
ABSTRACTS

V. M. Golovatyuk

INNOVATIVENESS OF THE UKRAINIAN ECONOMY IN THE CONTEXT OF EUROPEAN INTEGRATION

The peculiarities of innovation-driven development of the Ukrainian economy in comparison with the economies of EU countries over 2009–2015 are studied by data from the monitoring of Global Competitiveness Index (GCI). The ranks of Ukraine by the integral GCI and its factor components are analyzed. An upward tendency in the investment attractiveness of the Ukrainian economy can be found by the integral GCI and the majority of its factor components. Yet, the analysis of the EU economies by factor components of GCI measuring their innovativeness (“innovation”, “development of business”, “technological readiness of the economy”), made by use of mathematical statistics methods, shows that by the innovativeness of the economy Ukraine has been posed on the periphery from innovative leaders of EU, with the factor component “technological readiness of the economy” being the most problematic one, by which Ukrainian has failed to fall into the confidence interval of estimates for EU countries. Therefore, by this factor component Ukraine is not a country attractive for investment, and its estimates for Ukraine give rise for the assumption that the uncertainty of the social and economic environment in EU countries will increase once the Ukrainian economy is integrated in EU.

Keywords: innovation-driven development, investment attractiveness, science and innovation policy, social and economic environment, monitoring, Global Competitiveness Index, factor component, social potential.

Z. O. Popovych

PECULIARITIES OF SOCIAL STRUCTURE OF THE SOVIET SOCIETY, SOURCES AND NATURE OF PROTEST MOVEMENT IN THE USSR

It is shown that the hybrid planning & bureaucratic & market nature of the soviet economy resulted in a peculiar social structure, with an important role played by bourgeois entrepreneurial groups of “pushers” and “workshoppers”, tightly linked to a part of the soviet bureaucracy. Specific interests of this bourgeois entrepreneurial stratum had significant impact on the dynamics of social and political change. An attempt of Khrushchov to limit the scope of monetary relations and subdue the shadow economy triggered sabotage by the bourgeois class and part of the bureaucracy profiting from trade and distribution, closely linked to them, which, in turn, incited outbreaks of protests by the working class rallying mostly against the top authorities. The protests were crushed, and top echelons of the soviet bureaucracy had to ally with the bourgeois entrepreneurial class, by blurring the responsibility for “economic crimes”, extending the economic competencies of sectoral bureaucratic departments, and abandoning an integrated and transparent system of democratic centralized governance. These decisions weakened the support of the bureaucracy by broader strata of the working class and pushed the workers, at the end of 80s of the past century, to support bourgeois classes in the latter’s striving to ultimately restore the capitalism.

Keywords: market, plan, bureaucracy, shadow economy, entrepreneurship, “pushers”, “workshoppers”, protests.

E. M. Zabarna

EVALUATION OF INNOVATION AND INVESTMENT COMPONENT OF ECONOMIC DEVELOPMENT

Reasons for innovation decline in the real sector of the Ukrainian economy, principles underlying effective modernization policy at country and regional level, need for finding ways and forms to intensify innovation and investment driven economic growth in regions are substantiated. A set of main and supplementary parameters-indicators for evaluating innovation and investment components of economic growth at country level is proposed. A system incorporating 4 groups of indicators is constructed for evaluating the innovation and investment component at regional level: (i) economic development in a region, (ii) innovation capacities in a region, (iii) investment capacities in a region, (iv) industrial development in a region. The proposed set of indicators enables for: evaluation of the current performance of regions with maximal account of effects from innovation and investment factors, through comparison of reported estimates with targeted ones; comparisons of reported estimates for selected indicators with average or best ones, for related industries (economic activities or global analogues); estimation of trends; comparisons of selected (causally linked) indicators.

Keywords: economic growth, indicator, main parameters-indicators, supplementary parameters-indicators, investment, research and development, science & technology sector.

A. I. Yakovlev

STRUCTURE OF RESEARCH INTENSITY INDICATORS AT THE CURRENT PHASE OF ECONOMIC DEVELOPMENT

The structure of indicators measuring research intensity is systematized, which is supposed to improve its measurement methodology and enhance the credibility of produced data. Bearing in mind the need to cover all the domains of the global economy, the proposed indicators of research intensity are broken into three groups: indicators measuring applied research and development; indicators measuring basic research; indicators associated with globalization of science & technology processes, for evaluating international projects implemented in transnational companies. The strongest emphasis is made on the indicators measuring applied research and development, as their results are supposed to be acknowledged by the market; the group of these indicators is, therefore, divided into output ones and input ones, quantitative ones and qualitative ones. A table is attached, designed for collection of input data for evaluation of the research intensity performance in organizations developing innovations.

Keywords: *research intensity, research and development, project, innovations, technologies, technology life cycle.*

A. Artyukhov, S. Vorobiyov, V. Omelyanenko,

ANALYSIS OF PRACTICAL ASPECTS IN IMPLEMENTING BASIC RESEARCH PROJECTS: INTERNATIONAL EXPERIENCE, UKRAINIAN REALITIES AND PROSPECTS

Peculiar features in implementing basic research projects as part of the innovation system and effective ways of strengthening the practical focus of basic research projects in Ukraine are studied. Peculiarities of basic research projects management are highlighted in light of theoretical aspects and global experiences in building up innovation systems. It is emphasized that a serious problem in basic research projects management is choice of effective forms of their financing. Main problems related with market promotion of basic research results in Ukraine are analyzed. Recommendations on development of innovation system and basic research in Ukraine through engaging domestic researchers in the global innovation system and the European Research Area are given.

Keywords: *basic research, research and development, technology, innovation, research area, national innovation system.*

O. S. Popovich, O. P. Kostrytsa

CHANGE IN THE AGE STRUCTURE OF RESEARCHERS IN THE UKRAINIAN R&D

Data on the age structure of the Ukrainian research personnel in 2002–2014 is studied at national level and by broader research field. A comparison of the existing structure with the structure that would be optimal in view of the maximal effectiveness of R&D is made. It is shown that the change in the analyzed figures does not comply with the common opinion that “research personnel have been aged”, because the change depends on research field and category of research personnel. The corps of doctors of sciences remained the same or even grew: there was essential growth in the share of researches of old generation (older than 70), with the slightly reduced number of researchers aged 50–70, and virtually unchanged younger age groups. Regarding candidates of sciences, whose overall number in the Ukrainian research institutions fell by 16.1%, a reason for concern may be insignificant “trough” in the age profile of the age category corresponding to 40–49. It can nevertheless be argued that the national R&D system could deal with the increasing outflow of candidates of sciences from research institutions, with notable rejuvenation of the corps of candidates of sciences even in technical fields, which had suffered the heaviest losses of research workforce. The research workforce capacities in natural and technical fields in Ukraine can now be associated with a compressed spring capable to straighten up and do great amount of work required for the innovation-driven economic development. The most essential recovery of the age structure was in social sciences and humanities, with the research personnel strongly increased in the period under study.

Keywords: *age structure, age group, doctor of sciences, candidate of sciences, age profile, research institutions, natural sciences, technical sciences, social sciences and humanities.*

B. R. Kyyak, V. B. Andruschenko

SUBSTANTIATING EVALUATION CRITERIA FOR BASIC SCIENTIFIC RESEARCH

An important problem of science policy studies is discussed, related with sound evaluation of results produced from basic scientific research by analyzing information resources with use of bibliometric indicators. Advantages and limitations of bibliometric indicators as tools for evaluating basic scientific research are highlighted. Analysis of main bibliometric indicators for selected countries, the U. S., China, the U. K. and Ukraine, is made and illustrated in graph form. Authors' considerations on seeking for the criteria of credibility of produced knowledge are given. It is

shown that because quantitative measures of information are incapable to account for many aspects of it, especially its quality, novelty or value, knowledge evaluation should not be confined to quantitative indicators.

Keywords: citation, self-citation, publication, basic scientific research, information.

M. Khmara

EDUCATION CLUSTERS: THE UKRAINIAN CONTEXT

The study aims at theoretical and methodological grounding of the role of education clusters in economic development and analysis of their impact on competitiveness enhancement of national education systems, with emphasis on Ukraine. A review of theoretical approaches to interpretation and definition of the notion "education cluster" is made. Information about entities that may be incorporated in education cluster, objectives and expected results of education clusters is given; their advantages compared with traditional education system and their significance in the regional context are shown. Examples of education clusters and research and education clusters currently operating in Ukraine are given.

Keywords: education cluster, professional education, education system, education institution, research and education cluster, research and development.

O. A. Grachov, V. I. Horevin

NATIONAL ACADEMIES OF SCIENCES IN ASIA, AUSTRALIA AND NEW ZEALAND. SCIENTIFIC ANALYSIS

Comparative scientific analysis of national academies of sciences in 24 countries of Asia as well as Australia and New Zealand is carried out on the basis of the latest data contained in their websites. The analysis covers history, structure, objectives, thematic priorities of the National Academies of Sciences, the categories of members, awarding of prizes and participation of women and youth in the work of National Academies of Sciences, the role of National Academies of Sciences in the scientific and educational systems in the countries in question. It is concluded that the National Academies of Sciences in the most of Asian countries are at the formation phase, and scientific infrastructure capable to produce outstanding scientific achievements is available only in several countries in Asia and Australia.

Keywords: National Academy of Sciences in Asia and Australia, the Royal Society of New Zealand, objectives, structure, membership category.

Yu. A. Khramov

EARLY PHASE IN THE SPACECRAFT SCIENCE AND TECHNOLOGY (1926–1944)

The early phase in the development of spacecraft science and technology in the global context is summed up for the first time in the Ukrainian historiography, with the chronology of its pre-history, framed by the three key events: creation of powder rockets (thirteenth century); creation of rockets in the common sense as aircrafts using jet effect from the burning actuating fluid, rocket fuel, for their motion (1926); creation of earliest controlled ballistic rockets with liquid rocket engine (1942–1944). It is shown that the spacecraft in the modern sense established at the phase corresponding to 1926–1944. The proposed chronology makes the framework for systematization of the main facts scattered across various publications, for their clarification, for putting in circulation many little known events and personalities which information was strictly classified not so long ago.

Keywords: rocket devices, liquid rocket, liquid rocket engine, missile, ballistic missile, solid-fuel rocket.

V. I. Onopriyenko

PATRIARCH OF THE WORLD HISTORY OF GEOLOGY (100TH ANNIVERSARY SINCE THE BIRTH OF V. V. TIKHOMIROV)

Vladimir Vladimirovich Tikhomirov (1915–1994), a correspondent member of the Academy of Sciences of the USSR made the national history of geology known internationally thanks to his scientific works and prominent organizing activities. A talented geologist, he went to the battle-front in 1942, stood out as a combat pilot at Lenindrad front, tragically lost his vision, but completed brilliantly his post-graduate course after the war. For his excellent work he was awarded the scientific degree of doctor in geological and mineralogical sciences. He organized a renowned scientific center to link together works of historians of geology from 36 countries encompassing five continents. He was the founder and the first president of the International Commission on Geology History, a member of the International Academy of Science History.

Keywords: geology, Commission on Geological Scrutiny of the USSR, "Essays on History of Geological Knowledge", Geology Institute of the Academy of Sciences of the USSR, history of geological sciences.