

ARTICLES

SCIENTIFIC COOPERATION ACROSS THE BRICS

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The creation of the BRICS as a non-traditional international organization in the status of a global forum brings new meaning to the norm-setting of international organizations, including in the field of scientific cooperation. This paper aims to identify and analyze the up-to-date and complete normative framework of scientific cooperation across the BRICS which is a result of the BRICS norm-setting. The achievement of the stated aim is pursued through the identification of the distinctive features of the BRICS norm-setting by comparison with the norm-setting of traditional international intergovernmental organizations and by analysis of the BRICS regulations dealing with issues of scientific cooperation. Within the process of researching this subject the author analyzed the BRICS regulations of different levels from the Joint Statements of the BRICS Countries' Leaders and the Summits Declarations to the BRICS working papers as a framework program. The main finding of the research is that the normative framework of scientific cooperation across the BRICS is a set of non-legally binding norms contained in the regulations adopted at the various meetings of national officials within the BRICS. This finding can contribute to a better understanding of the application of the BRICS norms.

Keywords: norm-setting; scientific cooperation; the BRICS; normative framework; regulations.

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Introduction

In our high-technology age, development requires the use of scientific advances. Under current economic conditions, breakthrough research projects often become extremely difficult within a single country because of their complexity, duration, and high cost. One possible way to obtain scientific advances in low-resource settings is for countries to participate in international scientific cooperation.

It should be noted that international cooperation in science has become more significant since the second half of the 20th century. The international conferences of the United Nations on science and technology for development which took place in Geneva in 1963 and in Vienna in 1979 led to the adoption of the World Action Plan in science and technology. This plan contained recommendations concerning the enhancement of international scientific cooperation. By following these recommendations, countries began to develop rules on the effective and mutually advantageous process of receiving and exchanging scientific results. These rules are usually fixed in regulations that together make up a set called a "normative framework" in legal doctrine.

As world experience shows, a normative framework varies according to the geographical location of the countries which are engaged in international scientific cooperation. For example, the normative framework of scientific cooperation between the countries from different parts of the world consists of multilateral international treaties (e.g. the 1982 United Nations Convention on the Law of the Sea and the 1992 Convention on Biological Diversity), acts issued by international intergovernmental organizations (e.g. UNESCO regulations), and international scientific cooperation programs (e.g. the research and innovation program "Horizon 2020"). The normative framework of scientific cooperation between the countries from the same part of the world includes regional agreements (e.g. the 1992 Agreement between The Government of the Russian Federation and The Government of the Republic of Finland on cooperation in science and technology), acts of regional organizations and associations (e.g. the 1975 Helsinki Final Act of the Conference on Security and Cooperation in Europe), and regional scientific cooperation programs (e.g. the 1987 pan-African Program on the Application of Science and Technology to Development).

The inception of the BRICS as a group of countries from different parts of the world in the format of a global forum prompts us to take a fresh look at the normative

framework of international scientific cooperation. The fact that the BRICS members proclaimed their intention to develop mutual scientific cooperation makes this issue even more compelling.

Understanding the BRICS normative framework of scientific cooperation seems possible by answering the following questions: How does the BRICS status determine the distinctive features of its norm-setting? Which of the BRICS regulations deal with issues of scientific cooperation between the BRICS members? What aspects of scientific cooperation do the BRICS regulations cover?

Attempts to find answers to these questions in existing studies of scientific cooperation across the BRICS have failed due to the fact that the studies mainly focused on issues other than the BRICS normative framework of scientific cooperation. For instance, Finardi (2015) explores the scientific collaboration between the BRICS countries through the analysis of data on co-authored scientific products.¹ As for the normative framework, Finardi fragmentarily analyzes only two, the BRICS Declarations – the Sanya Declaration (BRICS 2011) and the Cape Town Declaration (BRICS 2014). By using a method of political, economic, social, technological, environmental, and legal (PESTEL) analysis, Kahn (2015) determines the prospects for cooperation in science among the BRICS members with an emphasis on the role of South Africa.² This author claims the legal analysis as a part of the research method, but analyzes only the Cape Town Declaration (BRICS 2014)³ and a few bilateral agreements between the BRICS countries. Rensburg, Motala, and David (2015) investigate research collaboration in BRICS using four measurable categories, namely, research capacity, research outputs, ranking, and the number of international collaborations.⁴ That study does not address the issues of the normative framework of scientific cooperation. Abashidze, Solntsev, and Kiseleva (2016) study the legal status of BRICS in comparison with similar international forums and trends in such spheres of cooperation of BRICS members as outer space activities and Africa as a continent.⁵ Within their paper, the authors analyze only some of the BRICS Declarations in light of the outlined trends. The study by Sokolov, Shashnov, Kotsemir, and Grebenyuk (2017) presents a methodology for the selection of priorities for science and technology cooperation among the BRICS countries based on an analysis of international and

¹ Ugo Finardi, *Scientific Collaboration between BRICS Countries*, 102(2) *Scientometrics* 1139 (2015).

² Michael Kahn, *Prospects for Cooperation in Science, Technology, and Innovation Among the BRICS Members*, 10(2) *International Organizations Research Journal* 105 (2015).

³ Cape Town Declaration (Cape Town, South Africa, 10 February 2014) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴ Ihron Rensburg et al., *Opportunities and Challenges for Research Collaboration Among the BRICS Nations*, 45(5) *A Journal of Comparative and International Education* 814 (2015).

⁵ Aslan Abashidze et al., *Legal Status of BRICS and Some Trends of International Cooperation*, 36(9) *Indian Journal of Science and Technology* 1 (2016).

national strategic documents of the BRICS countries and bibliometric analysis of joint publications by researchers from the BRICS countries indexed in the Scopus database.⁶ Despite the considerable number of the studied BRICS regulations, that study does not contain a full-scale analytical review of the normative framework of scientific cooperation between the BRICS countries.

In light of the above, the purpose of this paper is to identify and analyze the up-to-date and complete normative framework of scientific cooperation across the BRICS. For this purpose the present paper is organized as follows. The section which follows contains a study of the distinctive features of the BRICS norm-setting based on its comparison with the norm-setting of traditional international intergovernmental organizations. A further section then provides an analytical review of the BRICS regulations that deal with issues of scientific cooperation between the BRICS members. The final section presents the main findings and conclusions of this paper.

1. Distinctive Features of the BRICS Norm-Setting

The intention of the BRICS members to develop mutual scientific cooperation has been demonstrated more than once in their discussions at BRICS meetings and has been reflected in official documents. Thus, the Joint Statement of the BRIC Countries' Leaders (BRIC 2009) declared (p. 11):

We reaffirm to advance cooperation among our countries in science and education with the aim, inter alia, to engage in fundamental research and development of advanced technologies.⁷

The BRICS official document the Delhi Declaration (BRICS 2012) contains the following provision (p. 40):

We are convinced that there is a storehouse of knowledge, know-how, capacities and best practices available in our countries that we can share and on which we can build meaningful cooperation for the benefit of our peoples.⁸

Claiming scientific cooperation between the BRICS members as a kind of strategic interaction raises the issue of its normative framework. It seems appropriate to start

⁶ Alexander Sokolov et al., *Identification of Priorities for S&T Cooperation of BRICS Countries*, 12(4) International Organisations Research Journal 32 (2017).

⁷ Joint Statement of the BRIC Countries' Leaders (Yekaterinburg, Russia, 16 June 2009) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁸ BRICS Leaders Declaration (New Delhi, India, 29 March 2012) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

the study of this issue with the identification of the nature and features of the BRICS norm-setting in general.

An international formation of five countries, BRICS – Brazil, Russia, India, China, and South Africa – was established in 2011. As an actor in international relations, the BRICS cannot be seen as an intergovernmental organization of the ‘traditional’ type because of the absence of a constituent treaty, headquarters, secretariat, and budget. In legal doctrine, international formations that do not have all the features of an international intergovernmental organization are usually called international quasi-organizations or soft organizations.⁹

The status of the BRICS as a soft organization raises the question of whether the BRICS norm-setting is similar to the norm-setting of traditional intergovernmental international organizations or has some distinctive features. It seems possible to answer this question by comparing the norm-setting of traditional international intergovernmental organizations and the BRICS according to such criteria as legal personality, norm-setting forms, norm-setting competence, norm-setting process, and norm-setting outcomes.

Developing and deepening interstate relations demand a high level of unity of the states’ obligatory behavior which could be achieved by norms of international law. The contemporary international law-making process is not limited to the conclusion of international treaties by states and recognition of the practice of the state as international custom, and is characterized by strengthening the norm-setting role of international intergovernmental organizations.

Norm-setting is one of the functions of any traditional international intergovernmental organization.¹⁰ The study of this function should start with the legal personality of international organizations, which is the basis for their norm-setting. It is a fact that general rules which determine the legal personality of international organizations do not exist in international law. Some views regarding the essence of the legal personality of international organizations are expressed in the advisory opinions of international judicial institutions. For example, according to the legal opinion of the Economic Court of the Commonwealth of Independent States (CIS) dated 23 June 1998, the legal personality of CIS is its attribute and does not need additional recognition from the states, including member states, or from other international organizations. CIS acts as the subject of international law because it really exists and works in international relations. As the subject of international law, CIS has certain rights including in the sphere of norm-setting, in particular, CIS has

⁹ Jan Klabbers, *An Introduction to International Institutional Law* (Cambridge: Cambridge University Press, 2002).

¹⁰ It is important to note that norm-setting of intergovernmental organizations has repeatedly been a subject of scientific research. See for more details Hanna Bokor-Szego, *The Role of the United Nations in the International Legislations* (Budapest: North-Holland Publishing Co., 1978); Jesper W. Schneider, *Treaty-Making Power of International Organizations* (Geneva: Librairie E. Droz; Paris: Librairie Minard, 1959).

the right to sign international treaties with states and international organizations; bodies of the CIS make decisions on its own behalf.¹¹

In legal doctrine, there are multiple voices and stances on the legal personality of international organizations. According to I. Brownlie, the legal personality of international organizations can be established by interpreting constituent documents and by addressing the doctrine of "implied competences."¹² In the view of I.A. Shearer, international organizations can exercise the legal capacity needed for the implementation of their functions.¹³ The international lawyers L. Henkin, R. Crawford, O. Schachter, and H. Smit consider that the practice of international organizations can play a large role in their ability to conclude international treaties.¹⁴ There is another view that by creating the international organizations, the states allocate them the legal capacity, recognizing their ability to have the rights and duties to participate in the creation and use of rules of international law and to control respect for rules of international law by member states. According to this recognition, the states create a new subject of international law which along with them carries out law-making and law enforcement functions in the sphere of international cooperation. The ability of international organizations to make legally valid actions on their own behalf implies that they have isolated legal will. Such will differs from each individual will of the member states. Individual acts of members of the organization cannot be merged or put together. They have to be coordinated, and this coordinated will of the international organization has interstate character.¹⁵

In light of the above, it can be concluded that the BRICS as a kind of international organization also has a legal personality. Nonetheless, the BRICS legal personality differs from the legal personality of traditional intergovernmental organizations. As an independent actor in international relations, the BRICS may fulfill the norm-setting functions in the sphere of international cooperation between its members. However, the absence of the constituent treaty which implies the law-making and law enforcement functions of the BRICS means the absence of the ability to make legally valid actions. This, in turn, means that the BRICS cannot make the rules of law, but can make the rules of soft law.¹⁶

¹¹ Консультативное заключение Экономического суда СНГ № 01-1/2-98 от 23 июня 1998 г. [Advisory opinion of the CIS Economic Court № 01-1/2-98 of 23 June 1998 г.] in Решения Экономического суда СНГ (1994–2000 гг.) [Decisions of the CIS Economic Court (1994–2000)] 242 (V.G. Zorin (ed.), Minsk: CIS Economic Court, 2000).

¹² Ian Brownlie, *Principles of Public International Law* (Oxford: Clarendon Press, 1998).

¹³ Ivan A. Shearer, *Starke's International Law* (London; Boston: Butterworths, 1994).

¹⁴ Louis Henkin et al., *International Law: Cases and Materials* (New York: West Group, 1987).

¹⁵ Международное право [International Law] (J. Kolosov & E. Krivchikova (eds.), Moscow: International relations, 2001).

¹⁶ In the doctrine, soft law is defined as the rules of conduct that are not legally binding but can generate practical impact. See Francis Snyder, *Soft Law and the Institutional Practice in the European Community*

The norm-setting of the traditional international intergovernmental organizations can be in the form of participation in the law-making of the states or in the form of direct involvement in creating norms of international law. While participating in state law-making, international organizations do not create norms of international law, they only contribute to that process. The most typical cases of support functions in state law-making are development and adoption of draft conventions, technical standards, regulations, and the convening of conferences for signing treaties. While performing support functions in state law-making, international organizations often play the role of the depositary of international treaties which are responsible for the account and storage of international treaties. Thus, under the Charter of the United Nations (Art. 102):

Every treaty and every international agreement entered into by any Member of the United Nations after the present Charter comes into force shall as soon as possible be registered with the Secretariat and published by it.¹⁷

Direct norm-setting of the traditional international organizations can be carried out in the following ways:

1. conclusion of international treaties;
2. decision-making, regarding the behavior of member countries in the field of organization activity;
3. decision-making, regarding internal organizational issues or the creation of the internal law.

Concerning the BRICS, its participation in the law-making of the member states is impossible due to the absence of law-making authority. Regarding direct norm-setting across the BRICS, it can be carried out in forms of decision-making in the BRICS fields of cooperation or internal organizational issues.

Whatever the norm-setting form, every international intergovernmental organization should create norms according to its competence within delegated authorities which are derived from international treaties or constituent instruments. Thus, the Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations provides (Art. 6):

in *The Construction of Europe: Essays in Honour of Emile Noël* 197 (S. Martin (ed.), Dordrecht: Springer, 1994); Gregory Shaffer & Mark A. Pollack, *Hard and Soft Law: What Have We Learned?* (2012) (Jan. 28, 2020), available at <http://ssrn.com/abstract=2044800>; Dinah L. Shelton, *Soft Law* (2007) (Jan. 28, 2020), available at <http://ssrn.com/abstract=1003387>; Anna Peters & Isabella Pagotto, *Soft Law as a New Mode of Governance: A Legal Perspective* (2006) (Jan. 28, 2020), available at <http://ssrn.com/abstract=1668531>.

¹⁷ Charter of the United Nations (1945) (Jan. 28, 2020), available at <http://www.unitednationscharter.com>.

The capacity of an international organization to conclude treaties is governed by the rules of that organization.¹⁸

Under Article IV (p. 4) of the Constitution of UNESCO,¹⁹ Article 19 of the Constitution of the International Labour Organization,²⁰ and part 2 (p. b) of the Convention on the International Maritime Organization (IMO),²¹ these organizations have the right to approve drafts of international conventions, agreements, and regulations for ensuring the most effective international cooperation in the areas corresponding to their competence.

The norm-setting competence of an international organization requires the determination and differentiation of the norm-setting competence of its bodies. The charters of most intergovernmental organizations of the U.N. system establish the right of its highest body for the conclusion of international treaties: e.g. Articles X, XI of the Constitution of UNESCO, Articles 69, 70 of the Constitution of the World Health Organization (WHO),²² and Article 6 the Constitution of the International Telecommunication Union (ITU).²³ In some charters, this function is given to the body of limited representation – executive structure. In practice, the supreme or executive body often transfers its competence to the highest official of the organization – the Secretary-General or the Director-General. The charter of the international institution also may not include the provisions about the treaty competence of the organization. Thus, there are no such provisions in the Universal Postal Union (UPU) Constitution.

Equally important is the issue of the distribution of decision-making competence that is binding upon the member states. The charters of intergovernmental organizations provide that similar decisions can be made by two bodies: the highest and the executive.

The constituent instruments of the World Meteorological Organization (WMO), the World Health Organization (WHO), UNESCO, and the World Intellectual Property Organization (WIPO) provide that the question of development of the obligatory

¹⁸ Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations (1986) (Jan. 28, 2020), available at http://www.legal.un.org/InternationalLaw/Commission/conventions/1_2_1986.pdf.

¹⁹ Constitution of UNESCO (1945) (Jan. 28, 2020), available at <http://www.portal.unesco.org>.

²⁰ Constitution of the International Labour Organization (1919) (Jan. 28, 2020), available at http://www.ilo.org/rome/ilo-cosa...WCMS_633812/lang...index.htm.

²¹ Convention on the International Maritime Organization (1948) (Jan. 28, 2020), available at <http://www.imo.org/...Conventions...on...Maritime...Organization.aspx>.

²² Constitution of the World Health Organization (1946) (Jan. 28, 2020), available at http://www.who.int/governance/eb/who_constitution_en.pdf.

²³ Constitution of the International Telecommunication Union (1992) (Jan. 28, 2020), available at <http://www.itu.int/council/pd/constitution.html>.

decision can be only within the competence of the supreme body of the establishment. This reflects the principle of respect for the sovereign equality of states that is the basis for the legitimate creation and effective functioning of every intergovernmental organization. At the same time, some constituent documents provide that also bodies of a limited membership – executive boards – have rights to develop solutions which are obligatory for member states. Thus, Article 37 of the Chicago Convention on International Civil Aviation states that the International Civil Aviation Organization (ICAO)²⁴ shall adopt and amend from time to time, as may be necessary, international standards and recommended practices and procedures in civil aviation. According to Article 54 of the ICAO, this falls under the purview of the Council.

In some cases, constituent instruments provide that the competence of the organization is given to both the highest body and the executive body. For example, under Article 7 of the Convention of the World Meteorological Organization,²⁵ the right to approve the technical rules relating to meteorological procedures and practices is reserved to the Congress of the WMO as the highest body. Between the sessions of the Congress, functions on the elaboration of international rules are conferred on the executive body.

With regard to the BRICS, the absence of the constituent instruments makes it difficult to determine the norm-setting competence of its organization. Based on the general provisions of international law, it seems that the BRICS have the authority to make non-legal norms relating to the member states.

The norm-setting process of the traditional international intergovernmental organizations is a subject of formal regulation. In particular, the general rules of development and adoption of international treaties are established by the 1969 Vienna Convention on the Law of Treaties and the 1986 Vienna Convention on the Law of Treaties between states and international organizations or between international organizations. Some international organizations have internal procedural documents. For example, UNESCO has, “The rules of procedure concerning recommendations to member states and the international conventions covered under conditions of Paragraph 4 of Article IV of the Charter.” The International Labour Organization has “The rules of international labor convention’ which establish the procedure of conventions” development. Within the BRICS, the norm-setting process has no formal regulation.

The outcomes of the norm-setting of the traditional international intergovernmental organizations include such types of regulations as international treaties, resolutions, rules, directives, and recommendations. As for the legally binding force of these regulations, it should be determined based on the constituent instruments

²⁴ Chicago Convention on International Civil Aviation (1944) (Jan. 28, 2020), available at <http://www.icao.int/publications/Pages/doc7300.aspx>.

²⁵ Convention of the World Meteorological Organization (1947) (Jan. 28, 2020), available at <http://www.public.wmo.int>.

of the individual international organization. Actually, this legally binding force can vary from optional decisions of a moral and political character, without any obligatory value to legally obligatory decisions. Most of the international intergovernmental organizations are authorized to adopt regulations which have international legal importance. With the exception of U.N. acts, these regulations are generally local, because they apply only to member states or to their bodies and officials (personnel). In some intergovernmental organizations, there are judicial or arbitration bodies given authority to interpret the legal acts issued by these organizations and also to resolve disputes arising between their members by using the internal law of the organizations. Examples of such bodies include the International Court of Justice and the Court of Justice of the EU.

The BRICS format as a global forum means that all its regulations are the result of the BRICS meetings. These meetings are held between officials of various ranks, from heads of state to heads of ministries and departments. Depending on the rank of the rule-makers, the set of the existing BRICS regulations can be divided into three levels.

The first level includes the Joint Statements and the Summits Declarations, which are the normative results of the BRICS Heads of State meetings. Up to the present time, within the BRICS, the following Joint Statements and Summits Declarations have been adopted: Joint Statement of the BRIC Countries' Leaders (BRIC 2009),²⁶ 2nd BRIC Summit of Heads of State and Government: Joint Statement (BRIC 2010),²⁷ Statement by BRICS Leaders on the Establishment of the BRICS-Led Development Bank (BRICS 2013),²⁸ Media Statement: Informal BRICS Leaders' Meeting on the Margins of the G20 Summit (BRICS 2018),²⁹ Joint Statement on BRICS Leaders' Informal Meeting on the Margins of G20 Summit (BRICS 2019),³⁰ Sanya Declaration (BRICS 2011), Delhi Declaration (BRICS 2012), Durban Declaration (BRICS 2013),³¹ Fortaleza Declaration (BRICS 2014),³² Ufa Declaration (BRICS 2015),³³ Goa

²⁶ Joint Statement of the BRIC Countries' Leaders, *supra* note 7.

²⁷ 2nd BRIC Summit of Heads of State and Government: Joint Statement (Brasília, Brazil, 15 April 2010) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

²⁸ Statement by BRICS Leaders on the Establishment of the BRICS-Led Development Bank (Durban, South Africa, 27 March 2013) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

²⁹ Media Statement: Informal BRICS Leaders' Meeting on the Margins of the G20 Summit (Buenos Aires, Argentina, 30 November 2018) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁰ Joint Statement on BRICS Leaders' Informal Meeting on the Margins of G20 Summit (Osaka, Japan, 28 June 2019) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³¹ Durban Declaration (Durban, South Africa, 27 March 2013) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³² Fortaleza Declaration (Fortaleza, Brazil, 15 July 2014) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³³ Ufa Declaration (Ufa, Russian Federation, 9 July 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

Declaration (BRICS 2016),³⁴ Xiamen Declaration (BRICS 2017),³⁵ Johannesburg Declaration (BRICS 2018),³⁶ and Brasilia Declaration (BRICS 2019).³⁷

The second level of the BRICS regulations includes the documents which are the normative results of the BRICS heads of government or ministers meetings. The varieties of these documents are the Joint Statements (Goa Statement on Environment: Second Meeting of BRICS Environment Ministers (BRICS 2016),³⁸ Third Meeting of BRICS Environment Ministers Tianjin Statement on Environment (BRICS 2017),³⁹ Joint Statement for the 5th BRICS Ministers of Environment Meeting: Contribution of Urban Environmental Management to Improving the Quality of Life in Cities (BRICS 2019),⁴⁰ etc.), the Ministers Declarations (Ministerial Declaration of the BRICS Trade Ministers (BRICS 2011),⁴¹ Declaration of the BRICS Industry Ministers (BRICS 2015),⁴² Joint Declaration of BRICS Ministers of Agriculture (BRICS 2016),⁴³ etc.), the Memorandums of Understanding (Memorandum of Mutual Understanding in Energy Saving and Energy Efficiency among the Ministries and Governmental Agencies of BRICS, Responsible for Energy and Energy Efficiency (BRICS 2015),⁴⁴ Memorandum of Understanding on the Creation of the Joint BRICS Website (BRICS 2015),⁴⁵ etc.),

³⁴ Goa Declaration (Goa, India, 16 October 2016) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁵ Xiamen Declaration (Xiamen, China, 4 September 2017) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁶ Johannesburg Declaration (Johannesburg, South Africa, 26 July 2018) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁷ Brasilia Declaration (Brasilia, Brazil, 14 November 2019) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁸ Goa Statement on Environment: Second Meeting of BRICS Environment Ministers (Goa, India, 16 September 2016) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

³⁹ Third Meeting of BRICS Environment Ministers Tianjin Statement on Environment (Tianjin, China, 23 June 2017) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁰ Joint Statement for the 5th BRICS Ministers of Environment Meeting: Contribution of Urban Environmental Management to Improving the Quality of Life in Cities (Sao Paulo, Brazil, 15 August 2019) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴¹ Ministerial Declaration of the BRICS Trade Ministers (Geneva, Switzerland, 14 December 2011) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴² Declaration of the BRICS Industry Ministers (Moscow, Russia, 20 October 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴³ Joint Declaration of the BRICS Ministers of Agriculture (New Delhi, India, 23 September 2016) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁴ Memorandum of Mutual Understanding in Energy Saving and Energy Efficiency among the Ministries and Governmental Agencies of BRICS, Responsible for Energy and Energy Efficiency (Moscow, Russia, 20 November 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁵ Memorandum of Understanding on the Creation of the Joint BRICS Website (Ufa, Russia, 9 July 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

and the Action Plans (Action Plan 2012–2016 for Agricultural Cooperation of BRICS Countries (BRICS 2011),⁴⁶ Action Plan for Deepening Industrial Cooperation among BRICS Countries (BRICS 2017), etc.).⁴⁷

The third level of the BRICS regulations includes the regulations which are the normative results of the BRICS authorities meetings. For instance, up to the present time, the Communiqué of BRICS Heads of Revenue Meeting⁴⁸ and the Joint Statement of the Heads of BRICS Competition Authorities have been signed.⁴⁹

2. Normative Framework of Scientific Cooperation Across the BRICS

The analysis of the BRICS regulations suggests that scientific cooperation issues have received extended normative coverage. For example, some aspects of scientific cooperation are regulated in the highest level documents of the BRICS normative framework – the Joint Statements of the BRICS Countries’ Leaders and the Summits Declarations. Thus, some of the Joint Statements of the BRICS Countries’ Leaders contain intentions regarding mutual scientific cooperation (Table 1).

Table 1: Intentions of the BRICS countries regarding mutual scientific cooperation

Joint Statement	Provisions relating to scientific cooperation
Joint Statement of the BRIC Countries’ Leaders 2009	to advance cooperation among our countries in science and education with the aim, <i>inter alia</i> , to engage in fundamental research and development of advanced technologies
2 nd BRIC Summit of Heads of State and Government: Joint Statement 2010	to advance cooperation among BRIC countries in science, culture, and sports
Joint Statement on BRICS Leaders’ Informal Meeting on the Margins of G20 Summit 2019	to continue BRICS scientific, technical, innovation, and entrepreneurship cooperation, including the BRICS Partnership on New Industrial Revolution (PartNIR), iBRICS Network, the BRICS Institute of Future Networks, and Young Scientists Forum

⁴⁶ Action Plan 2012–2016 for Agricultural Cooperation of BRICS Countries (Chengdu, China, 30 October 2011) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁷ Action Plan for Deepening Industrial Cooperation among BRICS Countries (Hangzhou, China, 29 July 2017) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁸ Communiqué of BRICS Heads of Revenue Meeting (Moscow, Russia, 19 November 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

⁴⁹ Joint Statement of the Heads of BRICS Competition Authorities (Durban, South Africa, 13 November 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

As for the BRICS Summits Declarations, all of them highlight issues of scientific cooperation in two different directions. First, these declarations reflect the strategic intentions of the BRICS members regarding the development of mutual scientific cooperation (Table 2).

Table 2: Strategic intentions of the BRICS countries regarding mutual scientific cooperation

Declaration	Intentions
Sanya Declaration 2011	to explore mutual scientific cooperation
Delhi Declaration 2012	to build meaningful cooperation for sharing knowledge, know-how, capacities, and best practices available in the BRICS countries
Durban Declaration 2013	to promote scientific cooperation between the small and medium-sized enterprises of the BRICS countries
Fortaleza Declaration 2014	to enhance scientific cooperation; to strengthen intra-BRICS dialogue with a view to promote international exchange and cooperation and to foster innovation and research
Ufa Declaration 2015	to strengthen cooperation in science, technology, and innovation with the purposes of: promoting inclusive and sustainable social, and economic development; bridging the scientific and technological gap between the BRICS countries and developed countries; providing a new quality of growth based on economic complementarity; finding solutions to the challenges that the world economy faces today; expanding cooperation in joint research in the field of high-technology products
Goa Declaration 2016	to implement the BRICS Research and Innovation Initiative
Xiamen Declaration 2017	to promote cooperation on science to forge synergy in tapping new growth momentum for BRICS countries' economies
Johannesburg Declaration 2018	to provide the dynamic development of BRICS cooperation in science in view of its importance for sustainable development
Brasilia Declaration 2019	to streamline and intensify the BRICS scientific joint activities

Second, all the BRICS Summits Declarations determine actions aimed at implementing scientific cooperation strategic intentions (Table 3).

Table 3: Actions to implement the BRICS scientific cooperation strategic intentions

Declaration	Actions
Sanya Declaration 2011	to hold the BRICS Think-tank Symposia; to establish a network of research centers of all BRICS countries; to hold a meeting of senior officials for discussing ways of promoting scientific cooperation in the BRICS format
Delhi Declaration 2012	to hold a meeting of the BRICS senior officials on science and technology
Durban Declaration 2013	to hold a meeting of the BRICS Ministers of Science and Technology and BRICS senior officials on science and technology
Fortaleza Declaration 2014	to sign by the BRICS Ministers of Science and Technology the Memorandum of Understanding on Science, Technology, and Innovation, which provides a strategic framework for cooperation in this field
Ufa Declaration 2015	to cooperate within large research infrastructures, including possible consideration of mega-science projects, to achieve scientific and technological breakthroughs in the key areas of cooperation; to coordinate the existing large-scale national programs of the BRICS countries; to develop and implement a BRICS Framework Program for funding multilateral joint research projects for research, technology commercialization and innovation involving science and technology ministries and centers, development institutes and national regional foundations that sponsor research projects; to establish a joint Research and Innovation Platform
Goa Declaration 2016	to establish the BRICS Working Group on Research Infrastructure, and Mega-Science to reinforce the BRICS Global Research Advanced Infrastructure Network
Xiamen Declaration 2017	to select the BRICS research and development projects under the BRICS STI Framework Program; to enhance cooperation on innovation and entrepreneurship, including by promoting technology transfer and application, cooperation among science and technology parks and enterprises as well as mobility of researchers, entrepreneurs, professionals, and students
Johannesburg Declaration 2018	to implement coordinated BRICS scientific projects aimed at promoting BRICS science, technology, and innovation potential as a contribution to combined efforts in addressing the challenges of the Fourth Industrial Revolution

Brasilia Declaration 2019	to implement scientific joint activities through the BRICS Scientific Technology Innovation Steering Committee
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Scientific cooperation issues are also reflected in the BRICS's lower-level regulations. It may be noted that all the declarations resulting from the BRICS Science, Technology, and Innovation Ministers meetings address issues of mutual scientific cooperation.⁵⁰

The Ministers Declarations, similar to the BRICS Summits Declarations, express the intentions of the BRICS countries in the field of scientific cooperation (Table 4).

Table 4: Intentions of the BRICS countries in the field of scientific cooperation

Declaration	Intentions
Cape Town Declaration 2014	to intensify cooperation in the sphere of science; to strengthen and improve the governance mechanisms of scientific cooperation
Brasilia Declaration 2015	to elaborate and establish appropriate mechanisms of scientific cooperation
Moscow Declaration 2015	to build further scientific collaboration
Jaipur Declaration 2016	to intensify, diversify, and institutionalize scientific cooperation
Hangzhou Declaration 2017	to strengthen pragmatic cooperation in science among the BRICS countries, create new cooperation opportunities, expand partnerships, and jointly tackle global challenges
Durban Declaration 2018	to contribute positively to cooperation
Campinas Declaration 2019	to intensify scientific joint activities among BRICS countries and improve the partnerships in progress, to deepen cooperation on innovation

In addition, the Ministers Declarations contain a list of ready solutions and planned actions concerning scientific cooperation between the BRICS countries (Table 5).

⁵⁰ Up to the present time, the following declarations have been adopted: Cape Town Declaration (Cape Town, South Africa, 10 February 2014); Brasilia Declaration (Brasilia, Brazil, 18 March 2015); Moscow Declaration (Moscow, Russia, 28 October 2015); Jaipur Declaration (Jaipur, India, 8 October 2016); Hangzhou Declaration (Hangzhou, China, 18 July 2017); Durban Declaration (Durban, South Africa, 3 July 2018); Campinas Declaration (Campinas, Brazil, 20 September 2019) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

Table 5: Ready solutions and planned actions concerning scientific cooperation between the BRICS countries

Declaration	Ready solutions	Planned actions
Cape Town Declaration 2014	<p>– determined the main areas of scientific cooperation; exchange of information on policies and programs and promotion of innovation and technology transfer; food security and sustainable agriculture; climate change and natural disaster preparedness and mitigation; new and renewable energy, energy efficiency; nanotechnology; high-performance computing; basic research; space research and exploration, aeronautics, astronomy and earth observation; medicine and biotechnology; biomedicine and life sciences (biomedical engineering, bioinformatics, biomaterials); water resources and pollution treatment; high tech zones/science parks and incubators; technology transfer; science popularization; information and communication technology; clean coal technologies; natural gas and non-conventional gases; ocean and polar sciences; and geospatial technologies and its applications;</p> <p>– established five priority thematic areas and leadership: Brazil – climate change and natural disaster mitigation; Russia – water resources and pollution treatment; India – geospatial technology and its applications; China – new and renewable energy and energy efficiency; South Africa – astronomy</p>	<p>to sign a Memorandum of Understanding on Cooperation in Science, Technology, and Innovation as a strategic framework for cooperation in priority areas among the BRICS member countries;</p> <p>to establish a BRICS STI training program;</p> <p>to organize meetings of STI ministers, senior officials;</p> <p>to create a network of national coordinators</p>

Brasilia Declaration 2015	<p>– determined the necessity of sharing and exchanging information on science, leveraging contacts and programs aimed at enhancing collaborative innovation projects, joint long-term problem-focused cooperation programs as a central modality of scientific cooperation</p>	<p>to create the BRICS Young Scientists Forum as a platform for sharing scientific research results and experiences;</p> <p>to develop and negotiate a Work Plan of scientific cooperation 2015–2018;</p> <p>to cooperate in the framework of major research infrastructures;</p> <p>to coordinate the existing large-scale national programs of BRICS countries;</p> <p>to set up a Framework Program for funding the multilateral joint project for research, technology commercialization and innovation;</p> <p>to establish a joint Research and Innovation Network working Platform</p>
Moscow Declaration 2015	<p>– determined the necessity of development and implementation of the BRICS Framework Program on multilateral research</p>	<p>to use the possibilities of the New Development Bank as an additional funding instrument to foster further collaboration;</p> <p>to establish the BRICS Network University aimed at developing master's and PhD programs along with joint research projects in priority areas</p>
Jaipur Declaration 2016	<p>– recognized the need in the BRICS science, technology, and innovation Framework Program and the Implementation Plan of the BRICS countries' joint initiative on multilateral interdisciplinary research & innovation</p>	<p>to launch the next BRICS Framework Program for research and innovation</p>

Hangzhou Declaration 2017	<ul style="list-style-type: none"> – approved the driving of scientific cooperation through existing financing platforms of BRICS countries; – recognized the progress of BRICS scientific cooperation since 2015 	<ul style="list-style-type: none"> to draft the long-terms scientific cooperation plans; to adopt the BRICS Action Plan for Innovation Cooperation
Durban Declaration 2018	<ul style="list-style-type: none"> – recognized the important role of the Small and Medium-sized Enterprises, State-Owned Companies in the scientific cooperation 	<ul style="list-style-type: none"> to organize meetings of BRICS Ministers of Science and Technology and meetings of BRICS Senior Officials on Science and Technology; to explore the scientific cooperation in the new areas (energy, tourism)
Campinas Declaration 2019	<ul style="list-style-type: none"> – recognized the importance of establishing a network to encompass some of the main science parks, technology incubators, and accelerators of the BRICS countries 	<ul style="list-style-type: none"> to make the platform a single digital entry point into research infrastructure's basic info and links, partnership, and access calls, contacts, events, and news; to develop joint concrete actions in research, technological development, innovation, and entrepreneurship, in order to produce more knowledge, to transform this knowledge into products and wealth and to improve the quality of life of our populations

Another important BRICS regulation is the Memorandum of Understanding on Cooperation in Science, Technology, and Innovation between the Governments of the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People's Republic of China and the Republic of South Africa, signed at the II Meeting of Ministers of Science, Technology, and Innovation of the Countries of BRICS⁵¹ in March 2015.

The Memorandum determines number of strategic aspects of scientific cooperation development across the BRICS (Table 6).

Table 6: Strategic aspects of scientific cooperation development across the BRICS

Strategic aspects	Content
The main goal of scientific cooperation	to establish a strategic framework for cooperation in science, technology, and innovation among the BRICS member countries; to address common global and regional socio-economic challenges in the BRICS member countries utilizing shared experiences and complementarities in science, technology, and innovation; to co-generate new knowledge and innovative products, services and processes in the BRICS member countries utilizing appropriate funding and investment instruments; to promote, where appropriate, joint BRICS science, technology, and innovation partnerships with other strategic actors in the developing world
Principles of scientific cooperation	voluntary participation; equality; mutual benefit; reciprocity and subject to the availability of earmarked resources for collaboration by each country; voluntary participation; equality; mutual benefit; reciprocity and subject to the availability of resources for collaboration by each country

⁵¹ Memorandum of understanding on cooperation in science, technology, and innovation between the Governments of the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People's Republic of China and the Republic of South Africa (Brasilia, Brazil, 17 March 2015) (Jan. 28, 2020), available at <http://brics.utoronto.ca/docs/index.html>.

The main areas of scientific cooperation	<p>exchange of information on policies and programs and promotion of innovation and technology transfer;</p> <p>food security and sustainable agriculture;</p> <p>natural disasters;</p> <p>new and renewable energy, energy efficiency;</p> <p>nanotechnology;</p> <p>high-performance computing;</p> <p>basic research;</p> <p>space research and exploration, aeronautics, astronomy and earth observation;</p> <p>medicine and biotechnology;</p> <p>biomedicine and life sciences (biomedical engineering, bioinformatics, biomaterials);</p> <p>water resources and pollution treatment;</p> <p>high tech zones/science parks and incubators;</p> <p>technology transfer;</p> <p>science popularization;</p> <p>information and communication technology;</p> <p>clean coal technologies;</p> <p>natural gas and non-conventional gases;</p> <p>ocean and polar sciences;</p> <p>geospatial technologies and its applications</p>
Modalities of scientific cooperation	<p>short-term exchange of scientists, researchers, technical experts, and scholars;</p> <p>dedicated training programs to support human capital development in science, technology, and innovation;</p> <p>organization of science, technology, and innovation workshops, seminars and conferences in areas of mutual interest;</p> <p>exchange of science, technology, and innovation information;</p> <p>formulation and implementation of collaborative research and development programs and projects;</p> <p>establishment of joint funding mechanisms to support BRICS research programs and large-scale research infrastructure projects;</p> <p>facilitated access to science and technology infrastructure among BRICS member countries;</p> <p>announcement of simultaneous calls for proposals in BRICS member countries;</p> <p>cooperation of national science and engineering academies and research agencies</p>

The Memorandum of Understanding on Cooperation in Science, Technology, and Innovation served as the basis for preparing such working papers as the BRICS

Science, Technology, and Innovation Work Plan 2015–2018 and the BRICS Science, Technology, and Innovation Work Plan 2019–2022.

Following the fifth meeting of the BRICS Ministers of Science and Technology in July 2017, the BRICS Action Plan for Innovation Cooperation (2017–2020) was adopted. According to this plan, innovation is one of the key driving forces of global sustainable development and plays a fundamental role in promoting economic growth. In accordance with the provisions of the Action Plan, the BRICS countries should enhance cooperation in innovation based on existing mechanisms and joint research programs, encouraging cooperation among science parks and strengthening the training of technology retransfer.

In addition, the Action Plan recommends to the BRICS countries to promote partnerships on youth innovation and entrepreneurship for pragmatic cooperation, to establish inter-BRICS investment instruments, to exchange young scientists and entrepreneurs, and it emphasizes the role of women in science, technology, and innovation.

Other BRICS working papers are the BRICS Scientific Technology Innovation Framework Programs, which were adopted in 2016, 2017, and 2019. They aim to support excellent research on priority areas that can best be addressed by a multinational approach and enhance collaboration within BRICS.

Conclusion

The aim of this paper was to identify the up-to-date and complete normative framework of scientific cooperation across the BRICS. Strategically, the achievement of the stated aim, taking into account that the normative framework is a result of the norm-setting, assumed the identification of the features of the BRICS norm-setting both by comparison with the norm-setting of traditional international intergovernmental organizations and by analysis of the BRICS regulations dealing with issues of scientific cooperation. Tactically, the stated aim could be achieved by answering the following research questions: How does the BRICS status determine the distinctive features of its norm-setting? Which of the BRICS regulations deal with issues of scientific cooperation between the BRICS members? What aspects of scientific cooperation do the BRICS regulations cover? In light of the outlined strategy and tactics, the findings of the paper are the following.

By virtue of its existence, the BRICS as a kind of international organization has a legal personality that is different from the legal personality of any traditional intergovernmental organization. As an independent actor in international relations, the BRICS can be engaged in norm-setting. However, the absence of a constituent treaty which implies the law-making and law enforcement functions means the absence of the BRICS's ability to make legally valid actions and allows the creation of soft law rather than law.

The absence of law-making authority is a barrier to the BRICS participation in the law-making of its members. Because of this, norm-setting across the BRICS can be carried out only in the fields of the BRICS members' cooperation or internal organizational issues. The lack of constituent instruments makes it difficult to determine the norm-setting competence of the BRICS and their norm-setting proceedings. On the basis of the general provisions of international law, it seems that the BRICS are empowered to make non-legal norms relating to member states. As for the BRICS norm-setting process, it has no formal framework.

The BRICS format as a global forum means that all its regulations are the result of the BRICS meetings which are held between representatives of the member states, from heads of state to officials of various ranks. The normative results of these meetings are the Joint Statements, the Summits Declarations, the Ministers Declarations, the Action Plans, etc.

The analysis of the BRICS regulations shows that many of them relate to issues of scientific cooperation. Thus, the Joint Statements and the Summits Declarations as the normative results of the BRICS heads of state meetings reflect such aspects as the strategic intentions of the BRICS members regarding the development of mutual scientific cooperation, and the necessary actions for implementing these intentions. All the declarations resulting from the BRICS Science, Technology, and Innovation Ministers meetings address issues of mutual scientific cooperation. These regulations cover the intentions of the BRICS countries in the field of scientific cooperation, ready solutions, and planned actions in this regard. Scientific cooperation issues are also covered in a number of working papers, such as the Memorandum of Understanding on Cooperation in Science, Technology, and Innovation, the BRICS Science, Technology, and Innovation Work Plans, and the BRICS Scientific Technology Innovation Framework Programs.

Summing up the findings of the study, it can be concluded that the normative framework of scientific cooperation across the BRICS is a set of non-legally binding norms contained in the regulations adopted at the various meetings of national officials within the BRICS. In the future, it will be important to explore the results of the application of the BRICS regulations in mutual scientific cooperation between the BRICS members.

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