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INDICES OF DEVELOPMENT AND THEIR PRACTICAL APPLICATION

ABSTRACT
This research work was devoted to the development of indices of social, economic and political growth, to the practical application of these indices, and to their real-world verification with actual data. The study identified the advantages and disadvantages of the application of different indices to the assessment of growth. For example, one group of indices can be calculated, with some degree of simplification, for a fairly long time-period (half a century). Another group of indices that target the full consideration of growth includes indices that consist of a number of individual indicators though calculated for a relatively short time-period (e.g., one year only). The authors introduced specific indices of economic and social growth of countries and regions that were applied to the assessment of the social, economic, and political development of the world's countries. The assessment was verified using actual data on the countries' development.

KEY WORDS: indices of social, economic, and political development, economic and social lagging.

INTRODUCTION

First, let us talk about the objective changes that determine the variation of indices under consideration over the past century. One hundred years ago, even the boldest and most insightful experts could not predict, nor even imagine, the transformations that would take place in the global economy in the 20th century. The scope and structure of the economy and the national and global financial systems that support economic growth in some cases changed beyond recognition. Scientific and technological progress has led to a huge increase in the production of goods and services that has effectively raised living standards, despite the unparalleled increase in the population of the Earth and the even greater sophistication of the political map of the world (the number of independent states of the century has increased by more than three times). A deepening of specialization and the development of markets accompanied the increase in production, which facilitated the exchange of goods and the spread of new technologies, both within and between national economies. A significant reduction of material indices in most industries, of transportation costs, and of weights of many goods (with their miniaturization, etc.) contributed to the territorial expansion of the markets.

Although the results of economic growth were not uniformly distributed across the countries and regions, the assessment of the extent of this inequality depends on the choice of indicators. The gap between the average per capita Gross Domestic

Product (GDP) between rich and poor regions of the world has risen sharply. But if the focus is on, for example, indicators of social development, which partly discounts the value of average consumption (at a reasonable level) and stress such indicators as life expectancy and educational attainment, one can acknowledge some convergence between the countries towards the end of the century, despite the persistence of significant gaps between these indicators.

Before proceeding to the calculations of the composite indices of development targeted in this study, it is necessary to understand the main macroeconomic indicators characterizing the growth of the world's economy and the distribution of the world's income over the 20th century. The two most important features of economic development in this century are its significantly greater, compared to the past, pace and unevenness in different countries and regions.

The most authoritative historical estimates of the GDP indicate that in the 20th century, the total output of goods and services was significantly greater than their cumulative production for the entire preceding period of history known to mankind. From 1900–2000, the world's GDP (in real terms) grew 19 times, with an average annual growth rate of 3%, or 3,7% per year considering the emergence of new products and the improvement of product quality, which means a 38-fold increase of the GDP for the century [Caring for the future... 1999].

The population growth rate significantly accelerated in the 20th century – the world's population increased nearly four-fold – from 1.6 billion people in the beginning of the century to more than 6 billion at the end. If we consider the aftermath of the industrial revolution (from 1750 to 1900), when the world's population more than doubled, the average annual growth rate since 1750 can be estimated at 1.4%. During the longer than thousand-year period before the industrial revolution, population growth did not exceed 0.1% per year [Caring for the future... 1999]. Tremendous growth of the population in the 20th century often led to serious concerns and doubts about the sustainability of these trends because of the limited resources of the planet.

Aggregate centennial indicators of the world's production and population reveal substantial differences between countries, as well as uneven growth in some distinct periods of 20th century. Thus, if the richest quarter of the world's population had nearly a six fold increase in the average per capita GDP over the century, the poorest quarter experienced only a three-fold increase, although in the longer historical perspective, the three fold increase in income was a significant achievement. The measure of inequality, i.e., the Gini coefficient which varies from 0 (perfect equality) to 1 (perfect inequality), shows that for 1900–2000, it increased from 0.40 to 0.48 [Human development report..., 2002].

OVERVIEW OF DEVELOPMENT INDICES

Among the traditionally used indicators, the GDP, i.e. the total or per capita (calculated based on Purchasing Power Parity (PPP) in the prices of a given year), with which income levels usually correlate, is the best-known index. It gives an idea, though crude, about the effectiveness of the total potential of resource use in different countries, as well as provides some indication of the average material wealth, which is one of the components of the standard of living of a population, irrespective of whether this material wealth results from possession of valuable natural resources, or from highly efficient economies, or from some other factors.

The so-called individual (simple) indicators include different variants of the GDP, a number of other economic indicators, indicators of public health, and indicators from the political sphere, etc., hundreds of thousands in total, as reflected in the easily available statistics. Some of them have a substantial time span (such long time-

frames do not exist for the integral indices), others have only a few years worth of data. Some of them can be called "simple" only highly arbitrarily (e.g., the Gross National Product (GNP)), in contrast to, for example, really "simple" indicators, such as Infant Mortality (IM) or the tonnage of a particular production), because they are obtained from integrated calculations.

Each of the simple indicators may be of some value in assessing development. However, as already mentioned, these traditional indicators for several reasons do not reflect many social and economic processes and phenomena of development. Various international organizations and individual countries are actively developing criteria and indicators of development that often contain very complex systems of indicators. Summing up the available international experience in this area, two approaches may be identified [Indicators of sustainable development..., 2001]:

1. Establishing an integral, aggregate indicator that can be used to judge the degree of stability and level of socio-economic development. The aggregation is usually based on four groups of indicators: economic, social, political, and environmental.

2. Building a system of indicators, each of which reflects some aspects of development. Often, the general system includes the same four groups of indicators.

The integral socio-economic index used at the macro-level is usually preferable for decision makers in assessments of diverse factors of development of countries and regions. The existence of such integral indices allows one to see how changes in any of these factors or in their ratios influence the total well-being and prosperity of the territory.

Ideally, an individual index would reflect the degree of development of the country and its dynamics would reflect the trajectory of development. In other words, if it could be constructed, it could become a kind of measure of the GDP, of the GNP, of the national income, etc., of the indices that are usually used to measure the success of economic development and levels of the economy. However, there is no generally accepted integral indicator in the world yet due to methodological and statistical problems, difficulties in obtaining data, questions of reliability and calculation strategies, etc.

Nevertheless, constructive approaches in this field are actively being pursued. Attempts to create aggregate indicators of development have been most fully realized in the development of frameworks of the UN and the World Bank [Bossel, 2001; 2002 World development..., 2003]. These international organizations offered methods allowing for the consideration of the most diverse factors in the national accounts, in indicators of national wealth, and in social, demographic, and political evaluation.

Let us consider the main currently existing integrated indices. The methodology of the UN Development Program (UNDP) that is used to compare the human potential of the world's countries is considered to be the basis for calculations of the indices that characterize economic and social development. The Human Development Index (HDI) [Human development report..., 2002] is based on four factors: longevity, measured as life expectancy at birth (it contributes the coefficient factor of 1), the achieved level of education, measured as the cumulative level of education of the adult population (weighted at 2/3); cumulative share of students enrolled in schools at the primary, secondary, and tertiary level (weighted at 1/3), the standard of living, measured by the real GDP per capita (in $US at PPP, weighted at 1).

Among integrated indices of both economic and social aspects of development, there is an index of Real Progress and Sustainable Economic Well-Being [Genuine Progress Indicator..., 2004], first developed at the

University of San Francisco, and now widely used, for example, by the World Bank. The index is a multi-component measure of economic well-being that specifies the GDP taking into account a number of internal and external non-economic conditions (externalities).

The National Wealth per Capita Index is also an interesting indicator. Its data has been published since 1995; this index was developed by a group of the World Bank's experts [2002 World Development..., 2003]. The index of wealth includes three components: human, industrial, and natural capital. The natural capital component accounts for the size of land, amount of water, and mineral resources. The production capital is calculated based on the inventory, i.e., a long-term monitoring, of the investment to depreciation ratio. The *human capital* is measured as the difference between the sum of *production* and *resource capital* and the value that at 4% of usage provides a current level of clean sustainable net national product.

The Competitiveness Index (CI) [Global competitiveness..., 2003], calculated by the World Economic Forum, considers approximately 200 different indicators, including the GDP per capita, and many characteristics of public institutions and infrastructure. Their list is extremely, perhaps, too broad. For example, the characteristics of the infrastructure and public institutions include even such unusual figures as the time of arrival of the police at the scene, the stability of consumer choice, etc. Some of the initial data are taken from statistical compilations, but at least one-half are based on the surveys of managers of major companies and professionals of some scientific and public organizations.

In the report on the global competitiveness by the World Economic Forum published in 2002 [2002 World Development..., 2003], two additional approaches were used for the assessment; each was reflected in the form of a special index. The first index is the Global Competitiveness Index (GCI), which was used in the rating of growth prospects for hundreds of countries around the world. The second approach is reflected in the Microeconomic Competitiveness index (MCI). It uses the microeconomic indicators (i.e., institutions, market structures, and economic policies) to measure efficiency of resource use.

The GCI, according to the report, is intended to determine the ability of national economies to achieve sustained economic growth over a medium-length period, while controlling the current level of economic development. The GCI is based on three categories, which, according to the authors of the report, affect economic growth in the medium and long term. These factors are technology, public institutions, and the macroeconomic environment that includes four parameters: the export potential of manufacturing, the share of added value in manufacturing, the share of high-tech production in the entire manufacturing sector, and the share of high-tech production in the export sector of manufacturing.

The MCI identifies the conditions that determine the level of productivity in one hundred countries included in the rating. The MCI has two "sub-indices"; one of them reflects the degree of "advancement" of companies (company sophistication), the second – the state of the business climate in the country. There is a close interdependence between the degree of "sophistication" of companies and the state of the business climate. But there are exceptions. In some countries (i.e., four countries of the Group of Seven – Japan, Germany, France, and Italy) the level of "sophistication" of companies is high, despite an insufficiently favorable business climate. The governments of such countries, say the authors of the report, should implement significant reforms in public policy to improve the conditions for competition within the country; otherwise national companies will sooner or later be forced to move their operations and capital abroad. At the same time, opposite examples exist.

Of particular interest is the Post-Industrial Economic Development Index (PEDI) [Gorkin, 2006]. As shown by calculations carried out by A.P. Gorkin, this index strongly correlates with the GCI however; the very purpose of its design is different. The PEDI allows one to compare the "levels of post-industrialization" of individual countries. The index was calculated on the basis of three components, each contributing equally. These components were chosen to be:

- the share of the tertiary sector in the GDP;
- expenditures on research and development as a percentage of the GDP;
- the share of internet users in the overall population.

The baseline values were normalized by the linear transformation in the interval [0, 1], then, summed, and this sum was divided by the factor of three.

This index, unlike the vast majority of the indices that characterize the economic, social, or political aspect of development, pertains to a very interesting area, namely, the theory of transition from one condition to a new qualitative (not quantitative!) condition, as described by its very name. Using specifically this and similar indices (currently, this niche is virtually non-existent) one can receive new qualitative knowledge about the threshold values of some structural changes of the systems and their reorganization.

The World Bank proposed and designed the index of Actual Savings [2002 World Development..., 2003] for the world. It is the result of correcting the Gross Domestic Savings index, i.e., the Gross Accumulation Index.

Special attention should be paid to a number of ecological-economic indices. They were first to appear in this area and now, they are widely used in various integrated assessments of sustainable development.

The Statistics Division of the UN Secretary proposed the System of Integrated Environmental and Economic Accounting (SIEEA) [Indicators of sustainable development..., 2001], aimed at integrating environmental concerns into national statistics. The latest version of the SIEEA – the product of the Statistical Management Department of Economic and Social Affairs of the UN and the UN Environment Program (UNEP) – was published in December 2003. This system describes the relationship between the state of the environment and the economy. The relationship is expressed by linking the system of national accounts adopted by the UN with environmental factors and natural resources.

"Green Accounts" [Indicators of sustainable development..., 2001] are based on adjustments of the traditional economic indicators using two variables: the valuation of natural resource depletion and environmental-economic losses from pollution. The Environmentally Adjusted Net Domestic Product (EDP) serves as the basis for the adjustment of national accounts. This index is the product of the adjustment of the Net Domestic Product.

The Environmental Sustainability Index (ESI) is defined in the report prepared by a group of scientists from Yale and Columbia universities for the World Economic Forum in Davos [Indicators of sustainable development..., 2001]. Environmental sustainability is understood to be a part of the concept of "sustainable development". Narrowing the problem allows one to obtain quantitative characteristics in the form of an index. The report justifies the possibility of constructing a simple index reflecting the progress of various countries in the area of environmental sustainability.

Speaking of the environmental indices, it is necessary to mention finally the integrated *Living Planet Index* (LPI) [Living Planet..., 2001]. This index is used in assessments of the state of natural ecosystems of the planet and is calculated in the annual reports of the World Wildlife Fund. The LPI measures the natural capital of forests and of freshwater

and marine ecosystems and is calculated as the average of three indicators: the number of animals in forests, freshwater, and marine ecosystems. Each index reflects the change in the population of the most representative sample of organisms in the ecosystem.

Indices that reflect population health play an important role in the assessments of the social sector development. The most known index is the Population Health Index (PHI) [Human development..., 2002], calculated by the World Health Organization (WHO). This index is an example of an approach "by contradiction" because it reflects the distribution of various types of diseases from malaria to cancer and HIV infection. Because a very strong correlation exists between environmental quality and many diseases, this index includes several indices of environmental conditions in addition to the actual indices of diseases. And since children are most vulnerable to some of the common diseases, the IM rate (IMR), which measures the mortality from respiratory and enteric diseases based on the standard classification of diseases per hundred thousand of children aged 0–14 years, is used. Mortality from other diseases is calculated using only the total population of the country.

However, the design of the PHI, as well as the design of many other indices, is faulty with some degree of eclecticism, because many factors, such as environmental characteristics and resulting indicators, are lumped together. The Health Index is compiled using only three basic parameters: (1) IM, (2) life expectancy of women, and (3) life expectancy of men. For all its simplicity, it has another advantage: the initial data are available from the 1950's, which allows their analysis over a large time-period. This index is widely used in the Russian national literature [Prokhorov, Tikunov, 2001, 2004, 2005].

Innovation is becoming one of the most important components of development itself and, hence, its assessment in the era of globalization. However, as was already mentioned, the assessment of innovation is one of the components in the assessment of competitiveness. In our opinion, the most precise assessment system was proposed in 2000 by the European Council in Lisbon [European Innovation..., 2001]. It was called the "European Innovation Scoreboard". The report used 17 indicators that reflect the innovative potential of countries divided into 4 groups:

– *human resources*: young scientists and engineers, people with higher education, people continuing their education, employment in medium- and high-tech industries, employment in high-tech services;

– *creation of knowledge*: public spending on research and development, expenditures of private firms on research and development, high-tech patents granted;

– *the transfer and application of knowledge*: innovation in local small and medium-sized businesses, small and medium-sized businesses involved in innovation cooperation, the cost of innovation (percentage of total turnover in manufacturing);

– *innovative financing, production outputs and market outputs*: high-tech venture capital investment, new capital in the stock market, sales of new products on markets, access to the internet, share of the information and communication market, share of added value of production in high-tech industries.

The main drawback of this total index of innovation is its use only in the European Community, but the methodology can be used worldwide.

Another interesting index, the Networked Readiness Index (NRI) was calculated by a committee of the World Bank [2002 World Development..., 2003]. The NRI includes hundreds of statistical and performance parameters arbitrarily divided into 9 groups: market readiness, the willingness of political

and legislative establishments, infrastructure readiness, readiness of individuals, companies, and governments; and finally, the efficiency of network usage by individuals, companies, and government. The index for a number of indicators included in it is akin to the Innovation Index; it has the advantage of encompassing nearly a hundred and fifty countries, but there are drawbacks: the incomplete conformity of the number of indicators used for the assessment of each country (the minimal number of indices used is 40 and the maximal number is about 100) and the presence of a large number of intentionally arbitrarily assessment parameters.

Finally, it is necessary to mention aspects of development in the field of public and state institutions. In part, these questions have been raised in the calculations of competitiveness and network readiness. However, there are a number of indices directly evaluating political and social development. Some of these indices are described in the Global Corruption Report [OECD..., 2004] prepared by the members of one of the commissions of the Organization for Economic Cooperation and Development (OECD).

The Freedom Index (FI) facilitates the assessment of political and social environments**.** The report "Freedom in the World"[Freedom..., 2003] provides an assessment of the level of freedom for 192 countries and 18 dependent territories grouped into seven categories depending on the figures obtained. The study is based on the number of parameters broken into two areas: (1) political rights and (2) civil rights. Political rights imply the opportunity to participate freely in the political process; civil rights imply the opportunity to express opinions, to organize various public institutions, and to have individual liberty. The baseline data were obtained through responses to 90 key questions from six sub-categories. The questions were presented to residents-professional and the general public of a country; the ratio of the participants in these two groups was one to two. According to this survey, the countries were grouped into seven subgroups and three groups: free, partially free, and not free.

The Index of Electoral Freedom (IEF) concludes the list of political characteristics of development [Tikunov, 2002]. The notion of electoral freedom may cause difficulties; on the one hand, this index reflects a certain measure of liberalness of a state; on the other, the political literacy of its population and the level of its culture in a general political sense and especially in respect to the election process. Referring directly to the assessment of electoral freedom, one can speak of the existence of different variants of value orientations at different levels. These levels include: the ideological level (when people are integrating notions about politics in their individual picture of the world), the civil level (when people are reconciling the power of the government and their own ability to defend their rights and interests and, therefore, in one way or another, determine their own political status), and the specifically political level (reflected in the reaction to the forms of government, to a particular regime, to political allies, to the opponents, etc.). The IEF is based on a certain set of parameters derived from data on parliamentary elections in various countries. The calculations included such parameters as voter turnout, voting against all political associations on the list, pluralism as a proportion of the votes cast for all political entities with the exclusion of the two leading parties in the country, the monolithic status as the difference between the percent of votes cast for the winning party and the percent of votes cast for the party finishing in the second place.

Baklanov P.Y. [2001] proposed an interesting approach that utilizes indicators of development quality (ecological, economic, and social, including demographic) in the form of absolute parameters and indices (annual average, short-term, and ongoing). It has been also proposed to use a system of target and constraint parameters to assess the

efficiency of development. Thus, A.E. Yakovlev [2002] points out that such milestones may include the quality of life, level of economic development, and environmental well-being. This author suggests using such parameters as the length of human life, human health, deviation of the environment from standards, level of knowledge and educational skills, income (measured by the GDP per capita), employment rate, and the degree of realization of human rights for the analyses of the quality of life. He further proposes using parameters of consumption of natural resources and parameters of damage to ecosystems in the course of economic activity (per unit of output) together with parameters of the degree of usage of energy and other resources and waste production in the economic sector to identify the levels of natural resources use in the economy (per capita and as a unit of the GDP).

There are a few suggestions for obtaining integrated assessments of sustainable development of countries and regions. An example of such methodology is the methodology developed by the UN Commission on Sustainable Development [Indicators..., 1996; Indicators..., 2001.]. Noteworthy are also the parameters proposed in the annual report of the World Bank "World Development Indicators". There have been also efforts in Russia to obtain the index of the top synthetic level. For example, A.Y. Reteyum [2004] in the book "Monitoring of Development" uses 25 initial parameters of demographics, social status of the population, economics, public consciousness, and the environment in the constituents of the Russian Federation together with the data on changes in these parameters during a twelve-year period to analyze the country's regions from the view-point of sustainable development.

There are also opinions that it is methodologically impossible to obtain integrated indices of the highest level. For example, some researchers [Mazurov, Tikunov, 2005] argue that "since the absolute stability, the identity stability, the permanence of the conditions of the social components of the worldview, etc., do not exist in principle, there are, by the same token, no universal indicators of sustainable development" (p. 36). This idea has been confirmed by an experiment to assess social sustainability. For example, in [Rubanov, Tikunov, 2005], it is argued that "in the calculation of the integrated index, qualitatively opposing values of demographic indicators and indicators of human well-being mutually negate each other; under these conditions it is of small appropriateness to speak about leadership and ranking of regions by the degree of their social stability, since the determination of the key leading factors and the determination of which groups of indicators has been given more weight is the subjective opinion of the investigator. For this reason, the authors considered it inappropriate to calculate the integrated index of social stability and have decided to confine the calculation of three partial indices that characterize the main components of social sustainability" (p. 102).

What are the methodological conclusions that can be drawn from the analysis of the attempts to find the integrated characteristics of development?

Quantitative assessments of development should not ignore the following. First, there are problems of conceptual nature associated with an ambiguous understanding of the area "development" and, as a consequence, there is an emergence of a subjective choice of specific criteria and parameters included in the assessments. Moreover, for each assessment topic, there are parameters that are traditionally used in such studies and there are those that are rarely considered in the calculations. Second, any average statistics leads to averaging the real picture of development and its levels. It is expressed in two dimensions: "vertical", or socio-economic, and "horizontal", or spatial. The first can be observed, for example, within small territories, such as the famous "cities of contrasts" (whether it is New York, Istanbul, or Moscow, where the average income of residents has little to do with the concept of

income of the average citizen). This problem has been recognized, and, in principle, may be solved by established methods (e.g., by using different assessments of inequality, such as the Gini coefficient, etc.) and it does not negate the average values as a tool for assessment of territorial development. Geographers are usually more concerned with the other side of the problem, when the averages for the entire country or the region obscure the internal structure and the presence of sharp contrasts between the finer territorial divisions. Regions of the world and individual countries differ greatly in this respect. It is one thing if the countries are in Western Europe or this is Sweden, where the contrasts between the countries and areas in general are moderate; it is another thing if the countries are in South-East Asia, specifically, if they are Singapore, Laos, Kampuchea, Thailand, Indonesia, or other countries with strong internal stratification. This problem can be overcome using, for example, a general analysis of the territories.

We can talk about a shortage or absence of required data that are simply not collected by statistical agencies. Many of the figures do not have spatial referencing necessary for spatial analyses. Not to mention the dynamics and changes in parameters over time. This may be due to changes of views, to revisions of the priorities, or to the need of considering the objective changes in a very complex, as a rule, system under investigation.

There is a separate problem of bringing parameters different in nature into the attempts to solve a common task. Aggregation of diverse parameters into a single index is a special task and it raises a number of "technical" issues addressed in the report of the UN Commission on development. The main issue when aggregating information in the indices is to define the weights of baseline indicators without undue subjectivity and without decreasing their significance. The higher the level of aggregation of information (especially heterogeneous), the more it is difficult to weigh the incomparable values. The difficult and controversial matter is the unification of the calculations for different regions and countries that have different priorities and incomparable issues. This can be best addressed by a competent selection of weights however, the consensus is extremely difficult to achieve.

One of the proposed solutions is for each country to determine for itself the weights of indicators based on existing priorities keeping in mind that the results, in this case, may be incomparable and this may hamper further analyses. A compromise solution is the use of region-specific weights for individual regions of the world for their internal analysis and the use of common weights for cross-regional comparisons.

The definition of the weights is accomplished using the Delphi method, or the so-called multi-criteria analysis, and applying methods used in the social sciences. The method of "distance to target" allows one to use the parameters reconciled in international or other legal documents. Weighted coefficients can be obtained on the basis of opinion polls (as in "Eurobarometer" that assesses social preferences) or using the Delphi method formalizing experts' opinions. Thus, the indices developed by Eurostat are weighted and they reflect the opinions of the experts and of the key groups.

International conventions, laws, and regulations can be also used for weighting. In addition, there may be simple, definitive criteria: long-term or short-term perspectives, problems at global, regional, or local levels, the depth and complexity of impact, the degree of irreversibility of processes, etc. One way or another, it is generally not recommended to use equal weights of parameters.

In order to assess index stability and the influence of various factors on the outcomes, it may be useful to complement the aggregation of information with "situation sensing". The process of aggregation should

be completely transparent. The user should understand how to transform raw data and if necessary be able to restore them. In addition, it is necessary to have a clear idea about what the index shows and what its limitations are.

The process of aggregation can be formalized as follows. At the first level, the weights of indicators in selected problems are determined in order to obtain the index for each issue. At the second level, the intermediate indices are weighted and defined according to selected criteria. At the third level, the indices of the second level are weighted and the final index is determined.

It is possible to aggregate to the level of the main aspects of development, i.e., economic, social, institutional (political), and environmental, and to obtain the index for each of these areas. The economic aspect combines economic structure, production, and consumption. The social aspect combines health, education, equality, housing, safety, and the population. The institutional dimension includes organization and capabilities of the institutions. The environmental aspect combines the characteristics of the air, land, oceans, seas, coasts, clean water, and biodiversity.

Some of the most complete systems are the systems of development indicators developed by the UN commissions. Like most other public organizations dealing with development, they are charged with four sub-areas of indicators: social, economic, environmental, and institutional; each of these areas is presented in at least one annual report. The UN experts, in the opinion of the authors, have developed the most complete system of parameters to measure development. In total, the system covers more than 130 indicators that reflect the current status, trends, and conditionally corrective action for each of these areas.

The system of indicators of the Organization for Economic Cooperation and Development (OECD) is the system recognized worldwide. The OECD consistently uses the model of the "pressure-state-response" it has developed (the model is vaguely reminiscent of the model "challenge-response" from the famous historian Arnold Toynbee). The model assumes that human activities are exerting pressure on the economy, social sphere, etc., and affect the quality of life and quantity of material wealth; the society reacts to these changes through general economic and sectorial policies and through changes in social consciousness and behavior ("reaction pressure").

The model, in this way, identifies causal relationships between economic activity and political and social conditions, helping administrations and the public to see the connection between these spheres and to develop policies to address these problems. Therefore, it is a mechanism for selecting and organizing parameters in a form suitable for those who make decisions and for the general public. However, this does not mean ignoring the more complex relationships in the systems, as well as economic and social interactions. Pressure factors, the state of the environment, and the reaction under this system are presented in detail in Table 2.

Constructive systems of indicators of development are also being developed by the World Bank. The annual "Report of the World Bank's World Development Indicators" [2002 World Development..., 2003] proves to be useful for the development of a system of indicators. The report targets the progress towards the key objectives set by the UN, i.e., economic growth and the combat of poverty. The economic growth is seen as a means of providing health care, education, security, drinking water, and preserving the environment. More than 550 parameters are analyzed to study and compare the development of the world's countries and to define opportunities to achieve the specific goal of reducing poverty in half compared to 1990.

Of great interest is the scientific and practical experience associated with studying the levels of development, gained in the EU countries. With the support of the European Commission, a number of projects conducted by leading experts in economics and sociology have been implemented; for all EU countries, a detailed analysis has been undertaken. The limitations of these studies relate only to their geographic scope confined, as a rule, to the European continent only.

Along with international organizations, separate countries made efforts to design indicators of development, especially in connection with the development forecasts and programs. Thus, a great attention to the design of a system of indicators of development at a macro level has been given in the USA. A special government team of specialists from several agencies has been assembled. The first test system of 40 macro-level development indicators has been developed by such agencies as the Departments of State, Energy, Urban Development, Agriculture, and Interior, the US Fish and Wildlife Service, and the US Environmental Protection Agency.

Each parameter of the British system of development indicators designed in 1999 reflects its specific objectives, which are described in the UK Strategy of Development. The system includes 14 basic indicators of development that can be used to identify the main trends and 150 additional (specific national) indicators.

Finalizing the review of the indices, it is necessary to mention a comprehensive approach to the development issues. There are many "streets and alleys" where one can wander for a long time, however, one should keep on target and not get distracted by details. Thus, we should not forget that social development, although it possesses relative autonomy, is largely determined by the resource potential, which, in turn, depends on the level of economic development. Therefore, it is only possible to make certain breakthroughs in social life and raise the level of welfare, which, ultimately, always determines the success of socio-economic policies, through economic development. This is the necessary but not a sufficient condition for the development of a community. It is crucial to take into account all aspects of development, not just limited to the economy as such. Although the economy correlates with the development of the social sphere, the last section of this paper will show that the same country may be at different stages of social, economic, and political development. Thus, the task is to assess the maximum level of development in general. And what is so important to regional geography is to grasp their individual and typological features arising from differences in economic, social, cultural, and political spheres.

CHARACTERISTICS OF THE LAG IN DEVELOPMENT

Considering a multi-temporal pattern of global changes in the world, it is extremely interesting to see *how many years the regions and countries are lagging behind each other in their development*. The authors offer relatively simple indices that reflect time-gaps in the countries' development (mainly the parameters that reflect their lagging behind the few world leaders). The reason for using less complex indicators of development for this purpose is simple. Any of the integrated indices (and their source data) on a global scale is calculated, in the best-case scenario, starting in the 1980's. For example, calculations of the HDI were possible in 1975, however, the index itself has not been introduced until 1990; the retrospective calculations (for a not so remote past) have been performed even at a later date [Human development report..., 2002].

The authors are proposing to calculate two simple indices for a long retrospective period, one of which will reflect the economic development and the second – the social progress.

The economic backwardness of the majority of the world's leading countries (see Table 1 and Figure 1) is calculated using three indicators: the GDP (in PPP terms) (index weight of 0,5), labor productivity in the economy (index weight of 0,25), and the estimate of the cost of productive assets (index weight of 0,25). All figures are presented in the 1990 fixed prices per capita (previously it was noted that this work considers primarily per capita indices of development). Statistical materials of the World Bank [2002 World Development..., 2003] that provide data beginning from the 1950s served as the basis for the calculations. Some sources contain information for the earlier years, but the most credible and inclusive materials on the global scale are available only for the post-war period.

Table 1. The lag in development of the countries relative to the world leaders

Country	Social index	Country name	Economic index
Australia	2000	Austria	2000
Hong Kong	2000	Belgium	2000
Israel	2000	Denmark	2000
Iceland	2000	Ireland	2000
Spain	2000	Iceland	2000
Canada	2000	Canada	2000
Martinique	2000	Luxembourg	2000
Switzerland	2000	Norway	2000
Sweden	2000	USA	2000
Japan	2000	Switzerland	2000
Norway	1998	Japan	1997
France	1998	Australia	1996
Belgium	1997	Germany	1996
Macau	1997	Hong Kong	1996
Italy	1996	Netherlands	1996
Austria	1995	Finland	1995
Guadeloupe	1993	France	1995
Greece	1993	Sweden	1995
Cyprus	1993	United Kingdom	1994
Luxembourg	1993	Italy	1994
Malta	1993	French Polynesia	1994
Netherlands	1993	Singapore	1994
New Zealand	1993	New Caledonia	1993
United Kingdom	1992	Cyprus	1991
Germany	1992	Israel	1990
Costa Rica	1992	New Zealand	1990
Singapore	1990	Spain	1989
Finland	1990	EV. Arab. Emirates	1988
USA	1988	Bahamas	1987
Barbados	1987	Brunei	1987
Ireland	1987	Macau	1987
Cuba	1987	Malta	1987
Kuwait	1987	Portugal	1987
Brunei	1986	Slovenia	1987
Denmark	1986	South Korea	1987
Antilles	1985	Barbados	1986
Portugal	1985	Greece	1986
Slovenia	1985	Kuwait	1986
Chile	1984	Czech	1985
Jamaica	1984	Argentina	1983
Guiana (France)	1983	Hungary	1983
EV. Arab. Emirates	1983	Saint Kitts and Nevis	1983
Puerto Rico	1983	Saudi Arabia	1980
Reunion	1983	Slovakia	1980
Uruguay	1983	Antigua and Barbuda	1979
Czech	1983	Mauritius	1979
South Korea	1983	Puerto Rico	1979
Guam	1982	Chile	1979
New Caledonia	1982	Estonia	1979
Panama	1982	South African R-SC	1979
Argentina	1981	Costa Rica	1978
Bahrain	1981	Malaysia	1978
Bermuda	1981	Mexico	1978
Croatia	1981	Poland	1978
Albania	1980	Russian Federation	1978
Bosnia and Herzegovina	1980	Trinidad and Tobago	1978
Venezuela	1980	Uruguay	1978

Country	Social index	Country name	Economic index
Poland	1980	Belarus	1977
Saint Vincent and the Grenadines	1980	Brazil	1977
Georgia	1979	Grenada	1977
Lebanon	1979	Croatia	1977
Macedonia	1979	Yugoslavia	1977
Slovakia	1979	Botswana	1976
Malaysia	1978	Lithuania	1976
Mexico	1978	Seychelles	1976
French Polynesia	1978	Latvia	1975
Yugoslavia	1978	Turkey	1974
Qatar	1977	Libya	1973
Libya	1977	Namibia	1972
Tunisia	1977	Oman	1972
Sri Lanka	1977	Romania	1972
Lithuania	1976	Thailand	1972
Oman	1976	Tunisia	1972
Palestine	1975	Gabon	1971
Saudi Arabia	1975	Colombia	1971
Saint Lucia	1975	Venezuela	1970
Azerbaijan	1974	Dominican	1970
Armenia	1974	Iran	1970
Colombia	1974	Kazakhstan	1970
Mauritius	1974	Panama	1970
Hungary	1973	Belize	1969
Samoa	1973	Bulgaria	1969
Syria	1973	Saint Vincent and the Grenadines	1969
Belize	1972	Saint Lucia	1969
Estonia	1972	Algeria	1968
Seychelles	1971	Bosnia and Herzegovina	1966
Trinidad and Tobago	1971	Western Samoa	1966
Bulgaria	1970	Macedonia	1966
Jordan	1970	Cape Verde	1965
China	1970	Peru	1965
Surinam	1970	Salvador	1964
Latvia	1969	Fiji	1964
Paraguay	1969	Iraq	1963

Country	Social index	Country name	Economic index
Ecuador	1969	Maldives p-ka	1963
Romania	1968	Paraguay	1963
Salvador	1968	Swaziland	1963
Turkey	1968	Lebanon	1962
Iran	1967	Guyana	1961
Western Samoa	1966	Jordan	1961
Belarus	1965	China	1961
Cape Verde	1965	Turkmenistan	1961
Peru	1965	Philippines	1961
Sao Tome and Principe	1965	Equatorial Guinea	1961
Saint Kitts and Nevis	1965	Guatemala	1960
Philippines	1965	Surinam	1960
Algeria	1964	Ukraine	1960
Nicaragua	1964	Egypt	1959
Uzbekistan	1964	Jamaica	1959
Ukraine	1964	Morocco	1958
Fiji	1964	Syria	1958
Vietnam	1963	Sri Lanka	1958
Solomon Islands	1963	Albania	1957
Thailand	1963	Ecuador	1954
Vanuatu	1962	Indonesia	1952
Honduras	1962	Azerbaijan	1951
Egypt	1962	Vanuatu	1950
Moldova	1962	Georgia	1949
Morocco	1961	Zimbabwe	1949
Tajikistan	1961	Kyrgyzstan	1949
South African R-SC	1961	Armenia	1948
Kyrgyzstan	1960	Honduras	1947
Micronesia	1960	Uzbekistan	1947
Tonga	1960	Bolivia	1946
Brazil	1959	India	1946
Maldives p-ka	1958	Nicaragua	1946
Bahamas	1957	Papua New Guinea	1945
Palau	1957	Angola	1944
Russian Federation	1957	Sao Tome and Principe	1944
Turkmenistan	1957	Moldova	1943

Country	Social index	Country name	Eco-nomic index
Dominican	1956	Myanmar	1941
Indonesia	1956	Vietnam	1940
Guatemala	1955	Ghana	1940
Kazakhstan	1955	Guinea	1940
Western Sahara	1954	Korea	1940
Bolivia	1953	Cuba	1940
India	1952	Lesotho	1940
Mongolia	1951	Pakistan	1940
Butane	1950	Gambia	1939
Korea	1950	Cameroon	1939
Guyana	1949	Mauritania	1939
Bangladesh	1945	Mongolia	1939
Pakistan	1945	Sudan	1939
Iraq	1944	Bangladesh	1938
Comoros	1944	Bahrain	1938
Kiribati	1943	Comoros	1938
Yemen	1942	Côte d'Ivoire	1938
Nepal	1941	Laos	1938
Ghana	1939	Senegal	1938
Papua New Guinea	1939	Solomon Islands	1938
Cambodia	1938	Afghanistan	1937
Myanmar	1938	Butane	1937
Gabon	1937	Haiti	1937
Sudan	1936	Cambodia	1937
Laos	1935	Togo	1937
Gambia	1934	Liberia	1936
Madagascar	1933	Nepal	1936
Senegal	1932	Uganda	1934
Eritrea	1931	CAR	1933
Mauritania	1930	Tajikistan	1932
Nigeria	1928	Djibouti	1931
Benin	1926	Benin	1930
Togo	1925	Kenya	1930
Haiti	1924	Burkina Faso	1929
Guinea	1923	Rwanda	1929
Equatorial Guinea	1923	Yemen	1928
Congo	1922	Nigeria	1928
Mali	1922	Chad	1928
East Timor	1921	Madagascar	1927
Somalia	1921	Mozambique	1927
Cameroon	1919	Eritrea	1927
Niger	1919	Congo	1926
Uganda	1919	Zambia	1925
Burkina Faso	1918	Mali	1925
Djibouti	1918	Guinea-Bissau	1924
Ethiopia	1918	Zaire	1924
Guinea-Bissau	1917	Niger	1924
Kenya	1915	Ethiopia	1922
Chad	1915	Somalia	1920
Afghanistan	1914	Malawi	1919
Namibia	1914	Burundi	1918
Tanzania	1914	Tanzania	1916
Zaire	1911	Sierra Leone	1914
Burundi	1910		
Côte d'Ivoire	1910		
Liberia	1910		
Angola	1909		
Botswana	1908		
CAR	1908		
Rwanda	1907		
Mozambique	1906		
Malawi	1905		
Lesotho	1902		
Swaziland	1901		
Sierra Leone	1901		
Zimbabwe	1898		
Zambia	1896		

In the course of the calculations, a group of ten countries with the highest values of these parameters in 2000 (the sum of these parameters represents the economic index that we discuss herein) was isolated (each of the three indicators was normalized for each year for the 50-year period within a range between 0 and 1). For the group of leaders that included Luxemburg, USA, Norway, Iceland, Ireland, Switzerland, Canada, Denmark, Belgium, and Austria, the values of the average index for the entire group for each year for the 50-year period under consideration were calculated. In the future

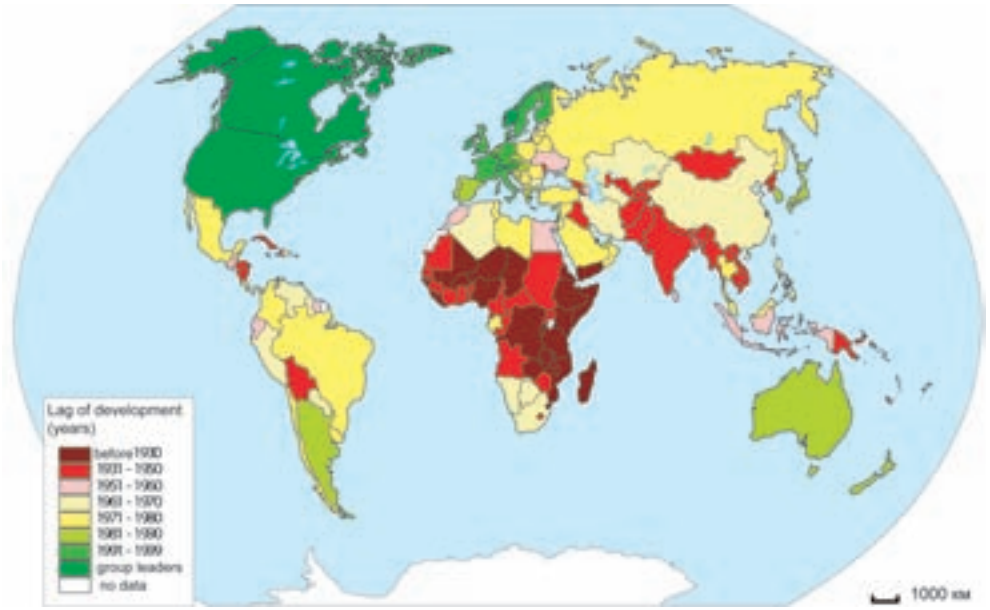

Fig. 1. The lag in the countries' economic development in respect to the group of leaders

calculations for all other countries, the value of this index in 2000 was compared with the nearest value for this or that year in the group of leaders. Based on this comparison, each country was assigned "the year of its developmental stage" relative to the group of leaders.

Considerable difficulty was associated with a very long, i.e., half a century, time-frame of the original data. Thus, we can see that, for example, the latest data on economic development go back to 1914, while the time-series for the leaders are limited to 1950. In order to expand the time-series, it was necessary to create a reference group of countries with a middle-level of development, which included Jamaica, Egypt, Syria, Morocco, Sri Lanka, Albania, Ecuador, Indonesia, Azerbaijan, and Vanuatu. When comparing the poorest countries, the year 2000 was assumed to be equivalent to the year 1950 for the absolute leaders; the time-frame was extended for another 50 years.

A similar approach was used in the calculations of *the lag in social development* (Fig. 2). To evaluate this component, a simple index was used, which includes three parameters: life expectancy for (1) men (index weight of 0.25) and (2) women (index weight of 0.25) and (3) the IMR (index weight of 0,5). It should be noted that the assessments of social and economic development are very arbitrary. However the sufficient time-series exist only for a very limited number of indices; the listed indices provide only a very general idea of social and economic spheres development.

The lags in economic development of the countries relative to the most developed countries in 2000 determined in accordance with the methodology described above suggest that the maximum gap between the countries lagging behind and the world's leaders is 86 years, or nearly a century, long. Currently, the least developed African countries (Sierra Leone, Tanzania, Burundi, and Malawi) are approximately at the economic level of Western Europe after the First World War. If we consider the fact that the largest portion of the national incomes of the poorest countries is owned by a narrow segment of their population, then it can be concluded that the average income derived by the population of these countries

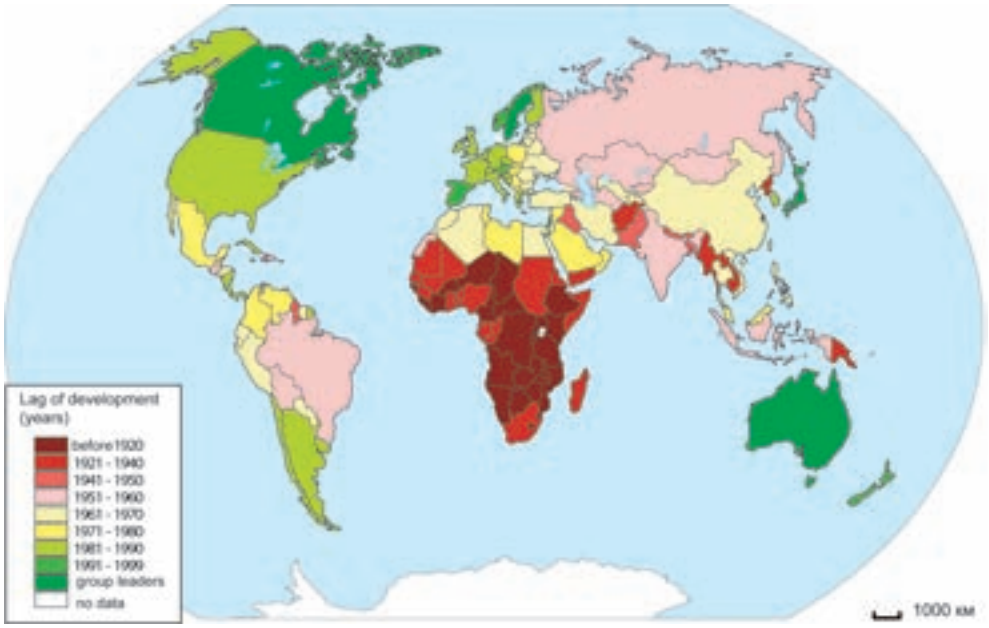

Fig. 2. The lag in the countries' social development in respect to the group of leaders

is lagging behind even further, i.e., another two decades.

The top ten countries include the USA, Canada, and small, but economically highly developed, countries of Western Europe. Neither of these countries intends to be the leader in the world's politics and plays no independent role in the economic control of the world. Using accumulation of their own and attracted capital from around the world, stability of their economies and currencies, a highly skilled workforce, and the benefits of their geographic location, these countries have reached high levels of production development and of capitalism development in industry and agriculture. In general, their per capita GDP is higher than in the so-called "leading countries" of Europe. They have a much more narrow specialization in international division of labor achieving high scores in selected areas. They are characterized by the highest per capita exports and imports among the developed countries and by the highest rate of export efficiency. The latter statement is characteristic of Canada; though it should be noted that in its development, this country depends and focuses on its "elder brother", i.e., the USA, while other countries are primarily confine their activities to the European continent.

Further analysis of the lag in the economic development can focus on a specific time step (i.e., 10-year steps: lagging behind by 10 years or less, 10–20 years, etc.). This time-step was used to isolate the groups of countries.

The first group, which lags 10 years or less behind the leaders, includes countries that belong to the so-called major European countries, all members of the G-7, without the USA and Canada, some of the European small and highly developed countries (Netherlands, Sweden, and Finland), and a number of states with small territories and populations that grew economically due to the export and transit of goods and services (Singapore and Hong Kong) or of unprocessed raw materials (e.g., New Caledonia).

In total, this group includes 16 countries; the place of each country in this group is fully justified. It is well known that the G-7 countries are the most developed in the

world in terms of economic and scientific-technical potential, have the most diversified economies, and the largest human potential among the economically advanced countries (according to the typology suggested by V.V. Volsky [1966]). Nevertheless, the calculations showed that the USA and Canada are at least several years ahead of their major European partners in economic development.

There are reasons for this situation. Development of the EU should be evaluated primarily in comparison with its main competitors: the USA and Japan. The EU lags behind in expenditures on science, in the degree of production concentration, and in systems promoting export, but it is ahead in bureaucratization of business. "Europe pushes itself out of the world's markets not so much because of their prices, but because of flaws in the economic regulations" [Shishkov, 1999]. The analysis by the well-known consulting company "McKinsey" of the comparative position of Europe and its competitors in the six areas of machinery producing industry, from electronics to automobile manufacturing shows that the speed of increase of the array of the regulatory documents in the EU clearly contrasts the slowness in the development of the new technologies. As a result, the EU is left with "though better distributed but an overall smaller piece of the economic pie". The degree of backwardness of these countries is not so great. More than half of them fit into the five-year lag, and the absolute indices of the lag are small.

The pattern of decrease in the countries level of development indicates that their number in each lag interval increases until the 20–30-year interval. There are 16, 18, and 36 countries in the first, second, and the third of the above-mentioned intervals, respectively; however, there are less than 26 countries in the fourth interval. Thus, a large group of the world's countries are between 1970 and 1980 in their development level relative to the world's leaders. If the fourth group of the countries is included, most of the countries fall between 1960 and 1980. These groups consist of a large number of countries with large economies and populations. These groups include Russia (which is "in 1978" relatively to the world's leaders), Mexico (1978), Brazil (1977), Turkey (1974), Thailand (1972), China (1961) and many other large countries. The total population of this group is about one-half of the world's total. Twenty-five countries are in the 1930–1940 interval, 21 countries are in the 1940–1950 interval; this interval also includes giant India (ironically, the year 1947

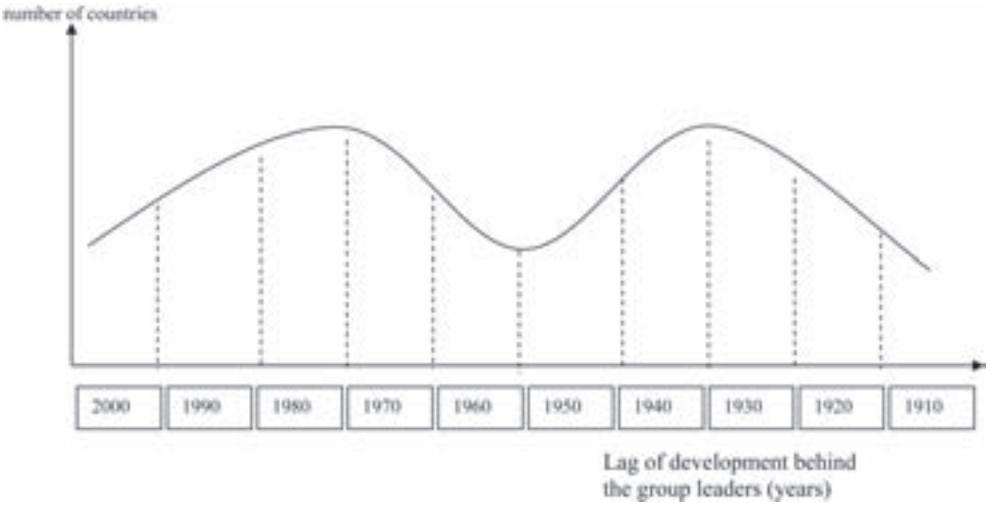

Fig. 3. Distribution of the countries by the lags in their economic development

is the year of its independence from Great Britain). The smallest group of the countries (10) is in the 1950–1960 developmental interval. There are 20 countries with the development below the 1930 level (which also includes 4 countries that are below the 1920 level) located on the African continent (with the exception of Yemen).

Fig. 3 presents a "double-peaked" graph with a normal distribution of the countries only at its edges and with a drop in the middle. Thus, assigning a value of 1 to the countries (without their GDPs, population, etc.), we obtain a bi-polar distribution. The two poles consist not of the leaders, or of the outsiders, or of the countries of the middle range, but of two groups which level of development may be arbitrarily called "above-average" and "below-average". This situation apparently reflects a quite unexpected differentiation into industrial and post-industrial countries. The graph shows two main groups of the countries, one at each stage, and the transitional interval between 1960 and 1950.

The second group consists of moderately developed countries of Western Europe – Spain, Portugal, and Greece. Despite their undeniable progress, the EU's support, etc., these countries are still lagging behind the main leaders in development of productive forces. There, especially in rural areas, the role of governmental sectors is strong (not so much in agriculture, but in industries intentionally designed to improve the economic structure). The governmental sector provides a significant number of jobs; however, wages and labor productivity are low. For example, Portugal had one of the highest levels of employment throughout the EU at the time when it included 15 countres (EU-15), but its labor productivity was at the level of Southern Italy and the least developed areas of Spain.

The same group includes Israel and New Zealand, small and not very developed countries of the "resettlement capitalism" with a comparatively narrow specialization in the International Division of Labor (IDL), compared, for example, to Australia and Canada; they are away from the major world trade markets. This group also includes rapidly developing countries of Central and Eastern Europe (CEE) (e.g., Slovenia and Czech Republic) and small "petrodollar" countries with hypertrophic share of mining, chemical, and petrochemical industries. Theses countries (e.g., UAE, Kuwait, and Brunei) and Southern European countries have lower levels of employment and its various fictitious forms. The same applies to many CEE countries included in this group: the Persian Gulf and Caribbean islands countries (Bahamas, offshore countries, and the "flag of convenience" countries, i.e., Barbados, St. Kitts and Nevis, or the so-called countries – "landlords"). This group also includes the countries whose economies depend upon their stronger economic neighbors ("masters") (Republic of Korea and Macao). Furthermore, this group includes Argentina, a highly-urbanized country with rich natural resources and the first in its region to have embarked on the path of capitalist development; however, at some point in its development, this country fell into a stage of a lengthy structural crisis.

The 4-year interval (from 1990 to 1987) includes over 60% of the countries from the second group. The 5-year interval (1990–86) includes almost 80% of the countries. Therefore, the core of these countries gravitates toward the preceding group; one way or another, the lags in their development are greater than those of the countries from the first group.

The share of CEE countries in the third group (36 countries) is growing. This group consists of the republics of the Former Soviet Union, Poland, Romania, and Croatia; countries-"landlords" (Antigua and Barbuda, Trinidad and Tobago, and Puerto Rico); and the Latin American countries (including the "key" countries – Brazil and Mexico).

This group, which lags behind the leaders by 20–30 years, consists of the so-called

"countries of externally-oriented adaptation development" or "small countries of concession development". The first type includes, for example, countries that have strong averages in the majority of economic indicators such as Libya, Turkey, and Tunisia. In many respects, they are similar to the countries of the second type (Gabon, Botswana, Namibia, and other leaders of sub-Saharan Africa) which are also former colonies that only recently gained their independence. Being underdeveloped industrially, these countries produce raw materials, simple products, and are too heavily dependent on the world market. The countries of Southeast Asia (Thailand and Malaysia) form a special temporal subtype within this group; their development is due to the transfer of a number of labor-intensive and ecologically taxing productions from more developed countries and a large involvement of transnational companies.

In general, this group of countries, which also includes Russia, is highly dependent on foreign capital either in the form of direct investment or in the form of export revenues from, as a rule, a limited number of products. Of course, the lag in these countries' development is rather large (i.e., more than 20 years). Thus, if the first group lags behind the leaders by 4–6 years on average, the second group is behind by 5–7 years, and most countries of the third groups are lagging behind by 7–9 years.

The first three groups include almost all countries that play the key roles in the economic development of their macro-regions. The exceptions are the largest countries of Asia (e.g., China, India, Indonesia, and Pakistan), which lag further behind the ten leaders. With the exception of theses Asian giants, the first three groups have most of the population of their respective regions.

The economic significance of the groups that are lagging 30 years or more is small, but they are the home to most of the world's population. This group of countries includes the states with poor economies and relatively small populations (their number is especially large in the last two 10-year intervals). The group also includes countries with enormous human potential and strong economies that, however, have small populations and countries that still cannot fully carry out structural reforms and get back on track to the level of market development, which would be beneficial for many social strata (e.g., the republics of the Former Soviet Union).

Countries whose development is between 1940 and 1965 are located on all continents. Except for a number of the major powers with substantial population and economic potential (China, Pakistan, Egypt, Indonesia, India, etc.), these countries are mostly less-developed; in a long run, they are unlikely to reduce the lag even behind the neighboring groups with above-average economies. In the latter group (1940 and earlier), as already mentioned, there are many African countries that emerged during the second half of the 20th century from the former colonies. There are about 50 of them and these are mostly least developed countries according to the UN list [Human development..., 2002]. The list is based on three criteria: a very low per capita income, a very low share of processing manufacturing in the GDP, and a very high level of illiteracy. This list includes 31 countries in Africa, 5 countries in Asia, 4 countries in Oceania, and 1 country in Latin America, with a total population of 355 million people on the date of the list's release. The entire list of countries (except Bolivia) could be found in groups that lag behind the leaders by 60 or more years.

THE CORE RESULTS OF THE ANALYSIS OF THE COUNTRIES' LAGS

What are the trends of the past century and what should we expect in this century? A more detailed analysis of some parameters not included in the index (e.g., the GDP in real prices) allows one to discover some interesting facts about differentiation in the 20th century. At the end of the century, the

GDP per capita of many poor countries was even lower than that of the leading countries in 1900. According to the same data of the World Bank [2002 World Development..., 2003], the average for Africa in 2000 ($US 1900) was significantly lower than the average for Western Europe and the countries inhabited by Western European émigrés (Australia, Canada, New Zealand, and USA): in 1900, $3090 and $4020, respectively. The average for Africa per capita GDP in 1900 ($500) was approximately 9 times lower than that of England which was, at that time, the richest country in the world. In 2000, this indicator was 20 times lower that this parameter of the richest countries in the world. The gap between rich and poor countries, measured in these terms, has grown enormously. Thus, the main feature of economic growth, if it is measured in the average per capita GDP, was the "rampant inequality".

The trends described above certainly slow down global economic development. They force out even further many developing countries (that are, in fact, are lagging behind even greater) from the mostly dynamically growing areas of the world's economy. Thus, in the 1980s and 1990s, a rapid growth in trade in manufactured goods, services, and knowledge-based products was observed. However, along with developing countries that have achieved good results, there were those that just dropped out of the overall development process. Exports of finished products should have been a step to reform their economies and create jobs. However, only 33 countries have managed to maintain the annual GDP growth at 3% in the period between 1980 and 2000. In 59 countries, mostly in sub-Saharan Africa, in Eastern Europe, and in the CIS countries, the GNP per capita has declined [Tikunov, 2002, 2009].

Many experts argue that the gap between the incomes of the poorest and the richest countries will continue to increase. This is clearly seen from the comparison of the share of the world's income earned by the world's richest and poorest one-fifths of the population. While in 1950, 20% of the world's population in the richest countries accounted for 70% of the world's income, the poorest countries received only 2,3% to 20% of the world's income; in the late 1990s, these values were 80% and 1,4%, respectively [Tikunov, 2002].

It should be noted that with a different selection of variables, the gaps may also look differently. The set of parameters that we used in our analyses may be considered as "soft" and somewhat gap-smoothing. If we take the GDP, not at parity terms, but in real terms (as in the examples given above), the size of the gaps between the two "poles" will at least double. This set of parameters can be disputed, though the authors find it to be one of the most reasonable and balanced approaches to the objective assessment of economic development.

The analysis of the countries lagging behind in *social development* shows longer time-lags separating the leaders and the outsiders (104 years) compared to the analysis of the economic index (86 years). This can be attributed to several causes.

The first cause, as it was already mentioned in respect to the countries whose "development is externally-oriented and opportunistic" and to "small countries of concession development", is associated with development based on foreign capital through one or two fields of some rare resource exploitation that only leads to a higher GDP, but not to the prosperity of their citizens. Principal cash flows go outside such countries leaving a mass of people without social protection. Export earnings from the sales of resources do not solve problems of either employment or development.

The second cause is the growth of the average per capita GDP in the poorest countries through a narrow stratum of wealthy citizens. This process too does not reduce cross-country disparities. Furthermore, the revenue growth for 2–3% of a country's citizens cannot lead, for example, to an increase in life expectancy of its entire population. In-

country income differentiation leads to the situation that more people live below the poverty level in such countries, for example, as China and India than the total population of most of the developed world. Indonesia, Nigeria, and some regions and countries with smaller populations most of whose incomes are below the subsistence levels adopted in these countries, are developing and distributing incomes unequally. Despite the fact that the share of the world's poorest population decreased slightly (judging from the average parameter for countries in general), their absolute number still remains appalling, as rapid population growth with all its consequences took place specifically in the poorest countries.

The third cause relates to the fact that many countries that focus on the distressed economies are lacking resources for the social spheres; family planning programs, health and safety standards in the treatment of various diseases and in childbirth are missing or not working. In developing countries, millions of mothers and babies die each year from complications after childbirth when a woman gives birth too often or when she is too young or too old. Every day, over 31 thousand children under 5 years of age die, many because of the low birth weight and other pregnancy-related complications. In addition, each year more than 585,000 women, at least one per minute, die from causes related to pregnancy and childbirth and 99% of these deaths occur in developing countries [Bolotin, 2001].

The spread of AIDS and some other viral diseases represents a specific case. In many African countries, even in relatively well developed (e.g., Botswana, Namibia), the momentum to control the HIV infection before it became widespread was lost because of the recent poverty and illiteracy. Now, even the enormous costs of combating the infection are ineffective and the number of carriers has already reached 40–50% of the total adult population.

In addition to improving the health of mothers and their children, family planning programs have contributed significantly to reducing population growth. However, the rates of population growth are still maximal in the least developed countries. There is a huge demographic pressure on the economically active population due to an extreme proportion of children (up to 50% of the population) that decreases the effectiveness of any social programs. There are also psychological adaptation consequences that are, at the same time, the causes of the countries' chronic underdevelopment; these consequences are associated with a reduction of peoples' exigencies, i.e., requirements to their health and life itself. For instance, Hindu traditionally do not consider death a disaster, many people can live without air conditioning, communications, etc., without feeling remorse about it. All this is especially true for the least developed countries.

As for the classification of countries based on the level of social development, in general, a strong correlation between the level of economic development of countries and their achievements in the social sphere (which, of course, is not surprising) exists. The first places in the list are occupied by small highly developed countries of Western Europe, the countries of the "resettlement capitalism", and, finally, by Japan and Hong Kong. The first 10-year lag period includes nearly all the remaining EU countries, Singapore, and Macao. The next group of countries with a lag in social development of 10–20 years, includes the oil-dominated Middle East countries, most countries in CEE, Latin America, Chile, Uruguay, Argentina, Mexico, and the Caribbean that primarily depend on export. The 11-year lag of Costa Rica is also consistent with its level of development. In Cuba, the 13-year lag is associated with a high contribution to the index of life expectancy that is high, as on most tropical islands, and is also due to a good medicine, the pride of the regime of Castro. The end of the list is practically the same as for the economic index: it includes only sub-Saharan Africa.

Let us discuss the distribution of countries by the groups presented in Fig. 4.

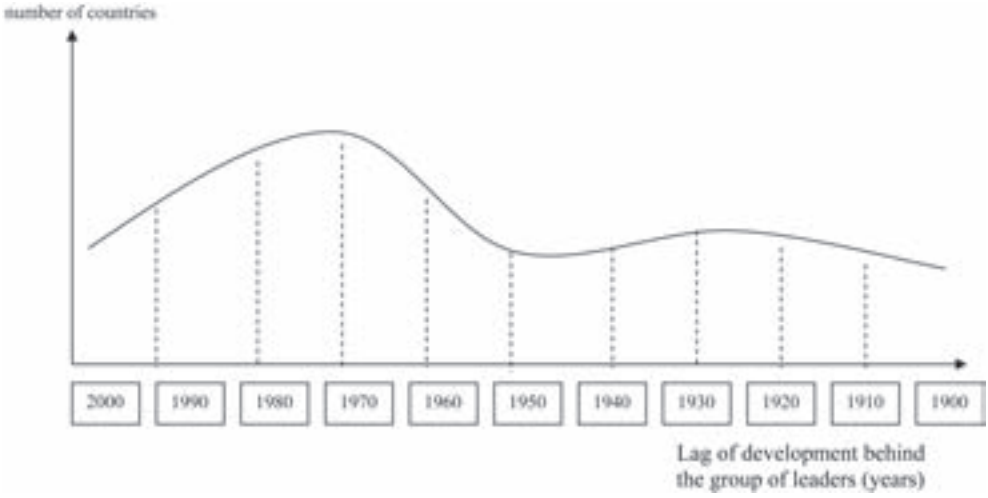

Fig. 4. The distribution of the countries lagging behind in social development

The graph shows the clearly defined second peak in the distribution of the countries. The countries lagging more than 50 years behind the leaders are distributed relatively evenly. Interestingly, the first 30-year period includes significantly more countries than in the case of economic development, although the overall number is more extended. It turns out that the big gaps are due to the outsiders, which was explained previously, while all developed countries and most of the second tier, i.e., Eastern Europe, the most advanced Latin American countries, and Asia, are in the 30-year lag interval. Czech Republic, Slovenia, and Poland fall into the 20-year lag, which is close to their economic performance. However, the lag of the majority of the CIS countries is increasing; for example, Russia appears to be "in the year of 1967".

The index of social development, as in the case of the index of economic development, may be also categorized as "soft". Thus, if the index includes the per capita expenditures on health, the gaps will grow almost tenfold. However, in the authors' opinion, the "soft" version of the index, reflecting the main health indicators, has also a right to exist.

THE INTEGRATED DEVELOPMENT INDEX

The second part of our work, as already mentioned in the beginning of this paper, is dedicated to the integrated indices of development (economic, social, political, and general) and is based on the widest possible number of the baseline parameters. Having set the task, a risky move had to be made, consolidating the existing indices that are described in the first section of the paper (rather than consolidating simple parameters, as currently accepted).

The economic index includes the GDP (in PPP terms), the CI, the industrial component of national wealth, the index of real progress, and the index of sustainable economic well-being. The social index includes both health indices discussed in the overview section of this paper and the human component of national wealth. The political index includes the IEF, FI, and CI. All these indices were mentioned in this paper previously, so we will not detail them any further. All parameters have equal weights because it is difficult to judge their relative importance. The components of the integrated index obtained herein were weighted based on the expert opinion of the authors as follows: economic (0,4), social (0,35), and political (0,25).

As a result, the overall index includes a large number of basic characteristics and it is possible that some parameters could have been even partially duplicated. This methodology of calculations, when everything is lumped together, is very easy

to condemn. However, the feasibility of the index is difficult to doubt and the probability of any random deviations tends to zero (the other side of this issue is the mutual cancellation of some particular features or their wearing-away). It is equally appropriate to criticize the methodology and to argue that this index has collected in itself all the best of many attempts to assess development.

Table 2. The overall integrated development index and its components

Country	Economic	Social	Political	Overall Integrated
Sweden	7	2	5	1
Norway	5	1	10	2
Switzerland	3	4	12	3
Iceland	9	3	4	4
Luxembourg	1	10	9	5
Canada	6	7	6	6
Denmark	4	13	2	7
Australia	8	5	11	8
United States of America	2	9	16	9
Netherlands	13	6	7	10
Finland	12	15	1	11
United Kingdom	16	12	13	12
Belgium	15	8	21	13
Japan	10	11	27	14
Germany	11	18	18	15
Austria	17	16	15	16
France	14	17	20	17
Ireland	20	14	17	18
New Zealand	26	21	3	19
Hong Kong	21	26	14	20
Italy	22	19	23	21
Spain	27	20	19	22
Israel	24	22	38	23
Cyprus	28	25	28	24
Portugal	40	23	22	25
Malta	43	33	8	26
New Caledonia	25	39	29	27
Singapore	19	28	55	28
Slovenia	37	29	25	29
Greece	36	24	53	30
Barbados	39	27	46	31
Macau	34	41	39	32
Republic of Korea	31	30	61	33
French Polynesia	29	53	32	34
Taiwan	38	37	43	35
Bahamas	30	52	36	36
Chile	48	46	24	37
Estonia	47	44	40	38
Hungary	50	40	41	39
Saint Kitts and Nevis	44	55	30	40
Czech	49	32	59	41
Puerto Rico	42	58	54	42
Poland	62	35	56	43
Uruguay	77	43	26	44
Seychelles	52	36	79	45
Costa Rica	68	45	47	46
Yugoslavia	55	48	69	47
Kuwait	23	49	119	48
Slovakia	65	42	62	49
Antigua and Barbuda	41	61	77	50
Lithuania	75	47	44	51
Bahrain	35	38	121	52
Brunei	32	31	137	53
Mauritius	58	68	48	54
Latvia	60	54	73	55
Argentina	67	34	92	56
Mexico	56	60	74	57
United Arab Emirates	18	51	149	58
Malaysia	46	63	91	59
Saint Lucia	71	74	37	60
Trinidad and Tobago	64	59	70	61

Country	Economic	Social	Political	Overall Integrated
Croatia	72	50	71	62
Brazil	54	71	75	63
Belize	73	72	49	64
South Africa	45	115	45	65
Panama	83	64	60	66
Bulgaria	92	62	58	67
Guyana	74	93	50	68
Saint Vincent	81	98	33	69
Grenada	63	95	68	70
Thailand	66	77	89	71
Macedonia	90	65	78	72
Jamaica	88	81	64	73
Surinam	110	80	35	74
Colombia	84	67	97	75
Fiji	80	83	84	76
Botswana	69	130	42	77
Namibia	61	129	57	78
Bosnia and Herzegovina	86	70	101	79
Belarus	59	57	163	80
Cape Verde	101	104	31	81
Tunisia	70	94	95	82
Russian Federation	57	69	152	83
Saudi Arabia	33	76	181	84
Oman	51	82	145	85
Romania	93	75	90	86
Venezuela	89	73	111	87
Libya	53	66	180	88
Turkey	79	99	96	89
Dominican Republic	91	96	82	90
Albania	94	97	76	91
Jordan	87	92	98	92
Mongolia	97	121	51	93
Peru	116	85	72	94
Samoa	105	113	52	95
Kazakhstan	82	79	151	96
Philippines	111	88	93	97
Salvador	103	109	81	98

Country	Economic	Social	Political	Overall Integrated
Lebanon	95	84	143	99
Ukraine	109	78	131	100
Paraguay	129	87	87	101
Sri Lanka	117	101	88	102
Papua New Guinea	102	136	67	103
Georgia	121	90	103	104
Cuba	106	56	175	105
Iran	76	108	166	106
Ecuador	113	100	120	107
Sao Tome and Principe	144	127	34	108
Algeria	98	110	134	109
Gabon	100	122	117	110
Maldives	115	86	144	111
Solomon Islands	119	128	80	112
Armenia	131	102	100	113
Moldova	120	111	108	114
China	108	107	133	115
Turkmenistan	96	89	179	116
Iraq	85	105	176	117
Swaziland	78	137	146	118
Morocco	99	131	126	119
Bolivia	124	118	114	120
Azerbaijan	122	91	158	121
Indonesia	118	116	130	122
Lesotho	138	141	65	123
India	125	132	99	124
Egypt	114	124	129	125
Ghana	136	133	83	126
Kyrgyzstan	123	106	142	127
Guatemala	130	123	112	128
Uzbekistan	127	103	160	129
Honduras	145	119	109	130
Syria	107	114	177	131
Nicaragua	148	126	113	132
Congo	128	145	123	133
Korea	112	125	178	134
Vietnam	135	112	161	135

Country	Economic	Social	Political	Overall Integrated
Guinea	104	162	141	136
Equatorial Guinea	126	120	170	137
Comoros	146	138	115	138
Benin	163	164	63	139
Tajikistan	153	117	147	140
Senegal	150	161	94	141
Gambia	147	156	107	142
Mauritania	134	159	125	143
Madagascar	169	154	85	144
Myanmar	132	135	174	145
Zimbabwe	133	150	154	146
Butane	157	140	136	147
Central African Republic	137	173	122	148
Djibouti	155	158	116	149
Kenya	152	151	132	150
Nepal	173	148	104	151
Liberia	139	142	167	152
Cambodia	164	134	139	153
Pakistan	143	149	156	154
Mali	171	182	66	155
Angola	140	169	135	156
Cameroon	141	147	169	157
Togo	159	146	148	158
Laos	151	139	172	159
Malawi	167	167	110	160
Zambia	156	168	128	161
Mozambique	176	177	86	162
Côte d'Ivoire	142	166	159	163
Bangladesh	166	144	153	164
Sudan	149	143	182	165
Yemen	161	153	150	166
Tanzania	165	165	127	167
Uganda	160	152	157	168
Burkina Faso	170	180	102	169
Nigeria	162	157	155	170
Niger	177	181	105	171
Guinea-Bissau	178	171	118	172
Sierra Leone	181	179	106	173
Haiti	168	155	165	174
Afghanistan	154	174	162	175
Ethiopia	180	175	124	176
Zaire	158	172	164	177
Chad	175	170	140	178
Rwanda	174	163	168	179
Burundi	182	178	138	180
Eritrea	179	160	171	181
Somalia	172	176	173	182

What are the main conclusions that can be drawn from examining the data presented in Table 2 and shown in Figures 5 and 6? Let us analyze this index as a whole, together with its components.

First, as expected, the first group (Table 3) includes the richest countries with the highest integrated indices of 1 to 40, including all EU-15 countries, Japan, all countries of the "resettlement of capitalism", except for South Africa, and some of the richest island states and territories (Malta, Cyprus, Singapore, and New Caledonia). Western European countries outside the EU (Switzerland and Norway), and some CEE countries also fall in this group. The countries in this group are characterized by a relatively proportional structure of the index without any sharp predominance of any one component (parameter). This could be explained by the fact that countries at a high level of development, in general, have a balance between economic, social, and political spheres.

Dramatic differences in the positions in terms of economic and social development are observed only for two countries: the Bahamas and New Caledonia. The Bahamas earn most of their income from hosting the environmentally hazardous activities and components of the infrastructure (the world's largest oil refining and cement plants, terminals for transferring crude oil

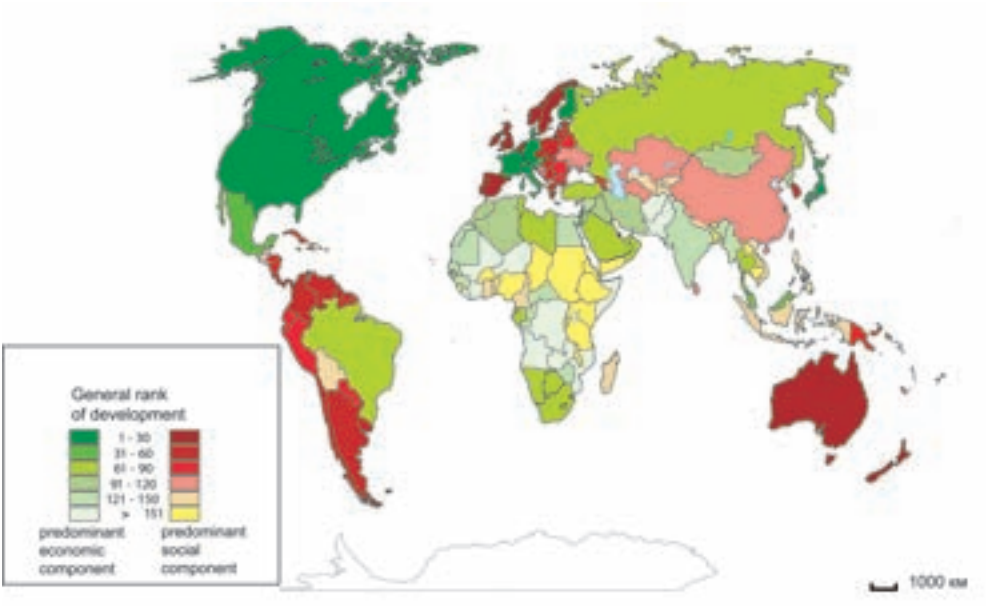

Fig. 5. The relation between economic and social development

from supertankers to conventional deep tankers that may be received by the US East Coast ports). Accredited external tenants in New Caledonia are engaged in processing of mineral resources providing nickel, chromium, cobalt, alloys, and their products for the external market. For all practical purposes, these territories belong to large transnational corporations, which use them at their own discretion as "free economic zones", simultaneously increasing, however, their GDP. In both countries, there are only small portion of population engaged in profitable export sector, but social problems (although the lag in this sphere behind the economic sphere is noticeable) are not as

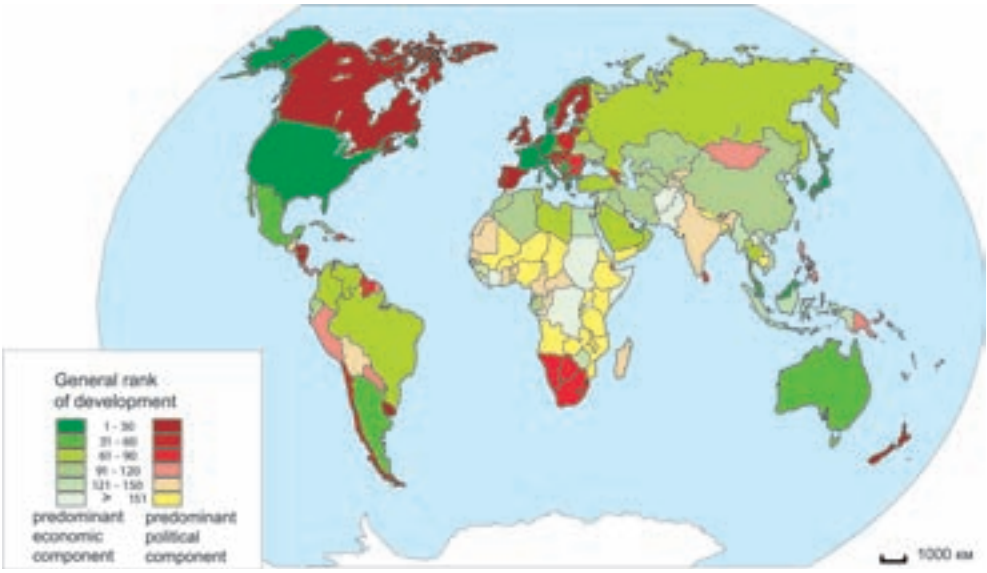

Fig. 6. The relation between economic and political development

Table 3. The grouping of the countries according to the level of general development considering its components

Rich				Moderate-level				Poor			
Socially advanced		Socially lagging behind		Socially advanced		Socially lagging behind		Socially advanced		Socially lagging behind	
Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind
Austria	Australia	Hong Kong	Bahamas	Belize	Argentina	Albania	Antigua and Barbuda	Armenia	Azerbaijan	Angola	Algeria
United Kingdom	Barbados	Denmark	Germany	Bulgaria	Belarus	Botswana	Bahrain	Bangladesh	Vietnam	Benin	Afghanistan
Hungary	Belgium	Canada	Costa Rica	Bosnia and Herzegovina	Guyana	Brazil	Bolivia	Indonesia	Burkina Faso	Gabon	
Ireland	Greece	Saint Kitts and Nevis	Luxembourg	Lithuania	Brunei	Dominican Rep..	Grenada	Burundi	China	Gambia	Guinea
Iceland	Israel	Finland	Macau	Macedonia	Venezuela	Cape Verde	Jordan	Butane	Cuba	Djibouti	Egypt
Spain	Italy		New Caledonia New Caledonia	Panama	Kazakhstan	Mauritius	Kuwait	Haiti	Kyrgyzstan	Zambia	Zaire
Cyprus		Singapore	Peru	Colombia	Mongolia	Libya	Ghana	Laos	India	Zimbabwe	
Malta	Norway		USA	Poland	Latvia	Namibia	Malaysia	Guatemala	Maldives	Congo	Iraq
Netherlands	R. Korea		France	Romania	Lebanon	Salvador	Mexico	Guinea-Bissau	Sudan	Lesotho	Iran
New Zealand	Taiwan		French Polynesia	Slovakia	Seychelles	Samoa	UAE	Honduras	Turkmenistan	Mauritania	Cameroon
Portugal			Switzerland	Surinam	Trinidad and Tobago	Saint Vincent	Oman	Georgia	Uzbekistan	Mali	Korea
Slovenia			Japan	Uruguay	Ukraine	Saint Lucia	Puerto Rico	Yemen	Ecuador	Mozambique	Côte d'Ivoire
Chile				Philippines	Czech	Yugoslavia	Russia	Cambodia	Eq Guinea	Niger	Liberia

Rich				Moderate-level				Poor			
Socially advanced		Socially lagging behind		Socially advanced		Socially lagging behind		Socially advanced		Socially lagging behind	
Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind	Politically advanced	Politically lagging behind
Sweden				Croatia			Saudi Arabia	Kenya		Papua New Guinea	Morocco
Estonia				Jamaica			Thailand	Comoros		Senegal	Myanmar
							Tunisia	Madagascar		CAR	Pakistan
							Turkey	Malawi			Swaziland
							Fiji	Moldova			Syria
						South Africa	Nepal			Somalia	
								Nigeria			
								Nicaragua			
								Paraguay			
								Rwanda			
								Sao Tome and Principe			
								Sierra Leone			
								Tajikistan			
								Tanzania			
								Togo			
								Uganda			
								Chad			
								Sri Lanka			
								Eritrea			
								Ethiopia			

prevalent as in many more populated export-oriented countries in Africa. Incidentally, the example speaks in favor of the method used. It reflects objectively the relations between the elements for even territorially small and information-wise complicated, for the assessment, countries with small populations and large exports, for which data are usually not very accurate.

In two other countries, the Republic of Korea and Singapore, the economic component very much dominates over the political one. On the economic and overall developmental level, they are flush with the world's leaders, while the political component of their development is clearly lagging behind (these countries have a high level of corruption).

It should be mentioned that some dominance exists of the economic factors over the social factors in the major developed countries (USA, Germany, Japan, and France). This situation, of course, is not due to the lack of social safety net, but rather due to the enormous scale of the economies of the nations that are the main economic partners for many countries in the world and the dominant players in the respective macro-regional markets. Therefore, countries with smaller populations and economies (but not the dwarfs), with a particular specialization in the IDL (Ireland, Sweden, Netherlands, and Austria) occupy more prominent positions in these ranking-series of the level of social development. The main reason for this situation is that the larger countries in this category have significant internal contrasts associated with the major part of their population, as well as regional contrasts that always complicate the implementation of general social policy. Many small countries in Europe are known for their solid material aid and subsidies for their people (e.g., Sweden).

The second group includes countries with the average level of general development (positions 41 to 100). This group is dominated by three types of regional types of countries: Latin America, Eastern Europe (including Russia and other republics of the Former Soviet Union), oil-producing countries of the Middle East, and several most developed countries of the African continent.

This group is divided into two subgroups. The first subgroup is characterized by a significant predominance of the economic factor over other factors (major export specialization for a small number of products). Thus, Russia and the Gulf states are dependent on exports of hydrocarbons. Mexico is working for the U.S. market. In varying degrees, the development of most of these countries is determined by the conjuncture of the world market prices on raw materials and agricultural products, as well as by the unstable demand for simple consumer electronics. The second subtype, which includes countries with more balanced and harmoniously developed economies, by contrast, is characterized by the predominance of the social sphere that fits in the logic describe earlier.

The third largest group consists of the least developed world's countries. First, this group includes the most populous (mostly Asian) countries. They may have a significant volume of gross economy, a prominent place in the IDL, and the important achievements in the application of modern technologies. However, they also have the overwhelming poverty of the masses and internal regional disparities (especially considering the fact that China, India, Pakistan, and Indonesia are the countries that are not only populous but with enormous territories).

Often, the commodity-money relations in the countries of this group have not even reached relative maturity: 60–80% of the population is rural where subsistence farming and the remnants of pre-capitalist relations still dominate. However, the most developed areas are already included in the market where a large national capital has emerged; there is an increasingly strong position of transnational companies that target the ultra-cheap labor force and a potentially huge consumer market. Indonesia has moved farther along this road as an

exporter of oil and mineral resources. Some of its figures are close to those of the middle group. The third group includes, among others, many former Central Asian republics of the Soviet Union; the level of development of the political systems (political component of the index) has proven to be even lower than their economies.

There is a more uniform distribution of the second and third groups by the identified subgroups. The third group quantitatively identifies the poor countries whose scarce natural resources do not allow to count on any large-scale exports and, therefore, on large profits (Bangladesh, Guatemala, Chad, etc.). Their opposites are the countries that have occupied the niche in the IDL specializing in export production of an individual commodity without controlling its world prices. One way or another, Egypt is known in the world for its cotton and oil, Morocco – for its phosphates and citrus, Algeria – for its gas and subtropical crops, Guinea – for its bauxite, Côte d'Ivoire – for its cocoa, coffee, rubber, etc. Their commodity exports by value greatly exceed the scale of exports from poor countries of the third group and the social component lags behind the economic. These countries are like the younger brothers of the second group with the dominance of economic development that specializes in the production of more complex, including finished, products.

In contrast, the countries of the third group are not market-forming centers of their macro-regions. These countries are: Mexico and Brazil in Latin America, Russia in the former Soviet Union space, Malaysia and Thailand in Southeast Asia, South Africa in Africa, and the Gulf countries, led by Saudi Arabia, in the Middle East (though the roles of Iran and Iraq have reduced substantially by the stagnation of their economies and military-political pressure from the West on the regimes that represent the threat to the Western world). Egypt, enjoying the best in the world quality of its cotton, is forced to almost completely sell it abroad because the quality of Egyptian fabric does not meet international standards and because technological level and production culture are low.

Transitioning from the first group to the third, there is an increase of intra-group disparities in the levels of development. On the one hand, it puts less prosperous countries, for example, the first group, with more severe social and, in the presence of national minorities, ethnic problems, a step below. On the other, the presence of a buffer zone in the form of moderately developed countries provides a more rapid emergence of new technologies, communications, etc., and creates a potentially huge market for goods and services and the conditions for integration into a single economic space (EU, NAFTA, MERCOSUR). The countries of the third group, generally speaking, can only rely on the export of their limited resources, and plea with local gods for favorable world commodity prices.

In conclusion, it should be stated that the design of the development indices, both general and specific that are applied to particular spheres (e.g., complexity of road networks, health, education, living conditions, etc.) is of a great interest. This area of study is far from been exhausted. The authors are hopeful that the work presented in this paper revealed new and not always obvious possibilities that can be explored in the future research. A more detailed geographic analysis can be found in the book [Tikunov, 2009].

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