M. Porter's National Competitiveness Model Verification: Correlation Between the Level of National Competitiveness, Labor Productivity and the Quality of Life

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Abstract: Regardless of differences in understanding of national competitiveness all points of view agree that there is contradiction between gradual growth of labour productivity and level of life and decrease of competitiveness of Russian Economy demonstrated in many ratings published by well-known international economic organizations. This work is aimed to compare the levels of national competitiveness, levels of life and productivity of 5 biggest economies of the world for 5 years. The author comes to conclusion that these indicators do not depend on each other directly and this contradicts the one of the fundamental theses of Porter's modern theory of national competitiveness.

Key words: National competitiveness · Labour productivity · Level of life · World economic forum

INTRODUCTION

Development patterns of modern economic relations have lead to forming of single whole global economic space with the same "rules of the game" for everybody, it means that in the competition for a portion of finite world income the most competitive national economies will win. The problem is that by now there is no uniform understanding of such notion as "national competitiveness" in the economic science. However disputes regarding definition of national competitiveness in economic literature are centered around labour productivity, which determines the competitiveness of the country, rate of growth and level or quality of life of its citizens; in such approach social and economic aspects of this phenomenon are tied up together.

Theory of national competitiveness is based on the works of M.Porter who has formulated a number of fundamental theses: 1) national competitiveness can not be inherited, it is created by national producers rather than state; national competitiveness directly depends on level of labour productivity in economy (factorial productivity), which to a great extent is determined by rate of implementation of innovations; 3) end target of growth of national competitiveness is increase in population's level of life.

In spite of big amount of publications devoted to analysis and interpretation of Porter's theory [1], there are still big layer of ideas which did not pass through verification and critical analysis. A few of them investigated triad-national competitiveness-labour productivity-quality of life-in its dynamics for several years and in the selected countries [2].

The aim of this article is to investigate dependencies between these three and confirm (or disprove) a number of postulates of modern theory of national competitiveness offered by Porter.

Methodology of Research: Having estimated change in the level of national competitiveness for a number of countries in medium term, compared it with dynamics of indicators of population's life level and labour productivity in these economies we can confirm or disprove Porter's theory.

The choice of 5 year time period (2008-2012) is stipulated by two factors: 1) international organizations' methodology of research changes all the time; it is necessary to provide for compatibility of available data and it is possible with middle-term period; 2) this period of time covers development of investigated economies taking into consideration the results of overcoming of world crisis.

This year Russian economy, for the first time in modern history, was among the 5 leading economies of the world [3], that is why we choose other 4 countries from this 5: they must be comparable with Russia in the level of economic development and the scale of tasks solved.

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Nowadays Two Reports Are Paid General Attention: The Global Competitiveness Report of World Economic Forum (WEF) and The World Competitiveness Yearbook of International Institute of Management Development (IMD). As Porter's theory is chosen as foundation for WEF's researches, we choose reports from this organization as source of data about national competitiveness in world economies. For the last 30 years WEF's methodology regularly changed: since 2005 Global Competitiveness Index (GCI) is calculated-this provided for compatibility of data for subsequent years. With that WEF understands "competitiveness of economy" as a set of institutions, policies and factors which determine the level of productivity in the country [4, p 4].

Quality of life is understood by modern researches as complex characteristic of socio-economic, political, cultural and ideological and ecological factors and conditions for existence of a person, position of a man in society [5, p. 70]. The most meaningful indicator used for evaluation of the quality of life used by international statistics is Human Development Index (HDI) calculated by annually published Human Development Reports in the framework of United National Development Program (UNDP). We shall take HDIs in the investigated countries for period of 5 years and compare these with dynamics of change of national competitiveness level in the same economies. Analysis of data for 5 years will enable us to verify the dependency of quality of life on labour productivity level.

Labour productivity reflects volume of products made by one employee per time unit. It is GDP (or GVA) divided by number of employees or by amount of work time (in hours) [6]. Inter-country comparisons of labour productivity are made by a number of international organizations, such as OECD, The Conference Board, McKinsey Global Institute, BLS USA, JPC and others. Having statistics at hand provided by The Conference Board (Total Economy Database) we shall find values of labour productivity for our 5 countries per one employee and than compare them with dynamics of changes of level of national competitiveness in these countries. Having analyzed the data for 5 years we will be able to verify dependency of national competitiveness level on labour productivity level.

Here it is necessary to make methodological remark: to compare incompatible indicators (GCI, HDI, Labour productivity per person employed) is not a good way but here we focus not on particular values of indictors but on finding trends (the most important thing-if they are positive or negative; one-directional or differently directed) of changes of level of national competitiveness,

quality of life and labour productivity. In any case as fulfilled analysis shows updating of incompatible with each other indicators in order to get compatible values will not change dynamics of trends.

Main Part: Now we shall see how 12 pillars of national competitiveness changed for the last 5 years in WEF's reports [7].

As we see, for this period of time USA have lost its leadership in the rating of the most competitive economies of the world but have kept its position as leading world economy. Except for three pillars of competitiveness which remained unchanged during 5 years (Health and primary education, Technological readiness, Market size) all other subindexes showed negative dynamics. Sudden decrease on such pillars as Institutions, Macroeconomic environment, Goods market efficiency was observed. To a great extent decrease of level of competitiveness of American economy is connected with slow recover from recent global crisis.

Chinese economy, in spite of the fact that it became the largest economy of the world, improved its position in WEF rating only for 1. Competitiveness of Chinese economy gradually grew all the time and only for the last year has shrunk to the level of 2009. Great positive changes have taken place in two pillars of competitiveness-Health and primary education, also Financial market development. In several other pillars-Goods market efficiency, Technological readiness, Business sophistication и Innovation-slight decrease is observed. In 2012-2013 rating of Chinese competitiveness was by error influenced by methodology of calculation of GCI. GCI-complex indicator including big quantity of subindexes-a little decrease on a number of them leads to falling of rating for 3 positions.

Economy of India in middle term showed negative dynamics in the global competitiveness rating, having lost 9 positions. Pillars in which great positive changes took place after 5 years are not numerous-Macroeconomic environment и Financial market development. Serious decrease was in Institutions, Infrastructure, Higher education and training, Goods market efficiency, Technological readiness, Business sophistication.

In 5-years interval competitiveness of Japan have not changed greatly. Such pillars of competitiveness as Health and primary education, Financial market development, Technological readiness have shown distinct positive dynamics. In the same time two pillars showed great decrease: Macroeconomic environment и

Table 1: United States competitiveness profile, 2008-12 (WEF)

	2008-09	2009-10	2010-11	2011-12	2012-13	Trend
SUBINDEXES						
Basic requirements:	22	28	32	36	33	-
. Institutions	29	34	40	39	41	-
. Infrastructure	7	8	15	16	14	-
. Macroeconomic environment	66	93	87	90	111	-
. Health and primary education	34	36	42	42	34	0
Efficiency enhancers:	1	1	3	3	2	-
. Higher education and training	5	7	9	13	8	-
. Goods market efficiency	8	12	26	24	23	-
. Labor market efficiency	1	3	4	4	6	-
. Financial market development	9	20	31	22	16	-
. Technological readiness	11	13	17	20	11	0
. Market size	1	1	1	1	1	0
Innovation and sophistication factors:	1	1	4	6	7	-
. Business sophistication	4	5	8	10	10	-
. Innovation	1	1	1	5	6	-

Table 2: China competitiveness profile, 2008-12 (WEF)

	2008-09	2009-10	2010-11	2011-12	2012-13	Trend
SUBINDEXES						
Basic requirements:	42	36	30	30	31	+
. Institutions	56	48	49	48	50	+
. Infrastructure	47	46	50	44	48	-
. Macroeconomic environment	11	8	4	10	11	0
. Health and primary education	50	45	37	32	35	+
Efficiency enhancers:	40	32	29	26	30	+
. Higher education and training	64	61	60	58	62	+
. Goods market efficiency	51	42	43	45	59	-
. Labor market efficiency	51	32	38	36	41	+
. Financial market development	109	81	57	48	54	+
. Technological readiness	77	79	78	77	88	-
. Market size	2	2	2	2	2	0
Innovation and sophistication factors:	32	29	31	31	34	-
. Business sophistication	43	38	41	37	45	-
. Innovation	28	26	26	29	33	-

Table 3: India competitiveness profile, 2008-12 (WEF)

	2008-09	2009-10	2010-11	2011-12	2012-13	Trend
SUBINDEXES						
Basic requirements:	80	79	81	91	85	-
. Institutions	53	54	58	69	70	-
. Infrastructure	72	76	86	89	84	-
. Macroeconomic environment	109	96	73	105	99	+
. Health and primary education	100	101	104	101	101	-
Efficiency enhancers:	33	35	38	37	39	-
. Higher education and training	63	66	85	87	86	-
. Goods market efficiency	47	48	71	70	75	-
. Labor market efficiency	89	83	92	81	82	+
. Financial market development	34	16	17	21	21	+
. Technological readiness	69	83	86	93	96	-
. Market size	5	4	4	3	3	+
Innovation and sophistication factors:	27	28	42	40	43	-
. Business sophistication	27	27	44	43	40	-
. Innovation	32	30	39	38	41	-

Table 4: Japan competitiveness profile, 2008-12 (WEF)

	2008-09	2009-10	2010-11	2011-12	2012-13	Trend
SUBINDEXES						
Basic requirements:	26	27	26	28	29	-
. Institutions	26	28	25	24	22	+
. Infrastructure	11	13	11	15	11	0
. Macroeconomic environment	98	97	105	113	124	-
. Health and primary education	22	19	9	9	10	+
Efficiency enhancers:	12	11	11	11	11	+
. Higher education and training	23	23	20	19	21	+
. Goods market efficiency	18	17	17	18	20	-
. Labor market efficiency	11	12	13	12	20	-
. Financial market development	42	40	39	32	36	+
. Technological readiness	21	25	28	25	16	+
. Market size	3	3	3	4	4	-
Innovation and sophistication factors:	3	2	1	3	2	+
. Business sophistication	3	1	1	1	1	+
. Innovation	4	4	4	4	5	-

Table 5: Russia competitiveness profile, 2008-12 (WEF)

	2008-09	2009-10	2010-11	2011-12	2012-13	Trend
SUBINDEXES						
Basic requirements:	56	64	65	63	53	+
. Institutions	110	114	118	128	133	-
. Infrastructure	59	71	47	48	47	+
. Macroeconomic environment	29	36	79	44	22	+
. Health and primary education	59	51	53	68	65	-
Efficiency enhancers:	50	52	53	55	54	-
. Higher education and training	46	51	50	52	52	-
. Goods market efficiency	99	108	123	128	134	-
. Labor market efficiency	27	43	57	65	84	-
. Financial market development	112	119	125	127	130	-
. Technological readiness	67	74	69	68	57	+
. Market size	8	7	8	8	7	+
Innovation and sophistication factors:	73	73	80	97	108	-
. Business sophistication	91	95	101	114	119	-
. Innovation	48	51	57	71	85	-

Table 6: GCI rankings of the 5 world's largest economies, 2008-12 (WEF)

	2008-09 (among 134)	2009-10 (among 133)	2010-11 (among 139)	2011-12 (among 142)	2012-13 (among 144)	Trend
United States	1	2	4	5	7	-6
China	30	29	27	26	29	+1
India	50	49	51	56	59	-9
Japan	9	8	6	9	10	-1
Russia	51	63	63	66	67	-16

Table 7: HDI dynamics of the 5 world's largest economies, 2008-12 (UNDP)

	2008	2009	2010	2011	2012
United States	0.931	0.930	0.934	0.936	0,937
China	0.672	0.680	0.689	0.695	0.699
India	0.533	0.540	0.547	0.551	0.554
Japan	0.905	0.904	0.909	0.910	0,912
Russia	0,778	0,777	0,782	0,784	0,788

Table 8: Labor productivity per person employed in 2012 US$ (converted to 2012 price level with updated 2005 EKS PPPs) dynamics of the 5 world's largest economies, 2008-12 (The Conference Board, Total Economy Database)

	2008	2009	2010	2011	2012
United States	102 450	103 143	106 209	107 551	108 080
China	13 099	14 256	15 688	17 067	18 325
India	9 028	9 630	10 226	10 659	11 048
Japan	75 113	72 125	76 243	75 960	76 340
Russia	36 649	34 289	35 716	37 070	38 327

Labor market efficiency. It was influenced by two factors: the effects of global crisis and the trap of liquidity from which Japan monetary authorities try to get out without any success for almost 2 decades.

Russian economy for 5 years showed extremely bad dynamics having lowered down from 51 position to 67. Improvements were made in such pillars as Infrastructure, Macroeconomic environment и Technological readiness. All other pillars of national competitiveness showed negative dynamics and in such pillars as Institutions, Goods market efficiency, Labor market efficiency, Financial market development, Business sophistication и Innovation it was great.

So in the medium term among 5 biggest economies of the world China have shown the best dynamics in WEF's rating and Russia-the worst. 4 from 5 leading economies have shown negative dynamics of changing of national competitiveness (Table 6).

Now let us have a look on how population's quality of life of in these countries changed for these 5 years. This can be known from Human Development Reports of UNDP [8].

All countries in question have showed positive dynamics, with the highest absolute value of human development shown by USA, the lowest-by India. The quickest growth of life quality was in China (4% for 5 recent years). Taking into consideration that in WEF rating of national competitiveness 4 of 5 countries have shown negative dynamics we can conclude that there is no direct relation between indicators of quality of life and level of national competitiveness.

Further on, now let us see the changes in labour productivity per person in 5 leading economies of the world for 5 years (Table 8) [9].

Analysis of data shows that all countries have shown growth of labour productivity for 5 years, the highest absolute value is in USA, the lowest-in India. The quickest growth was shown by China (40% for 5 years). Taking into consideration that in WEF rating (of national competitiveness) 4 of 5 economies have shown negative dynamics, we can conclude that there is no direct relationship between labour productivity and the level of national competitiveness indicators.

CONCLUSIONS

Having compared indicators of national competitiveness, quality of life and labour productivity we can make the following conclusions:

- Use of 3 complex indicators as the base for comparison revealed the problem of insufficiency of data on countries under consideration and for the period of time chosen-in spite of multi-form reports devoted to comparison of national economies. All indicators used in this article as well as data obtained from WEF, UNDP and Conference Board reports are reasonably criticized by scientific community, not only with regard to the methodology of calculation (which must be changed), but with regard to the base of such researches which is questionable. [10]. That is why the results of researches which use such sources of information should be taken with care taking into consideration the critics and objective restrictions in international statistics.

- M. Porter's idea of interdependence of labour productivity, quality of life and the level of national competitiveness probed on 5 leading economies of the world within 5-year period was disproved in regard to every one from these 5 economies:

- USA: dynamics of change of the indicators in question did not correlate within any of investigated periods (competitiveness always fell, labour productivity always grew up).

- China: indicators grew all these years simultaneously except for 2012.

- India: they grew simultaneously in 2009.

- Japan: they grew simultaneously in 2010.

- Russia: indicators fell down simultaneously in 2009.

US Economy Has the Highest (Taken in Absolute Values) Labour Productivity: and the highest level of life quality among investigated countries but in the same time it showed continuous decrease of global competitiveness for the last 5 years. Among all countries in question the most dynamic development was shown by China, in which labour productivity and quality of life grew with the

highest rate, by the way, it is the only economy which was able to improve its global competitiveness rating in the medium term. Outsider in terms of productivity and life quality was India and Russia showed the greatest decrease of GCR:-16 positions.

• It is understood that the results of only one research can not disprove theses of M.Porter's theory both because of some methodological simplifications and of limited volume of this article. But I hope that this work will attract attention of the scientific community to the idea of verification of national competitiveness theory in the conditions of globalization and will be taken as starting point for further research in this area.

REFERENCES

1. Dagmar, R., 2013. Beyond Porter-A Critique of the Critique of Porter. Date Views 21.09.2013 www.themanager.org/strategy/BeyondPorter.htm

2. Hanouz, M. and A. Prazdnichnykh, 2011. The Russia Competitiveness Report. World Economic Forum, Geneva. Date Views www.weforum.org/docs/WEF_ GCR_Russia_Report_2011.pdf

3. Gross domestic product, 2012. PPP. Date Views www3.databank.worldbank.org/data/download/GD P_PPP.pdf.

4. The Global Competitiveness Report, 2012-2013. Date Views www3.weforum.org/docs/WEF_Global CompetitivenessReport_2012-13.pdf.

5. Nagimova, A., 2007. Economic conditions of life as a defining component of quality of life in the region: a sociological analysis. Economic Bulletin of the Republic of Tatarstan, 4: 70-75.

6. Zaytsev, A., 2013. Regional diagnostics and branch analysis of labor productivity. Federalism, 18. 1(69): 57-74.

7. The Global Competitiveness Report, 2008-09. 2009-10; 2010-11; 2011-12; 2012-2013. Date Views www3.weforum.org/docs.

8. Human Development Report, 2009; 2010; 2011; 2013. Date Views www.hdr.undp.org/en/reports/

9. The Conference Board, 2013. Total Economy Database™-Output, Labor and Labor Productivity, 1950-2012. Date Views www. conference-board. org/retrievefile.cfm?filename=TEDII_Jan201321.xls and type=subsite.

10. The competitiveness of Russia in the global economy, 2003. Mosow: International Relations.