University Research Governance: the response demands in the context of the Scientific Journals System in Colombia –SJSC

María Alejandra Tejada-Gómez,
Ph.D candidate Governance of Knowledge and Innovation Twente University

Abstract
This research looks at university research governance in the framework of demands resulting from the scientific journal system in Colombia –SJSC-, which is in turn affected by international and national dynamics and which affects the incentives system regarding knowledge production and dissemination in the R&D evaluation (Shapira & Kuhlman, 2003), and performance (Binswanger, 2015). Tensions governance such as: national and international demands related SJSC, which are related (i) to rules and procedures, power relations, strategies, criteria for recruitment incentive; (ii) voltages ambiguous policy, formal and informal practices, definitions of efficiency, cost overruns, duplication of resources; (iii) Common tensions intellectual property (copyright vs. open access), performance incentives of research in terms of wages vs., reputation (publish or perish) local vs. global relevance, excellence, international positioning. The research question is: How does university research governance respond demands resulting from the dynamics and changing rule of the game at the SJSC?. In order to answer it in the context, 'governance' means "i*nstitutional arrangements within universities (e.g., lines of authority, decision-making processes, financing, and staffing),* [which] *depends on external governance, which "refers to the institutional arrangements on the macro- or system-level (e.g., laws and decrees, funding arrangements, evaluations)" to define new research agendas and strategies*". (Leisyte, 2007, p. 23) from institutionalist prospective "*institutions constrain behavior as a result of processes associated with three institutional pillars: the regulative, which guides action through coercion and threat of formal sanction; the normative, which guides action through norms of acceptability, morality and ethics; and the cognitive, which guides action through the very categories and frames by which actors know and interpret their world*" (Scott, 1995). The methodology to be used in this research follows an embedded case study (Yin, 2009) in multilevel environments and cases: six universities (central and peripheral) with different nature (public and private) active within the Colombian SJSC. A key hypothesis of the research is that, based on the criteria to select the cases, they will respond to the same system's incentives differently, according to their visions, missions, goals and research agenda. The trajectory of the SJSC and the analysis of the actors' role along this timeline will serve as the backbone of the research to be done, supported by both quantitative and qualitative analyses of the ways the higher education system reacts to resulting demands from the SJSC, discontinuities in the policy might jeopardize the results of resources and learning capacities allocated by actors in the system. For that reason, understand the performance and behavior of the principal actors in the SJSC are the universities (the main unit of analysis divided in three levels: L1, rectors and university boards, L2, research management units, and L3, research centers and teams) who receive the guidelines of scientific policy and 'signals' from the 'market' (i.e. universities, university rankings, etc.). Universities have to mediate national and international demands in order to define their institutional research policy for knowledge production, responding both incentives and gaps in the national system. In relation with SJSC the principal tensions and dilemmas are local journals communication models, governance tensions (geographical, disciplines), institutional logics, assessment evaluation R&D, universities invisible college (Crane), Mertonian logics accreditation and recognitions.

Key words: university research governance, research governance, higher education, scientific policy, institutionalist, institutional entrepreneurship, learning organizations capacities, human resources (incentives and motivation theories), scientific journal systems, Colombia cases.

Introduction -Problem Statement-

Since 1994 when Publindex establishment SJSC, the development of production and dissemination of scientific knowledge has gone through several stages, in terms of incentives for Colombian researchers, from national approach to an inclusive approach in the international database; where variables such as measurement, excellence, prestige, incentives, performance, disciplinary social contribution and geographical relevance are topics of discussion for actors involved in SJSC. Each of these tensions requires governance research units to define guidelines for research policy, organizational structure, and allocation of financial resources. These research units have to define meso level governance of university, in terms of knowledge production regulation and policies to research groups and researchers in different faculties and departments to achieve specific missional goals.

Among the main tensions nonconformity of researchers and research groups in the measurement models of national policy Colciencias, in which research units must decide whether to follow or take other models as an example to define criteria researchers' findings, in the last twenty years measurement models of scientific production have become a national model to internationalization model, in which the dilemmas besetting such as the (i) access to information (database model vs. closed pay models open to information); (ii) measurement criteria scienciometric research from data bases e.g. Scopus or Wos vs. altemetrics criteria based on open access criteria; (iii) results perversion of the system of indicators publish or perish like plagiarism, refried or salami slicing, and Harking (see table N 1).

Table N 1, Dilemmas and tensions

Dilemma	Description
National Regulation	Knowledge production regulation. Perverse stimulation
Globalization standards	International pression (rankings)
Institutional Impact	Formulation motivation / incentives
Institutional Rules norms	Exploration Values and norms
Research Integrity	Responsible conduct, ethic
Individual or disciplinary prospective	Researchers or research groups motivations
Area local or regional prospective	Context research
Authorship criteria / Plagiarism	
Citation bias, Open Access vs. copyright	Scienciometric, altemetrics
Practice of scientific salami slicing	Redundant publication which is usually characterized by similarity of hypothesis, methodology or results but not text similarity http://www.nature.com/nmat/journal/v4/n1/full/nmat1305.html
Harking	Practice in scientific communication termed HARKing (Hypothesizing After the Results are Known). HARKing is defined as presenting a post hoc hypothesis (i.e., one based on or informed by one's results) in one's research report as if it were, in fact, an a priori hypotheses. HARKing are widely practiced and widely seen as inappropriate. http://psr.sagepub.com/content/2/3/196.abstract

Source: Own elaboration, February 2016.

These dilemmas are related to the norms, rules, values, power structures and decision making developed by university organizations to face the dilemmas and define optimal organizational models consistent with the mission objectives of the organization. From an organizational and human resources perspective it translates into institutional incentives for research and production of research tied to recognition criteria discipline or salary.

The main tensions are divided into (i) Tensions governance such as: the various national and international demands related SJSC, which are related to rules and procedures, power relations, strategies, priorities and procedures, criteria for recruitment incentive ; (ii) voltages ambiguous policy, formal and informal practices, definitions of efficiency, cost overruns, duplication of resources; (iii) Common tensions intellectual property (copyright vs. open access), performance incentives of research in terms of wages vs., reputation (publish or perish) Relevance / local vs. global, excellence international positioning, definition Model measuring institutional performance for multiple purposes; defining appropriate scientific communication channels (by discipline) (see table 2).

Table N 2, Tension University Research Governance

		Lines of authority	Decision making processes	Financing	Staffing
Governance problems	Different demands(national and international) and incentives of the SJSC	Define Regulations	Directive decision	Income	Lawyers, Financial, Academic Experts
Policy problem	Different policy coexist in the system without correlation in the public actors; constrain with private actors interest	Formal or informal practice	Define efficiency	Over income	Duplicate resources
Common Problems	Open access vs. copy right; Publish or persihs vs. salary (income); Indicators and metrics vs. prestige in specif area or knowledge or geographical community channel of scientific communication.				

Source: Tejada-Gómez María Alejandra, January 2015.

The principal activities of governance university research units, come from external and internal demands such as (see Table 3 and 4).

Table N 3, Internal and External Demands

	Pression national and international rankings
	Pression National Policy Research measure (research team)
	Research development indicators
	Pressure achieving scarce funds national research funding with different criteria between (Colciencias vs. Royalties)
	Raising funds for financing international research criteria internationalization of indicators such as publication in top journals
	Development of salary incentives for researchers
	Definition of workload (teaching vs. research vs consultancy)
Research Unit Demands	Define the channels of production, communication, dissemination of knowledge

Source: Tejada-Gómez María Alejandra, March 2016

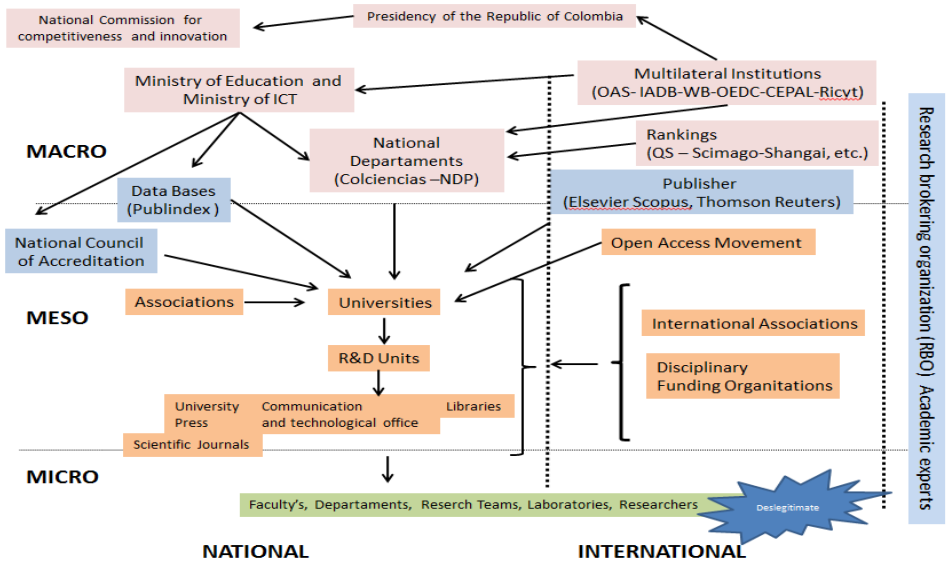
Stakeholders

The Scientific Journal System in Colombia is formed by stakeholders who are part of knowledge production development and dissemination in the Colombian Scientific Journals. The system classifies actors in macro, meso and micro level, national or international, also each actor analysis define different interest. (Kuhlmann, Evaluation as a source of strategic intelligence, 2003, p. 356) *"Hence, policy formulation in these circumstances is not straightforward. There is the increasing pressure on policy makers and strategists to: acknowledge, comprehend and master the increasing complexity of innovation systems (more actors, more aspects, more levels and son on); help*

preside over the establishment of an international division of labour in science and technology acceptable to all actors involved; adapt to changes in the focus of innovation policies between international (growing), national (changing) and regional (growing) levels".

First of all, the national level is divided in (i) macro level: public administration organizations who develop the policies, incentives or platforms for the SJSC, (ii) the meso level: the association of research organizations (research centers, universities) more of them affecting for the incentives in the macro level, (iii) the micro level: the research unit, research groups, researchers, library, publishers, communication media unit which develop institutional policies to respond to the national policies and (iv) cross organization as broker knowledge or transfer knowledge organization as consultants, fundraising organization who develop business intelligence or technological surveillance in specific fields, industry or disciplines (see graph N 1).

Graph N 1, Dynamics SJSC



Source: Tejada-Gómez María Alejandra, January 2015.

National Demands

The scientific journal system in Colombia was created by the decrees 1444 (1994) and 2912 (2002)[1] related to salary incentive in terms of the national knowledge production linking with the Publindex Colciencias program created in 2000. The principal goals of that decree is the index the national scientific journals and the main criteria are the relation with scientific and editorial quality, visibility and accessibility linking with indexing and abstract systems. According to the data "the total number of national scientific journals in the country by 2015 in Colciencias was 547 national journals indexing in the system, in terms of the internationalization process, national journal index in the international system as Elsevier Scopus in 2013 was 22 Colombian journals who account with international evaluation measure systems" (Molina Molina & De-Moya-Anegón , 2013, p. 532).

[1] Law 1279 dated 19 June of 2002: the salary and fringe benefits for professors at Colombia state universities is established, in article 10 -academic productivity-, salary scales are mentioned through acknowledged scientific papers indexed and/or homologated by Publindex Colciencias.

The correlation program with Publindex is the list System Indexing and resume SIRES, with double function, in one way is the list of databases to index the scientific journals to classify by areas of knowledge; and on the other hand the list to approve the scientific papers production or researcher in Colombia.

SIRES list is changing in the last decade, representing the increasing of index journals in the country and also approval articles. At the beginning the list was very restrict, even thought the index system list was represented by basic science more than social science who was lest representative, the relation are directly connecting with the salary incentives in last decree 1279/2002 which replaced the decree law of 1444, retained the academic performance rating for each product explicitly established between them publications in journals domestic or foreign by Publindex and SIRES. Historical analysis in terms of cost benefits correlate SIRES list and index journals or approval journals with the decree in terms or salaries and research budget, displays the salary pyramid on the way from the bottom or from the top.

Secondly the national council of accreditation has the mission to "contribute to the culture of quality in higher education institutions and society to ensure that the institutions and programs that are credited meet the highest quality requirements and performing its purposes and objectives". In the past decade one of the principals suggestions accreditation roles of these programs was incentive creation national scientific journals who was sponsorship by universities. Perhaps, in the last year these incentives are in transitions in the international publishing process.

International Demands

The international demands appeared with the university research rankings became more legitimate by the national authorities as Ministry of Education in 2009 the research international programs in alliance with Scimago and then the QS ranking program in LATAM region. Both of them measure knowledge production based in citation of the scientific journals index in Scopus Elsevier system and Web of Science of Thomson Reuters, the research measures ponderation is around thirty percent of the all methodology and the highest indicator are these kind of citation to assess research institution in terms of knowledge production. Nowadays both models Publindex the national and the international with the ranking are existent in the scene, generated advocacy coalition (Sabatier & Weible, 2014) in the macro level and governance research problems (Jansen, 2007) in the universities to manage the pressure of the system and the behave to performs of the researchers to be legitimate.

In 2013 Colciencias presented new model to asses scientific journal publindex and the research institutions, teams, and researchers. The main purpose are measure scienciometric and impact model; the new ranking model are methodological developed with base of citations model and quartils in the system Q1, Q2, Q3, Q4 in the level of citations papers of the data base Web of Science and Scopus; decreasing all rankings and measures in the national system of science and technology. In terms of the Scientific journals decrease the number of the scientific journals index in the Publindex system; but also the systemic effect in the research institutions, teams and researchers ranks measures or categorization, some research teams and institutions are decline an rejected these new model of categorization, desligitimate it.

The last years, the debate has been in relation to the continuity of the publindex program, some actors as Scimago are interested in develop a national model of citational data base using publindex program as Fecyt program in Spain or Korean Service for citation index an journal indicators –KSCD- developed by Korea Institute of Science and technology information –KISTI; others experts consider to eliminate or dissapear that ways of asses, argue the international system as the publisher data base support or suply that kind of process, another actors as open access model repositories regional data bases Red Alyc, Scielo, Public Knowledge Project –PKP- with open access journal –OJS- programm consider key role of the publindex as a bank of regional knowledge and local development knowledge production (these organization are lead a movement in Latinamerican about open acces, to illustate in México and Argentina the new law of open acces was promoted by them).

Table N 4, Demands SJSC vs. Responds URG

SJSC Demands	URG Responds
- Publindex : Index SJSC, homologation program - Decree salaries, incentives performance (Decreto 1444 de 1992; Decreto 60 de 1995; Decreto 15 de 1996; Decreto 1279 de 2002; Ley 1286 de 2009) - SIRES Indexing system and summary list. - New model of measures (Scienciometric Scopus or WoS, SJSC) - Open Access movement in LA Red Alyc, Scielo, Clacso, repositories, altemetrics - New technologies scientific communication to publish and share info Data Science web 2.0, 3.0, - Popularization of Science.	- Incentive create Scientific Journal in the institutions - Regulation performance (Salaries, bonifications, prizes, reputation) - Changes regulation incentives publish international journals - Repositories institutional and national - Webmetrics, implementing measures data science 2.0, Academic scholar strategies and social media visibility.

Source: Tejada-Gómez María Alejandra, March 2016

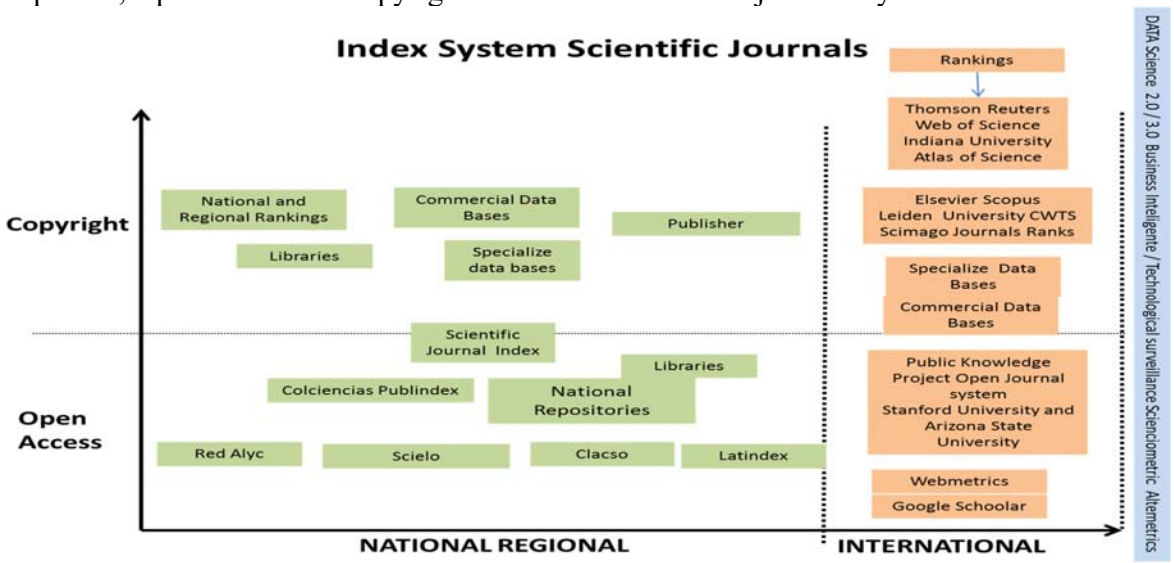
Publishers and data bases,

These actors will be analyzed through different angles (i) commercial or no profit organization, (ii) copyright or open access, (iii) geographical (global, regional, local) (iv) general data base or specialize (Graph N 2). The principal players are the publishers corporation as Elsevier Scopus or Thomson Reuters with Web of Science product, the main instrument of these organization are the measures or scienciometric programs as citation (quartiles Q1, Q2, Q3, Q4) or specific indicator (h index, g index, hc index), in the last decades these organizations have had strong influence with policy makers in Colciencias to use that instruments as a model to evaluate knowledge production of researches into the system of science and technology.

The open access movement to scientific literature promotes free access to scientific production without economic or copyright restrictions. Open access publication, also known as the golden route, and the deposit or self-archiving in institutional or thematic repositories, known as the green route. The most relevant adhesion movements to open access initiatives were shown in three declarations: The Declaration of Budapest, signed in February 2002, and the further Declarations of Bethesda and Berlin, signed in 2003. This aspect entails one the most important discussions between open or restricted and to-pay access to knowledge as most databases and indexers do; perhaps the sustainability of the model is still in discussion. The main problems in the data base and scienciometric model in developing countries, as Colombia, are (i) information sources don't cover the specific thematic or local problematization, (ii) application of scienciometric tools

without the specific dynamics of the disciplines, (iii) double subsidy of the funding research (government pay to funding specific research and the university institution (librarian role) researcher then pay to use the knowledge in the data base).

Graph N 2, Open Access vs. copyright actors index scientific journals system in Colombia



Source: Tejada-Gómez María Alejandra, March 2015.

Theoretical approach

The literature review is based on the concepts of university governance, university research governance in the context of higher education, scientific policy, institutionalism, institutional entrepreneurship, and the relationship to scientific publications systems.

Research Governance

Framing the role of governance of research (Jansen, 2007, p. 17) "*from a perspective of internal organizational efficiency influenced by Williamson (1975) comparison of market and hierarchy, to actor centered intuitionalism that regards normative-legal definition institutions and rules (Ostrom, 1990); from the political science perspective, governance means the coordination and control of autonomous but interdependent actors either by external authority or by internal mechanism of self-regulation or self-control* (Maintz and Scharpf 1995)".

University Research Governance –URG-

In effect of these globalization trends, higher education institutions as a principal knowledge dissemination agency and the publisher of the scientific journals, began to be ranked in that international system. In that sense, the institutions have been to redefine the institutional research policy and incentives to be part of the new international system legitimate at both national and international arenas.

University research governance problems in the case of SJSC, public and private universities are dealing with the different demands national and international, policy ambiguity into national stakeholders system. Related to the university governance, decision making process in terms of defining strategic planning of knowledge dissemination to develop norm, procedures, formal or

informal practices, define efficiency. To prevent overlapping functions, over income, duplicate resources. (Boer & File , 2009, p. 9) "governance refers to 'the formal and informal exercise of authority under laws, policies and rules that articulate the rights and responsibilities of various actors, including the rules by which they interact'. Higher education governance is thus understood as the external and internal coordination of higher education and research".

The challenges in higher education institutions are university research governance (Leisyte, 2007, p. 23). "*Internal governance refers to the institutional arrangements within universities (e.g., lines of authority, decision-making processes, financing, and staffing) whereas external governance refers to the institutional arrangements on the macro- or system-level (e.g., laws and decrees, funding arrangements, evaluations)" to define the new research agenda and strategies.* Such governance is defined as activities aiming to *"manage, organize and improve the performance and competitiveness of research capacity; (where) formulation of the research strategy is the starting point (identify and select a number of research priorities or interdisciplinary topics), coordinate through schools deans and research committees*" (Hazelkorn, OECD, 2005). Definition recent literature "*the way the institutions are organized and are "operated internally," from the point of view of their government and its management, and its relations with external entities and actors, with a view to ensure the objectives of higher education*" (Brunner, 2011). '

For that reason, criteria as institutionalist to analyze the institutional and individual (research team or researchers) performance are explain (Frost & Brockmann, 2014) "*behavioural consequences of quantitative performance measurement in universities. There is a growing tendency among scholars to behave less like Homo academicus and more like Homo strategicus as they direct their focus on performance indicators".*

Higuer education recognize of social and institutional development. Concepts as modernization, specialization, professionalization and rationalization are dynamics of organizational changes in education. University self-governance and managerism, methodology to evaluate performance. Division fast track and other members of staff, quite apart from the steady erosion or pay, and the devaluation of the status that such an erosion implies, pressures to raise research grants income, and to increase the quantity and quality of publications; pressure to raise research productivity measures in terms of outputs (publications), selective allocation resources to designated research grouping on the basis of their prover performance, changes and organization control in the academic labor (Willmott, 1995)

The work of the university research units research management faces resolve the dynamics related to strategic investment and reorganization of the budget; Appropriate organizational structures, including postgraduate training schools; Performance indicators to be compared with national and international standards; adjusted with the competitive international performance preferences or priorities niche fields; research and cluster centers capable of winning external funding; Resource allocation and alignment of research priorities; HEI strategic alliances with industry partners; Approval of research strategies by managers and boards; broad definition of the research that recognize the skills of powers (Hazelkorn, 2005)

The new challenges of research institutions are tied to the internationalization policies governed by supranational bodies and universities or research rankings, as well as the policies of science

and technology systems and innovation in each country. Institutional management consists of a set of factors (resources, processes and results) that must serve and positively contribute to the development of research, whose basic objective is to lead the development of the institution and not an association of academic units isolated (Nogueira, 2000).

It is possible to define an ideal model of research governance, without regard to organizational values that define the work of the institution, nor is it possible to consider that a successful model is transferable from one institution to another without first performing a deep reflection the mission objective of each and the strategic role of research in the world today. Think the research management at too simplified framework that leaves the researcher in an ideal world, self-regulated and without any possibility of external control, or the excessive academic commodification that carries profound and obvious ethical risks in the educational exercise.

Rankings, research indicators, assessments

Lately many have highlighted the growing interest in university rankings, emphasizing the important role of the emergence since 2003 of rankings (see Annex N 1) as prestigious as the ARWU, Leiden Ranking, QS World University Rank, Times Higher Education Ranking, CHE-Ranking, SCIMAGO Institutions Ranking, Ranking web of world Universities (Aguillo, Bar-Ilan, Levene, & Ortega, 2010); (Van Raan, Fatal attraction: Conceptual and methodological problems in the ranking of universities by Bibliometric methods, 2005); (Shin, Toutkoushian, & Teicher, University Rankigs Theoretical basic, Methodology and Impacts on Globlal Higher Education, 2011); (Torres-Salinas, 2011). Increased competition in the university context among researchers, departments, institutions or linked to the complexity countries (are institutions with different levels of aggregation) and diversity of the university system have favored the emergence of various types of rankings as a tool for evaluation and measure.

This growing interest has generated a wealth of scientific literature on the subject, explaining, analyzing and comparing different perspectives methodologies used and the relevance of the rankings of universities for the analysis of university disciplines, countries, researchers, departments (the university at various levels of aggregation). The global popularity of university rankings has stimulated debate about the quality and performance of higher education systems and has had a big hit in the light of the internationalization of higher education (De Filippo, Casani, García-Zorita global society , & Efrain-García, 2012).

Among the topics that we discussed is the myth number one question where that all institutions should be number one in the indicators; the Matthew effect that has given most and least has less you give, generating imbalances in the system; the iceberg effect, recognizing only the information that is visible and not on the base; viability and sustainability of research.

Studies or institutional policies focused on conduct measurement, assessment of indicators of research groups, departments, areas of knowledge from bibliometric studies as indicators of citation of scientific production. Cases: such as the University of Leiden measuring performance in the area of physics from Bibliometric performance indicators (H. F. Moed, 1986); citations- - Publications Bibliometric study and research groups of two medical faculties and mathematics at the University of Leiden as an element of assessment (H. F. Moed, 1985); use of genetic algorithms

to Increase the quality of management of university research for the best performance of research groups in the institutes and Departments (Chircu, 2009).

The reflective analysis and critical models such as the case studies developed by (Luke, The research game in academic life, 2006) published by the Society for Research in Higher Education, which performs an analysis of research universities with reference to the new role of concepts such as globalization, marketing and managerism marked by the rankings, measurement methodologies, evaluation systems, the differences between the areas of basic sciences and social sciences; the connection with the financing of research and models disclosure or communication of research using structured by Bourdieu's theory.

The development of global and international rankings standard indicators, makes all the institutions follow the same models and have no differentiating models, so-called, specialized knowledge areas (technology, schools, regional, etc.) competitive or comparative advantages. The main flow of money from educational institutions is given by the enrollment of students in all undergraduate and postgraduate levels, one of the myths that have it is that not being in the declining ranking students in the rankings. However, the differentiation between indicators of teaching, infrastructure, research, have given greater weight to the investigation forgetting that user or end customers are in the variable teaching which generates a negative effect in the weights assigned in the evaluation variables. Generalists rankings are too extended, forgetting indicators contextualized to the varying needs of the region and users, so the models as the ranking CHE of Germany, which contains the variables and end users is in charge of giving the weight according to the needs or context and disciplines, enables more contextualized analysis to the specific needs.

Scientific journals system as a knowledge dissemination in higher education URG

The principal debate is related on one hand with the new international demands who have a strong impact on higher education performance in terms of new norms, values and competition spheres; on the other hand to respond the national research problematic to resolve the specific dynamics. Tensions such as are local journals communication model attributes dilemmas, governance tensions (Public vs. Private / Geographical, Disciplines), institutional logics, assessment evaluation R&D vs. among, universities invisible college (Crane), Mertonian logics accreditation logics, recognitions (Gallagher, 2008).

Under those circumstances, a lot of studies are related to these problems (international vs. local knowledge dissemination) specific cases of study as country or disciplinary analysis. To illustrate (Ordóñez-Matamoros, Cozzens, & Garcia, 2010) *collaboration, as observed by the co-authorship of journal articles written by local scientists and partners located overseas, affects the ability of research teams to produce bibliographic outputs and to contribute to local knowledge*; (Kang, 2009) *global competition has created a discrepancy between the knowledge produced and the needs of local society*. (Tadaki & Tremewan, 2013) *Internationalization per se can be achieved in more or less post/colonial or elitist ways, and we encourage scholars and practitioners to concern themselves with the actual practice of internationalization projects. Theoretical account of agency to construct a political framework for consortia structure/agency, fields of power, governmentality, and network power.*

Country cases as (Chou, Lin, & Chiu, 2013) *the increasing importance of the competition in global university ranking has resulted in a paradigm shift in academic governance. Many governments have introduced different strategies for benchmarking their leading universities to facilitate global competitiveness and international visibility. A major trend in the changing university governance is the emergence of a regulatory evaluation scheme for faculty research productivity, reflected by the striking features of the recent changing academic profile of publication norms and forms that go beyond the territories of nation-states. Research performance is assessed in terms of the number of articles published in journals indexed by the Science Citation Index (SCI), the Social Science Citation Index (SSCI), and the Arts and Humanities Citation Index and in terms of citation rates and associated factors.*

Other disciplinary cases as (Clemens E. , Powell, McIlwaine, & Okamoto, 1995, p. 438) The organization of production ensures that reputation, productivity, and publication will be closely related. (Ziman, 1996, pp. 69 -70) an academic discipline is much more than a conglomerate of university departaments, learned societies, and scientific journals. It is an "invisible college" whose member share a particular research tradition.

Global competition has created a discrepancy between the knowledge produced and the needs of local society. To support these assertions, the study examined how the reform policies for global competition surrounding the emphasis of SSCI journals might produce globally competitive but also perhaps locally unsuitable knowledge. The study found that there is indeed a disjoint between the knowledge produced in the research sphere and the needs of the local society. Local researchers are compelled to adopt mainstream theoretical frameworks of North America and Europe in order to get their work published in the indexed journals. By analyzing how the content of knowledge is related to the needs of local society, this study seeks to determine in what manner the reform policy for competitiveness has strengthened the colonial structure of knowledge production (Kang, 2009).

Institutionalist

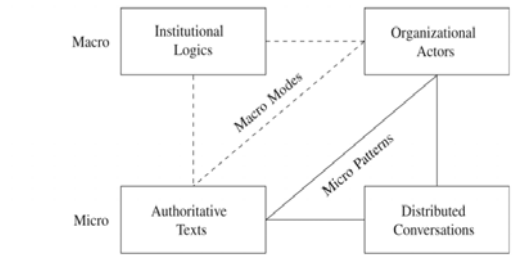
The principal player in the SJSC are universities, who play different roles to incentive and measure performance of knowledge production and dissemination; e.g. publishers of scientific journals, publish articles in international arenas, visibility and accessibility knowledge, internationalization (positioning in the rankings), and salary Incentive for academic production and performance. These kind of roles are directly related to institutional and organizational practice in terms of defining policies, mission, vision, functions, and allocate resources.

Institutionalism concept supports the idea higher education institutions in Colombia deal with scientific journals systems models in Colombia, define specific rules and requirements according with the mission, goals and structure define for the institutions. The process to legitimate the model define specific behaviour results of the process associated, e.g. publish the own journals develop for the institutions, publish in international journals or use other channels of communication depend on the level of legitimization, prestigious, resources and processes; that institutions process define the behave in the all structure researchers, administrative, education. (Crow & Silver, 2008) "*consider the ongoing development of national knowledge production networks in a global context and consider global knowledge networks in national and local contexts*".

In the light of theoretical approach to analyze the demands of SJS and the response of university research governance problematic in these research project is taking since institutionalist. (Scott W. R., 2004, p. 2) "*Institutional theory considers the processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior*". (Nelson & Winter , 1982) "*emphasize the role of rules, norms, and culture in organizational change and explicitly disavow the view that market competition ensures the selection of efficient organizational structures and process*".

Posited "top-down" models of social influence. Scholars examined the various ways in which rules, norms, and shared beliefs impacted organizational forms. (Scott W. R., 2004, p. 22) *"In tracking institutional change empirically, we found it advisable to focus on three measurable components— (i) types of actors or organizing models (a combination of cultural-cognitive and normative elements), (ii) institutional logics (primarily cultural-cognitive elements) and (iii) governance structures (a combination of regulative and normative elements). Charting systematic change over several decades in the types and numbers of actors (individual roles, organizational forms and their interrelations), in the nature of institutional logics.*

Graph N 3, macro mode and micro patterns, institutional measurable components



Macro modes and micro patterns

Source: (Blaschke et al., 2014, p. 714)

Under these measurable components transferred in the case of SJSC and universities actors. (i) actors –both individuals or organizations (e.g. institutions model who play different roles, associations, external organization, rankings, accreditations, internal units in three levels, macro - meso – micro, managers, research teams, researchers); (ii) institutional logics, the values, norms, ideas, beliefs and meaning systems that guide the behaviour of actors (e.g. legal framework – specific decree or regulations-, the specific scientific journal system national or international, research cultures, public or private context, specific norms or behave per area of knowledge); (iii) governance structures, (the institutional regulative an normative framework related with specific incentives of knowledge production and dissemination who are represented in the strategic research plan, mission, vision, values, research and professor statutes related to incentives "bonifications and salary", incentive and performance approach. According with (Clemens E. , Powell, McIlwaine, & Okamoto, 1995, p. 451) *associated with publication strategy links between institutional type and publication patterns*; (Rip, 2000, p. 472) *scientific quality, however, and while there may not yet be institutional competencies to address broader aspects, the possibility might well be explored and exploited in the new context.*

Institutional Entrepreneurship (IE)

"The term institutional entrepreneurship refers to the "activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones" (Maguire, Hardy and Lawrence, 2004: 657). The term is most closely associated with DiMaggio (1988: 14), who argued that "new institutions arise when organized actors with sufficient resources see in them an opportunity to realize interests that they value highly". These actors – institutional entrepreneurs – "create a whole new system of meaning that ties the functioning of disparate sets of institutions together" (Garud, Jain and Kumaraswamy, 2002). Institutional entrepreneurship is therefore a concept that reintroduces agency, interests and power into institutional analyses of organizations" (Garud, Hardy, & Maguire, 2007).

The institutional entrepreneurship approach transforming in the higher education sector specific in the scientific journal system related with knowledge production and dissemination; is the wonderful case to explain the national and regional models create to respond the specific demands in geographical context. For that reason the Publindex model in Colombia itself, is a responds in terms of model to internationalization process who was perversion of the system with the changes in the policy instruments. (Crow & Silver, 2008) "*consider the ongoing development of national knowledge production networks in a global context and consider global knowledge networks in national and local contexts. The centrality of science and technology to economic and social advances (as well as to these new stresses) has, in turn, helped push educational policies to the forefront of policy discussions in both developed and developing countries*".

In LATAM the models of open access as Red Alyc, Scielo, Clacso, and the repositories programs (national, thematic and institutional) are the agencies of institutional entrepreneur to respond national and regional demands of knowledge production and dissemination; in Colombia the national university repository is one of the examples of it. Also, the program Open Journal system of Public Knowledge project who born in Arizona State University and Stanford University; and was successful appropriate in Colombia Institutions are other examples of IE. (Crow M. , 2010) *"The concept applied to organizations and institutions presumes a trajectory of change and adaptation that we term institutional evolution. Its antithesis is "ossification" —a lack of innovation in the organization and practices of our institutions— which too often characterizes academic culture. The lack of innovation in our colleges and universities results in an insufficient differentiation between distinct categories of institutions as well as a stultifying homogeneity among institutions of the same type. Institutions must cultivate unique and differentiated research and learning environments that address the needs of students with different levels of academic preparation and differing types of potential".*

Methodology

The methodology to be used in this research follows an embedded case study approach (Yin, 2009) in multilevel environments and multiple cases: six universities (central and peripheral) of different types of ownership (public and private) active within the Colombian SJSC. A key hypothesis of the research is that, based on the criteria to select the cases, they will respond to the same system's incentives differently, according to their visions, missions, goals and research agenda. The trajectory of the SJSC and the analysis of the actors' role along this timeline will serve as the backbone of the research to be done, supported by both quantitative and qualitative analyses of the

ways the higher education system reacts to the demands resulting from the SJSC, discontinuities in the policy might jeopardize the results of resources and learning capacities allocated by actors in the system. For that reason, the principal actors in the SJSC are the universities (the main unit of analysis divided in three levels: L1, rectors and university boards, L2, research management units, and L3, research centers and teams) who receive the guidelines of scientific policy and 'signals' from the 'market' (i.e. universities, university rankings, etc.) and are in turn the promotors of scientific journals in the country (see table 5).

Table N 5, Cases L1/L2/L3

Level 1, Strategic University Boards, Strategic planning office	Mission (Values, norms, codes)
	Research Policy (research agenda, strategic planning, research performance, intellectual property, regulation)
Level 2 Tactic – Research unit, Vicerrector of research or research directions	Structure – Organigram, coordinate units and actors, lines of authority, decision-making processes Functions (financing, coordinate through schools deans and research committees and staffing) Research Information Systems (inputs – outputs) (CRIS/OCU)
Level 3 Operative, Research teams, centers, institutions	Organizational incentives outputs (knowledge production, dissemination, grants, relevance, prestigious)

Source: Own elaboration, march 2016

Unity of analysis

For that reason, the principal actors in the SJSC are the universities (the main unit of analysis). The multilevel analysis, in terms of the units engage in the scientific journal system as the research or academic unit who regulate the specific incentives or outputs for researchers, the units responsible for disseminate the knowledge as universities press, the libraries responsible from index and sharing the institutional information in repositories and the communication office with the function of dissemination and socializations knowledge; each faculty is responsible to curate the quality and peer review process in terms of disciplinary area of knowledge.

In the table N 6 are explain each single level in the university follow the Institutional change: three measurable components (Scott, 2004, p. 22). (i) *types of actors* or organizing models (a combination of cultural-cognitive and normative elements), (individual roles, organizational forms and their interrelations) (ii) *institutional logics* (primarily cultural-cognitive elements) (the organizing principles that provide work guidelines to participants [Friedland and Alford 1991]) (iii) *governance structures* (a combination of regulative and normative elements) (the private and public controls utilized in overseeing a field)

Table N 6 Institutional multilevel analysis (Meso level Universities)

	L1	L2	L3
Types of actors or organizing models	ASCUN, ASEUC, Rectors, Boards, support group, advisers, consultants	Research or academic Unit, strategic planning Unit, university press (publishers), libraries, communication and technologie office	Faculties, departaments, centers, research teams, researchers, editors, disciplinar associations, funding organizations .
Institutional logics (Tactic and operative)	Policies and decrees, decision-making processes	Regulations, norms, decrees, performances incentives, bonifications,	Schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior
Governance structures (strategic)	Mision, research policy	Research strategic plan, organigram, indicators	Functions
Actors Problems	External governance, which refers to the institutional arrangements on the macro- or system-level (e.g., laws and decrees, funding arrangements, evaluations)	Define new research agenda and strategies	Prestigious, performance, contribution disciplinary or Social contribution , geographical pertinence
Unit of Analysis	Rectors, boards	Research or academic Unit	Leader research teams in Business, Philosophy, Biology, Art
Data Quantitative	Semistructure interviews, minutes, mision, vision, goals, research policy	Research strategic plan, organigram, performance incentives and bonification regulation	Publication behaviour (Good journal – Good scientists) What do you consider good journal? Ideal way of publish? Quality, visibility, accessibility,
Data Qualitative	Institutional analysis knowledge production and dissemination	Research indicators	Scienciometric analysis research groups per discipline in the differente systems local, regional, international and disciplinar. Invisible College (Crane)
What do you want to know?	Criterias to define research policy, decision making process according with the internal vs. external or international vs. national demands	Criterias to define performance and incentives regulations according with the internal vs. external or international vs. national demands	Publication behaviour and the invisible college structure.

Source: Tejada-Gómez María Alejandra, January 2015.

Analysis of the relationship between, on the one hand the research mission, vision, goals, research planning, activities, strategies, and incentives to high quality research performance and scientific dissemination in the universities and, on the other hand, national and international demands as expressed through the SJSC in Colombia. Institutions multiple case study top down governance structure publish demands qualitative study actors, types of disciplines (preferences mission) embedded networks influences researchers quantitative scienciometric, how they respond to the publication behaviour (policy, publication, facts). This analysis will involve the following activities (see table N 7):

- Actors' analysis, Stakeholder interviews to university research managers/vice-rectors of research, etc.
- Survey to chief editors within the SJSC
- Semi structured interviews to research team leaders, disciplinary specific cases (science, socials science, art) in terms of channels of dissemination

Table N 7, Variables

Independent Variable	Dependent Variable
Demands national and international SJSC • Ministries • National and innovation policy, dissemination knowledge • Rankings, data bases • Accreditation, associations norms and values	Responds University Research Governance • Board – rectors • Research Units, Managers, strategic planning office • Faculty, departaments, centers, research teams, researchers

Source: Own elaboration, march 2016

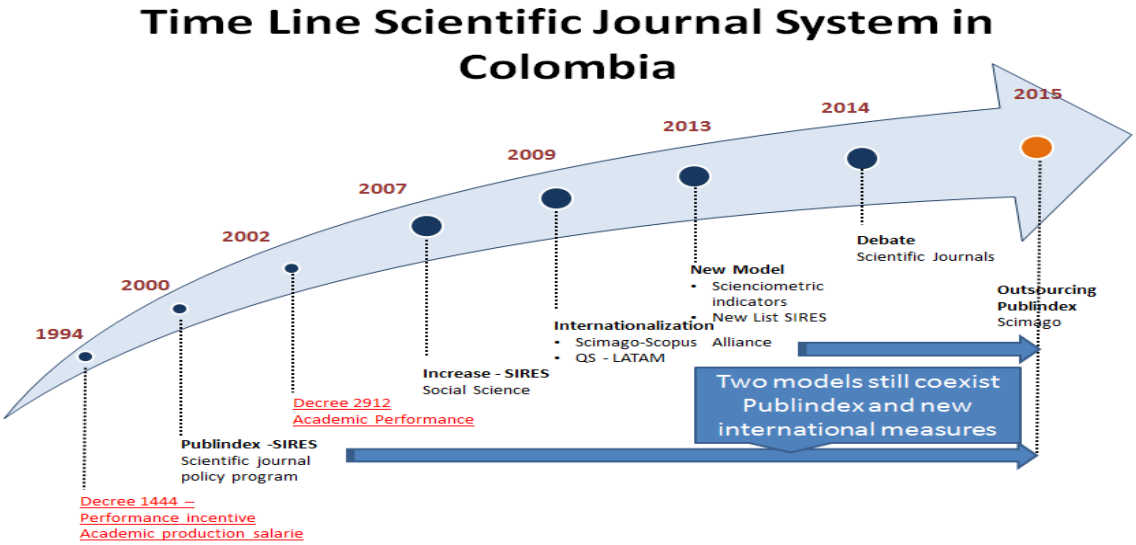
Hypotheses- Alternative 1, If SJSC adopt a new measurement model according to international standards, the URG will affect; Alternative 2 Different university governance practices respond to the same SJSC incentives, constraints and norms differently, according to their visions, missions, goals and research agenda.

Assumption 1, Campbell's law (Donald T. Campbell): "The more any quantitative social indicator (or even some qualitative indicator) is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor". Assumption 2, Research on the so-called "performance paradox" has been done in performance measurement theory (Meyer and Gupta 1994, p. 309; Meyer 2005, p. 288). This model is "driven by the assumption that institutions and peoples' behave is consequential for the design of performance measurement systems, and that efforts to measure performance not taking into account of the way adapt to performance constraints will encounter serious difficulties (ibid. 1994, p. 310).

The research 'story line' as a backbone (see Graph 4)
The main events of SJSC, remarked in the time line, are related with the variables to assess the knowledge production for researchers. In that way, the principal phenomenon are (i) decree 1444 knowledge production measure of research papers in 1994; (ii) the creation of the national scientific journal index system Publindex, the system indexing and abstract list in 2000; (iii) the decree 2912 which replaced the decree 1444, retained the academic performance rating for researchers in referent with scientific papers in the national system Publindex or homologation process with international journals in 2002; (iv) Ministry of Education developed a new model of research internationalization in alliance with Scimago and Scopus Elsevier, focus in analyzing the knowledge production and citations of universities, research centers, departments, researchers citation in the Scopus data base, and in the same line the new regional Latam model of the QS ranking with measure the knowledge production in terms of citation in Web of Science data base in 2009 finally (iv) The new model of evaluation of the scientific journal Publindex with the scienciometric indicator of citations in 2013; new model of measure included altemetrics in 2016.

Problematization the scientific journal system in Colombia, national and international demands. According with the timeline characterize three (3) main events: (i) Adoption Colciencias publications; (ii) Adopted accepted any real from the universities epistemic commodities without much criticism; (iii) Researchers effects of these adoption in the daily live, particular theories – governance issues – develop more for open access try to understand options and limitation of scientific knowledge production and dissemination global dynamics – local system scientific.

Graph 4, Time line SJSC



Source: Tejada-Gómez María Alejandra, January 2015.

In Colombia who are starting career missionally is considered "research universities" creating Vice Presidencies and research offices. Therefore, the need to know the landscape in which research management that create strategic plans for these organizations is located.

The approach of research indicators, shows the direct relationship it has with three macro-meso and micro levels, the first from the perspective of public, institutional policy that will generate measurements or quality parameters for further progress in a research models; the meso level is related to factors research management that will generate development platform for indicators some of the texts mentioned issues research management, technology platforms to share information, information systems scientific production, events, lectures, articles in scientific journals, and micro level is how these management models are operationalized by the smallest of research are researchers and research groups who are the ones who end up running and producing results indicators research units

University Cases studies

To define the cases is important to emphasize variatiability in the performance of the institutions (useful, successful, Colombia system, international system, disciplines, pubic vs. private). For that reason, analyze one public university in the top as National University, Antioquia University and Valle University, others privates as Andes University EAFIT, Pontificia Universidad Bolivariana, regional institutions, and institution who are outside of the system.

Table 8, University cases

	Center	Intermedium	Periphery
Public	National University	Antioquia University	Valle
Private	Andes University	EAFIT	Pontificia Universidad Bolivariana

Source: Tejada-Gómez María Alejandra, March 2016

Dimensions (i) Geographical, (ii) Institutions, (iii) Disciplines represented in all universities; researchers faculty member, historical line behave, line behave. (Cohen, March , & Olse, 1972) Garbage can model "*is a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work". Problems, solutions, participants, and choice opportunities flow in and out of a garbage can, and which problems get attached to solutions is largely due to chance*" Example of the universities and decision making to develop goals in uncertain contexts with unclear goals, unclear technology and fluid participants. Research gate report for the ministry of education culture and science / Homogeneous vs. Heterogeneous / Winners or losers / relative performance, instruments design, correlations / Quality, excellent, efficiency / Good practice vs. worst practice

Central and periphery

Geographical influence and the specialize data base, play an important role to identify the criteria to publish, more than a measure indicators, the recognition of a specific community or the creation an invisible college is more legitimate than a citation indicator in a private database system. The principal factors are the relationship between the variable of knowledge production in terms of index journals and scientific papers in the national or international arenas and the incentive to measure the researcher in terms of assess and define the salary. Besides, using different measures or criteria's in the trajectory to define the quality and quantity in terms visibility and accessibility of knowledge production are the variables that made changes in the system the last decade.

The research motivation in general is to give a contribution to science in a specific field and resolve problems in the society or the discipline or in specific geographical context. The researchers incentives to research performs are more related with being recognized and be legitimated for a specific scientific community of discipline, topic or region.

Disciplinary criteria's

A research team in terms of publication of knowledge production per disciplines. The criteria of quality and knowledge dissemination change for each scientific community depend on the specific databases or channel of communication, where the community ontological and epistemological are more representative. For example, in the chemical is chemical abstract, sociology is sociological abstract, history is Jstor, philosophy is philosopher index, medicine is Medline, economic is Econlit and repec (research papers in economic), business is Ebsco, law is Legus nexus and Legis in Colombia or other disciplinary and geographical examples. That kind of general standards as scienciometric does not reflect the reality practice and quality of each area of knowledge or specific scientific community (invisible college).

For that reason, each area of knowledge in these cases faculties, departments, laboratories, and research groups, developed specific criteria in terms of research quality, ethical, pertinence, research agenda, audience and interest (national or international), mode 1 or mode 2, peer review process, funding model, and dissemination channels according with the stakeholders and interest.

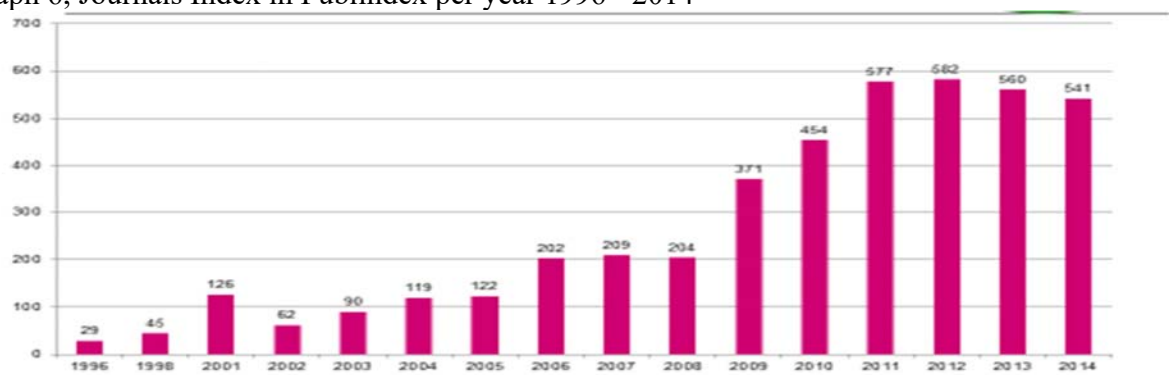
In reference with the dissemination channel, depends on the area of knowledge the channels and products of communication changes. For example, for a research in economics is most important an article in the local newspaper on economics, or the database repec (research papers in economic)

than in an international journal in ISI or Elsevier Scopus because the epistemological community use that kind of channel, or if the publication is in the international journal, sometimes, the local community or the invisible college does not have access the article. For those reasons, the definition of the audience and channels for communication has to be mediated according with the mission or agenda in the faculty, department, research teams, researchers, and specific research field.

Universities roles in Scientific Journals System in Colombia SJSC

Since the creation of Publindex Colombian index system in 1994 the number of journals index in the program started with 29 journals 2014 the number of journals index is 541; the high increment of journals per institutions are minimal 5 journals per organization (see Graph 6)

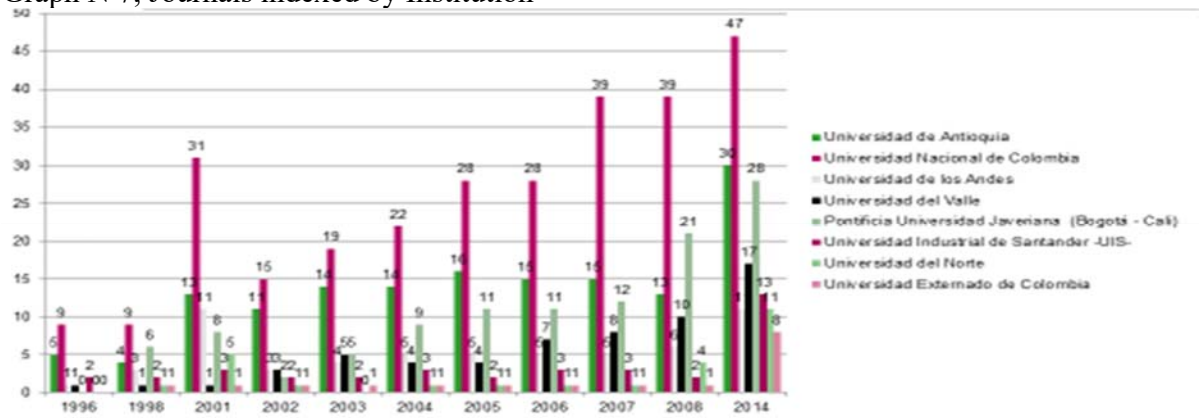
Graph 6, Journals Index in Publindex per year 1996 - 2014



Source: Own elaboration with Publindex data, march 2016.

In most of the cases, higher education institutions (public and private) are the source of financing for Colombian journals with three to five scientific journals per department or faculties. It creates a budget strain in the financial institutions and endogamous peer review system that is more concerned by tenure system than the quality of the research output (see Annex 2, journal index Publindex per institutions 1994 -2014 and Graph 7, principal universities index journals in Publindex)

Graph N 7, Journals indexed by Institution



Source: Own elaboration with Publindex data, march 2016.

The tradition in the university culture is developing the own journals per departments and faculties; incentive by specific decree 1444 (1994) and 2912 (2002), support by the Ministry of Education in relation to the knowledge production and the specific salary incentives per papers published in the journals indexed by Publindex the national program support by Observatory of Science and Technology –Ocyt- and Colciencias. Most of the public universities in the country have to deal with the decree of academic production by the Ministry of Education, these institutions are the highest rated with own scientific journals as the case of the National University of Colombia with 70 journals.

Private universities have a diversified portfolio, some of them as a mission developed their own scientific journals, as Javeriana University with 32 journal most of them indexed in international arenas. The cost of that infrastructure is high to sustain the requirements and resources; another case is Los Andes University who developed a strategy to incentive the researchers publishing in top international journals, perhaps losing the national arena audience and access information.

As an effect of these tendency, the higher education institutions as a principal knowledge production agency and the publisher or the scientific journals, began to be ranked in the international system where are more legitimate than the national arenas. In that sense, the institutions had redefined the institutional research policy and have encouraged their researchers to be part of the new international system legitimate in national arenas.

At this point, the scientific journal policy declared or not declared in the universities developed a practice model in the country, with specific institutional and national policy guidelines, practices and consequences to allocate resources as human resources (editor and publisher team), finance specific budget, infrastructure and technological to index in terms of international requirements.

Under these circumstance, the international demands, to index the scientific journals develop visibility, international peer review systems, international committee, management software information and index information in different systems without interoperability demand technological, infrastructure and human resources. For that reason, internal institutional coordination and coherence policy between the publisher unit, library, technology office, research unit and communication office will be developed; perhaps, is a lack of knowledge and technical information to develop interoperability and coherence guidelines between each units.

On the other hand, from the micro level are the effects in the research units in terms of knowledge production incentives and strategic research agendas and funding to define in the research teams and researchers; as the policy in the public decree academic productivity each university defined the specific model of incentives according with the mission and research agenda; for example bonifications to publish in top journals or diversification portfolio to publish in national, regional and international journals systems. Both national and international demands in the specific case of the scientific journal are strong influences to define the outputs and the research agenda, there is not a study to analyze how much effect has the SJSC in the research teams researcher practice in terms of knowledge production, what is important for them is the salary incentive to perform or legitimate specific community or respond specific agenda (international or national needs).

In the actual model of evaluation research in Colombia some disciplines are disagree with the modes and channels to measure a specific area of knowledge, most of the research groups in social sciences or art decide to deslegitimate the new model of measurement, these is one of the research of governance way to push between the policy macro level from Colciencias in the universities to legitimate the model and the research institutions have to legitimate in the micro level with researchers who does not want to play the game.

The research motivation in general is to give a contribution to science in a specific field and resolve problems in the society or the discipline or in specific geographical context. The researchers incentives to research performs are more related with being recognized and be legitimated for a specific scientific community of discipline, topic or region. Perhaps, the new regulation generate the research performs related to publish or perish in relation with the salary incentive. In terms of the institutions or regions in the last couple of decades, one of the incentives are the publishing or perish in terms of scientific journals, is an incentive related to define the researchers salary or find funding opportunities. In that sense, the researcher becomes a factory of scientific papers, learning strategies in terms of collaboration, internationalization and citation.

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Ranking U-Sapiens Colombia (2014)		QS World University Rankings / Times Higher Education World University Rankings (2014)		Clasificación de Scimago SJR (2014)	
N	Institución	N	Institución	N	Institución
1	Universidad Nacional de Colombia	501-550	Universidad de los Andes	29	Universidad Nacional de Colombia
2	Universidad de Antioquia	551-600	Universidad Nacional de Colombia	37	Universidad de Antioquia
3	Universidad del Valle	551-600	Universidad de Antioquia	65	Universidad del Valle
4	Pontificia Universidad Javeriana	>600	Universidad de Medellín	68	Universidad de los Andes
5	Universidad de los Andes	>600	Pontificia Universidad Javeriana	96	Pontificia Universidad Javeriana
1.- Master and Ph.D. Programs 2.- Research groups (Colciencias) 3. Scientific Journals Index in Publindex (Colciencias).		Investigación de la institución, la calidad de la misma, el nivel de empleabilidad de los egresados; así como también incluye valoraciones subjetivas como calidad de las relaciones laborales de los empleados, y el prestigio de los profesores y demás personal de planta.		Para su elaboración se analizaron las publicaciones científicas incluidas en el índice de citas Scopus. Analiza el tamaño, medido en producción de documentos científicos de las universidades, su capacidad para realizar investigación en colaboración con otros países y la visibilidad o impacto científico de su producción.	

Clasificación de Universia (2014)		International Colleges & Universities (2014)		Webometrics (2013)	
N	Institución	N	Institución	N	Institución
1	Universidad Nacional de Colombia	1	Universidad Nacional de Colombia	1	Universidad Nacional de Colombia
2	Universidad de Antioquia	2	Universidad de Antioquia	2	Universidad de Antioquia
3	Universidad del Valle	3	Universidad de los Andes	3	Universidad de los Andes
4	Universidad de los Andes	4	Universidad Tecnológica de Pereira	4	Pontificia Universidad Javeriana(Bogotá)
6	Pontificia Universidad Javeriana	5	Universidad EAFIT	5	Universidad del Valle
Los diferentes indicadores que se utilizan para asociar a cada institución una determinada producción o un factor de impacto, se basan siempre en el número de documentos recogidos en las revistas indexadas en las bases de datos Thomson Scientific-ISI. Paralelamente se está trabajando para incorporar los indicadores		Conteo de visitas a las páginas web de las instituciones. La lista se basa en un único criterio: la popularidad de las páginas web de las instituciones.		La lista se basa cuatro (4) criterio: el tamaño de la universidad, la visibilidad de su página web, el número de archivos de investigación (online), y el puntaje de los estudiantes. La metodología bibliométrica toma en cuenta el volumen de contenidos publicados en la web, así como la visibilidad e impacto de estos contenidos de acuerdo a los enlaces externos que apuntan hacia	

Ranking universitario de transparencia en web Observatorio de la Universidad Colombiana (2015)		La Nota Económica (2009)		Ranking del mercado laboral (2014)	
N	Institución	N	Institución	N	Institución
1	Universidad del Valle del Cauca	1	Universidad Nacional de Colombia	1	CESA
2	Universidad Militar Nueva Granada	2	Pontificia Universidad Javeriana	2	EAFIT
3	Instituto Tecnológico Metropolitano de Soledad, en Atlántico	3	Universidad de los Andes	3	Universidad del Rosario
4	Instituto Tecnológico Metropolitano de Medellín	4	Universidad del Valle	4	Universidad de los Andes
12	Universidad Javeriana (Bogotá)	5	Universidad Cooperativa	5	Pontificia Universidad Javeriana
Este ranking mide la pertinencia de la información publicada en la página web o dominio principal de cada una de las instituciones de educación superior colombianas, en cuanto a cantidad y calidad de la información para la identificación exacta de cada universidad, de su actuar académico, sus protagonistas, programas, rendición de cuentas, complejidad y gestión institucional		Este ranking se hace con base en los ingresos corrientes totales de las diferentes instituciones. La mayor parte de los ingresos de las universidades públicas no son ingresos propios (cobro de matrículas o venta de servicios) sino transferencias del gobierno nacional y, en algunos casos, de los gobierno locales. Privadas las ventas (o ingresos operacionales).		Tomó el Ingreso Base de Cotización, IBC, de cada egresado en las compañías donde trabajan, fundado en cifras del Ministerio de Protección Social. Observatorio Laboral para la Educación.	

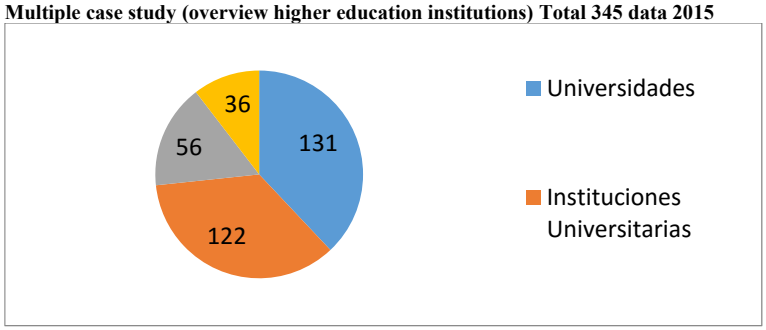
SPADIES (2014)		Revista Dinero Top of the mind (2014)		MERCO (2014)	
N	Institución	N	Institución	N	Institución
1		1	Universidad Nacional	1	Universidad de los Andes
2		2	Universidad de Antioquia	2	Universidad de Antioquia
3		3	Pontificia Universidad Javeriana	3	Universidad Nacional
4		4	Universidad del Valle	4	Pontificia Universida Javeriana
5		5	Universidad Autonoma	5	Universidad EAFIT
Contiene diferentes variables como son: deserción por cohorte, deserción por periodo, caracterización de los estudiantes, grado por cohorte, apoyo a la permanencia; cruce de variables.		La Institución se encuentra entre las marcas más recordadas entre sus pares en Colombia. El top of mind hace referencia a la primera marca que se le viene a la mente a las personas cuando se les pregunta por un producto específico. Es una forma de medir cómo están posicionados los productos de una misma categoría entre los consumidores. Aunque la primera mención no es un indicativo de que el consumidor compre ese producto, estudios han demostrado que hay una correlación de entre el 60 y el 70% entre top of mind y participación de mercado		Monitor empresarial de reputación corporativa, es un instrumento de evaluación reputacional. es el resultado de un estudio basado en un cuestionario que se remite a los principales directivos de todas las empresas que facturan en Colombia más de 30 millones de US$, y también, a través del concepto de expertos que reciben el encargo de evaluar las empresas.	

Source: Tejada-Gómez María Alejandra, March 2015.

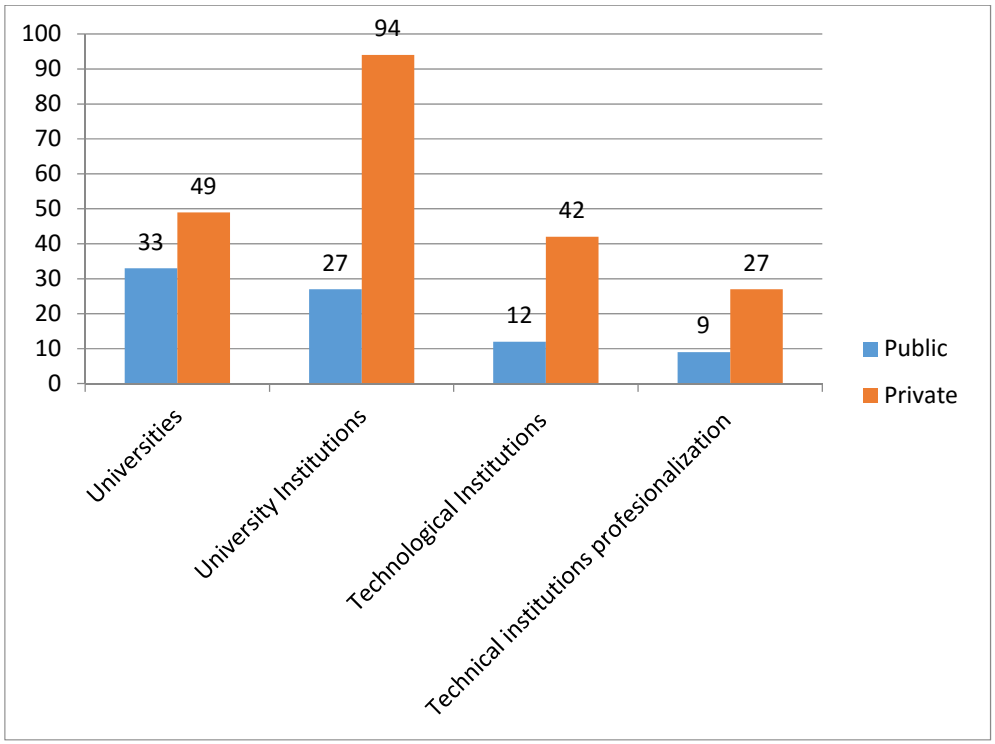
Journals Index per institutions (1996 - 2014)											
	1996	1998	2001	2002	2003	2004	2005	2006	2007	2008	2014
Universidad de Antioquia	5	4	13	11	14	14	16	15	15	13	30
Universidad Nacional de Colombia	9	9	31	15	19	22	28	28	39	39	47
Universidad de los Andes	1	3	11	3	4	5	5	5	5	6	11
Universidad del Valle	1	1	1	3	5	4	4	7	8	10	17
Pontificia Universidad Javeriana (Bogotá - Cali)	0	6	8	2	5	9	11	11	12	21	28
Universidad Industrial de Santander -UIS-	2	2	3	2	2	3	2	3	3	2	13
Universidad del Norte	0	1	5	1	0	1	1	1	1	4	11
Universidad Externado de Colombia	0	1	1	1	1	1	1	1	1	1	8
Universidad Pedagógica Nacional de Colombia	0	0	2	0	1	4	6	4	4	2	7
Universidad Colegio Mayor de Nuestra Señora del Rosario	0	0	2	1	2	2	3	3	4	5	5
Universidad Colegio Mayor de Cundinamarca	0	0	2	0	0	0	0	2	2	2	3
Universidad Distrital Francisco José de Caldas	0	0	4	2	3	4	4	4	3	3	14
Universidad Militar Nueva Granada	0	0	0	0	0	0	1	3	3	3	9
Universidad de la Sabana	0	0	1	0	0	0	1	2	4	4	7
Universidad del Cauca	0	0	1	0	0	0	1	2	2	2	2
Universidad de Medellín	0	0	0	0	0	1	2	2	2	2	4
Universidad Pedagógica y Tecnológica de Colombia (UPTC)	0	0	4	0	1	2	2	2	3	3	13
Universidad Autónoma de Bucaramanga	0	0	3	2	3	3	3	3	3	3	3
Universidad del Quindío Universidad del Quindío	0	0	1	0	0	0	0	0	0	0	1
Universidad EAFIT	0	0	1	1	2	2	1	1	4	3	5
Universidad ICESI	0	0	1	1	1	1	2	2	2	2	3
Universidad Pontificia Bolivariana	0	0	1	0	0	1	1	1	1	1	11
Universidad Tecnológica de Pereira	0	0	2	1	2	2	2	2	2	2	3
Universidad Central	0	0	0	1	1	1	1	1	0	0	1
Universidad Antonio Nariño	0	0	0	1	1	1	1	1	0	0	2
Universidad Santo Tomás	0	0	0	1	1	1	0	3	3	4	20
Universidad Autónoma de Colombia	0	0	0	0	1	1	0	0	0	0	1
Universidad Católica de Colombia	0	0	0	0	1	1	1	1	1	3	3
Universidad de la Salle	0	0	0	0	1	2	2	2	4	2	10
Universidad Autónoma de Occidente	0	0	0	0	0	1	1	1	1	1	1
Universidad de Pamplona	0	0	0	0	0	1	2	2	2	2	5
Universidad de los Llanos	0	0	0	0	0	0	1	1	1	1	2
Universidad de Caldas	0	0	0	0	0	0	2	2	7	7	14
Universidad de Cordoba	0	0	0	0	0	0	2	2	1	1	2
Universidad Libre	0	0	0	0	0	0	1	1	0	0	12
Universidad Manuela Beltrán	0	0	0	0	0	0	1	1	0	0	0
Universidad De Ciencias Aplicadas y Ambientales	0	0	0	0	0	0	0	0	1	1	1
Universidad De San Buenaventura	0	0	0	0	0	0	0	0	1	2	8
Universidad Del Magdalena	0	0	0	0	0	0	0	0	1		4
Universidad Del Quindio	0	0	0	0	0	0	0	0	1	1	1
Universidad Francisco De Paula Santander	0	0	0	0	0	0	0	0	1	1	1
Universidad Piloto De Colombia	0	0	0	0	0	0	0	0	1	1	1
niversidad Tecnológica Del Chocó - Diego Luis Cordoba	0	0	0	0	0	0	0	0	1	1	2
Universidad Autónoma De Manizales	0	0	0	0	0	0	0	0	0	1	6
Universidad Ces	0	0	0	0	0	0	0	0	0	1	8
Universidad Cooperativa De Colombia	0	0	0	0	0	0	0	0	0	1	8
Universidad De Manizales	0	0	0	0	0	0	0	0	0	2	6
Universidad De Nariño	0	0	0	0	0	0	0	0	0	1	5
Universidad El Bosque	0	0	0	0	0	0	0	0	0	1	7
Universidad Nacional Abierta y a distancia	0	0	0	0	0	0	0	0	0	1	2
Universidad Sergio Arboleda	0	0	0	0	0	0	0	0	0	1	2
Universidad Autonoma del Caribe	0	0	0	0	0	0	0	0	0	0	5
Universidad Autonoma Latinoaméricana	0	0	0	0	0	0	0	0	0	0	1
Universidad de Cartagena	0	0	0	0	0	0	0	0	0	0	2
Universidad de la Amazonia	0	0	0	0	0	0	0	0	0	0	2
Universidad el Atlantico	0	0	0	0	0	0	0	0	0	0	2
Universidad del Tolima	0	0	0	0	0	0	0	0	0	0	3
Universidad EAN	0	0	0	0	0	0	0	0	0	0	1
Universidad INNCA de Colombia	0	0	0	0	0	0	0	0	0	0	1
Universidad Jorge Tadeo Lozano	0	0	0	0	0	0	0	0	0	0	2
Universidad La Gran Colombia	0	0	0	0	0	0	0	0	0	0	5
Universidad Mariana Unimar	0	0	0	0	0	0	0	0	0	0	2
Universidad Santiago de Cali	0	0	0	0	0	0	0	0	0	0	2
Universidad Simón Bolivar	0	0	0	0	0	0	0	0	0	0	4
Universidad Surcolombiana	0	0	0	0	0	0	0	0	0	0	4
Universidad Tecnológica de Bolívar	0	0	0	0	0	0	0	0	0	0	1

Source: Tejada-Gómez María Alejandra, March 2016.

Multiple case study (overview higher education institutions) Total 345 data 2015



Source: own elaboration Tejada-Gómez María Alejandra base on Observatorio Colombiano Universitario, March 2016.



Source: own elaboration Tejada-Gómez María Alejandra base on Observatorio Colombiano Universitario, March 2016.