged in the United States shortly after the World War II. It was supported through generous funding of major American foundations, including Ford Foundation, Rockefeller Foundation, and Carnegie

Foundation. The funding inflow was enormous. According to David Szanton "between 1951 and 1966, the Ford Foundation invested more than $270 million in Area Studies training, research, and related programs (Szanton, 2002: Introduction)." The situation led to an emergence of a flourishing research area, popular among social science scholars.

The fall of the discipline, however, was as abrupt as its ascent. In the 1970s, new interdisciplinary approaches emerged that challenged the dominance of area studies. As these approaches gained currency, the funding for the discipline of Area Studies declined, reducing the field to few maverick programs. Obviously, the case of Area Studies is very particular. However, it demonstrates how simple fluctuations in funding and policies could erase entire disciplines. Academic rankings, at present, create a set of incentives for eliminating whole disciplines both through policy choices and individual choices of students. All other things being equal, a rational applicant would choose a program that is better funded and supported. The closure of multiple humanities departments at the State University of New York is alarming evidence to the plausibility of this scenario.

Academic rankings also create additional incentives in the growing division between teaching and research. As was explained in the previous section, the rankings create incentives for privileging research staff over teaching staff. As the global rankings do not measure teaching quality to any reasonable degree, investment in teaching becomes a luxury that few institutions and individuals can afford. While most graduate schools have an obligatory teaching component as a part of higher level training, there are numerous incentives to

tilt the personal emphasis of graduate students towards research.

Individual time constraints leave only a limited amount of time to invest into developing either teaching or research qualifications. Unfortunately, the more time is invested into one activity, the less time there is to invest into the other. Since research activities are privileged at most universities, there is an incentive for graduate students to invest more effort into developing their research skills. Potentially, this may lead to a situation where teaching and research would simply become separate activities in the academic system.

Paradoxically, university rankings may also contribute to a decreasing quality of research. Since, research productivity is often measured as research output, there is a slight skew towards producing copious amounts of research papers, rather than developing a single problem in depth. Obviously, it does not mean that the incentive is to produce research of the lowest quality; to be published a paper needs to satisfy minimum requirements. However, there is no reason to develop the paper further, once the minimum acceptance standards are reached. In this sense, the trend of modern system of measurements is towards quantity rather than quality. The skew could be corrected, however, if a more sensitive system of measurements will eventually emerge.

The incentives that rankings create on the level of individual institutions reinforce another alarming trend of strongly privileging quantitative research over other approaches. The majority of political science departments at prominent universities overwhelmingly support research in quantitative methods, political economy, and quantitative comparative analysis. Since such research is better suited to the global

measurements system, it contributes more to the standing of individual institutions in the global academic hierarchy.

According to Chalmers Johnson "What happened in political science was, I believe, an attempt erroneously to duplicate what had occurred in economics. What happened in economics was to take the American economy as a model and then mathematize it and reify it as the way all economies ought to be. Rational choice theory is the attempt to do something like that with American democracy. A political science Ph.D. today has been increasingly defined in terms of an ability in rational choice theory, game theory, the manipulation of economic models, and the formal creation of models in which the mode of analysis is deductive rather than inductive (JRPI, 2005).

The situation strongly affects incentives of individual researchers. A scholar of political science, for instance, has an incentive to choose quantitative specializations. Since research in political economy is better funded than research in political philosophy, it is more reasonable to specialize in political economy. The associated prestige of quantitative social research leads to better funding of research projects, better job prospects, and better opportunities for scholars opting to do the quantitative specializations. This situation strongly tilts the system of knowledge production in the social sciences towards highly formalistic deductive research, and sculpts social science on the model of natural sciences in their research and publication culture.

Even within individual disciplines global rankings create incentives to choose some research topics over others. On this level, incentives also work through a proxy. However, these are not policy and institutional incentives but departmental

incentives. After all, it is on this level that decisions to promote individual researchers are taken. To explain how it works, let us return to the thought experiment that was described in the previous chapter. In particular, the experiment portrays a selection committee of junior faculty at a hypothetical economic department.

As was demonstrated in the previous chapter, in the case of selection between the two candidates for junior faculty positions, there is an incentive to choose a person working in the mainstream economic strands. The incentive comes from a reasonable assumption that, all other things being equal, mainstream researchers will have more chances to publish their research. Hence, they will be more productive. Whether this assumption will prove correct in each individual case is not important, as, in large selection group, it should work.

At this point it is necessary to elaborate the situation with individual opportunities for publishing in the discipline of economics. In the previous section, the assumption that mainstream economists have more opportunities for publication was taken for granted. It seems reasonable that since a large majority of economists work in mainstream economic approaches there are more options for publication and scholarly audiences are wider. This situation, however, needs to be put in real numbers.

Indirect evidence of the utter dominance of mainstream approaches in economic sciences is that the Journal of Economic Literature out of 19 primary subcategories of economics dedicates only one section (Section JEL: B5) to heterodox economic approaches. Within this category many dissimilar strands of economics are lumped together, including Austrian economics, Evolutionary economics,

Feminist economics, institutional economics, Marxian economics, Socialist economics, and Sraffian economics. Considering that in addition to the seven fields of heterodox economics, The New Palgrave Dictionary adds another dozen, it is surprising that only one category is dedicated to the heterodox strands of thought.

Classification indexes are just labels put on research. To understand what the situation in the publishing world is, it is necessary to see what the actual opportunities for publishing are available to heterodox economists. The preliminary analysis is enough to demonstrate that the publishing opportunities are not equal between the sub-disciplines. RePEc, for instance lists more than 1000 journals on its website. It is hard to determine how many of these journals would be open to publish heterodox articles, but in a comprehensive study aimed to equalize the impact of heterodox and orthodox journals, Frederic S. Lee found only 69 heterodox journals. The simple comparison is staggering. Furthermore, if we take into account, that of these 69 journals the majority publishes articles on the border of mainstream acceptance (e.g. institutional economics), and does not publish more radical heterodox ideas, we have a situation where some heterodox economics strands have only a handful of journals for publication.

Obviously, nothing prevents a heterodox economist publishing in mainstream economics journals. Academia is supposed to be an environment open for contestation and criticism. In practice, the situation is not as objective as it may seem.

In 2008, Jack Reardon, a professor of Hamlin University, conducted an investigation of barriers of entry to the

mainstream journals by heterodox economists (Reardon, 2008). He conducted a survey of more than 1000 heterodox economists, aimed at calculating acceptance rates of heterodox papers to mainstream economics journals. Reardon found that "A total of 95 percent of the mainstream papers sent to mainstream journals were accepted, whereas no heterodox papers submitted to mainstream journals were accepted as is, after 1990 (Ibid: 189)". He concluded that: "The evidence overwhelmingly supports the existence of an ideological entry barrier. This barrier goes beyond the normal competitive nature of journal publishing, that is limited journal pages constricting the number of ''good papers'' that can be published, suggesting that there is an insidious ideological entry barrier preventing heterodox ideas from being published (Ibid: 185)."

Implications of this situation are quite important for individual choices of research topics. A junior economist with research interest in non-standard economic strands has an incentive to shun this interest in favor of more mainstream approaches. Assuming that the junior researcher has nearly perfect information about the preferences of the selection committees, and the researcher is dedicated to an academic career, there is a disincentive to choose heterodox economics research topics. The second assumption is quite important for the following reason: if alternative career pursuits are considered, the behavior of selection committees is not as crucial.

Since for an academic economist employment is a critical part of the career choice, few economists would choose to pursue non-mainstream economics research. This is especially valid for junior scholars, as the first academic employment is

extremely important both for the future academic career, and for staying in the academia altogether.

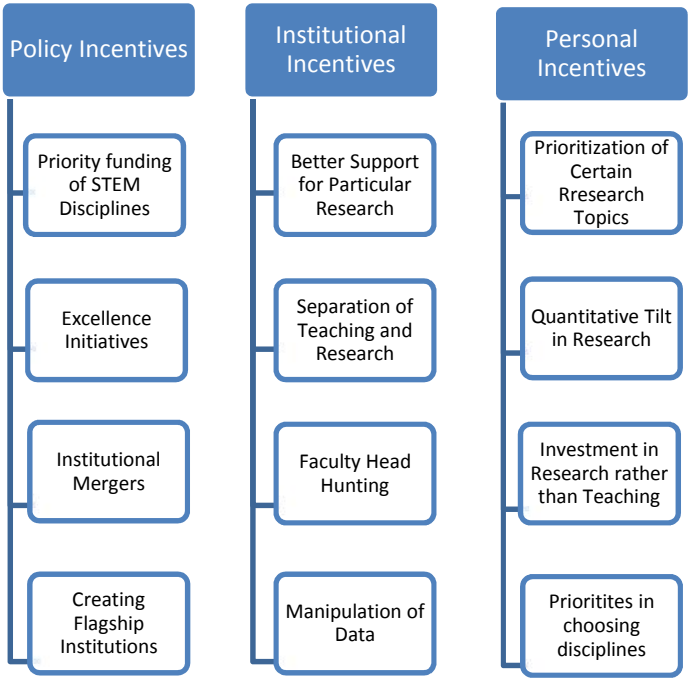
Continuing the thought experiment, an average junior economist has two options: either to work extremely hard to excel among their peers – which is complicated by the fact that opportunities for presenting and publishing research are scarcer – or to switch to more mainstream economics topics, at least for the initial part of his career. Other things being equal, a rational junior scholar would choose the second option. The result is well summarized by Subrick and Beaulier, "A heterodox economist who only publishes in heterodox journals (because she cannot get articles published in mainstream journals) has less prospects for academic success. In response, the heterodox economist does not pursue her true interest. Instead, she writes articles acceptable for a more mainstream audience […] meaning that the intellectual products of heterodox economists differ little from mainstream articles (Beaulier, Subrick: 2012: 1)," although they later attempt to contest the claim for the case of Austrian economics.

As has been demonstrated, the rankings contribute to the emergence of new incentives in the system of knowledge production. The incentives are present on various levels, from the level of policy making to the level of personal choices of research topics. These incentives tilt knowledge production in a particular direction. It does not mean that the rankings single-handedly push academia towards certain choices. As we have seen, some of the processes that started to intensify with the advent of global rankings have their roots in history. However, the global rankings do play a role in privileging certain research topics over others.

On the level of policy making and the level of institutional behavior, effects of global academic rankings are well researched. However, on the micro-level the effect of global ranking system has not been studied so far. The common assumption is that since rankings measure mostly institutional performance, they do not penetrate to the level of individual decision making. As this chapter has demonstrated this assumption is not correct. Although incentives that the rankings create are more subtle, they are present on the level of individual choices. We have all the necessary information to demonstrate this effect both theoretically and empirically.

3.5. Schemes and Models.

In this section, the conclusions of the previous sections are put together in a form of simple game-theoretical model. The model demonstrates how the global measurement system contributes to choices on the individual level. Before proceeding to illustrate the model, let us put all the levels on which global academic rankings produce new incentives in a format of a single scheme. The scheme would give an opportunity to position the sketchy narrative in a single system and elucidate the links between various incentive levels.



Scheme 2: The Rankings and Incentives on Various Levels.

Let us briefly summarize the incentives that ranking create at various levels. At the most general level, the level of policy making, rankings create incentives to pursue certain policy strategies. The simplest way to improve the position of domestic institutions in the rankings is to merge various higher education institutions into larger entities. Since many

rankings have a substantial size bias, this strategy could significantly improve the position of domestic higher education institutions in the global academic hierarchy.

Similarly, some countries may attempt to break into the global academic elite by creating new institutions that suit particularly well to the global system of measurements. This move is particularly suitable for countries ridden by bureaucratic inefficiencies, where the new flagship institutions could serve as motors of growth for the rest of the educational sector. These higher education institutions usually have a natural science and technology emphasis and large graduate populations.

A more sophisticated strategy that national policy makers are tempted to pursue is redistribution of resources towards hand-picked centers of education. This strategy often goes under the label of various excellence initiatives. The rationale behind the strategy is that it is impossible to have all of the higher education institutions in the global elite, and it is reasonable to concentrate the resources in a handful of institutions that have a shot at global leadership. This is one of distributive strategies, as the money for the higher education elite usually comes from other economic sectors.

The most important distributive incentive, however, is the shift of funding from "softer" scholarly pursuits, such as social sciences and humanities into sciences and engineering, the fields that are more efficient from the perspective of global measurement system. Since sciences, by virtue of a very particular research and social culture, have a better-measurable impact, it is only logical to invest more resources into their development and promotion.

On the level of institutions incentives for particular choices are equally affected by global rankings. Among the minor incentives are head hunting for distinguished faculty, if only to have the names nominally on the faculty, and tinkering with the data, so as to come out favorably in criteria with wide margins of oscillation. Another incentive on the institutional level is to invest more into research activities rather than teaching. This tendency could manifest itself in various forms. The recruitment process may give preference to faculty more oriented towards research; teaching load and auxiliary activities of scholars with high research productivity may be reduced.

A more significant set of incentives concerns distribution of resources within a higher education institution. These incentives mimic to some extent the policy incentive of shifting funding towards the STEM fields. In a similar manner, a higher education institution that wants to place high in the rankings has an incentive to promote certain types of research. The most obvious incentive is to promote STEM disciplines. However, the dynamics of a higher education institution is more complex and often restricts drastic shifts of funding. A more elaborated strategy is to support research that contributes more to institutional performance. On the level of faculty, this could involve favoring quantitative research with better measurable research production. On the level of department, this could involve favoring more mainstream research topics over riskier pursuits.

It is at this point that incentives on various levels start to merge affecting one another. For instance, better funding of STEM disciplines on the policy level may affect institutional decisions to invest more into particular disciplines. The very

same policy decision may skew the choices of majors and careers by undecided students. Various excellence initiatives may stimulate a student to opt for a more centrally located rather than local higher education institution. The race for excellence may also stimulate institutions to use strategies that would present them in the most favorable light to the policy makers that distribute funding.

The most interesting aspect of interaction between incentive levels can be observed on the institutional-personal axis. While policy choices impact higher education institutions in a very straightforward manner, institutional, faculty and departmental decisions often have very nuanced implications. In the end, all of these decisions are driven by the same logic of global competition, expressed in a simple system of measurements.

An institution that wants to perform better in any ranking system has a strong incentive to boost up its research profile. This translates into the levels of faculties and departments as a requirement to increase their research productivity, if they want to receive more funding. Departments are the basic recruiting units of the institution. Thus, in their recruitment policies they have an incentive to prioritize people with strong research profiles, whatever is their teaching record. The system is so pervasive that the potential applicants are perfectly informed about this preference. Therefore, in their graduate studies they have an incentive to dedicate more time to research activities rather than their teaching activities. This is one of the ways institutional incentives translate into personal incentives.

Much more complex is the institutional incentive of prioritizing certain types of research, since it can work on

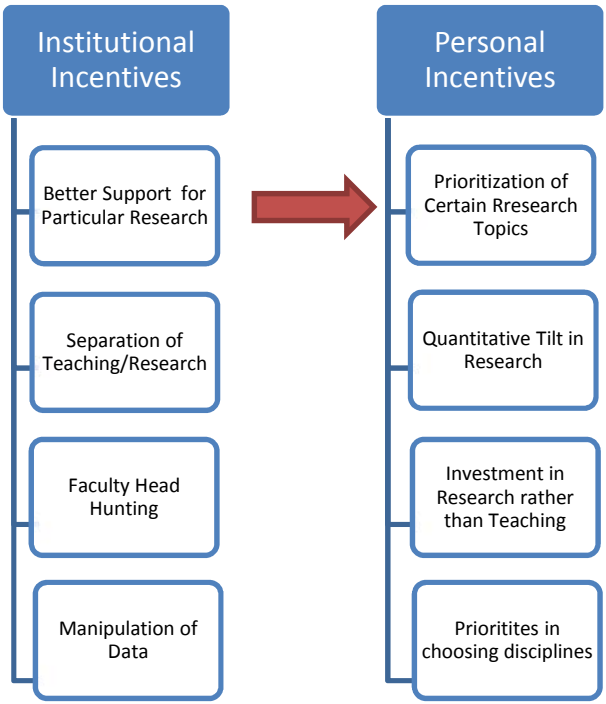
different levels. For instance, on the institutional level, better funding of STEM disciplines may create an incentive for a potential applicant to choose a particular specialty for institutions with structured curricula, or choose a particular major for institutions where curriculum is flexible. Obviously, this process would only work at the margin. A person majoring in English would not switch to biochemistry, but a person majoring in the philosophy of science could decide to follow a more scientific pathway.

Another set of choices is engendered by an incentive to promote quantitative over qualitative research. The trend is so ubiquitous that even in humanities there are constant attempts to introduce quantitative methodologies of research as exemplified by the case of experimental philosophy. This incentive is particularly important for the departments that stand on the methodological fringe, for instance in the field of social sciences. Among the leading research institutions in social science, there are just a handful of departments that still have a strong qualitative research program. The preference for quantitative research leads to a better availability of resources to pursue this choice (e.g. supervisors, specialized software) and fostering of quantitative research. Under these circumstances, students have an incentive to choose quantitative methodologies in their research topics.

Finally, the most intricate relationship between institutional and personal incentives can be spotted on the level of departmental recruiting procedures. As was mentioned before, research productivity is paramount to the success of a potential employee. However, it is not only the productivity that matters, but also what kind of research a person does. The system of academic rankings creates incentives to choose

more traditional research topics over more radical projects. This happens primarily due to the fact that more established topics have wider academic constituencies and better publication opportunities, which serve as a good approximation of higher research output of a potential employee working in traditional research fields.

To illustrate how this process works, it is necessary to construct a simple model. This model is based on game theory methods. The case for the game is the hypothetical recruitment event that was discussed in the institutional incentives section. In this section, however, both individual and institutional incentives are put together in order to make a visual demonstration of the ideas that have been discussed in the previous paragraphs. The game reflects an interaction between two levels of incentives: individual incentives and institutional incentives.



Scheme 3. Interactions between Incentives.

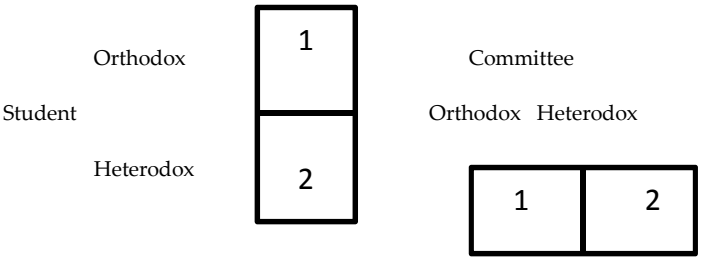
The assumptions of the game are as follows. There are two players in the game. The first player is a graduate student choosing a research topic. The second player is a selection committee, recruiting junior faculty members. The committee acts as a unit, representing interests of a department. The order of moves is not important. Each of the players has two choices for a total of four outcomes of the game.

The first player is a graduate student in economics that could opt for two large strands of economics research. One strand

includes all the various mainstream topics of research. The other strand includes any of the heterodox research topics. It is assumed that the student has a preference for heterodox research in the discipline. This latter assumption is not necessary as the model would work equally well for a neutral actor. However, the assumption that the student has preferences for heterodox research would allow demonstrating the point of the section better. The student is rational and aims to maximize his payoff.

The second player is a recruitment committee for junior faculty. The committee selects between two candidates that are absolutely equal. The only difference is the strand of economics in which they are working. Unlike the graduate student, the selection committee is ideologically neutral between the two candidates. If the neutrality assumption is removed, the game would not illustrate the point of the section clearly. The committee is rational and acts to maximize the payoff from its choices.

The payoffs of the game are random numbers. The numbers themselves do not matter, as long as the order of preferences is observed. Let us first model the preferences of the players.



Model 1. Preferences of Players.

As we defined that the student has a preference for the heterodox research, we put his payoff for choosing the heterodox topics at 2, and his payoff for choosing orthodox topics at 1, independently from the actions of the second player. The base of the second player is the payoff of 1, as we assume that the committee is initially perfectly neutral in its preferences. The payoffs, however, should be modified using the information of provided previously to complete the game. In order to do that, we need to combine the two players in one game.

		Committee: Orthodox	Committee: Heterodox
Student	Orthodox	2	0
	Heterodox	1	3

Model 2. Student's Preferences taking into account the Committee's decision.

Since we assume that the goal of the student is to secure academic employment, his payoffs are strongly affected by the fact whether he is selected or not. The student is selected if the committee choice between heterodox and orthodox economists corresponds to the student's research choice. In other words, the students gets selected if he chooses to work in heterodox strand and the committee chooses a heterodox

economist, or if the student chooses orthodox strand and the committee also chooses orthodox economist. The other two outcomes are negative for the student. Hence, one point is added to initial preferences of the student if he gets chosen, and one point is detracted if he does not get the job. The biggest payoff that the student can get here is if he chooses the heterodox research strand, and the committee still chooses the student. It is, however, not the dominant strategy, as the student is unsure whether the committee will necessary choose the heterodox option.

		Committee	
		Orthodox	Heterodox
Student	Orthodox	**2; 1+X**	0; 1
	Heterodox	1; 1+X	3; 1

Model 3. Combined Preferences of Players.

Since we assumed that the committee is ideologically neutral, it does not have a clear preference towards one or the other strand of economics. However, if it chooses the orthodox option, it will have an extra benefit of X, rendered by the fact that, other things being equal, orthodox candidate has more opportunities to get published and larger audiences. Therefore, X is an added advantage of choosing the orthodox economist. As long as X is bigger than 0, the committee has a dominant strategy to follow. The system of academic

rankings, actually, makes X a positive number. In the global competition of measurements even a marginally higher productivity is paramount to success.

The committee, thus, has a dominant strategy to follow. This strategy is to choose the orthodox option. Since both players are perfectly informed about the preferences of each other, there is only one equilibrium in the game. This equilibrium happens in the upper left quadrant. Knowing that the dominant strategy of the potential selection committee is to go for the orthodox option, the student is better off to choose an orthodox topic for research. Obviously, this outcome is valid only in case our assumptions hold true. For the selection committee, the assumptions are plausible due to better payoffs in every case that the orthodox candidate is selected among the two equal candidates. For the student, the assumption is plausible only if he is neutral or has a moderate preference towards heterodox research. If the preference towards heterodox research is stronger, the student may opt for doing this research even if his odds of getting employed are at significant risk.

The model demonstrates interrelations between the incentives that the academic ranking system creates on institutional and individual level. Obviously, the rankings do not determine all the choices that are made within academic system. Nevertheless, they introduce certain incentives that pervade academic decision making on various levels. Through these incentives, rankings contribute to a tilt of the academic system towards certain choices. This tilt may be negligible in individual cases, but in aggregate it significantly affects the system of knowledge production.

3.6. Empirical Testing.

In the previous sections of the chapter, the main discussion developed around the incentives that the global academic ranking system creates on various levels. The crux of the discussion centered on the intersection of institutional and individual incentives. The model of the previous section showed how incentives for institutional behavior can affect individual choices and steer knowledge production in a particular direction.

The model alone is unable to determine whether the actual situation is exactly as predicted. Some empirical confirmation is necessary to show that both institutional and individual behavior confirms the predictions of the model. In order to confirm the prediction that the model made, we conducted two surveys aimed at both institutional and individual actors.

The first survey targeted graduate students. The aim of the survey was to find out which factors contribute to the choice of research topics by the students. Among the factors that figured in the survey were some directly relevant to our research. We assumed, for instance, that securing an employment was as important as pursuing a particular research topic for a graduate student. There were multiple questions that aimed to elucidate this particular relation.

Another survey that was crucial to confirm the predictions of the model was a survey of recruiting committees' members. The survey aimed to find out which factors were most important for the committee in a potential employee. Through this survey we attempted to confirm the importance of research productivity to the selection process.

The surveys were sent to a set of institutions selected randomly out of top departments as ranked by RePEc/IDEAS[61]. Two European, one Australian, one Israeli, and one South-Asian university were added by the author to increase diversity. The surveys were completely anonymous. The student surveys were divided into seven batches to prevent tampering with the results and notice any statistical irregularities. The faculty surveys, due to a smaller size of the respondent group were divided into two batches.

Hundreds of invitations have been sent to both students and senior staff of the universities. The final result comprised 301 response by the students, and 75 responses by the faculty. The survey is far from being completely representative of the academic system. However, it allows seeing the trends and forming an idea of whether the predictions of the model are correct.

In general, the results of the surveys confirm the predictions of the model. Before proceeding to the more crucial points, let us provide a general picture of what the survey demonstrated. First, let us see the results of the student survey.

More than half of the respondents (52.7%) conduct their research in the field of microeconomics. The second most important research area is macroeconomics (29.07%). Research in econometrics, international economics, and political economy was done by 10-20% of respondents. Most importantly, only 5.8% of respondents do research in various strands of heterodox economics, despite the fact that survey

[61] The complete list of the surveyed institutions can be consulted in the appendix 3.

included some of the departments with significant presence of heterodox economics faculty. In a larger selection of the faculties, the number would most probably decrease. What this means is that very few graduate students, at present, do research in heterodox economics.

The factors that mattered in the selection of topics for the research are interesting to look at in this respect. Although the leading factor in absolute importance is personal interest (9.14/10), it is followed closely by career/employment prospects factor (6.32/10) and relevance/popularity of the topic factor (6.27/10). These numbers suggest that among the leading factors that determine the choice of student topics are the factors connected with market and discursive value of the research. The emphasis on market value speaks to the importance of finding employment as one of the main priorities of a graduate student and confirms the preferences of the student player in our model. The importance of discourse value of any research is discussed in detail in the fourth chapter of the dissertation. The leading importance of the personal interest in combination with the fact that only 5.8% students conducting research in heterodox economics may be interpreted as a general lack of interest towards the discipline. However, it is necessary to keep in mind that graduate students undergo the selection process on their application to a graduate school. In this process potential students interested in heterodox economics could be either sieved out or, in rare cases, encouraged to change their topic later. The latter parts of the survey demonstrate that the interest to heterodox economics is much stronger than the number suggests.

The student survey demonstrated an almost perfect awareness of the graduate students about the preferences of the junior recruitment committees. The students identified that the main factors that contribute to the employability of the potential candidate are research productivity (8.86/10), research topic quality (8.61/10), and research fit to the recruiting department (7.87/10). An almost perfect correlation in the order of preferences between the student survey and the professors survey (in response to the same question), confirms that the student player is almost perfectly informed about the actions of the committee player. Curious outcome of the survey is that both students (4.54) and professors (3.16) identified teaching experience as the least important factor in the selection of the junior faculty. This fact evidences to the failing status of teaching and prioritization of research in the academia.

The next two questions of the survey aimed to elucidate the order of preferences in the choice between a research topic and a possibility to find employment. When the question was put in a softer way (changing the research topic if alternative provided better prospects) 56% of the students confirmed their willingness to do so. However, when the stronger version of the question was put (changing the research topic in which the student is interested, if it compromised employment prospects), only around 53% confirmed their willingness to change their topic for the one that would be better for finding employment. Only 6.4% of students decidedly declined changing their research topic in the softer version of the question, and only 5.7% did so with the stronger version. Although this situation is not a rule, a slight majority of the students would be willing to change their research if an alternative provided better employment

prospects or their current research would compromise these prospects. The results confirm the unwillingness of the student player to choose the topic that would negatively affect employment chances.

Finally, the last set of questions concerned students' attitudes towards heterodox economics. This is an indirect test of the leanings of the current academic system. Considering that only around six percent of the respondents do research in heterodox economics, it is reasonable to suspect that the amount of people interested in the discipline would waver around this number. However, the results of the survey are quite surprising. More than 57% of respondents replied that they either have or had interest in heterodox economics. Furthermore more than 54% of respondents confirmed that they either would be interested (23.8%) or would consider (30.7%) doing research in heterodox economics strands. Although it is necessary to make an adjustment for institutional economics, mentioned among heterodox economics strands, which could have pulled the positive response up somewhat, the result is still surprising. The discrepancy between students that are doing research in heterodox economics strands, and those that would be interested in doing such research is also interesting. The explanation towards which the dissertation leans most is that problematic status of heterodox economics, relatively worse career prospects in the discipline, and complications in getting published contribute to this outcome. And although not among the most important reasons, the respondents that would not do research in heterodox economics identified worse career prospects (21%), lower chances of publishing (21%), and reputation of heterodox economics (21%) as some

of the reasons they would not do heterodox economics research.

Not less interesting are the results of the recruiting committee faculty. The surveyed faculty have identified their main research areas as microeconomics (52.38%), macroeconomics (34.91%), and econometrics (20.63%). Only 6.34% of respondents work in heterodox economics strands.

As has already been mentioned, the preferences of the faculty for the recruitment of the young faculty are well-understood by the potential applicants. Among the main factors that influence the recruitment are research topic quality (8.99/10), research productivity (8.95/10), and research topic fit to the profile of the department (6.17/10).

The faculty confirmed that they could predict the research productivity of the potential candidate. More than 86% replied that they either could, or could rather predict the research productivity. This point is quite important for our model, since of its main assumption was that the recruitment committee is aware of the lower research productivity of heterodox candidates. Obviously, this fact does not imply that the recruitment committee could necessarily predict heterodox economists producing less research. However, the following responses suggest so.

More than 67% of the faculty affirmed unwillingness to recruit heterodox economics candidates. Only 15% claimed that they would be willing to recruit a heterodox student. In part the situation could be explained by a certain bias towards heterodox economics. This is confirmed by the fact that among the reasons for their unwillingness to recruit a heterodox researcher the faculty claimed the reputation of

heterodox economics (26.8%). Aside for the ideological concerns, however, the main reasons for the plight of the heterodox student are lower predicted research productivity (48.77%) and unpredictable academic performance (46.33%).

In sum, the survey results overwhelmingly confirm both the assumptions and the conclusions of our game. The student player is well informed about the preferences of the recruiting committee. The student player is willing to change the research topic if necessary for getting employment. Among the two candidates the recruiting committee would select the candidate with higher research productivity. The committee is aware that heterodox candidates have lower research productivity. This means that almost every recruiting game would proceed along the lines of the outlined scenario. The rankings reinforce new values in the academia, and these values work against marginal strands of research.

Chapter 4. Beyond Academic Rankings.

4.1. Wider Implications and the Future of Rankings.

The discussion of the previous chapter focused on incentives that rankings add into the academic system and effects that these incentives have. The main conclusion of the previous section was that the rankings work on the margin. In other words, rankings often provide only marginal incentives to follow certain choices. If an institution has a strong humanities department, it would not be tempted to shift more funding to STEM disciplines. Similarly, department strong in qualitative methodologies would not be likely to invest more into developing quantitative research culture. On the individual level, an ideologically motivated scholar would probably not change their research topic either.

Why are the marginal incentives that rankings create important? The answer to this question lies in the fact that, although an effect of marginal incentives might not be crucial in each separate case, in aggregate these effects could contribute to a significant tilt in the academic system. Scholars who are strongly resolved to pursue heterodox economics research would pursue this research even if it will detrimentally affect their employment chances. However, an unresolved graduate student would be strongly tempted to reorient his research towards more orthodox topics. To make an analogy with the political process, those are undecided voters that usually crucially affect the outcome of any campaign. In the academia, the undecided mass of students is also critical to determine the direction of knowledge production.

The effect becomes stronger the more national or institutional involvement in global competition is. On the policy level, the more the country is involved in the international brain race, the more it will be likely to pay attention to measurements. Hence, for the countries that are at the core of the system or trying to position themselves close to the core, rankings create stronger incentives.

China, for instance, could serve as a good example of country acting in accord with the ranking incentives. Large amounts of Chinese research funding go to the STEM disciplines[62], in particular to science and technology studies. Chinese institutions on par with the government put strong efforts towards repatriation of the brightest scientists from abroad[63]. New research centers, with a strong tilt towards science and technology and a large ratio of graduate students, are created (Litao, Jinjing, 2009).

The same is valid for higher education institutions. The more an institution is involved in the global competition, the stronger is the effect of the incentives that rankings create. This is valid on multiple levels. An institution that does not value participation in the global competition would not be likely to pay much attention to the incentives. However, for top institutions that are resolved to remain among the global elite incentives of the rankings are crucial. Their policies and choices ought to reflect the logic of the ranking system.

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[62] "China urged to seize on new tech revolution," *China Daily*, 30 October 2012, http://www.chinadaily.com.cn/bizchina/2012-10/30/content_15856766.htm.

[63] "China plans to attract more overseas Chinese scholars in next 5 years," *Global Times*, 27 August 2011, http://www.globaltimes.cn/NEWS/tabid/99/ID/672861/China-plans-to-attract-more-overseas-Chinese-scholars-in-next-5-years.aspx.

According to Bowman and Bastedo "Rankings are likely to influence those who are vulnerable to status hierarchy produced by rankings, and that hierarchy of perceived value generates resources for research universities (Bowman, Bastedo, 2010: 19)."

The same situation is valid for top departments and schools. For these schools creating the product that the rankings value most is essential to their institutional status. Returning to the example of economics, the leading economics schools would have a strong disincentive to hire economists working in heterodox strands simply because their predicted research productivity is lower.

A quick analysis of the leading economic departments confirms this point. Lee, Grijalva, and Nowell have compiled the ranking of economics departments of the US universities with a meaningful presence of heterodox economists (Lee, Grijalva, Nowell, 2010). In total 27 economics departments were ranked, including such powerhouses as UC Berkeley and NYU. The ranking includes number of heterodox economists on the faculty of an institution and their importance index, the percentage that the heterodox economists contribute to the total productivity of a department. If we compare this ranking with the general ranking of economic departments provided by RePEc/IDEAS, which calculates the overall impact of academic departments based on traditional citation counts, interesting results emerge.

In the heterodox ranking there are twelve university departments where heterodox economics research constitutes relatively high input of total research productivity (more than 30%). Out of these departments only 1 department, that of UC

Riverside was ranked among 25% of university departments in the US in 2013. The curious fact among the rest of the 27 departments is that there is an almost perfect inverse correlation between how much heterodox research is being done at the department and how high it is placed. Even relatively strong institutions, figuring prominently in global university rankings, have relatively badly ranked university departments in economics, if these departments produce heterodox economics research. Relatively well ranked universities with high proportion of heterodox research include University of Massachusetts Amherst, Northeastern University, University of Utah, University of Nebraska-Linkoln, and Temple University. None of these universities' economics departments figure in the top-233 economics departments rated by RePEc, although relative to their position in the world university rankings they should be around the top-100.

Elite economics departments deserve special mention. Out of top fifty world universities, the schools that have meaningful heterodox presence number a disappointing four: University of Michigan, UC Berkeley, New York University, and University of Washington-St. Louis. Each of these universities has only two faculty members working in orthodox fields and their contribution to overall research productivity of their departments is relatively low. The vast majority of other top economics schools and departments have virtually no heterodox economists. In sum, among the faculty of the very best economics departments in the United States the presence of heterodox economists is negligible.

This analytic exercise does not completely prove a tilt against heterodox economics. Correlation does not mean causation.

However, the fact that a huge chunk of economics research is underrepresented in virtually all top universities is quite interesting. Furthermore, the situation where departments with high heterodox research activity are not included even in a relatively large selection of top economic institutions is somewhat puzzling.

The system has a circular logic. The more non-standard economics strands are sidetracked, the more profound this trend becomes. There will be more and more economists working in mainstream fields of economics, which would make the field even more dominant. At the same time, there will be less and less economists working in non-standard economics sub-fields, which threatens the field with extinction and creates a risk of rigidifying the discipline.

The trend would similarly reflect on the availability of supervisors. The more mainstream economists the system produces, the more they dominate economics departments. The predominance of mainstream economists in economics departments could lead to the situation where even if a potential graduate student would like to do research in non-standard strands of economics, they might have a problem simply finding a suitable supervisor. Furthermore, as at the first degree level the role of a supervisor is critical in the choice of research topic, the supply of people that would be willing to do research in non-standard economics could be undercut at the source.

It is reasonable to ask how this information is important for the system of knowledge production. After all, heterodox economics strands have never been extremely popular with the majority of economists. The rankings, in this respect, just add further incentives for marginalization of already

marginal fields of study. It is not even clear to what extent the rankings contribute to the demise of non-standard economics strands. The only thing that follows directly from our analysis is that there are these new incentives for marginalization. Therefore, in large numbers these incentives would have some effect on the economics discipline.

The sad fate of heterodox economics aside, the importance of this discovery lies rather in the fact that the marginalization process could be extrapolated on wider situation in the international academia. If economics and other quantitative disciplines contribute more to the standing of an institution in international rankings, why not invest more resources into these disciplines? If in political science, political economy research brings better measurable results than in political philosophy, why not promote the specialization in political economy? That is, of course, if social sciences and humanities are to be supported at all. In the end, natural and life sciences, as well as mathematics and computer science give a rather considerable advantage for the institutions that choose to specialize in these fields. Relatively young technological schools, such as HKUST, showed well the direction to go in case an institution wants to break into top ranks.

The process of marginalization works on multiple levels. On the level of the country, it sidetracks less known institutions in favor of more prominent and recognized ones. This is especially dangerous for up-and-coming institutions that did not have enough time to demonstrate their potential. If such institutions are not in focus of government policies, their growth may be stunted by their inability to compete on par with their more established peers.

On the level of higher education institutions, marginalization manifests itself in better support for particular departments. This means that there are strong incentives to invest into the departments that are better suited to position their higher education institution among the global universities elite. Again, this situation is more dangerous for institutions that have relatively weak departments in the disciplines less favored by the rankings. There is no reason to support a young department of literature during the time that it needs to grow stronger, when the resources could be invested into department that could give an immediate benefit. Furthermore, to make matters worse there is a disincentive to found new departments in humanistic disciplines, because resources that need to be invested into this endeavor would give a relatively better payoff in STEM departments.

On the level of faculties and departments there is an incentive to promote fields and disciplines that suit better to the system of measurements devised by various rankings. The alliance between social sciences and humanities is ditched in favor of the alliance between social sciences and sciences, with quantitative and experimental methodologies taking precedence over qualitative methodologies.

On the level of individual disciplines, less popular fields of inquiry are being marginalized in favor of more prominent ones. Bigger audiences usually mean more citations and better publication opportunities. To survive in a fast paced environment of international competition, it is reasonable to support those fields that could yield the best measurable performance. The culture of numbers dominates the academia.

A whole culture of research production – that of publishing comprehensive works – is being sidelines in favor of fast track production of easily digestible research. The culture of fast research gives precedence to speed over depth. The logic of this situation is to produce the most citations in the shortest period of time. Although it is not the rule, it usually means that a researcher has to publish new research in copious quantities, without investing too much into its quality. As soon as research is publishable, it is a publish-or-perish situation.

The book is badly suited to this fast environment. Its larger size decreases the potential readership. Consequently, the book might yield lower citation counts. Considering that the effort that needs to be invested into producing a book is often higher, there is a disincentive to publish comprehensive investigations in any field. More and more disciplines engage in this fast paced research production. The example of our own investigation is telling. In the literature review section, it was shown that there are only a few books written on the topic of rankings, despite a vast amount of articles dedicated to the topic. The void, produced by the decrease of comprehensive works, is filled by collections of articles or multi-author works. These surrogates partly fulfill the demand for a deeper treatment of the topic. However, they lack the coherence of a single author investigation.

The process of marginalization restructures the academia in unprecedented ways, and the rankings are a pivotal part of this process. The skew in the system of knowledge production might have been in the academia for a long time. Nevertheless, it is the rankings that reinforce and further this skew.

Since rankings play such an important role in directing the system of knowledge production, the hopes to rectify the skew are connected to further development of ranking systems. As rankings become more nuanced, the marginalization process might cease to exist. Multiple bundles have to be overcome before this scenario would realize itself.

The first bundle is the development of more sensitive proxies for measuring research in various disciplinary domains. The development of more sensitive proxies could rectify the situation where various disciplinary domains are represented unequally, thus eliminating the skew towards STEM disciplines. This is, possibly, the most complicated problem to solve on the way to more accurate ranking systems. Developing more sensitive proxies does not mean simple normalization counts. Normalization counts do not tend to produce accurate results by themselves. They have both temporal and field bias (Rauhvargers, 2011: 64). The impact of research should be judged on the impacts outside of simple citation counts. The merits of any research should be analyzed on the basis of a research's contribution to its field and to its stakeholder community. It is necessary to admit that, at present, there is no system of measurements sophisticated enough to measure research impacts across various fields. Furthermore, development of proxies for such system is a cumbersome process that ought to rely on complicated algorithms. Any such algorithm would invariably complicate measurements and render them less transparent.

In the absence of more accurate proxies, the possible solution to the ranking dilemma is a further diversification and fragmentation of ranking systems. The ultimate result of such

development is a plethora of rankings measuring each discipline or disciplinary domain with a set of proxies uniquely suited to this discipline. In theory, development of ranking systems along these lines could create a quite accurate system of measurements in the absence of more sensitive proxies. Drawbacks of this solution are a possible informational congestion and lack of possibilities for wider comparisons between fields and disciplines.

Another bundle that needs to be overcome in the development of ranking systems is devising better measurements of teaching. There are no simple solutions in this direction either. An accurate set of criteria to measure teaching quality is hard to devise. There might even be the case where a certain differentiation between disciplines would be necessary, since not every discipline is equally teaching intensive. Unlike measurements of research quality, measurements of teaching quality are practically absent. The claims of principal ranking systems that such proxies as the number of Nobel Prize winners or the employers' reviews are legitimate measures of teaching quality are ludicrous. Measuring teaching quality in such way is akin to measuring knowledge by the success with which graduates are able to climb a tree. Considering how simple it is to devise at least some sort of proxies for measuring teaching quality, it is surprising that there is still no hint of such developments in principal ranking systems.

One obvious method of measuring teaching quality is to conduct surveys among the students. It is a seemingly cumbersome procedure; however, many schools already have the results of students' surveys. Although there is no reason to believe that this data would be readily available, there is

also no reason to believe the contrary. A certain reluctance to use this approach may be connected to an old fashioned distrust to student evaluations. An attempt to introduce a website for measuring teaching quality in the UK, for instance, caused uproar in the British academic community[64].

Including student survey as a part of university evaluation could be a controversial move for major ranking systems. More complex systems of teaching quality evaluation may include a combination of student and self-assessment, accompanied by various proxies. Among the possible proxies are progress of students' performance, employers' satisfaction, and alumni success. Obviously, any such evaluation would need thorough elaboration. However, in the current situation, any sort of teaching assessment would invariably be better than the proxies already in use.

Finally, one of the most tangled bundles to deal with is devising reliable measures for comparison between institutions with different institutional missions. In other words measuring research and teaching intensive universities with the same set of measurements is somewhat problematic. This is not only a problem of teaching versus research. This is an issue involving institutions that may have widely divergent objectives. A US public university, for instance, may fulfill functions of a research university and a community university at the same time. The two missions evoke widely different institutional behaviors. A focus on solving community problems may disadvantage a university in the international competition. At present, good universities

[64] Chris Parr, "We Are Not Dancing Bears," *Times Higher Education*, 13 June 2013, http://www.insidehighered.com/news/2013/06/13/british-professors-object-website-ranks-them.

are incentivized to pay less attention to any of their missions other than research. However, this situation is potentially dangerous in that it directs universities in one direction, while sidelining any benefit that they could bring into other pursuits.

The problem of uniform treatment is the most complicated problem to overcome. In the United States, for instance, there are separate rankings for comprehensive universities and liberal arts colleges[65]. Since these institutions pursue divergent missions such move is well justified. However, this is once again the strategy of diversification. If the rankings would be diversified in the direction of both discipline specificity and institutional specificity, the result could be an overwhelming number of rankings that is too confusing to be employed for any meaningful purpose. Alternatives are not quite clear. The U-Multirank[66] might present an example of sensitive adjustable ranking. However, it remains to be seen how well it will manage to tackle the diversification problem.

On the basis of everything that has been said above we can outline various scenarios of further developments. Two main axes that should be taken into account are whether rankings will diversify and whether they will continue to play a prominent role in the higher education. The rankings are here to stay, as every other article is keen to underline. However, it does not mean that their significance will remain the same. Similarly, the problems of the rankings would not necessarily

[65] See, "USNWR National Liberal Arts College Ranking," http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/national-liberal-arts-colleges; "USNWR National University Ranking," http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/national-universities.

[66] See, "U-Multirank,: http://www.u-multirank.eu.

lead to a significant diversification of rankings and ranking systems. Four possible scenarios emerge out of the two axes.

In the first scenario, the rankings will continue to play a prominent role in individual and policy choices and they will not significantly increase in number or diversify their methodology. Alternatively, there may be some degree of diversification, but the principal ranking systems would dominate public discourse and will not employ more complex methodologies. In this case, the tendencies that we have identified above are bound to become stronger and stronger. It is quite likely that in this scenario the research university would dominate the future academia. Marginalization tendencies would intensify further, and very few universities would be enticed to engage in riskier pursuits. The role of teaching will continue to decrease in significance, with the academic profession possibly split between those doing teaching and those doing research. Humanities and social sciences would be further sidetracked. Humanities may be squeezed out of academia altogether, or confined to a limited set of institutions that would be able to afford maintaining them. Social sciences would become increasingly similar to harder sciences, employing precise quantitative methodologies. The culture of research will be dominated by fast research products with quantity and measurable output prioritized over more comprehensive pursuits.

The second scenario is possible if the rankings will continue to be prominent, but their diversification and methodological sophistication will ensue. In this case, the development of ranking systems may rectify the current skew in the system of knowledge production. The universities will be assessed in accordance with their missions. The prioritization of research

will not be as strong as it is currently and other academic activities, including teaching and governance, will be valued by the measurement system. The trend towards dividing teaching and research might be stifled. Research impacts would be assessed within the frames of corresponding research cultures, and fast research would be confined to specific disciplines. There are two complications in this scenario. First, in order to rectify all the tilts in the system of knowledge production, it is necessary that the rankings take into account various university missions, teaching quality, and research cultures. If any of these factors is not taken into account, the corresponding skew will persist in academia. Another problem is that under the current system certain tendencies have already entrenched themselves in academia. Even if rankings will develop more sensitive measures for each disciplinary domain, it would not rectify the fact that social science department are staffed with quantitative scientists. Whatever the development of ranking systems will be, the current trends are and are bound to dominate the academic system at least in the nearest future.

Finally, scenarios three and four could be merged together. Both scenarios imply passing ranking hype and faltering significance of rankings in the international academia. Although this scenario may seem unlikely, academic rankings are a relatively recent addition to the academic system. As we have shown in the first chapter, although rankings go back in history, they hardly had much impact on academia until recently. Obviously, rankings perform a certain function in academic system. They benchmark higher education institutions against each other and provide a digestible informational product for a quick comparison of institutions. However, beyond a plethora of imperfections in

measurements, it is questionable whether rankings do a good job in comparing HEIs. If ranking systems will continue to stagnate in their methodologies, there is a good chance that rankings would cease to be used as comparison instruments as their faults will be gradually understood. It is hard to make a prognosis on what will substitute rankings as a measurement mechanism in this case, but the academic system had managed to survive without the rankings for quite a long time. Obviously, this scenario would also suffer from the tilts that rankings have already introduced, and normalization of knowledge production will be a slow and gradual process.

This last scenario raises a wider question. This question is whether rankings fulfill their stated goals and how good they fulfill these goals. To answer the question, it is necessary to understand rhetoric and functions of rankings. The next section is dedicated to analyzing rhetoric components of academic rankings.

4.2. Rhetoric of Academic Rankings.

Although it may seem somewhat strange to see academic rankings through the prism of their rhetorical functions, rankings have a strong discursive component. From their very origin, the rankings were intrinsically tied to various social discourses. The first rankings were occupied with answering the question, "Which institutions train the elite of the nation?". The emergence of the first rankings is tied to nature vs. nurture debates (Myers, Robe, 2009: 7). The rankings themselves were used in the arguments of which factors contribute to the development of eminent individuals.

The first global ranking, created by Shanghai Jiao Tong University, was also wrapped in a very particular discourse. This time it was the discourse of global competition. It was through the prism of the global competition discourse that Liu and his associated tried to assess the global educational system. The fact that competitiveness was assessed mostly through the prism of mathematics, natural sciences and engineering is, in itself, telling of social perceptions in the country that came up with the research.

Here we see an example of how discourse crystallizes into particular products, and how these products, in turn, determine further development of various discourses. The skewed vision of goals and objectives of higher education led to a skewed ranking that served as a reference point for other rankings. Progressive unfolding of this vision led to global universities' being judged by the criteria that were initially supposed to serve a very limited purpose and very limited national objectives. This created a new discourse of higher educational quality based on a particular set of criteria.

As this discourse set in, university rankings moved from a purely referential point to one of the determining factors to consider in the actions of global HEIs. This happened as rankings started to be employed in considerations of various choices on policy, institutional, and individual levels. As soon as concrete material benefits appeared, university rankings became an important factor in the world of higher education. That is how one specific discourse created a product through which initially the discourse became a part of everyday life in the academia. Before the emergence of the first rankings, the trends that are now common in the academia – such as marginalization of certain disciplines, side-lining of teaching,

and demise of humanities – were far less pronounced or inexistent.

The success of crystallization of the ranking discourse raises an interesting sociological problem. As was mentioned in one of the previous chapters, some scholars claimed that the first rankings imposed a particular order of power on the global academic system (Bowman, Bastedo, 2011; Marginson, 2009). In other words, the first rankings had actually determined which universities belonged to the global elite and which did not. Furthermore, they set the order of influence among higher education institutions. New and lower ranking HEIs in this system would need much more effort to rise up the ladder than those that are already well positioned. Important concepts to understand this situation are "path-dependence" and "first-mover advantage".

Let us see on concrete examples how this system works. The first global ranking, ARWU, listed hundreds of world universities according to their performance over a set of ostensibly objective criteria. As has been shown, the criteria were quite basic and tailored to a few disciplines. However, the very form of the ranking suggested an order of quality, which for those that were not willing to go deeper into the details was taken for granted. In addition to expected brands of quality – such as Oxford, Harvard, Princeton, Yale, and Cambridge – there were a lot of other universities that, albeit known to experts in their fields, would not necessarily be placed higher than their peers by the vast majority of experts. Some results were quite unexpected, for instance relatively weak performance of Russian, French and German universities. However, the bulk of the system was created.

The sheer weight of the universities ranked in the top-100 – these were mostly large, comprehensive universities – was enough to legitimize the system in its original state. The top ranked universities had a vested interest in the system and its promotion. They could use the rankings to raise funding, attract more students and better professors, etc. In the long term, supporting the ranking was profitable for them. Hence, even if they disapproved of the ranking, top ranked HEIs emphasized their performance and lent it a certain discursive legitimacy. At this point of time, everyone who had contact with the first ranking had an approximate idea of how the main universities are positioned and to which tier they belong.

One year later, the THE-QS ranking appeared. This ranking was based on very different criteria. This time the ranking did not state that it had a very limited scope and purpose. On the other hand, it was supposed to be a comprehensive ranking of global educational quality. It was based on a wider set of criteria and, most importantly, on the reputation of HEIs. Although scholars are reputed to have broad knowledge of their fields, it is doubtful that every scholar has the whole international education system in view. Hence, there is a strong possibility that the ARWU ranking could have influenced certain choices and categorizations, whether due to scholar's familiarity with the previous ranking or due to the discourse that ARWU spread with respect to top ranking universities.

Bowman and Bastedo identified a significant "anchoring effect" in the THE rankings. In simple terms, the anchoring effect means that the institutional order set by the earlier rankings influence the peer assessment in the later rankings.

The authors found "that anchoring effects exert a substantial influence on future reputational assessments, raising substantial concerns about the validity and reliability of the reputational scores used by ranking agencies to sort and stratify institutions by quality (Bowman, Bastedo, 2011: 432)". The authors also mention other researchers that found similar effects for other rankings (Stake, 2006; Bastedo, Bowman, 2010). If the anchoring effect can be observed in the above-mentioned cases, it is reasonable to assume its existence in the case of the earlier ARWU and the following THE-QS ranking.

The two ranking systems cemented the order of power in the global academia. And at this point it is hard to judge whether they come close to describing the objective situation, or the situation is a matter of chance. If, before the ascent of the rankings, people could argue whether University of Michigan is better than Humboldt University, or whether the University of Wisconsin-Madison is better than the University of Groeningen, after the appearance of the rankings both Michigan and UWM were far ahead of their competitors in the ranking game.

Although the concrete numbers are yet to be provided, better performance in the rankings is reckoned to provide tangible benefits to well performing universities (Hazelkorn, 2011). The universities that had been ranked at the top of the global academic order, thus received more resources than the rest to entrench themselves even further among the very best. Considering that the first rankings had dominated the field for years, there were plenty of time for the existing academic order of power to become iron clad. Less well ranked universities did not get the same amount of tangible and intangible benefits accruing to their positions. To them the

ascent up the ranking ladder was and still is a battle against considerable odds.

Although institutionalization of the ranking discourse and strong influence of this discourse on higher education and research is a critical issue, there is another side to the rhetoric of rankings. This side concerns primarily presentations of rankings and the actual rhetorical component of the ranking business. Although aspiring to be treated as an objective representation of the international academic system, rankings are seriously flawed in their methodologies. Some ranking providers actually admit their shortcomings in one way or another (Liu, Cheng, 2005: 13). However, the topic of shortcomings is an uncomfortable one and is rarely put on the table as often as their advantages.

An important part of the rankings discourse is how much credibility is given to individual rankings. ARWU ranking is usually given much credibility in the higher education discourse. Despite already mentioned problems with reproducing the ranking results, ARWU benefits from clear and simple methodology. Negative side of ARWU is the limited character of its measurements. ARWU ignores teaching and underrepresents universities' performance in humanities and social sciences. This information, however, could hardly be found on the website of ARWU. Instead the website is full of laudatory comments on the ranking[67].

Although the creators of the ARWU ranking admit its limitations – and point to the limitations of other rankings at

[67] After the initial paragraph, the ARWU self-description concentrates mostly on praise of the ranking. See, "About ARWU," http://www.shanghairanking.com/aboutarwu.html.

the same time – they never fail to emphasize positive features of their ranking such as "carefully selected, nonsubjective criteria (Liu, Cheng, 2005: 135)," and "internationally comparable data that most users can verify in some way (Ibid)". The website of the ARWU rankings does not mention neither the limitations of the rankings nor that its main objective is measuring solely research performance in some very limited research areas. The impression that the website creates is that the ranking actually provides a comprehensive picture of international academic system. Thus, the careful admittance of the obvious by the creators of the ARWU ranking does not really reflect on its objectivist rhetoric.

Similarly, the websites of both the THE and QS rankings mention only positive reviews. THE prides itself on no less than "the most comprehensive and balanced comparisons available, which are trusted by students, academics, university leaders, industry and governments[68]." QS tries to convince us that its ranking is "among the most trusted university rankings available[69]." It does not sound surprising. However, it is interesting that even in the description of the methodology none of the rankings mention their limited scope or subjective character of their measures. All of the main rankings, thus, are trying to make an impression that they provide a comprehensive and objective overview of the international academic system.

[68] "THE World University Rankings 2012-2013," http://www.timeshighereducation.co.uk/world-university-rankings/2012-13/world-ranking.

[69] "QS World University Rankings 2012," http://www.topuniversities.com/university-rankings/world-university-rankings/2012.

This situation would not matter much if most of the ranking consumers cared to go into details of the ranking methodologies and figure out what rankings measure and what they do not measure. However, digging into ranking methodologies is a labor intensive activity. That is why credibility of the rankings is strongly influenced by expert opinions.

In a perfectly objective world the ranking providers would tell exactly what their rankings measure. However, detailed description of what rankings measure and what they do not measure would probably scare away any person that would like to use the rankings to assess anything. Thus, the rankings have to keep the mask of objectivity. Even despite the fact that experts could easily see the multiple drawbacks of every ranking system, in the eyes of the general population rankings represent reality, at least to a certain degree. The extent to which university rankings are trusted is determined by the opinions that are prevalent among experts. Thus, the criticism that QS ranking evoked made this ranking less trustworthy for the general population. The fact that other experts have noticed a relative objectivity of the ARWU rankings increased its general credibility and trustworthiness.

It is here, however, that the distinction between what is said and what is understood becomes more obvious. Although ARWU is indeed a quite transparent and methodologically clear ranking, the limited choice of criteria diminishes its value significantly. To put it in a simple example, a ranking that would measure universities by the size of their student body would be clear and transparent. However, it would hardly show an objective picture of the international academic system. According to this ranking the best

university in the world would be Indira Ghandi National Open University with over four million enrolled students[70]. Princeton with its 8000 student and California Institute of Technology with little more than 2000 students would probably be somewhere at the end of the ranking. Hence, the expert evaluation of the ARWU as clear and transparent is misleading to the wider population and endows a limited ranking with poor methodology with a sign of quality that allows it to thrive. The QS ranking, on the other hand, has a very subjective methodology. However, it does not necessarily mean that it represents the international academic system worse than its competitors.

An indirect proof that the credibility of rankings plays an extremely important role in the ranking business is the divorce of the THE and QS rankings. A strong criticism of the THE-QS ranking from the international academic community lowered its prestige among the general population, undermining the customer base. The response of the THE was the creation of a new ranking, unburdened by the reputation of the previous ranking. The THE management has continuously made emphasis on the fact that the QS ranking was severely criticized, and that in the new THE rankings the previous drawbacks would be liquidated[71]. Although the reality turned out to be much less rosy than promised, the THE rankings, so far, drew less criticism from international experts. Although they offered some improvements over the old THE-QS model, these improvements are overshadowed by the amount of methodological measurements that THE retained. Milder criticism in this case can be explained in part

[70] "Profile of IGNOU," http://www.ignou.ac.in/ignou/aboutignou/profile/2.
[71] Ann Mroz, "Leader: Only the best for the best," *Times Higher Education*, 5 November 2009, http://www.timeshighereducation.co.uk/408968.article.

by the QS taking the bulk of the critical comments, shielding the very similar THE ranking from a wave of criticism.

The rhetoric of university rankings transforms into rhetoric on lower levels. These levels include individual and institutional rhetoric. The institutional level of the rhetoric was already mentioned earlier in this section. Performance of universities in global rankings carries tangible economic benefits. Despite a great deal of criticism, thus, it is beneficial for an institution to emphasize its performance in various rankings; especially, if it involves progression to higher levels. The descent down the ranking ladder is also not especially harmful, as long as the institution still occupies a decent spot. The memory of the general population is quite short when it concerns ranking performance, and, except for a bunch of experts, few hold the whole history of ranking position changes in their head. Therefore, it is enough for a university to mention just the current results in order to de-emphasize its decline in various ranking tables.

The system has circular logic. By communicating their performance in various rankings, universities increase legitimacy of these rankings. Since many of the academic powerhouses are mentioned in the rankings, the legitimacy of the ranking systems is backed by leading names in the academia. The more reputable the ranking system, the more likely a higher education institution would be to mention its success. Few universities would pass the opportunity to emphasize their "world leading" status by pointing to ARWU, THE WUR, or QSWUR. Much smaller number of universities would be tempted to do so by referring to the Global Universities Ranking, in which the Moscow State University somehow came fifth. Despite criticism of global

university rankings, the leading universities themselves support and nourish them. This is especially valid of the three principal ranking systems that are so far ahead of their rivals that they not only measure but also shape the global academy

The final rhetorical component of rankings could be seen on the individual level. Here as well rankings create and conserve a particular power order. The most basic component of this order is legitimization of the order of discourse. In other words, the rankings build a hierarchical research structure where some scientific centers are privileged over others. An institution in the higher levels of ranking hierarchy has more rhetorical weight than a university in the lower levels of the same hierarchy. This might not be valid for the top-200 world universities, although even there a certain effect should exist.

Such universities as Harvard, Stanford, UCL or Cambridge would have more weight in dissemination and promotion of their research results than the University of Buchurest or the University of Dehli. Although this situation seems reasonable at first sight, this also means that whatever research Harvard will do, it will mostly be well regarded in the international community. For secondary universities, however, only truly groundbreaking research would catch some spotlight.

The problem here is the fact that the value of research does not necessarily relates to its intrinsic characteristics. Quite often research value is determined by recognition of a narrow scientific community. This community has its superstars and outsiders. In case of prestigious world universities, their research product would be better valued, even if it has the same intrinsic potential as that of secondary universities. Thus, secondary universities have to jump over the top to

gain the recognition and impetus for promoting their research. In this way, university rankings contribute to preserving the very order that they created.

The individual rhetorical component of this discourse concerns the legitimacy of a speaker. In other words, who is speaking – in terms of institutional affiliation – determines how much attention is paid to the speaker. In constantly growing research fields and enterprises, individual reputations tend to become blurred. It is practically impossible for a professional researcher to know other researchers outside of their specialization, even within the same discipline. However, advanced research often involves information not only from within the narrow specialization of an individual researcher, but also from related disciplines. Institutional reputation comes to fore in the decisions concerning the source for such information. All other things being equal, it is simpler to keep an eye on the research done in leading research institutions than that in secondary ones. Scholars who are affiliated to the prestigious institutions, thus, attract more attention to their research.

This situation leads to a reputation building in the scientific community. More attention means more recognition in the international scientific community. The message gets less attention than the messenger itself. A scholar affiliated with the Harvard University would carry more weight by means of this affiliation alone than a peer from lesser institutions, even if the research of the latter has better potential. The implications of this situation are manifold, from wider audiences at various conferences and congresses, and higher credibility given to the research, to higher citation numbers. This latter implication is especially important as it speaks

back to the circularity of the whole ranking system. To put it in a simple scheme: the higher ranked the university is the more attention its research and individual researchers receive; the more attention the research receives, the more it is cited; the more citations are on the university research product, the higher this university is placed in academic rankings. The academic power order is ironclad on all the levels of the academic system, and the rankings play an important role in its maintenance.

4.3. Prognosis of Trends in Global Academia.

The analysis of the previous chapters showed how global academic rankings contribute to shaping of the knowledge production system. Multiple processes converge in creating a new mold of academic system. The rankings are just one of the elements that define future trends of the academia. One thing is for sure: despite strong resilience of the academic system, the last decades laid the basis for revolutionary changes in the system of knowledge production. In over seven hundred years, the system did not change as much as it did in the last two decades. The future will see further intensification of these trends.

The three core processes that change the face of the global academic systems are the demise of humanities, separation between teaching and learning, and homogenization of dominant knowledge paradigms. Each of these trends is important enough to deserve a separate treatment. Together they are bound to change the landscape of global academia drastically. In the following part of the section it is shown how this processes change the traditional system of knowledge production.

The European university was born out of the preceding traditions of monastic schools. The original universities had three higher faculties: law, theology, and medicine. Out of the three faculties only one belonged to science disciplines of today. Two faculties, theology and law, belonged to an intersection between humanities and social sciences. Furthermore, the lower faculty of the Arts (or Philosophy) gave instruction predominantly in humanities.

Except for medicine and medical sciences, the modern sciences mostly emerged out of philosophical enterprises. In fact, many lustrous minds of early sciences, such as Copernicus, Bacon, and Galileo, were known as natural philosophers rather than scientists.

Prestige of philosophy and humanities kept growing long after scientific disciplines dissociated themselves from their humanistic ancestry. This trend was mostly due to the fact that elites around the world were often educated in the liberal curriculum. In the British Empire, for instance, education in classics was a prerequisite for social advancement. According to Turner "a knowledge of classical languages and the experience of a classical education, of not necessarily any powerful knowledge of the classics, constituted one of the chief defining factors in the education of gentlemen who could in one way or another claim to belong to the social and political elite throughout Great Britain. Education in the classics was thus an avenue for social advancement, even if often modestly so (Turner, 2005: 161)."

Nineteenth century, as well as the first half of the Twentieth century, saw reputation of humanities and social sciences rising to unprecedented levels. Many important insights of inner workings of human behavior and social world were

made during this time. In Philosophy, Kant, Fichte, Hegel, Pierce, Nietzsche, and Wittgenstein were among many philosophers that provided important perspectives on human condition. In what would later become social sciences, Comte, Weber, Marx, and Durkheim laid foundations for further explorations of society and social relations. In incipient psychological investigations, Wundt, Freud, and Pavlov determined the agenda of inquiries into individual and social behavior.

Prestige and significance of humanities persisted well into the late twentieth century. Academia, however, had been for a long time harboring a split that came to fore recently.

In 1959, Charles P. Snow, a British chemist and literary figure, gave a lecture at Cambridge in which he lamented the growing division and lack of communication between scientists and men of letters[72]. The topic, which came to be variously known as The Great Divide or The Two Cultures, generated a long lasting polemics; it led to sharp intellectual exchanges, disciplinary introspections, and even setting up of a specialized institution[73]. Certain mistrust between men of the two different intellectual pursuits ventured well into the 21st century and provided inspiration for an occasional squabble, dispute, or prank[74].

In the battle between sciences and humanities, rankings took the side of sciences. Perhaps, this was due to the objective fact that knowledge production in sciences better yields to measurements, or, maybe, it was due to the fact that the

[72] The lecture was later published in book form (See, Snow, 2001).
[73] Michigan State University set up the Lyman Briggs College for this purpose.
[74] For a more thorough elaboration of the topic see, Dmitrishin, 2013b.

original ranking aimed to measure productivity in sciences and mathematics. Whatever the reason is, rankings had tilted the balance in academia towards sciences. Humanities, the pillars of the modern system of knowledge production, are slowly giving more ground to sciences in the academia.

Of course, the downslide of humanities may be just a temporary trend. Once humanities were the pillars of elite education, and their status may be regained in the future. However, the logic of the academic system, at present, works against humanities and humanistic social sciences. The trend is so strong that it would likely persist into the future, even if the current anti-humanities skew will be corrected.

The core problem of humanities and social sciences is that they are seen as uncompetitive in the era of global market[75]. While harder sciences, medicine, and engineering bring tangible benefits, humanities and social sciences have a less tangible impact. Thus the two fields are often seen as a vestige of another era when education served different purposes. As long as education continues to get more and more expensive, humanities and humanistic social sciences would hardly be a popular choice for a practical mind.

Yet, humanities are not as impractical as they are often perceived. Humanities constitute the backbone of the creative industry sector, which contributes significantly to the global economy. One example of the influence of humanities on the creative sector is a number of talented artists that have been over the years produced by Goldsmiths, University of

[75] See, for instance, Nicholas Christakis, "Let's Shake Up Social Sciences," New York Times, 19 July 2013, http://www.nytimes.com/2013/07/21/opinion/sunday/lets-shake-up-the-social-sciences.html?_r=4&.

London. The university has almost singlehandedly created the bulk of British young modern artists. However, looking at humanities just as the nursery of creative industries is not completely correct. English contributes to formation of writers and journalists; History creates professionals of cultural sector; Law is a foundation upon which social structures are built. In sum, humanities contribute to the tertiary sector of economy – the most dynamic component of the global competition.

The problem of humanities is the failure to emphasize their own potential. Toby Miller claims that humanities split into two major camps (Miller, 2012). According to him, "Humanities one" carry a long tradition of elite education and focus mostly on learning for the sake of learning. In his opinion, this part of humanities is extremely unpractical, yet it dominates humanities agenda and how humanities are perceived. "Humanities two" are a part of humanities that is practically oriented. As an example here Miller gives Communication Studies, which has a long tradition of nourishing media industries. "Humanities two" grew out of the spread of humanities in public universities, where students had more practical concerns. Thus, "Humanities two" have a market orientation where humanistic skills and education is channeled into the market sector to provide tangible impact. The second group of humanities has much lesser influence over the general academic rhetoric. Miller believes that the two fields should merge, creating the new humanities education that would have a strong applied potential.

Regardless of whether Miller's ideas reflect the real situation or not, there is a real threat to the humanities, unless they

would prove their worth in the market society. With public universities' budgets being cut from year to year, humanities are liable to undergo the strongest cuts. Soon, humanities could indeed be affordable only to the chosen few. This situation concerns both universities – as only the well-endowed institutions would be able to afford maintaining strong humanities departments – and the students – as only those that would be able to afford private education could get a humanities degree. The concern exacerbates the concern of Miller, as more practical humanities taught at public universities have the highest risk of disappearing, leaving only the theoretical humanities of the elite schools. Whatever the future will be, humanities are slowly retreating to the background of higher education. This process retracts one of the core pillars of global academia, changing the academic landscape drastically.

The unity of teaching and research had been another fundamental characteristic of the academic world until recently. "Traditionally, teaching and research have gone hand in hand; however, the balance has been tipping. Teaching has not only been undervalued and marginalized, but is in danger of being seen as a negative attribute by institutions and their departments[76]," states Keith Gull in his comments on the British education system. However, not only Britain experiences a decrease in the importance of teaching in higher education institutions. For the reasons outlined in the previous chapters, teaching is seriously disadvantaged against research in the contemporary system of higher

[76] Keith Gull, "The chasm between teaching and research," *New Scientist*, 26 March 2010, http://www.newscientist.com/blogs/thesword/2010/03/academy-the-chasm-between-teac.html.

education. The consequences of this trend may be as significant for higher education as the demise of humanities.

The unity of teaching and research was enshrined into the European higher education model by Wilhelm von Humboldt. Humboldtian model is well known for its practical orientation and applied research concentration. Relatively less known is the fact that the Humboldtian model considered teaching one of the cornerstones of education and science. According to Ian McNeely "Humboldt found that academies had produced little significant research, whereas many of Germany's brightest thinkers taught in its universities. This recognition helped convince Humboldt to combine academic research with the university's historic teaching mission. Synthesizing the best of both modernity and tradition, he forged the world's most dynamic and influential intellectual institution (McNeely, 2002: 33)". In the heart of the model was the idea of teaching through research. This idea found its realization in the concept of seminar, an advanced level class where students interact with a tutor to solve practical research problems. The Humbodtian reform was imitated by universities around the world, especially in the United States. Johns Hopkins, UC Berkeley, University of Chicago and UCLA were founded upon the Humboldtian model (Albriton, 2006: 7-9).

According to Albriton "The ideal of the university, based upon Humboldt's philosophy, is one where there was freedom of teaching and learning and unity of teaching and research. Humboldt also stressed Bildung (the overall education of the individual) versus Ausbildung (education specifically geared towards employment). The research and teaching is determined by professors but the students are free

to determine the overall direction of their studies (Ibid: 2-3)". The importance of combining research and teaching came from the principle of developing rather than maintaining existing knowledge. In the dialogue between the professor and the students, thus, new directions of academic research could be born. Until recently, the unity of teaching and research had defined the international academic landscape.

The situation changed somewhat in the recent past. More and more emphasis in the academia is put on research rather than teaching. Again, the reasons behind this shift are analyzed in the previous chapters. A more pertinent question here is the consequences of this shift. Global institutions of higher learning are constantly engaged in the race for prestige and recognition. As defined by the current system of measurements, this prestige comes mostly from research. And while some countries still have the resources to fund both teaching and research – although latter definitely gets better funded – other countries find themselves in a position to barely able to afford investment into teaching.

A notorious example of this situation is UK. The country that traditionally prides itself on the quality of its higher education, gave up the teaching component of its higher education in all but rhetoric. Stripped bare of contact hours, British universities model evolved into something close to extra-mural studies. All but the richest universities place emphasis on individual studying. In practice, it means that despite the growing tuition fees, students in the UK have few chances to experience face-to-face interaction with their professors. At the same time, British universities are extremely research intensive. Although the cuts on teaching responsibilities are covered by individual study skill rhetoric,

UK is experiencing precisely the situation that the ranking model predicts. To be able to keep up in global competition against their better funded peers over the ocean, UK has sacrificed some of the basic functions of its academic system.

With massive investments into research and hardly any investment into teaching, UK's professors have an incentive to concentrate on research. In this system, the students cover the bill for the research rather than their own education. In return they get degrees from reputable institutions that they could use to obtain employment. The system brings considerable benefit to the UK, as prestige of its universities allows attracting international students who contribute to UK's budget. However, sustainability of the system in the long run is questionable, since prestige is not the only determinant of educational choice. US, in this sense, allows for both prestige and the quality of teaching.

The United States is also experiencing the skew in favor of research, which is perpetuated by the ranking system. However, being in a more favorable position, US universities do not experience such drastic changes as their peers in the UK. This situation is due to three main reasons. First, US universities are, on average, better funded. Over the years, many private universities have accumulated large endowments that allow them to be self-sustainable in matters of teaching and research. Public universities are not so lucky. Yet, the favorable position of US in the global academia still allows these universities to have an influx of funding from various sources. Second, many universities in the US have traditionally relied on adjunct professors to do basic teaching, while freeing the more advanced scholars for a few graduate seminars and research work. Finally, there is a traditional

division between teaching-oriented liberal arts colleges and research oriented public and private universities. Separate national rankings for the two types of schools allow both to concentrate on their respective missions. LARCs in this respect conduct mostly undergraduate education feeding research universities with students for graduate school.

The situation in the US is not ideal. Although there are many well-funded universities, the latest trend was the decrease of funding towards social sciences and humanities by various foundations. The recent decrease of funding for NEH and NEA, as well as cancellation of the political science funding of the NSF, show that the US was not spared the worldwide trend of sidetracking humanities and social sciences. Considering that foundations play an important role in funding US higher education and research, the situation causes certain concerns. Helga Nowotny, commenting on the issue, went as far as to claim that "In the US, the social sciences and humanities are under attack[77]."

The rest of the countries are not as favorably positioned. In particular, countries that are runners up of global competition would hardly be able to invest a lot of resources into teaching. If they want to catch up with the leading countries, then at least under the current system they would have to re-route most of their resources into the research intensive activities. What it means for the Humboldt model remains to be seen. However, the traditional model of education based on the unity of teaching and research gradually fades into the past,

[77] Helga Nowotny, Shifting horizons for Europe's social sciences and humanities, *The Guardian*, 23 September 2013, http://www.theguardian.com/science/political-science/2013/sep/23/europe-social-sciences-humanities.

leaving a vacuum that a new model of higher education will have to fill out.

Another major shift, which the system of higher education and knowledge production faces, concerns strengthening of dominant paradigms and marginalization of their alternatives. How this process works was elaborated in previous chapters. Marginalization of contesting knowledge paradigms is nothing new. Inconvenient knowledge has always been pushed out of the principal communications channels. Academia in this respect did not provide any exception. Since the origins of the European university, its agenda has been defined by dominant social powers. In Medieval times it was the Church; in modern history, the state or imperial interest; and in contemporary history, the ideology defined acceptable and unacceptable knowledge. Trespassers risked penalties that varied from social ostracism to institutionalized violence.

The novelty of the last decades, however, was the purported death of ideology. Francis Fukuyama proclaimed the end of history, which in our case translates into the end of constraining factors on the system of knowledge production (Fukuyama, 1992). The plight of academia however was not resolved. What happened was a simple transition from varyingly direct political control to the indirect control of the market. For a short period of time after the collapse of the Soviet Union, the system went through a period of relative liberalization where multiple paradigms competed. However, as time passed by, the grip of the market on knowledge production gradually increased. That process was reflected in part by the emergence of global university rankings. Rankings were both a product of the market and the outcome of a

market type competition in academia. It is good to remember here that the first ranking emerged out of comparisons in disciplines that had strong market potential.

The central factor of a university's performance in the international rankings is its research activity, measured as the amount of publications in top academic journals. These journals are measured and ranked in turn. Cross-referencing between top journals and top universities creates a closed system where certain forms of knowledge are more valuable for the university's standing. This situation affects and structures many decisions that universities take on a daily basis.

An example from the discipline of economics might be useful to put this discussion in context. Top journals in the field of economics are specialized in the neoclassical synthesis. A person that works in heterodox strains of economic thought has few chances to publish an article in those periodicals. This could affect the standing of such individuals on the global academic market, as they are less beneficial to the university's standing in the rankings and, thus, are in less demand. Needless to say that few top universities would be too willing to take heterodox economists, if they have a choice. This affects personal incentives for the choice of research areas by individual scientists. And those few that still challenge dominant paradigms are at a rhetorical disadvantage, since they often have to opt for less prestigious places for conducting their research.

Rauhvargers states that "National or regional higher education policy makers increasingly consult ranking results when deciding on the allocation of resources or the structure of higher education systems (Rauhvargers, 2011: 20)".This

creates a situation where all the incentives work to privilege scientific production that contributes to a university's standing in the rankings.

What are the problems with prioritizing production of certain knowledge? The potential dangers of such prioritization are that the knowledge produced by universities is not selected on its merits, but on its suitability to accepted socio-political paradigms. Free competition of ideas is being restricted, and university rankings constitute just one element in the system of such restrictions.

The mechanisms of assuring universities compliance with dominant socio-political ideologies have become more and more sophisticated in the last centuries. Yet, they still perform the same function they performed in the Middle-Ages. That is to keep the social system on a certain track.

The difference of the new system of domination lies in principally new mechanisms of assuring compliance. There is no forced compliance or any form of violence involved in the production of knowledge. In the traditional sense, no obvious penalties are enforced on those who choose to pursue knowledge paradigms different from the mainstream. However, that does not mean that knowledge production is completely independent. The place of penalties is now occupied by positive incentives. In fact, penalties themselves are nothing else but negative incentives. The politics of stick is substituted by the politics of carrot. Yet, the effect is very similar. Those that do not comply with the demands of the social system are marginalized, both personally – their ability to communicate through dominant channels is hindered, and their reputation is undermined – and professionally – their research gets less attention or even discredited. The final

outcome is the same: scholars who choose to disobey dominant social realities loose benefits associated with compliance.

Obviously, this system could pose multiple dangers. Whatever sort of knowledge is being produced under the current social system, it is used to take practical political decisions. These decisions may not be optimal for the social system. However, since the alternatives are marginalized, no serious attempts are made to consider contesting paradigms. In other words, dominant paradigm does not admit the possibility of being wrong. Marketplace is supposed to take optimal decisions, even if the optimality of these decisions is just theoretic.

The dominance of certain social paradigms is not necessarily detrimental to the society. Existence of principal paradigms is necessary to maintain social cohesion and balance. Without some vision of the social system, accepted by large segments of society, it is impossible to stabilize social system and provide a political course. Any political decision is based on a compromise around a common set of believes. In this respect, dominance of certain paradigms in academic system is one of the necessary self-preserving tendencies of the social system. Market based social system, thus, needs knowledge production to be closely aligned with the principles of the market.

It is interesting to see how this system works in practice. To illustrate its mechanisms it is necessary to draw on the concepts elaborated in previous sections. Knowledge production in contemporary world is structured into an order of power with its main centers having much more influence on social discourse than its peripheries. To maintain the

position at the top of this hierarchic ladder the main centers of knowledge production have to produce knowledge of particular type. These forms of knowledge produce more points in the measurement system dominated by rankings. As soon as some centers deviate from the production of acceptable knowledge their ranking positions are seriously undermined. A good example for this is the low rankings of economics departments producing heterodox economics research. More generally, institutions with reputation for critical non-standard research, such as The New School or Goldsmiths, University of London tend to rank lower than their peers with similar reputation for excellence.

University rankings keep the system in check. They determine the order of weight in social discourse. Only those centers of research that produce acceptable forms of knowledge could aspire to ascend the order of prestige. The system is self-sustainable. The more prestigious the higher education institution is, the more brilliant professors and students it receives. These students and professors, in turn, are backed by the prestige of their universities. Professors set the social discourse in the academia. Students go on to occupy leading positions of power in the international system. Anyone who wants to rise up the social ladder would have to go through dominant centers of higher education and research production, where dominant social paradigms will be instilled in them with various degrees of success. In the end, the critical mass to push the dominant system forward is created, and alternatives are marginalized or eliminated.

Conclusion

The dissertation studied impacts of academic rankings on higher education and knowledge production. Multiple mechanisms through which the rankings influence the direction of higher education and research have been identified. It is hard to discern the trends in higher education that academic rankings have created, and those that they reinforced. However, it is clear that the rankings affect the current system of higher education and research in a substantial way.

The principal reason that enables academic rankings to influence the higher education system is that the rankings are used for concrete policy decisions. The rankings have rooted themselves in the public sphere, and they are consulted with when funding and other distributive decisions are being made. The dissertation has identified various impacts that rankings have on higher education and research production. The rankings permeate the system of higher education and research production on all levels: policy level, institutional level, individual level. They promote elitism in national education systems, they prioritize some discipline over others, and they favor particular types of research.

Most importantly, academic rankings influence higher education system in a subtler way. The bulk of the third chapter of the dissertation studied the marginalizing influence of academic rankings. This marginalization trend works to reinforce dominant research paradigms and undermine rival research. The principal mechanism at work here is the higher impact of mainstream research in the academic discourse. As the competitiveness of the academic system increases, and its institutional structure becomes more

rigid, pursuing research in dominant paradigms becomes the key to the survival of young researchers.

The marginalizing influence of academic rankings was demonstrated on a case study of heterodox economics. A game-theoretical model was used to demonstrate that, ceteris paribus, with the incentives that rankings create the recruitment process in academia works against heterodox economics candidates. Extrapolating this case on a wider situation of international academia, it can be said that any researcher participating in less mainstream research projects has a distinct disadvantage in the higher education system. To prove that the model corresponds to the real situation, surveys of graduate students and recruitment committee members were conducted.

Curiously, the marginalizing influence works to sustain those research paradigms that maintain rather than challenge the dominant social trends. In the case of economics, the rankings work well to reinforce the position of neo-classical synthesis, the market-oriented approach to the social system. Heterodox economics strands that research alternatives to the dominance of the market are being strongly disadvantaged under the incentives that academic rankings create. An interesting intuition worth following in the further research is whether the logic of the rankings equally disadvantages other research pursuits that challenge dominant social paradigms.

Academic rankings also influence other aspects of higher education and knowledge production. The rankings reinforce preexisting trends of the higher education system. One of the most important trends that the rankings reinforce is the prioritization of STEM disciplines over humanities and social sciences. The systems of measurements devised by the

principal ranking systems are better suited to measure research production in the STEM disciplines. Considering that research production is one of the major elements of the final ranking scores, STEM-oriented HEIs have a great advantage over the HEIs specializing in social sciences and humanities.

Another disturbing trend that the rankings reinforce is prioritization of teaching over research. The unity of teaching and research was one of the pillars of the Humboldtian university model. Currently, research activities have greater importance in the higher education system. The contribution of the rankings to this process is that while the research activity of a university contributes the bulk of the university's final score, the teaching activity contributes almost nothing. Few proxies that aim to measure the teaching activity have almost no real value due to their imprecision. An indirect proof of the faltering importance of teaching in the academia is that teaching experience was identified as the least important criterion in the hiring of economics faculty by the respondents of our survey.

In many ways, the logic of the rankings corresponds to the logic of the market. They promote more marketable forms academic activities. This brings the discussion back to the beginning of the first chapter. If there are mechanisms that keep the higher education and knowledge production system in check with dominant social paradigms, they should be sought in the workings of the market system. The rankings constitute one element of this system.

Despite the solid façade of multitude, academic rankings are subjected to a single logic. The research of the second chapter demonstrated connections between various ranking systems. Moreover, the principal ranking systems (ARWU, QS, THE)

and auxiliary rankings (e.g. Impact factor, H-Index) are also connected. This connection is due to the use of the same databases (ISI, Scopus, Google Scholar) and similar methods of score calculations (quantity vs. quality). In sum, all the rankings work to push the knowledge production system in the same way.

The future of academic rankings is unclear. There are constant efforts to develop more sensitive measures of higher education system (U-Multirank). It remains to be seen how successful these attempts will be. The rankings perform an important function providing an easily accessible simple metrics to interested parties. Their applicability, however, masks the fact that they provide a very perfunctory picture of the academic system, higher education institutions, and individual researchers.

The wisdom of higher education scholars is that the rankings are here to stay. Although there is a great demand for the information function that the rankings perform, it does not mean that the rankings will not lose their significance. One of the most important trends here is a growing number and diversification of rankings. Obviously, the three principal ranking systems draw the most scholarly attention, but that need not be so in the future.

The axes of significance/insignificance and generality/sensitivity provide an interesting insight into the potential developments of the ranking systems. Three major scenarios of further development could be identified here. The two polar scenarios are significant-general rankings versus significant-sensitive rankings. In the first case, the trends for marginalization, prioritization of STEM disciplines, and separation of teaching and research will continue to

intensify in the international academia. In the second case, more sensitive measures would allow measuring universities based on their mission, which would rectify the current skew. The two scenarios in which the academic rankings lose their significance lead to the same outcome: regression of the academic system to the pre-ranking state, where reputation played larger role than performance of higher education institutions.

Whichever direction the further development of the ranking systems will take, the trends that the rankings reinforced will influence the system of higher education and knowledge production well into the future. Larger investments into STEM disciplines, prioritization of particular research culture, promotion of research over teaching, preferences towards mainstream research topics ought to leave a mark on the academia. One mechanism through which the trends will persist is the creation of critical mass of professors working in disciplines and fields promoted by the logic of the rankings. These professors will train the next generation of scholars, who would be exposed to particular perspectives and incentivized to follow particular types of research.

What should be expected under this system in short term is growing consolidation of higher education and research production centers, as well as entrenchment of the current order of power in the academia. The rhetoric of rankings will continue to reinforce the dominant position of the HEIs that are already positioned in the rankings. The better their position, the easier it is to continue occupy prominent position in the rankings. A notable mechanism here is that the more spotlight a HEI, department, or individual researcher receives, the more references they receive thus feeding back

into the system. The institutions that would like to break into the global elite in this system would have to struggle against considerable odds.

In the long term, multiple developments are possible. The trend towards sidelining humanities and humanistic social sciences may squeeze the fields altogether out of the academic system. Although, this situation is hardly imaginable today, humanities do not fit well with the market-oriented trend of the international academia. They might either have to redefine themselves in more applied terms or undergo further marginalization. The insight into the situation could be developed by adding to this trend the marginalization of fringe research fields and qualitative research areas. The higher education and knowledge production system is being gradually reoriented towards creating research applicable to the market. In the worst case scenario academia might become a research arm of the corporate system.

To sum up, academia currently undergoes systemic change pervading every level. Academic rankings contribute to these changes in important ways. The rankings create behavioral incentives on policy, institutional, and individual levels that push higher education system in particular directions. This dissertation has shown how the incentives, which rankings create on various levels, work together to push the system into the same direction. The trends are easily discernible, but their actual impact is far from being clear. The dissertation opened many roads to follow. Perhaps, the future might even see an emergence of a separate field of ranking studies.

Appendix 1. The Surveys.

Graduate Students Survey.

1. In what area of economics do you do your research? (Multiple areas can be specified)

Microeconomics

Macroeconomics

Econometrics

International Economics

Political Economy

Economic History

Heterodox (Institutional, evolutionary, Austrian, post-Keynesian etc.)

Other (please specify)

2. When you chose your research topic, which of the following factors mattered most?

Least Important—Most Important (1-10, Multiple Answers Possible).

Personal Interest

Career and Employment Prospects

Suggestion of Tutor/Supervisor

Relevance/Popularity of the Topic

Availability of Resources (Supervisor, Labs, Library etc.)

By Chance

Other (please specify)

3. Which factors do you think matter most to potential recruitment committees of junior staff?

Least Important—Most Important (1-10, Multiple answers possible).

Research productivity

Research topic quality

Research topic fit to the recruiting institution

Teaching Experience

Previous Education

Institutional Reputation (of your institution)

Prominent supervisor/s

Other (please specify)

4. Would you be willing to change/modify your research topic if the alternative provided better opportunities to secure employment?

Yes

More Yes than No

Not Likely

No

5. If you were interested in a topic, but it would compromise your employment prospects would you still be willing to pursue the research?

No

Not Likely

More Yes than No

Yes

6. Do/did you have any interest in heterodox strands of economics (Institutional, evolutionary, post-Keynesian, Austrian, Sraffian, socialist, neuroeconomics, ecological economics etc.)?

Yes

Somewhat

No

7. Would you be interested to pursue a research project in heterodox economics?

Yes

Maybe

No

8. If you answered "No" to the previous question, why?

Not relevant to your research topic

Not familiar methodology

Lower chances of publishing/citations

Worse career prospects

Reputation of Heterodox economics

Lack of interest

Other (please specify)

Faculty Survey.

1. In what area of economics do you do your research?

Microeconomics

Macroeconomics

Econometrics

International Economics

Political Economy

Economic History

Heterodox (Institutional, evolutionary, Austrian, post-Keynesian etc.)

Other (please specify)

2. Which factors matter most in your choice of a candidate for a junior faculty position?

Least Important—Most Important (1-10, Multiple Answers Possible).

Research productivity

Research topic quality

Research topic fit to the recruiting institution

Teaching Experience

Previous Education

Institutional Reputation (of the candidate's institution)

Prominent supervisor/s

Other (please specify)

3. Could you reasonably predict research productivity of a candidate for a faculty position?

Yes

Rather Yes than No

Rather No than Yes

No

4. Would you be willing to hire a candidate working in non-standard (i.e. heterodox) economics strands?

Yes

Rather Yes than No

Not Likely

No

5. If you have answered "No" to the previous question, why?

Lower predicted research productivity

Unpredictable academic performance

Reputation of heterodox economics

Not fitting methodological paradigm

Other (please specify)

Appendix 2. The Empirical Data.

Graduate Students Survey.

1. In what area of economics do you do your research? (%)

	Sur. 1	Sur. 2	Sur. 3	Sur. 4	Sur. 5	Sur. 6	Sur. 7	Total
	47/52	48/52	30/36	41/53	34/37	15/21	43/48	258
Micro	61.70	41.67	56.67	56.10	47.06	33.33	60.47	52.7
Macro	27.66	35.42	33.33	24.39	41.18	20	18.60	29.07
Econ.	23.40	10.42	16.67	17.07	11.76	20	18.60	16.66
Intern.	6.38	12.50	6.67	17.07	20.59	13.33	16.28	13.14
Pol.Ec.	10.64	8.33	3.33	7.32	20.59	26.67	11.63	11.21
Ec.Hist	0	4.17	3.33	4.88	11.76	13.33	0	3.67
Hdox	4.26	4.17	3.33	0	23.53	13.33	0	5.22
Other	23.40	27.08	26.66	39.02	17.64	53.33	30.23	29.00

	47	48	30	41	34	15	43	258
Micro	61.70	41.67	56.67	56.10	47.06	33.33	60.47	52.71496
Macro	27.66	35.42	33.33	24.39	41.18	20	18.60	29.06973
Econ.	23.40	10.42	16.67	17.07	11.76	20	18.60	16.665
Intern.	6.38	12.50	6.67	17.07	20.59	13.33	16.28	13.17783
Pol.Ec.	10.64	8.33	3.33	7.32	20.59	26.67	11.63	11.24085
Ec.Hist	0	4.17	3.33	4.88	11.76	13.33	0	4.263295
Hdox	4.26	4.17	3.33	0	23.53	13.33	0	5.814922
Other	23.40	27.08	26.66	39.02	17.64	53.33	30.23	29.06535

2. When you chose your research topic, which of the following factors mattered most? (10 point scale)

51/52 54/54 35/36 53/53 37/37 20/21 46/48 296

	51	54	35	53	37	20	46	296
Per.Inter	9.1	9.19	9.31	8.98	9.24	8.65	9.35	9.14
Prospects	6.24	6.26	6.29	6.33	6.41	6.05	6.57	6.32
Tutor	5.85	5.72	4.66	5.06	5.86	5.25	5.42	5.43
Relevance	7.10	6.06	5.67	5.98	5.73	5.79	7.04	6.27
Resource	6.06	5.79	5.50	5.45	5.49	5.53	5.69	5.67
Chance	3.89	3.22	3.19	4.38	3.11	4.05	3.50	3.62
Other	0							

3. Which factors do you think matter most to potential recruitment committees of junior staff? (10)

50/52 54/54 36/36 53/53 37/37 19/21 46/48 295

	50	54	36	53	37	19	46	295
R.Prod	9.15	8.43	9.22	8.92	8.97	7.89	9.07	8.86922
RT Qual.	8.61	8.87	8.53	8.25	8.38	8.44	9.07	8.615085
RT Fit	8.17	7.87	7.78	7.49	7.84	7.79	8.15	7.876339
Teach. Ex	4.66	4.67	4.23	4.60	4.69	5	4.13	4.541593
Prev. Ed	5.55	5.50	5.40	4.73	5.08	5.72	4.82	5.21339
Inst.Rep	7.96	7.94	7.53	7.13	7.46	8.21	7.74	7.673831
Prom. Sv.	7.56	8.09	7.42	6.85	7.30	7.95	7.20	7.448746

4. Would you be willing to change/modify your research topic if the alternative provided better opportunities to secure employment? (%)

51/52 54/54 36/36 53/53 37/37 20/21 46/48 297

	51	54	36	53	37	20	46	297
Yes	13.73	22.22	13.89	15.09	8.11	25	15.22	15.82529

More Yes	50.98	25.93	50	39.62	45.95	30	43.48	41.07842
Rather No	25.49	44.44	36.11	39.62	35.14	45	34.78	36.69909
No	9.80	7.41	0	5.66	10.81	0	6.52	6.396667

5. If you were interested in a topic, but it would compromise your employment prospects would you still be willing to pursue the research? (%)

51/52 54/54 36/36 53/53 37/37 20/21 46/48 297

	51	54	36	53	37	20	46	297
No	5.88	5.56	8.33	3.77	8.11	10	2.17	5.722896
Rather No	43.14	50	38.89	41.51	35.14	20	45.65	41.41512
Rather Yes	39.22	37.04	44.44	47.17	37.84	65	39.13	42.42522
Yes	11.76	7.41	8.33	7.55	18.92	5	13.04	10.43707

6. Do/did you have any interest in heterodox strands of economics (Institutional, evolutionary, post-Keynesian, Austrian, Sraffian, socialist, neuroeconomics, ecological economics etc.)?

49/52 54/54 36/36 51/53 37/37 20/21 45/48 292

	49	54	36	51	37	20	45	292
Yes	26.53	29.63	27.78	25.49	48.65	55	11.11	29.45226
Somewhat	22.45	29.63	30.56	31.37	16.22	15	40	27.74055
No	51.02	40.74	41.67	43.14	35.14	30	48.89	42.80969

7. Would you be interested to pursue a research project in heterodox economics? (%)

50/52 54/54 36/36 51/53 37/37 20/21 45/48 293

	50	54	36	51	37	20	45	293
Yes	22	20.37	13.89	25.49	40.54	40	15.56	23.89143
Maybe	28	29.63	33.33	31.37	24.32	35	35.56	30.71608

No	50	50	52.78	43.14	35.14	25	48.89	45.39403

8. If you answered "No" to the previous question, why?

28/52 24/54 21/36 24/53 14/37 5/21 22/48 138

	28	24	21	24	14	5	22	138
N.Rel.RT	50	54.17	76.19	45.83	85.71	60	59.09	59.41964
N.fam.M	35.71	29.17	42.86	45.83	14.29	60	40.91	36.95667
L. Pub	28.57	16.67	9.52	16.67	28.57	40	27.27	21.73884
W. Car.	25	20.83	14.29	16.67	35.71	0	27.27	21.73891
Rep HE	28.57	20.83	9.52	20.83	21.43	0	31.82	21.73754
Lack Int	57.14	66.67	52.38	70.83	78.57	80	59.09	63.7671

Faculty Survey (75 respondents)

Survey 1 Survey 2 Total

1. In what area of economics do you do your research? (%)

51/60 12/15 63

	51	12	63
Micro	54.90	41.67	52.38
Macro	35.29	33.33	34.9166667
Econ.	19.61	25	20.6366667
Intern.	15.69	16.67	15.8766667
Pol.Ec.	9.80	16.67	11.1085714
Ec.Hist	3.92	8.33	4.76
Hdox	7.84	0	6.34666667
Other	21.56	25	22.2152381

2. Which factors matter most in your choice of a candidate for a junior faculty position?

59/60 15/15 74

	59	15	74
R.Prod	8.89	9.20	8.952838
RT Qual.	8.93	9.27	8.998919
RT Fit	6.07	6.60	6.177432
Teach. Ex	3.21	3	3.167432
Prev. Ed	5.25	5.80	5.361486
Inst.Rep	5.35	7.07	5.698649
Prom. Sv.	4.40	6.33	4.791216

3. Could you reasonably predict research productivity of a candidate for a faculty position?

59/60 15/15 74

	59	15	74
Yes	10.17	13.33	10.81054
Rather Y	77.97	66.67	75.67946
Rather N	11.86	20	13.51
No	0	0	0

4. Would you be willing to hire a candidate working in non-standard (i.e. heterodox) economics strands?

58/60 15/15 73

	58	15	73
Yes	17.24	6.67	15.06808
Rather Y	13.79	33.33	17.80507
Rather N	62.07	53.33	60.27411
No	6.90	6.67	6.85274

5. If you have answered "No" to the previous question, why?

33/60 8/15 41

	33	8	41
Lower RP	39.39	87.50	48.77732
Unpred AP	45.45	50	46.3378
Rep.HE	24.24	37.50	26.82732
Meth.NF	21.21	37.50	24.38854

Appendix 3. The List of Surveyed HEIs.

Washington University in St. Louis

University of Washington

London School of Economics and Political Science

Queen Mary, University of London

University of Minnesota

Michigan University

University of Wisconsin-Madison

University of California, Santa Barbara

University of California, Riverside

New York University

The New School

University of Colorado-Boulder

University of Nebraska-Lincoln

University of California, Los Angeles,

Michigan State University

Princeton University

University of California, San Diego

University of Toronto

Central European University

IMT Institute for Advanced Studies, Lucca

Hebrew University

Rutgers, The State University of New Jersey

National University Singapore

Hong Kong University

Australian National University,

University of Sussex,

University of Pennsylvania,

European University Institute,

Pompeu Fabra University

University of Toulouse

Bibliography

Aguillo, Isidro F., Judit Bar-Ilan, Mark Levene, and Jose Luis Ortega. 2010. "Comparing university rankings" *Scientometrics,* Vol. 85, No. 1, pp. 243-256

Albritton, F. P. 2006. Humboldt's unity of research and teaching: Influence on the philosophy of U.S. higher education. *The FedUni Journal of Higher Education*, Vol. 4, No. 1, pp. 7-19. http://dx.doi.org/10.2139/ssrn.939811

Alonsoa, S., F.J. Cabrerizob, E. Herrera-Viedmac, F. Herrera. 2009. "H-Index: A review focused in its variants, computation and standardization for different scientific fields," *Journal of Informetrics*, Vol. 3, No. 4, pp. 273-289.

Altbach, P. 2006. The dilemmas of ranking. International Higher Education, No. 42, pp. 2-3.

Altbach, P. G. 2012. "The globalization of college and university rankings," *Change: The Magazine of Higher Learning*, Vol. 44, No. 1, pp. 26-31

Arimoto, A. "Reaction to Academic Ranking: Knowledge Production, Faculty Productivity from an International Perspective" in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.), *University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education*. Springer.

Bastedo, M. and N. A. Bowman. 2011. "College rankings as an interorganizational dependency: Establishing the foundation for strategic and institutional accounts," *Research in Higher Education*, pp. 1-21.

Beaulier, Scott A., and J Robert Subrick. 2012. "Understanding Academic Journal Market Failure: The Case of Austrian Economics," *Eastern Economic Journal*, doi:10.1057/eej.2012.32.

Bergstrom, Carl T., Jevin D. West, and Marc A. Wiseman. 2008. "The Eigenfactor™ Metrics," *The Journal of Neuroscience*, Vol. 28, No. 45, pp. 11433-11434.

Bergstrom, Carl. 2007. Eigenfactor Measuring the value and prestige of scholarly journals. *C&RL News*, Vol. 68, No. 5, pp. 314-316.

Billaut, Jean-Charles, Denis Bouyssou, and Philippe Vincke. 2010. "Should you believe in the Shanghai ranking?". *Scientometrics,* Vol. 84, No. 1, pp. 237-263.

Bookstein F., H. Seidler, M. Fieder, G. Winckler. 2010. "Too much noise in the Times Higher Education rankings," *Scientometrics,* Vol. 85, No. 1, pp. 295-299.

Bowman, Nicholas A., Michael N. Bastedo. 2011. "Anchoring effects in world university rankings: exploring biases in reputation scores," Higher Education Vol. 61, pp. 431–444.

Cattell, James McKeen. 1921. *American men of science; a biographical directory.* The Science Press.

Cetto, Ana María, Alonso Gamboa, and José Octavio (eds.) 2011. *Calidad e Impacto de la revista Iberoamericana.* México: Facultad de Ciencias, UNAM.

Cheng Y., and N.C. Liu. 2008. "Examining Major Rankings According to the Berlin Principles," *Higher Education in Europe*, Vol. 33, No. 2/3, pp. 201-208.

Cheng, Y. 2010. "To better measure social science performance: A review of existing ranking indicators," Invited presentation at the 5th Meeting of International Ranking Expert Group (IREG-5) on October 6-8, 2010 in Berlin, Germany.

Connely, J. 2000. *Captive University: The Sovietization of East German, Czech, and Polish Higher Education, 1945–1956.* University of North Carolina Press.

Daunton, M. (ed.). 2005. *The Organization of Knowledge in Victorian Britain.* Oxford UP.

De la Pena, J. A. 2011. "Measuring Scientific Production: Uses and Abuses" in Cetto, Ana María, Alonso Gamboa, and José Octavio (eds.). 2011. *Calidad e Impacto de la revista Iberoamericana.* México: Facultad de Ciencias, UNAM.

Denifle, H. and E. Chatelain. 1889. *Chartularium Universitatis Parisiensis.* Delalain.

Dmitrishin, Alexander. 2013a. "Deconstructing distinctions: the European university in comparative historical perspective," *Entremons: UPF Journal of World History*, No. 5. http://www.raco.cat/index.php/Entremons/article/view/266752/354374.

Dmitrishin, Alexander. 2013b. "Intellectual Babel: Knowledge between Sciences and Letters," *Pulse – CEU History, Sociology and Philosophy of Science Journal*, No. 1, pp. 21-28.

Dod, Bernard. 1982. "Aristotles Latinus," The Cambridge History of Later Medieval Philosophy: From the Rediscovery of Aristotle to the Disintegration of Scholasticism, 1100-1600.

Eds. Norman Kretzmann, Anthony Kenny, Jan Pinborg, Eleonore Stump. Cambridge University Press.

Drucker, P. F. 1966. *The Effective Executive.* NY: Harper Business.

Enserink, Martin. 2007. "Who Ranks the University Rankers?" *Science*, Vol. 317, No. 5841, pp. 1026-1028.

Falagas, Matthew, Vasilios D. Kouranos, Ricardo Arencibia-Jorge and Drosos E. Karageorgopoulos. 2008. "Comparison of SCImago journal rank indicator with journal impact factor," *The FASEB Journal,* Vol. 22, No. 8, pp. 2623-2628.

Fallon, D. 1980. T*he German University: A Heroic Ideal in Conflict with the Modern World.* Colorado Associated University Press.

Fersht, A. 2009. "The most influential journals: Impact Factor and Eigenfactor," *PNAS*, Vol. 106, No. 17, pp. 6883-6884.

Florian, Razvan V. 2007. "Irreproducibility of the results of the Shanghai academic ranking of world universities," *Scientometrics*, Vol. 72, No. 1, pp. 25-32.

Flynn, James T. 1971. "Magnitskii's Purge of Kazan University: A Case Study in the Uses of Reaction in Nineteenth-Century Russia," *The Journal of Modern History,* Vol. 43, No. 4, pp. 598-614.

Francis Fukuyama. 1992. *The End of History and the Last Man.* Free Press.

Frank M. Turner. 2005. "Victorian Classics: Sustaining the Study of the Ancient. World," in M. Daunton (ed.), *The*

Organisation of Knowledge in Victorian Britain. Oxford UP. pp. 159-172.

Frijhoff, W. 1996. "Patterns," A history of the university in Europe, Volume II: Universities in early modern Europe, 1500-1800. Ed. Hilde de Ridder-Symoens. Cambridge University Press.

Gerbod, P. 2004. "Relations with Authority," in Walter Ruegg (ed.) *A History of the University in Europe. Volume III: Universities in the Nineteenth and Early Twentieth Centuries (1800-1945).* Cambridge University Press.

González-Pereira, Borja, Vicente P. Guerrero-Boteb and Félix Moya-Anegónc. 2009. The SJR indicator: A new indicator of journals' scientific prestige. arXiv:0912.4141. http://arxiv.org/ftp/arxiv/papers/0912/0912.4141.pdf

Grant, Edward. 1984. "Science in the Medieval University," Rebirth, Reform and Resilience: Universities in Transition, 1300-1700. Eds. James M. Kittleson and Pamela J. Transue. Ohio State University Press.

Hazelkorn, E. 2007. "The Impact of League Tables and Ranking Systems on Higher Education Decision-Making," Higher Education Management and Policy, Vol. 19, No. 2, pp. 87-110.

Hazelkorn, E. 2008. "Impact of University Rankings: Global Excellence vs. Local Engagement," Presentation given at the Launch Workshop for Participating Regions, OECD/IMHE Reviews of Higher Education in Regional Development 2008-2010. Paris, September, 2008

Hazelkorn, E. 2008a. "Learning to Live with Leagues Tables and Ranking: The Experience of Institutional Leaders," *Higher Education Policy*, Vol. 21, No. 2, pp. 193-215.

Hazelkorn, E. 2009. "The Impact of Global Rankings on Higher Education Research and the Production of Knowledge," UNESCO Forum on Higher Education, Research and Knowledge Occasional Paper N°16.

Hazelkorn, E. 2013. "How Rankings are Reshaping Higher Education" in Climent, V., Michavila, F. and Ripolles, M. (eds). *Los Rankings Univeritarios: Mitos y Realidades.* Tecnos. http://arrow.dit.ie/cserbk/23/

Hazelkorn, E. and Martin Ryan. 2013. "The Impact of University Rankings on Higher Education Policy in Europe: a Challenge to Perceived Wisdom and a Stimulus for Change," in Zgaga, P., Teichler, U. and Brennan, J. (eds.) *The Globalization Challenge for European Higher Education: Convergence and Diversity, Centres and Peripheries*. Peter Lang. http://arrow.dit.ie/cserbk/22/

Hazelkorn, Ellen. 2011. *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence.* Palgrave Macmillan.

Hirsch, J. E. 2005. "An index to quantify an individual's scientific research output," *PNAS,* Vol. 102, No. 46, pp. 16569–16572.

Huff, Toby. 2003. Rise of Early Modern Science: Islam, China and the West (2nd ed). Cambridge University Press.

Hughes, Raymond M. 1925. A Study of the Graduate Schools of America. Miami, Ohio.

Institute for Higher Education Policy (IHEP). 2007. *College and university ranking systems: Global perspectives and American challenges.* Washington, DC.

Ioannidis, J., N. Patsopoulos, F. Kavvoura, A. Tatsioni, E. Evangelou, I. Kouri, D. Contopoulos-Ioannidis, and G. Liberopoulos. 2007. "International ranking systems for universities and institutions: a critical appraisal," BMC Medicine 5:30, doi:10.1186/1741-7015-5-30, http://www.biomedcentral.com/1741-7015/5/30

Jovanovic, M., Jeremic, V., Savic, G., Bulajic, M., Martic, M. 2012. "How does the normalization of data affect the ARWU ranking?" *Scientometrics,* Vol. 93, No. 2, pp. 319 - 327.

JPRI. 2005. About Area Studies and Japan A Dialogue Between Chalmers Johnson and Hidenori Ijiri," Japan Policy Research Institute Occasional Paper No. 34, http://www.jpri.org/publications/occasionalpapers/op34.html

KEA. 2006. *The economy of culture in Europe*. European Commission. http://ec.europa.eu/culture/pdf/doc887_en.pdf.

Kehm, Barbara and Bjorn Stensaker (eds). 2009. *University Rankings, Diversity, and the New Landscape of Higher Education.* Sense Publishers.

Kroth, A., and Daniel, H.-D. 2008. "International university rankings: A critical review of the methodology," *Zeitschrift fur Erziehungswissenschaft*, No. 11, pp. 542–558.

Lee, Frederic S., Bruce C. Cronin, Scott McConnell, and Erik Dean. 2010. "Research Quality Rankings of Heterodox Economic Journals in a Contested Discipline," *The American*

Journal of Economics and Sociology, Vol. 69, No. 5, pp. 1409-1452.

Lee, Frederic S., Therese C. Grijalva, and Clifford Nowell. 2010. "Ranking Economics Departments in a Contested Discipline: A Bibliometric Approach to Quality Equality between Theoretically Distinct Subdisciplines," *The American Journal of Economics and Sociology*, Vol. 69, No. 5, pp. 1345-1375.

Litao, Zhao and Zhu Jinjing. 2009. "China Attracting Global Talent: Central and Local Initiatives," *China: An International Journal,* Vol. 7, No. 2, pp. 323-335.

Liu, N. C. 2009. "The Story of Academic Rankings," *International Higher Education*, No. 54, pp. 2-3.

Liu, N. C., and Y. Cheng. 2005. "Academic Ranking of World Universities: Methodologies and Problems," *Higher Education in Europe*, Vol. 30, No. 2, pp. 2-3. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.126.3066&rep=rep1&type=pdf

Liu, N. C., Y. Cheng, and L. Liu. 2005. "Academic ranking of world universities using Scientometrics – A comment to the 'Fatal Attraction'," *Scientometrics,* Vol. 64, No. 1, pp. 101-109.

Liu, N.C., and Cheng, Y. 2005. "The Academic Ranking of World Universities," *Higher Education in Europe*, Vol. 30, No. 2, pp. 127-135.

Liu, Nian Cai. 2009. "The Story of Academic Ranking of World Universities," *International Higher Education*, No 54., pp. 2-3.

Liu, Nian Cai. 2010. "The Academic Ranking of World Universities," Journal of International Higher Education. Vol. 3. No.4.

Longden, B. 2011. "Ranking Indicators and Weights," in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education. Springer.

Lubrano, M., L. Bauwens, A. Kirman and C. Protopopescu. 2003. "Ranking Economics Departments in Europe: A Statistical Approach," *Journal of the European Economic Association,* Vol. 1, No. 6, pp. 1367-1401.

MacLean, Alick H. H. 1900. *Where We Get Our Best Men: Some Statistics Showing Their Nationalities, Counties, Towns, Schools, Universities, and Other Antecedents: 1837-1897.* Simpkin, Marshall, Hamilton, Kent, and Company.

Marginson, S. 2006. "Global university rankings at the end of 2006: Is this the hierarchy we have to have?" Presentation for OECD/IMHE and Rectors Conference, Germany, Bonn, 4-5 December 2006, http://www.cshe.unimelb.edu.au/people/marginson_docs/IMHE_Bonn_rankings041206.pdf.

Marginson, S. 2009. "University rankings, government and social order: Managing the field of higher education according to the logic of the performative present-as-future" in M. Simons, M. Olssen, and M. Peters (eds.) *Re-reading Education Policies: Studying the policy agenda of the 21st century.* Rotterdam: Sense Publishers. Pp. 584-604.

McLean, Iain, André Blais, James C. Garand and Micheal Giles. 2009. "Comparative journal rankings: A survey report," *Political Studies Review*, Vol. 7, No. 1, pp. 18-38.

McNeely, Ian. 2002. "The Unity of Teaching and. Research: Humboldt's Educational Revolution," Oregon Humanities, pp. 32-35. http://hdl.handle.net/1794/1456

Meho, L. I., and Yang, K. 2007. "Impact of Data Sources on Citation Counts and Rankings of LIS Faculty: Web of Science vs. Scopus and Google Scholar," *Journal of the American Society for Information Science and Technology*, Vol. 58, No. 13, pp. 2105–2125.

Michigan Alumnus. 1956. Vol 3.

Miller, Toby. 2012. *Blow up the humanities.* Temple UP.

Morphew C.C., and C. Swanson. 2011. "On the Efficacy of Raising Your University's Rankings," in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education. Springer.

Morse, Robert. 2008. The Birth of the College Rankings. http://www.usnews.com/news/national/articles/2008/05/16/the-birth-of-college-rankings

Mu-Hsuan Huang. 2011. "A Comparison of Three Major Academic Rankings for World Universities: From a Research Evaluation Perspective," *Journal of Library and Information Studies*, Vol. 9, No. 1, pp. 1-25

Myers, L. and J. Robe. 2009. *College Rankings. History, Criticism and Reform. Luke Myers and Jonathan Robe. Center for College*

Affordability and Productivity. http://www.centerforcollegeaffordability.org/uploads/College_Rankings_History.pdf

Nokkala, T., Heller-Schuh, B., and Paier, M. 2011. "Ranking lists and European Framework Programmes: Does university status matter for performance in Framework Programmes?" in P. Teixeira, and D. Dill (eds.), *Public Vices, Private Virtues? Assessing the Effects of Marketization in Higher education.* Rotterdam: Sense Publishers. Pp. 111-139

Opthof, T., and Leydesdorff, L. 2011. "Citation analysis cannot legitimate the strategic selection of excellence," arXiv:1102.2569.

Ornstein, M. 1928. *The role of scientific societies in the seventeenth century.* University of Chicago Press.

Ornstein, M. 1928. The role of scientific societies in the seventeenth century. University of Chicago Press.

Oswald, Andrew. 2007. There's nothing Nobel in deceiving ourselves. Independent. http://www.independent.co.uk/news/education/higher/andrew-oswald-theres-nothing-nobel-in-deceiving-ourselves-764880.html

Perry, Marvin, Myrna Chase, Margaret C. Jacob and James R. Jacob (2008). Western Civilization: Ideas, Politics, and Society. Cengage Learning.

Pinkard, T. 2001. *Hegel: A Biography.* Cambridge University Press.

Pontille, D. and Didier Torny. 2010. "The Controversial Policies of Journal Ratings: Evaluating Social Sciences and Humanities," *Research Evaluation*, vol. 19, No. 5, p. 347-360.

Rashdall, Hastings. 2010. *The Universities of Europe in the Middle Ages, Volume I: Salerno, Bologna, Paris.* Cambridge University Press.

Rauhvargers, Andrejs. 2011. *Global University Rankings and Their Impact.* European University Association.

Rauhvargers, Andrejs. 2013. *Global University Rankings and Their Impact. Report II.* European University Association.

Reardon, Jack. 2008. "Barriers to entry: heterodox publishing in mainstream journals," *On the Horizon,* Vol. 16, No. 4, pp. 185-197.

Rossner M., H. Van Epps, and E. Hill. 2007. "Show me the data," *The Journal of Cell Biology*, Vol. 179, No. 6, pp. 1091-1092.

Rubiralta, Marius, and Luis Delgado. 2010. "Developing international campuses of excellence in Spain," *CELE Exchange,* No. 4. OECD.

Rudy, W. 1984. The Universities of Europe, 1100-1914. Cranbury: Associated University Presses.

Rüegg, W. 1996. *A History of the University in Europe. Volume II: Universities in Early Modern Europe.* Ed. Hilde de Ridder-Symoens. Cambridge University Press.

Sadlac, J. 2007. "Development in higher education and how they stimulate the university rankings' phenomenon," in *The*

world-class university and ranking: Aiming beyond status. Paris: UNESCO-CEPES. Pp. 75-87.

Sadlak, Jan, and Liu Nian Cai (eds.). 2007. *The World-Class University and Ranking: Aiming Beyond Status.* UNESCO-Cepes

Salmi, J. 2010. "If ranking is the disease, is benchmarking the cure?" Presentation at IREG 2010 conference, Berlin, 7 October 2010. http://www.ireg-observatory.org/prezentacje/2010/S1_4_Salmi.pdf

Salmi, Jamil and Alenoush Saroyan. 2007. "League Tables as Policy Instruments: Uses and Misuses. Higher Education Management and Policy," Vol. 19, No. 2, pp. 31-68.

Salmi, Jamil. 2009. *The Challenge of Establishing World Class Universities.* UNESCO.

Schrecker, Ellen W. 1986. *No Ivory Tower: McCarthyism and the Universities.* Oxford University Press.

Scott, J. C. 2006. "The mission of the university: Medieval to Postmodern transformations," *Journal of Higher Education,* Vol. 77, No. 1, pp. 1-39.

Serenkoa, Alexander and Michael Dohan. 2011. "Comparing the expert survey and citation impact journal ranking methods: Example from the field of Artificial Intelligence," *Journal of Informetrics* Vol. 5, No. 4, pp. 629-648.

Shapin, Steven. 1996. *The Scientific Revolution.* University of Chicago Press.

Shin, J.C. 2011."Organizational Effectiveness and University Rankings," in Shin, Jung, Robert Toutkoushian, and Ulrich

Teiler (eds.). *University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education.* Springer.

Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). 2011. *University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education.* Springer.

Snow, C. P. 2001 [1959]. *The Two Cultures*. London: Cambridge University Press.

Snyder, Thomas D. 1993. *120 Years of American Education: A Statistical Portrait.* DIANE Publishing.

Spongenberg, Helena. EU to test new university ranking in 2010. EU Observer. http://euobserver.com/education/29189

Stake, J. E. 2006. "The interplay between law school rankings, reputations, and resource allocations: Ways rankings mislead," *Indiana Law Journal,* Vol. 82, pp. 229–270.

Stella, A., and D. Woodhouse. 2006. "Ranking of Higher Education Institutions," AUQA Paper No. 6.

Szanton, David L. (ed.) 2002. *The Politics of Knowledge: Area Studies and the Disciplines. University of California Press.* http://escholarship.org/uc/item/59n2d2n1

Teiler, U. 2011. "Social Contexts and Systemic Consequence of University Rankings: A Meta-Analysis of the Ranking Literature" in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education. Springer.

Teiler, U. 2011. "The Future of University Rankings" in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education. Springer.

Thorndike, Lynn. 1944. *University Records and Life in the Middle Ages.* University of Columbia Press.

Tight, Malcolm. 2013. "Institutional churn: institutional change in United Kingdom higher education," *Journal of Higher Education Policy and Management,* Vol. 35, No. 1, pp. 11-20.

UNCTAD. 2008. *Creative Economy Report 2008: The challenge of assessing the creative economy towards informed policy-making.* UNCTAD. http://unctad.org/en/Docs/ditc20082cer_en.pdf

Usher, A., and M. Savino. 2006. *A World of Difference: A Global Survey of University League Tables.* Toronto, ON: Educational Policy Institute.

Van Dyke, N. 2005 "Twenty years of university report cards," *Higher Education in Europe*, Vol. 30, No. 2, pp. 103–125.

Van Nierop, Erjen. 2009. "Why Do Statistics Journals Have Low Impact Factors?" *Statistica Neerlandica*, Vol. 63, No. 1, pp. 52–62.

Van Raan, A. F. J. 2005. "Fatal attraction: Conceptual and methodological problems in the ranking of universities by bibliometric methods," *Scientometrics*, Vol. 62, No 1., pp. 133-143.

Van Raan, A.F.J. 2005. "Reply to the comments of Liu et al.," *Scientometrics*, Vol. 64, No. 1, pp. 111-112.

Van Vught, F., and Ziegele, F. (Eds.) 2012. *Multi-dimensional ranking: the design and development of U-Multirank.* Springer.

Verger, J. 1995. *Les Universités françaises au Moyen Âge.* E.J. Brill.

Webber K.L, R. K. Toutkoushian. 2011. "Measuring the Research Performance of Postsecondary Institutions," in Shin, Jung, Robert Toutkoushian, and Ulrich Teiler (eds.). University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education. Springer.

Webster, David S. 1984. "The Bureau of Education's Suppressed Rating of Colleges, 1911-1912," *History of Education Quarterly,* Vol. 24, No. 4, pp. 499-511.

Webster, David S. 1986. *Academic Quality Rankings of American Colleges and Universities.* Springfield, IL: Charles C. Thomas, 1986.

Webster, David S. *Academic Quality Rankings of American Colleges and Universities.* Springfield, IL:

Wendl, Michael. 2007. "H-index: however ranked, citations need context," *Nature,* Vol. 449, No. 7161, p. 403.

Westfall, R. S. 1977. *The construction of modern science: mechanisms and mechanics.* Cambridge University Press.

Whittaker, C. 1978. "From Promise to Purge: The First Years of St. Petersburg University," *Paedagogica Historica*, Vol. 18, No.1, pp. 148-67.

Wildavsky, Ben. 2010. *The Great Brain Race: How Global Universities Are Reshaping the World.* Princeton University Press.

World Bank. 2002. *Constructing Knowledge Societies: New Challenges for Tertiary Education.* World Bank.