
THE QUANTIFICATION OF THE POWER POTENTIAL OF THE BRICS COUNTRIES IN THE GLOBAL CONTEXT

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Abstract:

The aim of this article is to provide the analysis of the current position of the BRICS countries in the global power hierarchy in order to extend theoretical considerations about their real power. The article is divided into two main parts - the first part is devoted to theoretical and methodological background of the research problems; the second part presents detailed analysis of the position of the BRICS countries in the global power hierarchy on the basis of selected research approaches. Though various approaches perceive the particular arrangement of states in the power hierarchy differently and they differ in their methods of quantification of power potential of countries and in projections of the future international order, the vast majority of them expect gradual transition to multipolarity, erosion of the U.S. dominance, emergence of new players among the most powerful countries and growing power potential of the BRICS (or BICS) countries.

Key words: *global power hierarchy, BRICS countries, quantification, power potential*

1. Introduction

After the end of the Cold War, the Soviet implosion and the collapse of bipolarity, the international system became unipolar and the world's geopolitical center shifted to the United States of America. But since the power in international relations is always relative and the balance of power may reflect any distribution of power (not necessarily equal), it must be remembered that the balance can be established only for "a short time" period - "no international political situation in history was ever anything other than a temporary arrangement of the balance of power" (Krejčí 2005, p. 103). Applied to the present: "hegemonistic arrangement of the world political system has always a tendency to integrate the periphery. The result of U.S. hegemony is today the call of European Union, Russia, China, India, Brazil and some Muslim states for multipolarity. But in the beginning of the 21st century, this requirement is not supported by sufficient power potential and may never be heard. Nevertheless, questioning the

hegemony of the U.S. by another country or alliance remains a traditional way of the structure alteration." (Krejčí 2010, p. 653)

Today, it can be assumed that the United States will retain its dominant position in the world economy and global politics for several decades. But on the other hand, we can't ignore the impressive economic development of so-called BRICS countries (Brazil, Russia, India, China and South Africa) - countries that are today among the fastest growing economies in the world; countries that have undergone remarkable transformations, that have enormous economic power, important energy and natural resources potential and huge growth potential for the future. Furthermore, these countries are interested in strengthening their global position as key players in multipolar world order and all of them present visions of further internal transformation to functioning economies with significant impact on world events. The primary objective of this article is therefore the extension of theoretical considerations about the real power of the BRICS countries and the analysis of the current position of the BRICS countries in the global power hierarchy based on selected research approaches, models and indicators.

2. Theoretical and methodological framework

Most generally, the power arises from the asymmetric position of subjects in their mutual relations and it presents itself with the ability of given subject to carry out own will and to achieve stated goals through exercising its influence on other subjects. According to former Secretary of State Condoleezza Rice power: *"is nothing unless you can turn into influence."* (Blanton and Kegley 2008, p. 277). Similarly, according to Correlates of War project, the power can be defined as *"the ability of a nation to exercise and resist influence."* (Correlates of War - National Material Capabilities Data Documentation: Version 4.0, p. 38). Then, the power of a state in international relations presents the ability to affect other subjects of these relations to promote own interests – thus, the state can exercise its power over another state and thereby influence and change its attitudes and action. But this does not deny the principle of sovereign equality of states. *"Each state [still] is a power and all states are formally (according to international law) equal. Actually, however, their role and participation in international political relations are affected by power they wield"* (Škvrnda 2010, p. 165) and which is manifested in the form of power potential. Power potential can be understood as *"the capabilities or resources held by a state that are considered necessary to its asserting influence over others;"* (Kegley and Blanton 2008, p. 277) and as a factor determining the position of states in the global power hierarchy. From this perspective, the following factors can be considered as determinants of the whole power potential of each country: geographic, demographic, economic, political, military and nuclear capabilities including the possibility of their conversion into fulfillment of own needs; as well as research, technological and innovation capabilities; financial, natural, mineral or human

capital resources. But the measurement of power potential using only one of these factors can never lead to creation of sufficient and objective classification of countries of the world. Hierarchization must be necessarily complex - although, acceptable are different methods of its realization, it should always be based on a whole range of factors. Its persistent pitfalls include: the fact that the disposal of different types of potentials and resources does not necessarily reflect the global power potential of the country, important is the ability to converse different potentials and sometimes, the power potential of country can be artificially supported by ostensible assumption of other countries.

The only correct method for determining the power potential and international power of the country does not exist - international relations theory distinguishes different power quantification approaches and approaches to the subsequent classification and hierarchization of countries in the global context. The variety of components that those approaches consider as essential for power confirms the fact of impossibility of determining the power potential of a state absolutely, but on the other hand, does not preclude the polemics on this issue and the analysis from different perspectives. For the purposes of this article, the following approaches and models in favor of identifying the position of the BRICS countries in the global power hierarchy, which allows us to extend the theoretical considerations about their real power, were selected: (1) basic Organski / Kugler power transition model, (2) composite index of national capability and (3) comprehensive national power index. Finally, the article contains also long-term prognosis of the position of countries in the global power hierarchy by the year 2100 in accordance with the power index introduced by the International Futures. The aim of the selection of mentioned approaches and models is to highlight the complexity and diversity of research problems, to outline the future organization of global power system from different angles and to provide the basis for analysis in the second part of the paper.

2.1 The power transition model

The Organski/Kugler power transition model (based on the power transition theory introduced by Organski in 1958) sees international order as pyramid-like hierarchically organized with one dominant, few strong and many weak states – each with different degree of satisfaction/dissatisfaction with the established status quo. Degree of satisfaction/dissatisfaction and power are together key determinants of conflict and peace in global power hierarchy. On one hand, peace is assured by power of dominant nation establishing the status quo in cooperation with satisfied great powers; on the other hand, dissatisfaction - increasing from top to bottom of the pyramid, connected only with weak nations cannot be considered as a serious threat but in connection with great powers may lead to creation of challenges and conflict situations. The power transition theory is then primarily concerned with the continuous variability of power, its transition in international system and ensuring the stability through the asymmetry of power (but by rejecting anarchy). The model divides states

based on the power potential to five groups (Kugler, Organski 1989, p.174): *dominant nation* – the most powerful state holding the greatest power potential and assuring peace; *great powers* – countries with relatively real potential to gain the position of dominant nation in the future but currently with less abilities to influence the others, that are: either allies of the dominant nation who are satisfied with the status quo, or challengers of the dominant nation who are dissatisfied with the status quo and are not accepting their subordinate positions - challengers are usually challenging the leadership and may carry on an activity towards destabilization of the position of hegemony and other countries or threatening the peace; *middle powers* – countries with some power but without capabilities enabling them to attempt for creation of new international order; *small powers* – countries with only very limited power in international order; and *colonies* (nowadays not relevant).

According to the power transition model, the comparison of the relative power of countries can be based on three main components of power, which are: (1) „*the number of people in a nation who can work and fight* [population]; (2) *the skills and productivity of the active population* [GNP], (3) *and the capacity of governmental system to mobilize human and material resources at its disposal and devote them to national goals*“ (Kugler, Organski 1980, p. 8). So that simply means that national power stems from national development, mainly from speed of modernization and timing and sequence of (socioeconomic and political) development. Dominant nation then has a large population (who can work and fight), achieves high economic productivity and has government able to mobilize human and material resources at its disposal.

Calculation of the power potential of the state in the global power hierarchy was based on the indicator gross national product (GNP) reflecting the interaction between the productivity of the country and the productive population, which denote military expenditures, available technology or capital intensity. Basic Organski/Kugler power transition model formula has the form (Kugler, Organski 1989, p. 190):

$$(1) \quad \begin{array}{l} \text{Power} = \\ \text{Economic Productivity per Capita (GNP/Population)} \times \text{Population} \\ \Rightarrow \text{Power} = \text{GNP} \end{array}$$

Thus, this method originally did not include the political potential due to lack of its measures and the supposition of authors that this method is sufficient for national power calculation. Subsequently, Organski a Kugler began to develop a quantitative index to measure the capacity of government to mobilize human and material resources - the relative political capacity (RCP, or the index of governmental extraction – IGE; IEG = Tax Effort^{1.75}) as a “*ratio that measures the difference between the revenues a government is expected to extract (given its economic performance and resource endowment) and the revenues a government is capable of extracting to pursue its own ends.*” (Kugler, Organski 1989, p. 191). Later, they incorporated also foreign aid into their formula.

2.2 The composite index of national capability

The Composite Index of National Capability (CINC) was developed by J. David Singer in 1963 as a statistical measure of national (material) power within the project *The Correlates of War*. The index is based on these six components presenting demographic, industrial and military strength - that means long-, medium- and short-term capabilities (Correlates of War): (1) *total population* – the number of all residents in an given state (population de facto) + military personnel abroad; (2) *urban population* – the number of people living in urban areas in a given state including cities that exceed a threshold of 100 000 inhabitants; (3) *iron and steel production* – “reflects all domestically produced pig iron before 1899 and steel after 1900” (Correlates of War, p. 38); (4) *primary energy consumption* (converted into one thousand metric ton coal equivalents) – the total primary energy from coal, petroleum, electricity and natural gas used in a given state in a particular year; (5) *military personnel* - the size of the regular active state army on the January 1st of the year = the troops, excluding irregular troops (frontier guards, civil defence units etc.), reserves, colonial or insurgent troops, protectorates and foreign military forces; (6) and *military expenditure* of all state members (gross, converted into U.S. dollars) – the total annual budget (including reserves and excluding civil expenditures) for military forces.

The project *Correlates of War* is currently using version 4.0 for determining the CINC index of countries, containing data covering the period 1816 - 2007. The calculation of the index of a given country (country X) in a given year involves two phases. The first phase consists of determining the value of each of the six components as the share of the world's total resources (1), the second consists of calculation of the CINC index itself (2). The higher the score CINC index of a country is the higher is its potential power. The detailed calculation procedure is as follows:

$$(1) \quad \text{Indicator}_{\text{Country X}} = \frac{\text{Value for indicator}_{\text{Country X}}}{\text{Total value for the world for given indicator}}$$

- for example: $\text{TPR}_X = \text{Total population}_X / \text{Total world's population}$

$$(2) \quad \text{CINC}_X = \frac{\text{TPR}_X + \text{UPR}_X + \text{ISR}_X + \text{ECR}_X + \text{MPR}_X + \text{MER}_X}{6}$$

(where: TPR = Total population ratio, UPR = Urban population ratio, ISR = Iron and steel production ratio, ECR = Primary energy consumption ratio, MPR = Military personnel ratio and MER = Military expenditure ratio).

Although, the composite index of national capability does not explicitly lead to a particular classification of countries to superpower, great powers, regional powers and countries with middle or small power, it allows to sort countries according to the power they have (calculated with CINC). And so it is possible to identify the dominant state - with the highest index score (in accordance with the Correlates of War it was in China in 2007 with an index value 0.1985579); and states with high, middle or low

CINC index scores (the latter states can be regarded as states with only small international power). Index does not allow predicting the future position of states; it is intended only to assess the current status.

2.3 The comprehensive national power index

The Chinese comprehensive national power (CNP) concept was historically based on efforts to measure national power, predict the future shape of global power hierarchy and balance of powers and to calculate or estimate the strength of potential partners and rivals. The essence of the dynamic CNP concept, whose idea and name came into practice in the 80's of the 20th century during the reign of Deng Xiaoping despite ancient roots, is to qualitatively and quantitatively express national power of countries as a result of the whole complex of components (not only of GNP or military potential). However, this complex of components is not universal or unchangeable, even the mere interpretation of the concept of national power by different authors varies. The quantification and assessment of the CNP is mostly carried out in line with approach published in the book *Comparative Studies of the Comprehensive National Power of the World's Major Nations*, published in 1996 by the Chinese Academy of Social Sciences (CASS) or the book *On Comprehensive National Power*, published by the Academy of Military Science (AMS) and Huang Shuofeng (more orthodox), as "*numerous Chinese authors have made predictions about future CNP, but few provide detailed accounts about the associated methodologies for measurement and evaluation*" (Ghosh 2009, p. 20).

The CASS approach assumes eight major components making up the country's comprehensive national power that develop over time (i.e. in past, present and future they do not need to be identical, what should be taken into account by evaluating different time periods) and include also potential power, not just current. These components are (Ghosh 2009, p. 32 - 33): *natural resources, domestic economic capability, foreign economic capability, science and technology, social development level* comprising education, health care and cultural level, communications and urbanization, *military capability, government regulation and control capability* and *foreign affairs capability*. The calculation of the CNP of a given country in a given year consists of two phases: in the first phase the value of all indicators that are part of an extensive index system established for assessing the components of CNP need to be calculated (by different methods); in the second phase, the revision of calculation based on weighted methods and qualitative analysis follows, reflecting the changing significance of components over time and ensuring objectivity and scientism of conclusions. First of all, each indicator is assigned a weight – later also all eight components are assigned a weight. Total CNP has then a weighted factor of 1.00, of which natural resources have a factor of 0.08, domestic economic capability of 0.28, foreign economic capability 0.13, science and technology 0.15, social development level 0.10, military capability 0.10, government regulation and control capability 0.08 a foreign affairs capability 0.08 (Pillsbury 2000, p. 229). This way,

CASS calculated the comprehensive national power scores of selected countries in the years 1970, 1980 and 1990. At the same time, after adjusting the weight of components as follows: (note that the total CNP weighted factor = 1.00) natural resources has weighted factor of 0.06, domestic economic capability of 0.28, foreign economic capability of 0.13, science and technology of 0.17, social development level of 0.12, military capability of 0.10, government regulation and control capability of 0.07 and foreign affairs capability of 0.07 (Pillsbury 2000, p. 229), it also forecasted CNP scores for years 2000 and 2010.

The AMS approach sees the CNP as a complex system composed of four main index subsystems (Ghosh 2009, p. 37 - 38): (1) *material power* (or hard power) subsystem – comprising the country's economy, its natural resources and defence as well as the level of science and technology development; (2) *spirit power* (soft power) subsystem – reflecting politics, culture, education and foreign affairs of the country; (3) *coordinated power* subsystem – consisting of factors ensuring control and management of the previous two subsystems (i.e. decision-making, command, management or leadership levels); (4) and *environmental* subsystem - comprising international environment, natural environment and social environment. The four main subsystems are divided into sub-subsystems and other levels that are mutually interconnected and as a whole they are basis for the quantification of CNP. The calculation of CNP itself is effected through the dynamic equation (or CNP function), which reflects the permanently evolving nature of the CNP (over time as well as under impact of changing foreign relations, energy policies or science and technology development etc.), and has the following form (Pillsbury 2000, p. 233):

$$Y_t = F (x_1, x_2, \dots, x_n; t)$$

(where: Y_t = CNP; t = time; x_1, x_2, \dots, x_n = component factors of CNP dependent on time)

However, a large number of component factors and the complexity of the relations among them resulted into adjustment of macro variables in the equation that are in fact the variables of hard, soft and coordinated powers (Pillsbury 2000, p. 234):

$$Y_t = F (H_t, S_t, K_t)$$

(H_t = hard power variable; S_t = soft power variable; K_t = coordinated power variable)

Hard power factors of the equation are calculated by the index number method, soft power factors by specialist evaluation method, coordinated power factors by weighted coefficients and finally, the assessment of some uncertain factors can be carried out by the method of judgment. Then, CNP calculated that way reflects the power of the state in a given year.

2.4 The International Futures power index (allowing long-term projections)

One of the other options for quantification the position of countries in the global power hierarchy is the use of the modeling system of the *International Futures* which

considers the power as a weighted sum of the following nine components: “*population, GDP at purchasing power, GDP at market prices, economic-technological capability using GDP per capita at either purchasing power or exchange rates, government size, military spending, conventional military power and nuclear power. For each component, a global sum is created and country capabilities are computed as portions of the global total*” (International Futures 2012). Currently, the system uses the version 6.54 and allows determining the power index of countries since the year 2010 with projections to year 2100. It works with five scenarios: the basic scenario; the Market First scenario – adjusting the basic scenario and involving for example the accelerating democratization in a global context, continuing trade and domestic economies liberalization or increase in the flows of foreign direct investment and global migration; the Policy First scenario – highlighting in line with the basic scenario the area of global development and justice and the area of sustainable environment. The first area involves for example higher spending on education, health care and science and research; the second area draws attention to the use of renewable energy and agricultural needs. The Security First scenario assumes in the future spreading uncertainty and more intensive enforcement of measures in order to suppress it, and thus, it modifies the basic scenario and involves for example the slowdown in the process of democratization in the global context, the growth of global protectionism or the decrease in the flows of foreign direct investment and global migration. And finally, the Sustainability First scenario amends the basic scenario similarly as the Policy First scenario but with different values of parameters (for example – it assumes greater reduction in energy demand etc.), and it involves also changing lifestyle. Changes in lifestyle can be understood as the preference of free time over work or the increase in social interactions. For the purpose of this article, the analysis is based on the basic scenario and other scenarios are incorporated through the comparison.

3. The position of the BRICS countries in the global power hierarchy

The changing role of the BRICS countries in the global power hierarchy cannot be questioned. But claims that the power potential of these countries is growing steadily and they gradually continue to rank themselves among to the most powerful countries in the world need to be necessarily based on concrete figures what can lead to the confirmation of their real power through the use of data base. The quantification of power potential of countries and its amendments is in the following text realized within theoretical and methodological framework. All of the four selected approaches allow determining the power of states at present – the first three approaches also allow monitoring the development of power in the past and the last approach brings forecasts of its development for the rest of the 21st century.

3.1 The power transition model (Organski/Kugler)

The power transition theory brings into the theory of international relations the idea of international order as a hierarchically organized system. Authors developing this theory (Kugler, Organski, Tamen etc.) consider after the collapse of the Soviet Union the United States to be the dominant state at the top of the power pyramid. Its unwavering leading position still do not jeopardize with own ambitions and potential any other challenger what supports the stability of the global power order without any significant expected twists. However, the position of other states with lower positions in the hierarchy as a result of their power potential is gradually changing over the years. In the year 1989, Kugler and Organski included among great powers satisfied with the status quo: „Germany, Japan, England, France and Italy. The Soviet Union and China [were] *potential challengers ... in direct competition with one another and, very importantly, ... also much weaker than the United States. India [was] still a very weak country unable to challenge the great powers*“ (Kugler – Organski 1989, p. 175). In the year 2004, according to Kugler and Tamen these states were among the great powers: „China, Japan, the EU in toto, Russia, and potentially India“ (Kugler – Tamen 2004, p. 36), while the lowest level of satisfaction with the status quo and American leadership exhibited China, India and Russia as potential challengers. Ergo, India had not been considered as a state with only small power. Middle powers were for example: *“France, Italy, Poland, South Africa, Indonesia, or Brazil, each with substantial resources. ... [As small powers were considered] nations, such as Malaysia and Iraq, [with] no direct threat to the dominant nation’s leadership of the global hierarchy.”* (Kugler, Tamen 2004, p. 36).

Nowadays, at the beginning of the second decade of the 21st century, the identification of the position of countries in this paper by application of the Organski/Kugler power transition model is limited to the basic model taking into account the use of indicator gross national product (GNP). Unavailability of current statistical data, their non-harmonized form, complicated method of calculation of the relative political capacity, changing structure of indicators and problematic incorporation of foreign aid into the formula did not allow us to calculate national capabilities fully and properly in line with the later form of their model.

The basic Organski/Kugler power transition model assumes the calculation of the power potential of a given state in the global power hierarchy using the indicator GNP. Our analysis is based on the use of indicator gross national income (GNI) converted to purchasing power parity (PPP) and current international dollar (\$), and on the available figures of the World Bank (see table 1). However, replacement of the original indicator reflects the methodology of the World Bank which defines GNI as: *“the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad”* (The World Bank). That means that indicators GNP a GNI are based on similar principles.

Table 1: Top ten countries with the highest and lowest GNI (PPP, in current international \$) in the year 2011

	GNI (PPP, in current international \$)		GNI (PPP, in current international \$)
United States	15 232 385 400 000	Grenada	1 104 272 987
China	11 325 384 690 037	Dominica	843 002 335
Japan	4 538 986 610 570	Comoros	841 900 463
India	4 488 037 667 475	Samoa	814 221 490
Germany	3 283 320 315 309	St. Kitts and Nevis	768 822 337
Russian Federation	2 845 251 032 175	Tonga	490 611 443
France	2 346 350 783 356	Micronesia, Fed. Sts.	402 610 284
United Kingdom	2 315 736 221 952	Kiribati	351 817 751
Brazil	2 261 060 112 142	Sao Tome and Principe	349 962 787
Italy	1 966 086 523 399	Palau	254 198 287

Source: World Bank

As shown in table no. 1, also in the year 2011, the United States may be in accordance with the selected approach considered as the dominant nation. Among the great powers could be included: China, Japan, India, Germany and Russia, or the EU as a whole; among middle powers (states with substantial capabilities but not sufficient to significantly challenge the dominant nation) for example: France, United Kingdom, Brazil or Italy, as well as South Africa. On the other hand, as the weakest powers can be identified: Palau, Sao Tome and Principe or Kiribati etc.

Based on the statistical data of the World Bank, it can be further assessed that in the year 1990, the GNI of China was below the GNI of Japan, Germany, Russia, France, Italy or the UK, amounting to only approximately 15,9% of the GNI of the United States. The GNI of Russian Federation amounted to approximately 20,8% of the U.S. GNI, the GNI of Brazil and India to 13,2% and of South Africa to 3,4%. During the first decade of the 21st century, however, the development of the GNI values recorded reversal confirming the growing power potential of all five BRICS countries in the global context. The China's GNI value in the year 2011 reached the level of 1251% higher than in the year 1990, the India's GNI of 595,5% higher, Russia's GNI of 239,9%, Brazil's of 299,5% and the GNI of South Africa of 279,8%. For comparison, the value of the U.S. GNI in the year 2011 reached the level of 267% higher than in 1990, the Japan's GNI of 190% and the GNI of Germany of 220,2%. In terms of the GNI growth rate, China is clearly in the position of leader. In 2011, China also recorded the second highest GNI value among the countries of the world, followed by Japan, India, Germany, Russia, France, UK, Italy and Brazil (The World Bank 2012).

3.2 The composite index of national capability (CINC)

The analysis of potential and position of countries in the global power hierarchy using the CINC brings different results as the previous approach - the main and most

interesting difference lies in the country on the top of the global power pyramid. As shown in table no. 2, the United States were the dominant nation of international relations only until the beginning of the 21st century, when China has taken a leading position. In 2007, China was followed in the ranking by the U.S., India, Japan, Russian Federation, Brazil, Germany, South Korea, United Kingdom, France and Italy.

Table 2: The CINC index of selected countries in years 1900, 1950, 1990, 2000 and 2007

The Composite Index of National Capability (CINC)					
State / Year	1900	1950	1990	2000	2007
China	0.1199774	0.1184953	0.1059285	0.1557135	0.1985779
United States	0.1879988	0.284443	0.139376	0.1429513	0.1421487
India	-	0.0495623	0.0589141	0.0669228	0.0734437
Japan	0.0288864	-	0.0557047	0.054506	0.0426745
Russian Federation	0.1092385	0.1805985	0.1238611	0.0495242	0.0392739
Brazil	0.0092039	0.0127369	0.0236354	0.0251966	0.0245967
Germany	0.1315254	-	0.0244175	0.0281456	0.0240815
South Korea	-	0.0047363	0.0187157	0.0254056	0.0238778
United Kingdom	0.1775276	0.0613487	0.0252901	0.0220596	0.0211575
France	0.0747144	0.0332216	0.0221232	0.020735	0.0189237
Italy	0.0281645	0.017447	0.0202386	0.0188588	0.0174203
....
South Africa	-	0.0050475	0.0074112	0.0068133	0.0063162

Source: The Correlates of War

In the year 1900, the United States recorded the highest value of the index followed by the United Kingdom, Germany (German Empire), China (Quing Dynasty) and Russian Empire; in the year 1950, the United States remained at the top of the ranking but the United Kingdom lost its position falling to 4th place. The national capability of Russia (the Union of Soviet Socialist Republics), followed by China (People's Republic of China) and India, was increasing significantly. The U.S., USSR and China were at the top of the ranking also in the year 1990 – this year; it is also possible to notice the remarkable growth of national capabilities of India (ranked 4th) and Brazil (in 9th place). The year 2000 brings a whole new position of countries in the global power hierarchy: China pushed the U.S. out of the long-term leading position to second place and India found itself in 3rd place followed by Japan and only then by Russian Federation. At the same time, Brazil overtook the U.K. Finally, recent data on the development of the CINC index indicate that the country with the highest national capability is China, followed by the U.S., India, Japan, Russian Federation and Brazil. Thus, that confirms the growing and now also dominant role of the BRIC countries in the global power hierarchy. South Africa does not record high values of the index what is not enabling to place the country among the most powerful countries of the world.

3.3 The comprehensive national power index

The quantification of power potential of countries using the CNP index, introduced with the intention to measure national power of countries and predict the future shape of the global power hierarchy, varies in the approach of the CASS and the AMS considerably. Both approaches also differ in the projections of the future international order, although they consistently predict weakening of the dominant position of the U.S. in international relations accompanied by strengthening the position of other great powers. Thus, multipolarity is a necessity. But on the other hand, approaches consider different values of the CNP index, rates of their development as well as the specific order of individual states (see table no. 3) in terms of power.

Table 3: CASS and AMS CNP scores and projections

	CASS CNP					AMS CNP			
	1990	2000	2010	2020		1989	2000	2010	2020
United States	279 ₍₁₎	241 ₍₁₎	213 ₍₁₎	192 ₍₂₎	United States	593,33 ₍₁₎	816,85 ₍₁₎	1066,21 ₍₁₎	1391,71 ₍₁₎
Japan	162 ₍₃₎	184 ₍₂₎	206 ₍₂₎	228 ₍₁₎	USSR	386,72 ₍₂₎	648,34 ₍₂₎	:	:
Germany	161 ₍₄₎	162 ₍₃₎	163 ₍₃₎	164 ₍₃₎	Germany	378,10 ₍₃₎	558,23 ₍₃₎	772,35 ₍₂₎	1068,63 ₍₃₎
France	129 ₍₅₎	141 ₍₄₎	150 ₍₄₎	157 ₍₄₎	Japan	368,04 ₍₄₎	537,39 ₍₄₎	736,35 ₍₄₎	1009 ₍₄₎
Italy	115 ₍₇₎	125 ₍₆₎	137 ₍₅₎	151 ₍₅₎	China	222,33 ₍₆₎	437,35 ₍₅₎	768,57 ₍₃₎	1350,63 ₍₂₎
England	116 ₍₆₎	116 ₍₇₎	115 ₍₇₎	115 ₍₈₎	France	276,35 ₍₅₎	384,93 ₍₆₎	507,36 ₍₅₎	668,73 ₍₆₎
Canada	100 ₍₈₎	92 ₍₉₎	86 ₍₁₀₎	81 ₍₁₀₎	England	214,08 ₍₇₎	281,24 ₍₇₎	353,05 ₍₈₎	443,19 ₍₈₎
Australia	78 ₍₁₀₎	71 ₍₁₁₎	66 ₍₁₂₎	62 ₍₁₂₎	Brazil	156,05 ₍₈₎	267,70 ₍₉₎	419,72 ₍₇₎	658,09 ₍₇₎
South Africa	36 ₍₁₅₎	34 ₍₁₆₎	32 ₍₁₆₎	30 ₍₁₆₎	India	144,16 ₍₉₎	274,08 ₍₈₎	468,15 ₍₆₎	799,67 ₍₅₎
Russian Federation	USSR = 184 ₍₂₎	131 ₍₅₎	121 ₍₆₎	108 ₍₉₎	Canada	136,64 ₍₁₀₎	177,41 ₍₁₀₎	220,56 ₍₉₎	274,18 ₍₉₎
China	94 ₍₉₎	102 ₍₈₎	110 ₍₈₎	118 ₍₇₎	Australia	112,59 ₍₁₁₎	147,91 ₍₁₁₎	185,67 ₍₁₀₎	233,07 ₍₁₀₎
India	51 ₍₁₃₎	53 ₍₁₃₎	55 ₍₁₃₎	57 ₍₁₃₎					
Indonesia	34 ₍₁₆₎	37 ₍₁₅₎	39 ₍₁₅₎	40 ₍₁₅₎					
South Korea	70 ₍₁₁₎	87 ₍₁₀₎	105 ₍₉₎	124 ₍₆₎					
Brazil	62 ₍₁₂₎	69 ₍₁₂₎	75 ₍₁₁₎	80 ₍₁₁₎					
Mexico	46 ₍₁₄₎	49 ₍₁₄₎	51 ₍₁₄₎	52 ₍₁₄₎					
Egypt	30 ₍₁₇₎	26 ₍₁₇₎	23 ₍₁₇₎	21 ₍₁₇₎					

Source: Pillsbury 2000, p. 246, 248 (Original: Wang Songfen, ed. 1996. *Shijie zhuyao guojia zonghe guoli bijiao yanjiu*. Changsha: Hunan chubanshe, 1996. p. 438; and Huang Shuofeng. 1992. *Zonghe guoli lun*. Beijing: Zhongguo shehui kexue chubanshe, 1992. p. 220-221).

As the table no. 3 (containing a comparison of CASS and CNP AMS scores in 1990, 2000 and 2010 and data for 2020 projected by M. Pillsbury) shows, according to both approaches, the United States possessed a dominance in the global power hierarchy in the years 1990 (or 1989), 2000 and 2010. In the year 1989/1990, the U.S. was still followed by the USSR; and further by Japan, Germany and France (China ranked at 9th place, India at 13th, Brazil at 12th and South Africa at 15th) according to CASS approach and by Germany, Japan and France (China ranked at 6th place, Brazil at 8th and India at 9th) according to AMS approach. The collapse of the Soviet Union left its traces also in the order of countries in the global power hierarchy.

In accordance with the CASS approach, the ranking of the most powerful countries in the world in years 2000 and 2010 started also with the United States followed by Japan, Germany, France, Italy and Russian Federation. In the year 2010, China ranked at 8th place, India remained at 13th place, Brazil ranked at 11th place and South Africa fell to 16th place. But very interesting is the prediction that by the year 2020, the national power of Japan should exceed the power of the United States deposing it to the second place in ranking. Germany should maintain the third place followed by France, Italy, South Korea and China. The value of CNP index of the United States is gradually decreasing over time (in comparison of the years 1990, 2000, 2010 and 2020) demonstrating the elimination of the gap between the U.S. hegemonic position and the position of the rest of the countries of the world. Values of the CNP index decrease over time also in the case of England, Canada, Australia, South Africa and Russian Federation; on the contrary they increase in the case of Japan, South Korea, Italy, France, China and Brazil most significantly. Thus, the CASS approach assumes that China will be the seventh most powerful country in the world in the year 2020 while highlighting that: *“three strongest components of CNP are its natural resources, rapid growth rate, and military manpower and weapons ... [and] two important weakness - its low level of science and technology and its low "social" development“* (Pillsbury 2000, p. 243). Russian Federation will gradually lose its power position with the prospect of leaving top ten most powerful countries after the year 2020, while more significant change in the position of India is not expected (especially due to political instability and slow process of privatization).

According to the AMS approach, the dominant position in international relations in years 2000 and 2010 belonged also to the United States of America, but it was followed by Germany, Japan, China and France. In the year 2010, Germany ranked at 2nd place among the ten most powerful countries in the world, China moved to 3rd place. Only then ranked Japan, France, India (6th place), Brazil (7th place), England, Canada and Australia. For the year 2020, the approach projected the United States to remain its position at the top of the global power hierarchy while the second most powerful country should be China. The national power of China and the U.S. should be almost the same size. Germany should rank at 3rd place followed by Japan, India, France, Brazil, England, Canada and Australia. On contrary of the CASS approach, AMS assumes that the value of CNP index of the United States should gradually increase in comparison of the years 1989, 2000, 2010 and 2020. The most

significant increase in CNP values should be record in the case of China, further of the United States, Germany, India, Japan and Brazil.

Thus, among the most significant differences in conclusions of the CASS and the AMS approach can be included: projections of the future position of Japan in the global power hierarchy by the year 2020 (in accordance with CASS in terms of national power Japan should outperform the United States, according to AMS Japan's national power should be significantly lower), projections of the future position of China (AMS assumes national power of China and the U.S. almost of the same size while CASS assumes significantly lower national power of China) as well as of India and Brazil (their position should be according to AMS much stronger than according to CASS). However, both approaches consistently forecast reducing the power gap between the most developed countries of the world towards multipolar order and strengthening role of China, Brazil, India and Russian Federation.

3.4 The International Futures power index

The quantification of power of countries in the world realized by modeling system of the International Futures allows not only to analyze the current position of countries in the global power hierarchy, but also to forecast the position of countries until the year 2100 through the basic scenario or scenarios Market First, Policy First, Security First and Sustainability First. The following text is based on the basic scenario while the results are compared with the results of other scenarios.

The Basic Scenario: In the year 2010, in line with the basic scenario of the International Futures, the United States of America were unambiguously the dominant country in the global power hierarchy (see table no. 4) followed by China, India, Japan, Germany, United Kingdom, France, Brazil, Russia and Italy. In the year 2020, Italy should leave the top ten most powerful countries in the world and on the contrary, South Korea should be included among them. Also the empowerment of Brazil (they should move from 8th to 7th place) and Russia (from 9th to 8th place) is expected, while France should slip from seventh to ninth place. In the long term, values of the power index of the United States should in accordance with the basic scenario decline significantly. China should overtake the U.S. by the year 2030 and maintain the leadership until the year 2070, when it should be replaced by India and moved to the second place. Thus, from the year 2070 to 2100, the triad of the most powerful countries of the world should consist of India, China and the United States. In the year 2050, the top ten most powerful countries in the world should not contain Italy, France nor South Korea. Brazil should move up to 4th place followed by Japan, Russia, Nigeria, United Kingdom, Saudi Arabia and by Germany. Hence, in the year 2100, the global power hierarchy should be almost completely different compared to the year 2010 in favor of the power transition to Asia and Africa since Nigeria should rank 4th, Brazil 5th and Tanzania 6th followed by Pakistan, Indonesia, Democratic Republic of Congo, Ethiopia and Uganda. The position of Japan (it should drop down to 16th

place), Russia (to 26th place), Italy (36th place) and South Korea (40th place) should worsen significantly. Neither Saudi Arabia should maintain its position.

Table 4: Power index scores according to Base Scenario of the International Futures in years 2010, 2020, 2050 and 2100

	2010	2020	2050	2100
USA	23.97 ⁽¹⁾	20.59 ⁽¹⁾	13.83 ⁽³⁾	9.626 ⁽³⁾
China	12.23 ⁽²⁾	15.76 ⁽²⁾	19.54 ⁽¹⁾	15.44 ⁽²⁾
India	7.219 ⁽³⁾	8.449 ⁽³⁾	14.77 ⁽²⁾	18.44 ⁽¹⁾
Japan	4.828 ⁽⁴⁾	4.042 ⁽⁴⁾	2.299 ⁽⁵⁾	1.132 ⁽¹⁶⁾
Germany	3.19 ⁽⁵⁾	2.744 ⁽⁵⁾	1.702 ⁽¹⁰⁾	1.197 ⁽¹⁴⁾
United Kingdom	3.083 ⁽⁶⁾	2.497 ⁽⁶⁾	1.816 ⁽⁸⁾	1.363 ⁽¹²⁾
France	2.695 ⁽⁷⁾	2.167 ⁽⁹⁾	1.405 ⁽¹²⁾	1.181 ⁽¹⁵⁾
Brazil	2.328 ⁽⁸⁾	2.448 ⁽⁷⁾	2.515 ⁽⁴⁾	2.39 ⁽⁵⁾
Russia	2.21 ⁽⁹⁾	2.245 ⁽⁸⁾	1.93 ⁽⁶⁾	0.78 ⁽²⁶⁾
Italy	1.964 ⁽¹⁰⁾	1.59 ⁽¹²⁾	0.853 ⁽²⁰⁾	0.572 ⁽³⁶⁾
South Korea	1.784 ⁽¹¹⁾	1.836 ⁽¹⁰⁾	1.215 ⁽¹⁴⁾	0.472 ⁽⁴⁰⁾
...				
Nigeria	0.797 ⁽²²⁾	0.97 ⁽¹⁹⁾	1.908 ⁽⁷⁾	2.847 ⁽⁴⁾
Saudi Arabia	1.184 ⁽¹⁶⁾	1.481 ⁽¹³⁾	1.75 ⁽⁹⁾	0.921 ⁽²²⁾
South Africa	0.545 ⁽³¹⁾	0.502 ⁽³¹⁾	0.541 ⁽³⁴⁾	0.872 ⁽²⁵⁾

Source: International Futures 2012

Market, Policy, Security and Sustainability First Scenarios: All four additional scenarios are consistent with the basic scenario in the order of countries of the top ten most powerful countries of the world in years 2010 and 2020. In years 2050 and 2100, those ten countries should contain almost the same countries but in a different order. In the year 2050, triad of the most powerful countries should be made up of China, India and the U.S.; only according to the First Security scenario, the dominance of the U.S. should continue followed by China and India. In the year 2100, according to all scenarios, the most powerful country should be India, second and third should rank the U.S. and China – only the Security First scenario assumes that the U.S. will be 2nd and China 3rd. In the year 2050, in accordance with all scenarios, the fourth most powerful country should be Japan; the ranking of remaining countries varies greatly. But in any case, it includes Russia, Nigeria and the U.K. According to the Market First scenario, the top ten most powerful countries should include also Saudi Arabia and Germany (identical to the basic scenario); according to the Police First scenario: Germany and Indonesia; according to the Security First: Saudi Arabia and Indonesia; and according to the Sustainability First: Germany and Indonesia. Finally, in the year 2100, the top ten most powerful countries in the world should in accordance with all scenarios include (except the triad) in different order: Brazil, Nigeria, Tanzania, Pakistan, Indonesia and Ethiopia. The Basic, Market First and Security First scenarios also place among those countries the Democratic Republic of Congo; Policy First Scenario also Bangladesh and Sustainability First scenario the U.K.

The conclusion all five scenarios is the assumption of gradually growing position of China, India and Brazil in the global power hierarchy; all these countries should reach and remain in the top six most powerful countries of the world and thus significantly influence world affairs. In the second half of the 21st century, the Russian Federation will probably not be able to maintain its position; values of its power index should decrease significantly after the year 2040. On the contrary, values of the power index of South Africa should after the year 2040 rise significantly.

4. Conclusion

Different approaches and models that the theory of international relations distinguishes and that allow the quantification and comparison of the power potential of countries and their arrangement in the global power hierarchy, use different methods of power measurement, consider different components as crucial for power of countries and in their conclusions often differ in specific identification of the most powerful countries of the world. In order to extend theoretical considerations about the real power of the BRICS countries, in the analysis, we came to a number of conclusions.

In line with the basic Organski/Kugler power transition model, those countries should be considered as the most powerful in the world in the year 2011: (in descending order) United States of America (representing the dominant nation of the global power hierarchy), China, Japan, India, Germany and Russia; Brazil and South Africa could be considered as middle powers with substantial capabilities. In accordance with this model, we confirmed that the power potential of the BRICS countries in a global context is gradually increasing - most significantly the potential of China which is a leader in terms of the growth of the gross national product. The quantification of the power potential using the composite index of national capability considers China, USA, India, Japan, Russian Federation, Brazil, Germany, South Korea, United Kingdom and France to be the most powerful countries of the world in the year 2007. Thus, by using this index, we get different state at the top of the global power pyramid. But on the other hand, the analysis of the development of values of this index also confirms the significant power of the BRICS countries in international relations and the ability to include them currently among the most powerful countries (without South Africa). The results of the use of the comprehensive national power index depend on the calculation approach. The CASS approach considered United States, Japan, Germany, France, Italy and Russian Federation to be the most powerful countries in the year 2010, while China ranked 8th, India 13th, Brazil 11th and South Africa 16th. Significant empowerment of China other BRICS countries is unlikely to be expected by the year 2020. In accordance with the AMS approach, in the year 2010, the United States, Germany, China (whose national power should be in the year 2020 almost equal to the power of the U.S.), Japan, France, India, Brazil, Britain, Canada and Australia were among the most powerful countries. Thus, approaches differ in the

specific arrangement of the countries in the global power hierarchy, but consistently forecast gradual weakening of the dominant position of the United States accompanied by strengthening the position of other great powers (also of the BRIC countries) towards a multipolar world order. Finally, using the modeling system of the International Futures and realizing the analysis of current power of countries, we confirmed again that the BRIC countries can be included among the ten most powerful countries of the world (South Africa ranks 31st). At the same time, we introduce the forecast of the power development of countries by the year 2100 in line with five scenarios which shows that China and India should maintain in the triad and Brazil in the top six most powerful countries until the end of the 21st century. In the long term, also the power of South Africa should grow and on contrary, Russian Federation should probably not be able to hold its position.

5. References

- Correlates of War, (2007), *National Material Capabilities (v4.0)*, available online at <http://www.correlatesofwar.org/>
- Correlates of War, (2007), *National Material Capabilities Data Documentation: Version 4.0*, 68 p., available online at <http://www.correlatesofwar.org/>
- Gosh, P. K., (2009), The Chinese Concept of Comprehensive National Power: An Overview. In *Air Power Journal*, 4(4), pp.17 - 54.
- International Futures, (2012), *The International Futures Modeling System: version 6.54*, available online at <http://www.ifs.du.edu/ifs/index.aspx>
- Kegley, Ch.W., Blanton, S.L., (2008), *World Politics: Trend and Transformation*, Boston: Wadsworth Publishing.
- Kugler, J., Organski A.F.K., (1989), The Power Transition: A Retrospective and Prospective Evaluation, In: M.I. Midlarsky, ed. 1989. *Handbook of War Studies*. Boston: Unwin Hyman, pp.171 – 194.
- Kugler, J., Organski A.F.K., (1980), *The War Ledger*, Chicago: University of Chicago Press.
- Kugler, J., Tamen, R., (2004), Regional Challenge: China's Rise to Power, In: J. Rolfe, ed. 2004. *The Asia – Pacific: A Region in Transition*. Honolulu: Asia-Pacific Centre for Security Studies, pp.33 - 53.
- Nation Raking, (2012), *National Power Index*, available online at <http://nationranking.wordpress.com/category/national-power-index/>
- Nation Raking, (2012), *Detailed Methodology*, available online at <http://nationranking.files.wordpress.com/2011/03/nation-ranking-methodology.pdf>
- Pillsbury, M., (2000), *China Debates the Future Security Environment*, Washington, DC: National Defense University Press.
- Škvrnda, F. et al, (2010), *Medzinárodné politické vzťahy*, Bratislava: Vydavateľstvo EKONÓM.
- Wight, M., (2002), *Power Politics*, London, New York: Continuum.
- World Bank, (2012), *World DataBank*, available online at <http://databank.worldbank.org/Data/Views/Reports/TableView.aspx?IsShared=true&IsPopular=country>
- World Bank, (2012), *GNI, PPP (current international \$)*, available online at <http://data.worldbank.org/indicator/NY.GNP.MKTP.PP.CD/countcoun>