

Modern Determinants of Countries' Economic Power

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ABSTRACT. The economic power of a country is the ability of all its residents to influence the other subjects of international economic relations by economic means and to withstand external impact. The abstract nature, multidimensionality and complexity of the concept of economic power determine the plurality of methods for its quantitative measurement. The examples of the existing assessments of countries' economic power at the beginning of the 21st century are given based on its key determinants. The methods based on the criteria of GDP, national wealth, trade sphere of influence, multi-component indices and subjective assessments are preferably used. Most assessments show the distribution of economic power between countries in a fairly similar way. However, the methods based on national wealth and its components give a distinct advantage to developed countries, and the methods of subjective assessments in individual countries can show unexpected results. The problematic aspects of the existing methods include the failure to take into account economic dynamics, informal economy, environmental impact, non-periodicity of statistical data publication, coverage of a part of economic entities, one-dimensionality, arbitrary weighting coefficients of factors or duplication of information. We propose the economic power index based on fixed values and dynamics of adjusted net national income. The application of such index made it possible to assess the economic power of the vast majority of countries and a number of integrated entities. The leading countries, i.e. USA and China, were similarly assessed. Taking into account the incomplete integration, the EU takes the third place. The developed countries account for a half of economic power of the world's countries, the newly industrialized countries – for more than one third, the least developed countries – for less than 1 per cent. The enhancing effect of integrated entities on their key member states was assessed. The advantages and disadvantages of the proposed method of assessment were presented. It has advantages when comparing countries with similar economy size and does not have any significant advantages in relation to the method of GDP when comparing economies of a significantly different sizes. The proposed method points to the relatively larger power of the North American countries, developed countries and East Asian countries as compared to their share in the gross world product.

KEYWORDS. Economic power of a country, economic power centers, economy size, national income, national wealth.

Introduction

The concept of economic power derives from political sciences and economic trends being alternative to the liberal paradigm. The inclusion of this concept into the economic theory contributes to a more accurate explanation of real economic processes, including those between

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countries. It reflects the existence of actual inequality between economic entities.

Economic power of a country may be defined as the ability of all its residents to influence the subjects of international economic relations (as well as their own subnational economic entities) and to withstand external impact. Economic power may be also considered as a process of such influence. It is an integral part of its overall national power and is an important factor in the formation of the political, military, informational, ideological, demographic, natural and resource, scientific and technical power of the country, although it cannot be an appropriate substitute therefor.

Economic power is unequally distributed among the world's leading economic centers and other countries. Knowledge of this distribution helps to foresee the behavior of economic entities, structural changes in the world economy, the development of a strategy of foreign economic and political relations with partner countries and competitors.

However, the abstract nature, multidimensionality and complexity of the concept of economic power determine the plurality of methods for its quantitative measurement. They include the criteria based on GDP, national wealth, other single-criterion methods (based on energy consumption, government revenues, foreign trade, IMF quotas, etc.), multi-component indices, subjective assessments.

GDP is the most universal indicator of measuring economic power in terms of the promptness of statistical data publication and ease of use. Criticism of GDP-based criterion takes into account the following aspects: costly and often consumer nature, underestimation of the role of social capital, possibility of non-use of manufactured goods, informal economy, environmental impact, asset value, environment, access to information and knowledge, creation of pseudo-benefits, revenues from the current economic situation, external indebtedness.

The disadvantages of criteria based on national wealth include non-periodicity of data publication, failure to take into account economic dynamics and informal economy, non-identity of concepts of ownership and control, complexity of intangible capital, coverage of a part of economic entities. Other one-dimensional criteria actually focus only on one factor or manifestation of economic power. Multi-component economic power indices include several factors of power. Incomplete set of factors, arbitrary weighting coefficients of factors, often costly character of indicators, duplication of information provided by different indicators are still the main problem related thereto. In case of subjective assessments, the results regarding less well-known countries may be inaccurate and depend on the profession and citizenship of the respondents.

We intend to characterize the state of distribution of economic power between countries herein. To achieve this purpose, we use a review of the assessments made by other researchers and apply our own assessment methodology based on static and dynamic indicators of economic activity.

Main part

We would like to give several examples of assessments of the current situation relating to such distribution in the 21st century. According to the CIA's Strategic Assessments Group, the USA accounted for 20% of the aggregate global power in 2005, the EU and China – 14% each, India – 9%, Brazil, South Korea and Russia – 2% each².

GDP-based criteria A. Virmani determines the USA, EU (80% of the USA's level), China (25%) and Japan (27%) as global players, and determines Germany, France, UK, Italy, Russia and Spain in Europe (and to a lesser extent — the Netherlands, Poland, Belgium, Austria, Sweden, Switzerland, Norway, Greece), India, the Republic of Korea and Australia in Asia (Taiwan, Thailand, Indonesia, Hong Kong), Canada and Brazil in America (Mexico, Argentina) and none in Africa and the Middle East (or Southern Africa, Turkey, Iran, Saudi Arabia) as regional powers based on the power potential (actually economic power potential, since GDP and per capita GDP are taken into account) in 2005. The researcher also considers the hypothetical possibility of the power distribution between the EU and the member states in half. In such case the EU's power potential will be 40% and not 80% of the USA's level, and Germany's power potential will be less than Canada's one³.

The following powers were distinguished within the framework of the strategic matrix method in 2008: economic superpowers with GDP by PPP (by purchasing power parity method) of more than 5 trillion dollars (EU, USA, China), great powers — more than 1.5 trillion dollars (Japan, India, Germany, UK, France, Italy, Russia, Brazil), regional powers — more than 150 billion dollars (e.g., the Republic of Korea, Canada, Mexico, Spain). The remaining countries are considered as small powers⁴. However O. Arin noted that there were the following regional poles in 2000: none in Latin America, Eastern Europe and

² Treverton, Gregory F., and Seth G. Jones. *Measuring National Power: Conference Proceedings*. Santa Monica, CA, Arlington, VA, Pittsburgh, PA: RAND National Security Research Division, 2005.

³ Virmani, Arvind. *Global Power from the 18th to 21st Century: Power Potential (VIP2), Strategic Assets & Actual Power (VIP)*. Working paper 175. New Delhi: Indian Council for Research on International Economic Relations, 2005.

⁴ Ageev, A. I., G. Mensch, and R. Matthews, ed. *Global Rating of Integral Power of 100 World's Leading Countries – 2008*. Moscow: International League of Strategic Management, Assessment and Accounting, International Academy for Futures Studies, Institute for Economic Strategies, RAS, 2009.

Western Europe (Brazil prevailed over Mexico a little, Russia — over Poland, and Germany — over UK), South Africa in Africa, Turkey in the Middle East, Japan in East Asia, Russia in the CIS⁵.

According to L. Galperina's economic power index based on GDP and per capita GDP, the USA accounted for 18.5% of the global economic power in 2011, Japan — 5.2%, Germany — 3.5%, UK — 2.7%, France — 2.6%, Russia — 2.3%, Italy — 2.1%, Spain — 1.6%, Canada — 1.6%, Ukraine — 0.3%⁶.

Multi-component indices. A. Subramanian presents long-term assessments based on GDP, foreign trade and net capital flows. In 1870, the UK accounted for 16% of the global economic power, Germany — 9%, France — 8%. In 1950, the USA accounted for 23%, Russia — 7%, UK — 4%. In 1973, the USA accounted for 18%, Japan and Germany — 7.5%. In 2010, the USA accounted for 13%, China — 12%, Japan — 7%. China will account for 17%, USA — 13%, India — 7%⁷ according to the forecast for 2030.

K. Basu, S. De, R. Ghosh and Shweta use the index of government economic power (based on such indicators: government revenues, foreign exchange reserves, export of goods and services, human capital). The following countries took the lead in 2009: USA, China, Japan, Germany, India, Russia, France, Brazil, South Africa, Italy (see Table 1). Ukraine took the 32nd place. The list of the leading countries was different in 2000: USA, Japan, China, Germany, France, UK, Italy, India, Canada, Brazil. The following major changes took place during 2000–2009: economic power increased in Russia from 15th to 6th place, South Africa from 12th to 9th, Brazil from 10th to 8th place, India from 8th to 5th place; economic power declined in the UK from 6th to 11th place, Canada from 9th to 15th place. Considering the smaller powers, Azerbaijan, Belarus, Sudan, Angola, Kazakhstan, Georgia, China, Kyrgyz Republic, Ukraine, and Romania took the first places in terms of the index growth rate. In terms of both the power and growth rate, the rating was as follows: China, India, Russia, USA, Brazil, South Africa, Germany, Saudi Arabia, Japan, Italy⁸.

⁵ Arin, Oleh. *Twenty First Century: the World without Russia*. Moscow: Alians, 2001. Electronic edition, 2011. Accessed December 21, 2013. <http://www.twirpx.com/file/445834/>. [In Russian]

⁶ Galperina, L. "Adaptation Potential of the Social and Economic Development of a Country to the World Economic Risks." *Actual Problems of International Relations* 105(2) (2012) 29–34 [In Ukrainian].

⁷ Subramanian, Arvind. *Eclipse: Living in a Shadow of China's Economic Dominance*. Washington D. C.: Peterson Institute for International Economics, 2011.

⁸ Basu, Kaushik, Supriyo De, Rangeet Ghosh, and Shweta. "The Evolving Dynamics of Global Economic Power in the Post-Crisis World: Revelations from a New Index of Government Economic Power." *eSocialSciences Working Papers* 4666 (2011) 1–34 p. Accessed October 4, 2011. <http://finmin.nic.in/WorkingPaper/Index%20of%20Government%20Economic%20Power.pdf>.

Table 1 Rating and Government Economic Power in 2009⁹

No.	Country	Index	No.	Country	Index	No.	Country	Index
1	USA	0.4695	35	Czech Republic	0.0146	69	Yemen	0.0024
2	China	0.4254	36	Columbia	0.0139	70	Dominican Republic	0.0022
3	Japan	0.1979	37	Romania	0.0130	71	Uruguay	0.0021
4	Germany	0.1267	38	Venezuela	0.0126	72	Cameroon	0.0020
5	India	0.1183	39	Hungary	0.0124	73	Luxembourg	0.0020
6	Russian Federation	0.0947	40	Greece	0.0122	74	Latvia	0.0020
7	France	0.0891	41	Israel	0.0119	75	Costa Rica	0.0019
8	Brazil	0.0884	42	Singapore	0.0118	76	Ethiopia	0.0019
9	South Africa	0.0794	43	Vietnam	0.0116	77	Guatemala	0.0019
10	Italy	0.0772	44	Pakistan	0.0113	78	Uganda	0.0017
11	UK	0.0722	45	Portugal	0.0102	79	Trinidad and Tobago	0.0016
12	Republic of Korea	0.0546	46	Finland	0.0100	80	Estonia	0.0016
13	Spain	0.0503	47	Chile	0.0099	81	Paraguay	0.0015
14	Mexico	0.0492	48	Peru	0.0096	82	Zambia	0.0014
15	Canada	0.0478	49	Ireland	0.0090	83	Cyprus	0.0014
16	Indonesia	0.0348	50	Kazakhstan	0.0082	84	Cambodia	0.0013
17	Turkey	0.0342	51	Bangladesh	0.0073	85	Botswana	0.0012
18	Saudi Arabia	0.0337	52	Morocco	0.0070	86	Georgia	0.0012
19	Australia	0.0326	53	Angola	0.0065	87	Senegal	0.0011
20	Netherlands	0.0318	54	Slovak Republic	0.0057	88	Albania	0.0011
21	Poland	0.0308	55	New Zealand	0.0056	89	Jamaica	0.0010
22	Thailand	0.0250	56	Bulgaria	0.0047	90	Kyrgyz Republic	0.0008
23	Switzerland	0.0215	57	Belarus	0.0045	91	Moldova	0.0008
24	Belgium	0.0212	58	Azerbaijan	0.0042	92	Namibia	0.0008
25	Malaysia	0.0208	59	Croatia	0.0042	93	Nicaragua	0.0008
26	Argentina	0.0208	60	Tunisia	0.0037	94	Armenia	0.0007
27	Sweden	0.0203	61	Kenya	0.0036	95	Mali	0.0007
28	Nigeria	0.0194	62	Sri Lanka	0.0030	96	Benin	0.0007
29	Norway	0.0168	63	Lithuania	0.0028	97	Island	0.0006
30	Egypt	0.0164	64	Tanzania	0.0027	98	Mauritius	0.0006
31	Denmark	0.0162	65	Slovenia	0.0027	99	Haiti	0.0006
32	Ukraine	0.0160	66	Sudan	0.0026	100	Brunei	0.0005
33	Austria	0.0154	67	Bolivia	0.0025		-	
34	Philippines	0.0150	68	Jordan	0.0025		-	

⁹ Basu, Kaushik, Supriyo De, Rangeet Ghosh, and Shweta. "The Evolving Dynamics of Global Economic Power in the Post-Crisis World: Revelations from a New Index of Government Economic Power." *eSocialSciences Working Papers* 4666 (2011): 34. Accessed October 4, 2011. <http://finmin.nic.in/WorkingPaper/Index%20of%20Government%20Economic%20Power.pdf>.

National wealth. Let us proceed to assessments based on accumulated wealth. In 2005, (latest published data), according to the World Bank, the USA possessed 32.3% of the world's wealth, Japan 10.4%, Germany 6.7%, UK 5.9%, France 5.3%, Italy 4.3%, China 3.7%, Ukraine 0.2%. If not accounting for the intangible capital, the distribution will be different: USA 20.7%, Japan 12.5%, China 8.8%, Germany 5.9%, Russia 4.6%, France 4.2%, Italy 3.5%, UK 3.3%, India 3.3%, Brazil 3%, Ukraine 0.42%¹⁰. If we abstract from the problems related to sustainable development, the second method characterizes the economic power potential in a better way.

Table 2 shows the assessments of the distribution of global household wealth according to Credit Suisse Wealth Report. We see the clear economic leadership of the USA; China and Japan are far behind. In 2014 (in 2000), the distribution by regions was as follows: North America 34.7% (38.8%), Europe 32.4% (28.8%), Asia-Pacific Region 28.4% (28.6%), Latin America 3.5% (2.9%), Africa 1.1% (0.9%)¹¹. As we see, the main redistribution took place from Japan and the USA to China and a part of Europe (despite the crisis, probably due to the dynamics of euro exchange rate) in the research period. However, their methodology allows calculating wealth of developed countries only on a relatively reliable basis: quality of data by many developing countries, including Ukraine, is low enough.

Table 2 Distribution of Household Wealth by Countries, %¹²

Country	2014	2000	Country	2014	2000	Country	2014	2000
USA	31.8	36.7	India	1.4	1.0	Indonesia	0.6	0.3
Japan	8.8	16.5	Republic of Korea	1.4	0.9	Austria	0.6	0.5
China	8.1	4.0	Switzerland	1.4	1.1	Denmark	0.5	0.4
France	5.8	3.9	Taiwan	1.3	1.5	Norway	0.5	0.3
Germany	5.4	5	Brazil	1.2	0.7	Greece	0.4	0.4
UK	5.4	6.1	Belgium	1.0	1.0	Hong Kong	0.4	0.5
Italy	4.8	4.7	Netherlands	1.0	1.1	Singapore	0.4	0.3
Canada	2.9	2.1	Mexico	1.0	0.8	Turkey	0.4	0.4
Australia	2.7	1.2	Sweden	0.9	0.7
Spain	1.9	1.7	Russia	0.8	0.3	Ukraine	0.0	0.0

According to the Forbes ranking, total net assets of billionaires and the number of billionaires were distributed in 2015 as indicated in Table 3. We see that the power of Japan and that of the UK are clearly underestimated.

¹⁰ Calculated by: The World Bank. "The Changing Wealth of Nations." Accessed August 6, 2016. <http://data.worldbank.org/data-catalog/wealth-of-nations>

¹¹ Credit Suisse Research Institute. *Global Wealth Databook 2014*. Zurich: Credit Suisse Group AG, 2014: 22-5, 34-7.

¹² Ibid

Table 3 Wealth and Number of Billionaires by Countries in 2015¹³

Country	Net assets, billion dollars	Number, persons	Share in net assets, %	Share in the number of billionaires, %	Country	Net assets, billion dollars	Number, persons	Share in net assets, %	Share in the number of billionaires, %
USA	2567	537	36.39	29.34	Egypt	23.5	8	0.33	0.44
EU	1,437	343	20.37	18.74	Nigeria	23	5	0.33	0.27
China	565	213	8.01	11.64	UAE	19.2	4	0.27	0.22
Germany	435	103	6.17	5.63	Columbia	18.5	3	0.26	0.16
Russia	337	88	4.78	4.81	Cyprus	15.8	5	0.22	0.27
India	294	91	4.17	4.97	Czech Republic	15.5	5	0.22	0.27
France	253	47	3.59	2.57	Lebanon	14	7	0.20	0.38
Hong Kong	246	56	3.49	3.06	Ukraine	12	5	0.17	0.27
Brazil	181	54	2.57	2.95	Poland	11.5	5	0.16	0.27
UK	171	53	2.42	2.90	Argentina	11	5	0.16	0.27
Italy	156	39	2.21	2.13	Kazakhstan	10.8	5	0.15	0.27
Mexico	144	16	2.04	0.87	New Zealand	9.9	2	0.14	0.11
Canada	135	39	1.91	2.13	Venezuela	9.6	3	0.14	0.16
Spain	116	21	1.64	1.15	Peru	8.8	6	0.12	0.33
Sweden	116	23	1.64	1.26	Belgium	8.2	3	0.12	0.16
Switzerland	99	29	1.40	1.58	Portugal	8.2	3	0.12	0.16
Japan	98	25	1.39	1.37	Finland	8	5	0.11	0.27
Taiwan	82	33	1.16	1.80	Greece	7	3	0.10	0.16
Republic of Korea	78	30	1.11	1.64	Kuwait	5.9	5	0.08	0.27
Australia	69	27	0.98	1.48	Morocco	5.3	3	0.08	0.16
Indonesia	56	23	0.79	1.26	Georgia	5.2	1	0.07	0.05
Thailand	55	16	0.78	0.87	Monaco	4.7	3	0.07	0.16
Singapore	54	19	0.77	1.04	Swaziland	3.9	1	0.06	0.05
Israel	54	17	0.77	0.93	Angola	3.3	1	0.05	0.05
Saudi Arabia	52	10	0.74	0.55	Algeria	3.1	1	0.04	0.05
Turkey	52	32	0.74	1.75	Tanzania	2.3	3	0.03	0.16
Philippines	51	11	0.72	0.60	Oman	2.2	2	0.03	0.11
Malaysia	49	12	0.69	0.66	Romania	2.2	2	0.03	0.11
Chile	40	12	0.57	0.66	Jersey	1.8	1	0.03	0.05
Austria	30	7	0.43	0.38	Vietnam	1.7	1	0.02	0.05
Ireland	30	5	0.43	0.27	Island	1.3	1	0.02	0.05
South Africa	29	7	0.41	0.38	Nepal	1.3	1	0.02	0.05
Netherlands	28	9	0.40	0.49	Saint Kitts and Nevis	1.2	1	0.02	0.05
Denmark	26	5	0.37	0.27	Uganda	1.1	1	0.02	0.05
Norway	25	10	0.35	0.55	Guatemala	1	1	0.01	0.05

¹³ Calculated by: Forbes. "The World's Billionaires." Accessed August 7(2016). <http://www.forbes.com/billionaires/>.

The USA account for more than a third of assets, which is almost twice more than in the EU and 3–4.5 times more than in China. Such asymmetry is due to higher per capita incomes and a significant inequality in the distribution of incomes in the USA. In this case, the share in the number of billionaires therefore better reflects the distribution of wealth between countries than the share in net assets. About 30% of the assets of China's billionaires are concentrated in Hong Kong. Russia and India take the 5th and 6th places. Ukraine accounts for only 0.17% of assets.

In 2014, the number of millionaires was (in thousands) 4,351 in the USA, 2,452 in Japan, 1,141 in Germany, 890 in China, 550 in the UK, 494 in France, 343 in Switzerland, 331 in Canada, 226 in Australia, 219 in Italy, 198 in India, 190 in Netherlands, 189 in the Republic Korea, 178 in Spain, 161 in Saudi Arabia, 161 in Brazil, 155 in Russia, 141 in Kuwait, 138 in Hong Kong, 127 in Norway, 125 in Mexico, 125 in Taiwan, 114 in Austria, 111 in Argentina, 107 in Singapore. As compared to 2013, the largest increase was observed in India (26%), China (17%), Kuwait (12%), Taiwan (12%), and decrease occurred in Brazil (-6%), Mexico (-4%), Russia (-3%)¹⁴. Investment assets of millionaires were distributed in 2014 (2010) as follows: 28.8% (27.3%) in North America, 28% (25.3%) in the Asia-Pacific region, 23% (23.9%) in Europe, 13.6% (17%) in Latin America, 4% (3.9%) in the Middle East, 2.6% (2.7%) in Africa¹⁵. As we see, there was a clear increase of the positions of the Asia-Pacific region, a slight increase in the USA and the Middle East, a clear weakening in Latin America, a slight weakening in Europe and Africa.

Trade power of influence. The trade component of economic power may be calculated by the scope of the trading sphere of the country's influence due to its bilateral export and import relations. The scope of trading spheres of countries' influence is determined by S.N. Sokolov. According to the researcher, the U.S. trading sphere of influence includes 44 among 245 countries, while Germany and China taking the second and third places are significantly behind. 7 countries within the American sphere of influence have high dependence (small Caribbean countries), 22 countries have medium (also mostly the Caribbean countries, countries of Africa, Oceania, Canada), 11 countries – small (the same regions as well as Israel), 4 countries – insignificant dependence. As compared to 2009, the U.S. trading sphere of influence

¹⁴ Capgemini, RBC Wealth Management. "Global HNWI Population and Wealth Expanded, but at a Slower Pace." Accessed August 16, 2015. <https://www.worldwealthreport.com/Global-HNWI-Population-and-Wealth-Expanded>.

¹⁵ Calculated by: Capgemini, RBC Wealth Management. "Global HNWI Population and Wealth Expanded, but at a Slower Pace." Accessed August 16, 2015. <https://www.worldwealthreport.com/Global-HNWI-Population-and-Wealth-Expanded>.

has decreased. For instance, Brazil, India, Japan and others have moved to another sphere of influence.

9 countries within the German sphere of influence had an average dependence, 6 — small and 8 — insignificant (all countries of Europe). It also decreased. 3 countries / territories within the Chinese sphere of influence have a high dependence (Lesotho, DPRK, Mongolia), 2 — medium (including Taiwan), 8 — small (Africa, East Asia, Middle East), 3 — insignificant (Africa and Iran). The Chinese sphere of influence has been dynamically growing.

The French sphere of influence included 13 countries in total (Africa and Europe), Russian — 12 countries and territories (post-Soviet countries and Serbia), Japanese — 9 countries (Middle East, East Asia, Africa, Australia), Italian — 8 countries (Europe Africa), Australian — 6 countries (Oceania), Saudi Arabian — 3 countries (Middle East and Africa), South African — 5 countries (Africa), UK — 5 countries (Europe and Africa), Indian — 4 countries (South Asia and Africa), Brazilian — 4 countries (South America), Spanish — 3 countries (Europe and the Caribbean), Portuguese — 3 countries (the former island colonies), Singaporean — 3 countries (Asia and the Caribbean), Belgian — 3 countries (Africa). The sphere of influence of the following countries included 1–2 countries each: Thailand, Kenya, Fiji, Venezuela, Malaysia, Finland, Croatia, Pakistan, Ukraine, Djibouti, Turkey, Trinidad and Tobago, South Korea, Nigeria, Syria, Iraq, Greece, Serbia, Canada, UAE, the Netherlands.

South Africa (40.3%), Russia (21.1%), Portugal (20.6%) have the largest average weighted foreign trade quota of the metropolitan area within their sphere of influence, while Belgium (6.6%), France (7%), Singapore (9.1%) have the smallest one. And in terms of GDP, the largest spheres of influence are U.S. and German (more than 10 trillion dollars), French, Chinese, Japanese (1-5 trillion dollars), Russian, Italian, Brazilian, Singaporean, Australian, Spanish (100-1,000 billion dollars), as well as British. S. N. Sokolov calculated the share of export and import in and from the metropolitan area and the difference between them regarding each sphere of influence. According to this characteristic, the spheres of influence are divided into:

- import (difference less than -10%, import from metropolitan area prevails): Saudi Arabian, South African, Portuguese, Russian, Indian, Brazilian and Singaporean;
- export (more than 10%): American, Italian and Belgian;
- balanced (-10% to 10%) – the rest of spheres¹⁶.

¹⁶ Sokolov, S. N. "Modern Foreign Trade Influence Areas of Countries of the World." Paper presented at the 2nd international conference "Analysis of Trends and Prospects of Development of the Economy, Management and Law" Donetsk, November 25–27, 2013 [In Russian].

If we sum up export and import of metropolitan areas within their spheres of influence, as stated in S.N. Sokolov's study, the largest spheres of influence are the following: U.S. (1,962 billion dollars), German (1,513 billion dollars), French (348 billion dollars), Chinese (270 billion dollars), Japanese (218 billion dollars), British (100 billion dollars), Russian (87 billion dollars), Italian (56 billion dollars), Singapore (40 billion dollars), Spanish (37 billion dollars), Brazilian (32 billion dollars), Australian (15 billion dollars), South African (11 billion dollars), Saudi Arabian (8.5 billion dollars), Indian (5.5 billion dollars), Belgian (0.9 billion dollars), Portuguese (0.4 billion dollars)¹⁷.

Subjective assessments. Let us give an example of assessments based on a survey instead of objective statistical indicators. According to surveys to determine the subjective opinion of students being trained in the relevant field, which was conducted by M. Sulek, the countries were ranked according to economic power in 2010 as follows: the USA, Switzerland, Germany, Japan (1), the EU, the Netherlands, China (5), Sweden, Saudi Arabia (8), UK, Spain, Belgium (10), Italy, France (13), Poland (15), Brazil, Australia (16), Taiwan (19), South Africa (19), Canada (19), Thailand, South Korea (22), Egypt (24), Venezuela (25), India (25), Chile (27), Vietnam, Turkey, Russia, Nigeria, Colombia (28), Mexico (33), North Korea, Israel, Indonesia (34), Ukraine, Iran (37), Pakistan (39), Bangladesh (40). Therefore, by a number of countries (e.g., Switzerland, India, the Netherlands, Russia), this is significantly different from objective indicators¹⁸.

Methodology of economic power distribution based on adjusted net national income (ANNI). We have proposed an assessment method (HEP index) of economic power that takes into account the economy size and economic growth based on ANNI (GNI less consumption of fixed capital and depletion of natural resources), valued according to global indicators. The following formula is used:

$$HEP = \frac{(3ANNI + \Delta ANNI) \cdot \sqrt{PPP}}{4}, \quad (1)$$

where *HEP* is economic power;

ANNI – share of a country's ANNI in the world;

ΔANNI – share of long-term increase of a country's ANNI in the world;

PPP – correlation of PPP coefficient and exchange rate.

¹⁷ Calculated by: Sokolov, S. N. "Modern Foreign Trade Influence Areas of Countries of the World." Paper presented at the 2nd international conference "Analysis of Trends and Prospects of Development of the Economy, Management and Law" Donetsk, November 25–27, 2013 [In Russian].

¹⁸ Sulek, Mirosław. *Synthetic Approach to Measurement of National Power*. Warsaw: Institute of International Relations, University of Warsaw, 2010. Accessed February 7, 2015. <http://powermetrics.bplaced.net/22A00.doc>.

We simultaneously use the fixed values and increase of ANNI to take into account two concepts of economic power (power potential and power reflected in the results). In order to calculate the increase of ANNI, we use the weighted average annual increase so that later years are of greater weight:

$$\Delta\text{ANNI} = \frac{\Delta\text{ANNI}_{t-11} + 2\Delta\text{ANNI}_{t-10} + \dots + 10\Delta\text{ANNI}_{t-2} + 12\Delta\text{GNI}_{t-1}}{77} \quad (2)$$

The use of gross national income (*GNI*) for the last year is due to a large lag when publishing data on ANNI. Partial PPP adjustment is used to reduce the effect of the understated or overvalued exchange rate (ANNI is calculated at the exchange rate). After calculating HEP index, it is re-valued so that the amount of HEP of all countries is equal to 98.5% for adjustment for availability of countries regarding which there are no relevant statistical data.

In order to assess the economic power of an integrated entity as a subject of international relations, and not as a mechanical totality of member states, because of its incomplete subjectivity, we use the average geometric HEP of all member states and HEP of the largest member states (core states):

- one country for the customs union or common market (e.g. Russia in the EAEU, Brazil in MERCOSUR);

- two to three countries in case of an already well-established economic and monetary union (e.g., Germany, France and the UK / Italy in the EU).

Results of the countries' economic power assessment based on ANNI. We have verified this method based on the data of the World Bank¹⁹. The results of calculations of the economic power index (HEP) are set out in Table 4. To date, the USA and China have a similar economic power (40% of the global indicator). India, Germany and Japan (only 12% in total) are far behind.

Table 4 Countries' Economic Power in 2015, %²⁰

No.	Country	HEP	No.	Country	HEP	No.	Country	HEP
1	China	19.97	58	Uzbekistan	0.17	115	Botswana	0.024
2	USA	19.82	59	Ecuador	0.16	116	Nicaragua	0.024
3	India	5.07	60	Hungary	0.16	117	Chad	0.022
4	Germany	3.64	61	Greece	0.15	118	Namibia	0.021
5	Japan	3.48	62	Angola	0.15	119	Mali	0.021

¹⁹ The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

²⁰ Calculated by: The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

No.	Country	HEP	No.	Country	HEP	No.	Country	HEP
6	UK	2.85	63	Sudan	0.14	120	Burkina Faso	0.021
7	Brazil	2.80	64	Cuba	0.14	121	Mauritius	0.021
8	France	2.39	65	Ethiopia	0.14	122	Armenia	0.020
9	Russia	2.15	66	Ukraine	0.13	123	Tajikistan	0.020
10	Indonesia	2.07	67	Kenya	0.13	124	Jamaica	0.020
11	Republic of Korea	1.71	68	Dominican Republic	0.12	125	Cyprus	0.019
12	Italy	1.68	69	Azerbaijan	0.12	126	Madagascar	0.019
13	Mexico	1.66	70	Belarus	0.11	127	Albania	0.019
14	Canada	1.55	71	Myanmar	0.11	128	Benin	0.018
15	Australia	1.29	72	Tanzania	0.11	129	Island	0.018
16	Turkey	1.26	73	Guatemala	0.11	130	Macedonia	0.018
17	Spain	1.18	74	Slovak Republic	0.10	131	Haiti	0.017
18	Nigeria	1.09	75	Panama	0.087	132	Rwanda	0.016
19	Iran	1.04	76	Bulgaria	0.084	133	Moldova	0.016
20	Saudi Arabia	1.02	77	Uruguay	0.081	134	Gabon	0.014
21	Argentina	1.00	78	Costa Rica	0.081	135	Niger	0.013
22	Poland	0.76	79	Yemen	0.078	136	Kyrgyz Republic	0.013
23	Netherlands	0.76	80	Lebanon	0.078	137	Guinea	0.0096
24	Egypt	0.75	81	Jordan	0.074	138	Bahamas	0.0091
25	Philippines	0.74	82	Tunisia	0.074	139	Sierra Leone	0.0077
26	Pakistan	0.72	83	Côte d'Ivoire	0.066	140	Togo	0.0075
27	Thailand	0.66	84	Ghana	0.065	141	Republic of the Congo	0.0074
28	Switzerland	0.59	85	Bolivia	0.064	142	Mauritania	0.0072
29	Venezuela	0.56	86	Lithuania	0.059	143	Suriname	0.0072
30	UAE	0.54	87	Oman	0.058	144	Malawi	0.0069
31	Malaysia	0.53	88	Cameroon	0.056	145	Swaziland	0.0068
32	Sweden	0.51	89	Paraguay	0.054	146	Fiji	0.0068
33	Columbia	0.51	90	Croatia	0.053	147	Burundi	0.0059
34	Bangladesh	0.47	91	Uganda	0.053	148	Guyana	0.0054
35	Belgium	0.45	92	Nepal	0.050	149	Lesotho	0.0047
36	Singapore	0.44	93	Afghanistan	0.047	150	Barbados	0.0047
37	South Africa	0.44	94	Slovenia	0.046	151	Equatorial Guinea	0.0046
38	Vietnam	0.38	95	Trinidad and Tobago	0.045	152	Eritrea	0.0046
39	Romania	0.38	96	Salvador	0.040	153	Maldives	0.0045
40	Austria	0.37	97	Cambodia	0.038	154	Bhutan	0.0034
41	Israel	0.37	98	Zambia	0.038	155	Liberia	0.0024
42	Norway	0.35	99	Democratic Republic of the Congo	0.037	156	Seychelles	0.0022
43	Peru	0.35	100	Luxembourg	0.036	157	Central African Republic	0.0021

No.	Country	HEP	No.	Country	HEP	No.	Country	HEP
44	Algeria	0.34	101	Bahrain	0.036	158	Cape Verde	0.0021
45	Chile	0.33	102	Latvia	0.033	159	Belize	0.0021
46	Iraq	0.32	103	Honduras	0.032	160	Saint Lucia	0.0020
47	Kazakhstan	0.30	104	Estonia	0.032	161	Guinea-Bissau	0.0016
48	Denmark	0.27	105	Turkmenistan	0.030	162	Vanuatu	0.0011
49	Qatar	0.25	106	Georgia	0.028	163	Saint Vincent and the Grenadines	0.0011
50	Portugal	0.21	107	Zimbabwe	0.028	164	Samoa	0.0011
51	Finland	0.20	108	Papua New Guinea	0.027	165	Gambia	0.0010
52	Sri Lanka	0.20	109	Mozambique	0.026	166	Solomon Islands	0.0010
53	New Zealand	0.20	110	Laos	0.026	167	Comoros	0.0010
54	Ireland	0.20	111	Senegal	0.026	168	Dominica	0.0007
55	Czech Republic	0.19	112	Brunei	0.025	169	Sro Tomř and Prncipe	0.0007
56	Morocco	0.18	113	Mongolia	0.025	170	Tonga	0.0006
57	Kuwait	0.17	114	Libya	0.024	171	Kiribati	0.0005

The economic power was distributed by groups of countries as indicated in Table 5. A half of the global economic power is accounted for by the developed countries, 35% — by the newly industrialized countries, less than 1% — by the least developed countries. The Asia-Pacific region accounts for one third, Europe, Central Asia and North America account for 21–23%.

Table 5 Concentration of Economic Power by Regions of the World and Groups of Countries, %²¹

Region	HEP	Countries by income per capita	HEP	Other groups of countries	HEP
East Asia and Pacific region	33.1	With high income	50.6	EU	16.9
Europe and Central Asia	22.6	With income above the average	35.4	Eurozone	11.6
North America	21.4	With income below the average	13.6	Central Europe and the Baltic countries	1.9
Latin America and the Caribbean region	8.2	With low income	0.8	The Arab world	4.4
South Asia	6.6				
Middle East and North Africa	5.3				
Sub-Saharan Africa	3.0				

²¹ Calculated by: The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

We compare the rating of the leading countries by economic power index (HEP), its static and dynamic components (NNP and Δ NNP), GNI at exchange rate (GNI_{er}) and GNI by PPP (GNI_{ppp}) in Table 6.

Table 6 Leading Countries' Economic Power Indicators²²

No.	Country	HEP	Country	NNP	Country	Δ NNP
1	China	20.0	USA	23.0	China	21.9
2	USA	19.8	China	13.5	USA	14.0
3	India	5.1	Japan	5.8	India	2.7
4	Federal Republic of Germany	3.6	Federal Republic of Germany	5.0	Indonesia	1.12
5	Japan	3.5	UK	3.9	Republic of Korea	1.07
6	UK	2.8	France	3.6	Australia	0.83
7	Brazil	2.8	Brazil	3.1	Nigeria	0.80
8	France	2.4	India	2.7	Argentina	0.79
9	Russia	2.1	Italy	2.7	UK	0.63
10	Indonesia	2.1	Russia	2.4	Egypt	0.63

	Country	GNI _{er}	Country	GNI _{ppp}
1	USA	24.7	China	17.1
2	China	14.7	USA	16.0
3	Japan	5.8	India	7.0
4	Federal Republic of Germany	4.7	Japan	4.4
5	UK	3.8	Federal Republic of Germany	3.5
6	France	3.4	Russia	3.1
7	India	2.8	Brazil	2.8
8	Italy	2.5	Indonesia	2.4
9	Brazil	2.4	France	2.4
10	Canada	2.1	UK	2.3

We see that while the USA has the best static situation, China has the best dynamics. According to the dynamic component, the top ten countries include such traditional leading countries as Japan and Germany, which is due to moderate economic growth in these countries. At the same time, according to the dynamic component, disproportionately better situation is observed in such countries as

²² Calculated by: The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

Indonesia, Republic of Korea, Australia, Nigeria etc. Table 7 reflects the similar comparison of the relevant indicators of Ukraine. Economic dynamics was Ukraine's vulnerable spot due to economic crises in 2008-09 and 2014-15.

*Table 7 Assessments of Ukraine's Economic Power*²³

Indicator	Value, %	Rank
HEP	0.13	66
NNP	0.17	59
Δ NNP	-0.002	156
GNI _{er}	0.12	62
GNI _{ppp}	0.30	47

Comparison of assessments based on GDP and ANNI. Table 8 shows the correlation matrix between alternative methods of economic power measurement (we divided the indicators by a country's share in world population for exclusion of influence of a country's size). We see that our HEP index is almost equally highly correlated with GNI by different ways of calculation. This means that although our method, which also takes into account economic dynamics, more accurately assesses the country's economic power, the methods based on GNI or GDP (for example, the average of GNI shares at exchange rate and by PPP in the world) are also suitable for simplification of calculations. If it is referred to assessment of the effects of asymmetry in economic power between countries that are significantly different (small economies, medium-sized economies, large economies), our method has no advantage over application of GDP or GNI. The correlation between HEP and GNI_{ppp} was 0.997, without adjustment for population size. The HEP-based method has therefore a clear advantage only in case when it is required to compare the power of economies of a similar size.

*Table 8 Correlation between Countries' Economic Power Indicators Adjusted for Population Size*²⁴

Country	HEP	NNP	Δ NNP	GNI _{er}	GNI _{ppp}
HEP	1				
NNP	0.952	1			
Δ NNP	0.267	0.029	1		
GNI _{er}	0.963	0.994	0.097	1	
GNI _{ppp}	0.963	0.892	0.179	0.912	1

²³ Calculated by: The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

²⁴ Calculated by: The World Bank. "World Development Indicators." Accessed August 5, 2016. <http://data.worldbank.org/data-catalog/world-development-indicators>.

As compared to GNIppp, HEP index deviates by an average of 17%. The most positive deviation was 54%, negative — 71%. HEP index clearly shows larger economic power than GNIppp in such countries such as Vanuatu, Israel, Papua New Guinea, New Zealand, Australia, Iceland, Uruguay, Switzerland (deviation of more than +30%). Economic power is clearly smaller in the Republic of the Congo, Libya, Gambia, Equatorial Guinea, Oman, Malawi, Turkmenistan (-60% and less), in Ukraine (-54%). These deviations are due to the impact of economic dynamics, unequal efficiency of the use of fixed capital and natural resources, or the simplified method of calculating HEP if a part of data is not available. More positive deviation is observed (by groups of countries) in North America, developed countries, East Asia; negative deviation is observed in South Asia, the Middle East and North Africa, countries (developing) of Europe and Central Asia, Central Europe and the Baltic countries.

Economic power of integrated entities. We may also use the approach proposed by us for assessment of economic power of integrated entities with adjustment for incomplete subjectivity. HEP of all EU countries is 16.9% of the world; HEP of Germany, France and Italy is 7.7% in the aggregate. The adjusted HEP of the EU may be therefore considered to be 11.4%. This indicator is 3 times higher than HEP of Germany. But this is approximately 40% less than HEP of the USA or China, and better reflects the effect of incomplete integration in the EU.

Regarding EAEU and MERCOSUR, incomplete integration is greater. HEP of Russia is 2.15%, HEP of all EAEU countries is 2.59%, that is why the adjusted HEP of EAEU is 2.36%. We may say that due to EAEU Russia increases its influence by approximately 10% as compared to the absence of integration. HEP of Brazil and all MERCOSUR countries is 2.80% and 4.56% correspondingly, so the adjusted HEP of MERCOSUR is 3.58%. Due to MERCOSUR, Brazil increases its influence by 28%.

Conclusions

Most assessments show the distribution of economic power between countries in a fairly similar way. The first places are taken by the USA (13-36.4%), the EU (14-20.4%) and China (8.1-14%), Japan (1.4-12.5%), Germany (3.5-6.7%). At the regional level, the close indicators are observed in North America, Europe and the Asia-Pacific region. Ukraine accounts for 0.0-0.42% of the global economic power, taking the 32nd-37th places in the ranking. Therefore, despite the population size and territory, Ukraine is not considered as a regional economic power.

However there are differences. The methods based on national wealth and its components give a clear advantage to developed countries. Individual countries (especially Japan) were underestimated or re-valued (Russia) according to rating of billionaires' wealth. According to the method based on the scope of trade sphere, the USA is followed by Germany (by a small margin), France (by a significant margin), China, Japan, UK, Russia, Italy. The methods based on subjective assessments of individual countries may show unexpected results (for example, overestimated assessments regarding Switzerland, the Netherlands, underestimated assessments regarding the EU and Russia).

The economic power index proposed by us takes into account the static and dynamic indicators of adjusted net national income and made it possible to estimate the power of 171 countries with available statistical data. It shows a similar value of economic power in the USA and China — almost 20% in each. The index for the EU is 40% less (11.4%), adjusted for incomplete integration and, accordingly, incomplete subjectivity in the international economic relations. The following places are taken by India (5.1%), Germany (3.6%), Japan (3.5%), UK (2.9%), Brazil (2.8%), France (2.4%), Russia (2.2%), Indonesia (2.1%), the Republic of Korea (1.7%), Italy (1.7%), Mexico (1.7%), Canada (1.6%), Australia (1.3%), Turkey (1.3%), Spain (1.2%), Nigeria (1.1%), Iran, Saudi Arabia, Argentina (1% each). Due to integration into the EAEC, Russia increases its economic power by 10%, due to MERCOSUR, Brazil increases its economic power by 28%, but it is substantially less than the EU core due to European integration.

Our economic power index usually leads to a ranking close to the averaged rank between the GNI-based ratings at the exchange rate and by PPP. This is evidenced by the high correlation between them, even with the adjustment for the population size. However there are exceptions. For instance, Ukraine takes the 66th place (0.13%), taking into account the negative economic dynamics in recent years, which is lower than the rank according to both methods of calculating GNI. But we hope that Ukraine's economic power will be significantly improved due to stabilization of the economy in the medium term. Among the countries of Central and Eastern Europe, Ukraine's economic power is the same as that of Romania, Kazakhstan, the Czech Republic, Hungary, Azerbaijan, Belarus, Slovak Republic, Bulgaria.

As compared to the basic method based on GDP or GNI, the method proposed by us has advantages when comparing countries with the same economy size, but does not add significant information when comparing the power of economies that are significantly different by size (small economies vs. large or medium-sized economies). The deviations of the

economic power assessment according to our index and the GNP by PPP range from -71% to 54%. The upward deviations are mostly attributable to North American countries, developed countries and East Asia.

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