



УПРАВЛІННЯ ЕКОНОМІКОЮ ТА ЇЇ ІНСТИТУЦІЙНЕ ЗАБЕЗПЕЧЕННЯ

ECONOMIC MANAGEMENT AND ITS INSTITUTIONAL FRAMEWORK

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INDICATORS OF INTELLECTUAL PROPERTY IN INNOVATION ACTIVITIES OF UKRAINE

Present study analyses the trends in patenting in Ukraine in 2004-2023. Negative trends in patenting in Ukraine have been identified. Relative indicators of inventive activity that can characterise the scientific and technical potential of the state have been determined. Recommendations have been made to improve statistical information in the field of innovation and intellectual property.

Keywords: *innovative activity; intellectual property; inventive activity; statistical observations; economic activity.*

Innovation is the most important factor in economic development in today's world, which is characterized by rapid technological change and global competition. This manifests in the market's saturation with new competitive products or technologies. Scientists have long known that the primary factors for intensifying innovation ac-

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tivity in any country or technical industry are exclusively economic factors, such as changes in market structure, increased investment in R&D, and other factors that shape science and technology policies. But at the same time, as a rule, there is an increase in inventive activity and an increase in the number of patent documents in the relevant technical fields (Schmookler, 1966). In other words, statistics on patent documentation growth are important indicators of innovation activity intensification.

There is a direct link between the patenting of inventions and the level of economic development of the country, which is measured by the GDP, number of patents issued in the country and R&D expenditures, level of inventive activity in a particular industry, prospects of the relevant scientific and technical direction, and structure of mutual foreign patenting and export-import policy (Griliches, 1984; 1990).

One of the most important aspects of industrial property is that patents for inventions are the most significant and highly informative in terms of a country's technological development.

Among the most significant indicators of patent statistics are the following:

- Number of domestic applications and patents granted thereunder;
- Number of foreign applications and patents granted thereunder (broken down by country of origin);
- The number of national and foreign applications/patents broken down by IPC classes and countries of origin;
- Number of patents obtained by national applicants abroad.

Thus, the number of applications from domestic applicants indicates the scientific and technical potential of the country, and is the basis for calculating the inventive activity ratio, which is defined as the number of such applications per 1 million population. The ratio of the number of applications filed by domestic applicants to the total number of applications filed determines the technological self-sufficiency coefficient. The number of applications filed by foreign applicants determines the technological "penetration" and is the basis for calculating the country's technological dependence coefficient, which is defined as the ratio of the number of applications filed by foreign applicants to the number of applications filed by domestic applicants. The number of applications filed by domestic applicants in foreign countries determines the level of technological "diffusion" of a given country and is the basis for calculating the diffusion coefficient, defined as the ratio of the number of applications filed abroad to the number of applications filed by domestic applicants in the previous year (Orliuk, 2023).

Patent statistics serve as the most important information base for conducting various scientific, technical, and economic studies, including assessing the functioning of the patent system in the country and analyzing the state and dynamics of the scientific and technical potential of inventions, both in the country as a whole and in individual regions. Thus, patenting inventions and utility models are integral parts of country's innovation processes.

Therefore, **the purpose of this article** is to demonstrate that patenting is an integral part of the country's innovation processes, to analyze patenting trends in Ukraine from 2004 to 2023, identify positive and negative trends in patenting, and

provide recommendations for improving statistical information in the field of innovation and intellectual property.

Materials and methods. In the course of writing this paper, the authors studied materials that investigated the relationship between inventive activity and a country's level of economic development. The authors have analyzed the standard methodology for collecting and interpreting statistical data on innovation, as well as the regulatory documents of the European Community on conducting statistical surveys of innovation activity. A comparative analysis of the methodology for conducting statistical observations on innovations in the EU and Ukraine was conducted.

The main method of this study was a statistical analysis of the indicators of the inventive activity. This covers the period from 2004 to 2023. Statistical data from the National Intellectual Property Authority of Ukraine and World Intellectual Property Organization were used. Based on these statistics, the authors calculated the relative indicators of inventive activity characterizing the scientific and technological potential of the country and analyzed the dynamics of these indicators over the period.

Results and discussion. The processes that took place in Ukraine in the field of industrial property rights (IPR) protection during 2004—2023 generally show negative trends, particularly in filing applications for inventions and utility models.

This period was chosen for the analysis of inventive activity because, starting on January 1, 2004, the Civil Code of Ukraine entered into force, according to which amendments were made to legislative norms in the field of intellectual property rights protection. In particular, the institute of a declarative patent was abolished, meaning that inventions were protected by only one protection document, a patent with a validity period of 20 years. In addition, the list of objects protected as utility models has been expanded.

It should be noted that the provisions of the legislation of previous years differed significantly from the provisions introduced by the Civil Code of Ukraine, in particular, the object of a utility model was only the constructive design of a device, and inventions, in addition to 20-year patents, were protected first by a “short patent” with a validity period of 5 years, and then by a so-called declarative patent also with a validity period of 5 years, the issuance of which did not require a substantive examination. Thus, comparing statistical data on inventive activities from previous years with data after 2004 is incorrect and impossible.

The trend filings for inventions and utility models from to 2004—2023 are shown in Fig. 1.

These legislative changes had a corresponding impact on the inventive activity of national applicants.

After the abolition of the declarative patent and the expansion of the list of objects protected as utility models, a significant number of domestic applicants, in order to minimize the costs of obtaining a patent, preferred to file utility model applications, which, on the one hand, artificially reduced the number of applications for inventions and, on the other hand, negatively affected the technical level of the innovation because the registration of a utility model patent was carried out without substantive examination.

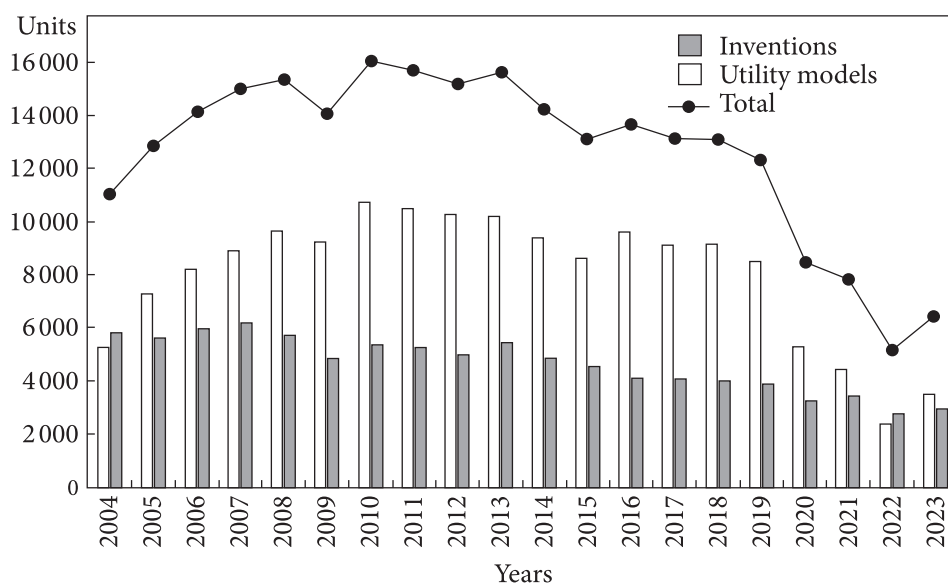


Fig. 1. Trend in filings for inventions and utility models, 2004–2023, units

Source: prepared by the authors based on: Statistics, Plans, Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/statistics> (accessed: 05.08.2025); UANIPIO Statistics and Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/UKRNOIVI-statistics> (accessed: 05.08.2025); URL: <https://ukrpatent.org/atachs/IP-in-Figures-2023-web1-.pdf>

Thus, starting in 2004, there were positive trends in national applicants' inventive activity, mainly due to the growth in the number of utility model applications (Fig. 2). Thus, in 2008, their share in the total number of filed applications reached 77% compared to 56% in 2004. Accordingly, the share of applications for inventions decreased significantly, from 44 to 23%. The average annual growth rate (T) of the number of applications for inventions and utility models for the period 2004–2008 was +7.4% (for applications for inventions –8.8%, for utility model applications +16.4%). T was calculated using the following formula

$$T = (K - 1) \cdot 100,$$

where $K = \sqrt[n-1]{\frac{y_n}{y_1}}$, y_n and y_1 are the number of applications filed at the end and beginning of the period, n is the number of years in the period.

After the economic crisis of 2008–2009, which led to a decline in inventive activity in Ukraine, primarily due to a decrease in the activity of domestic applicants, there was an increase in filing applications for inventions and utility models in 2010. The average annual growth rate in the number of applications filed by domestic applicants during 2009–2013 was +2.8% (for applications for inventions, +4.2%; for utility models, +2.5%).

The events of 2014 (aggression by the Russian Federation, annexation of the Crimea, and occupation of certain districts of the Luhansk and Donetsk regions) had a negative impact on the socioeconomic development of the country in ge-

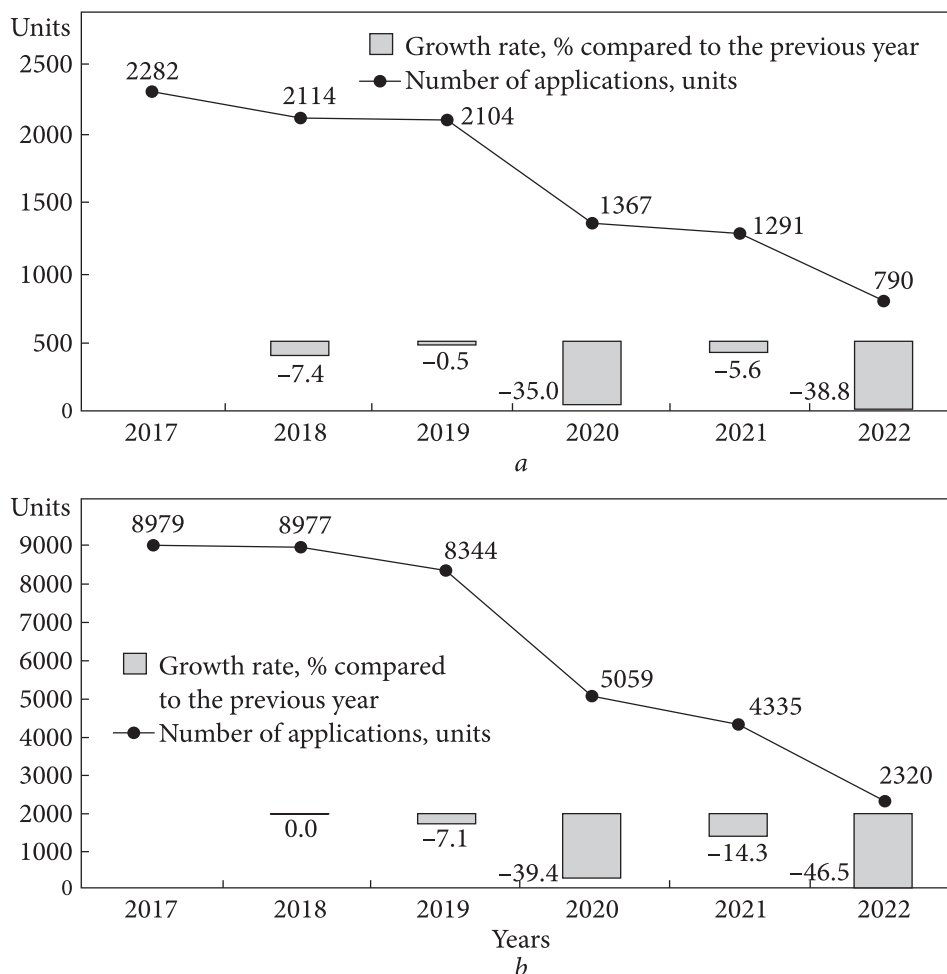


Fig. 2. Trends in filings for inventions (a) and utility models (b) by domestic applicants under the national procedure, units

Source: prepared by the authors based on: Statistics, Plans, Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/statistics> (accessed: 05.08.2025); UANIPIO Statistics and Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/UKRNOIVI-statistics> (accessed: 05.08.2025); URL: <https://ukrpatent.org/atachs/IP-in-Figures-2023-web1-.pdf>

neral and on the patenting activity of domestic inventors. Beginning in 2013, there was a negative trend in the filing of applications for inventions and utility models. Thus, in 2014, compared to 2013, the number of applications for inventions filed by national applicants decreased by 14%, and utility model applications decreased by 7.4%. The average annual growth rate of the total number of applications for the period 2013–2019 was –3.4% (for inventions, –5.0%; for utility models, –2.9%).

There were several reasons for the significant drop in inventive activity in 2020. In particular, CMU Resolution No. 496 dated 12.06.2019¹ amended the Pro-

¹ URL: <https://zakon.rada.gov.ua/laws/show/496-2019-%D0%BF#Text>

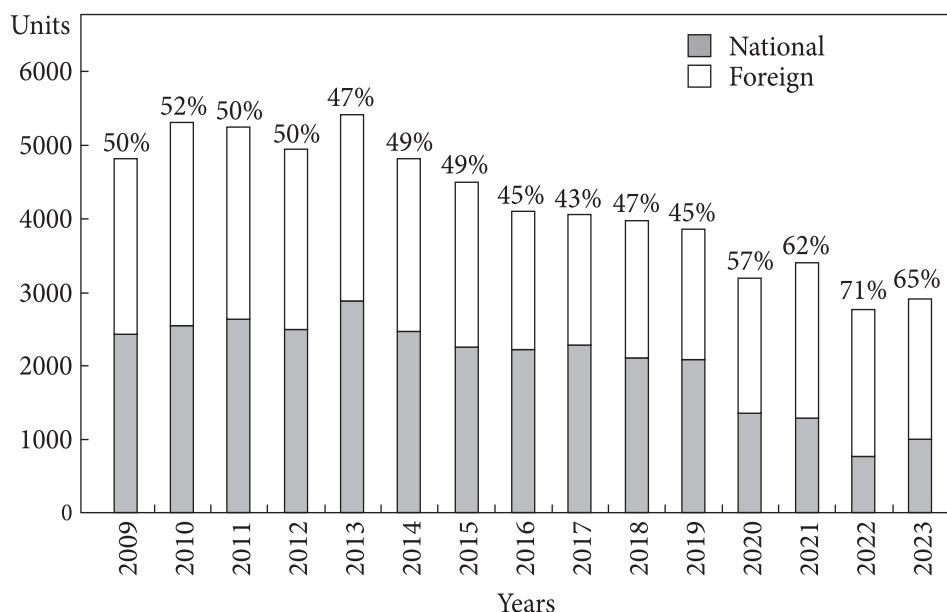


Fig. 3. Ratio of the number of applications for inventions filed by domestic and foreign applicants, %

Source: prepared by the authors based on: Statistics, Plans, Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/statistics> (accessed: 05.08.2025); UANIPIO Statistics and Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/UKRNOIVI-statistics> (accessed: 05.08.2025); URL: <https://ukrpatent.org/atachs/IP-in-Figures-2023-web1-.pdf>

cedure for Payment of Fees for Activities related to the Protection of Intellectual Property Rights, namely, significantly increasing the amount of fees for filing applications and other actions necessary to obtain titles of protection.

In addition, the sharp decline in the number of utility model applications in 2020 (by almost 38%) was due to changes in current legislation. Thus, on 20.08.2020, the Law of Ukraine No. 816 dated 21.07.2020 "On Amendments to Certain Legislative Acts of Ukraine on the Reform of Patent Legislation"² entered into force, according to which the list of objects protected as utility models was limited.

The COVID-19 pandemic has also had an impact. The highest rate of decline was observed in 2022, due to Russian military aggression. The number of applications decreased by almost 19% for inventions and nearly half for utility models compared to the previous year.

It should be noted that the downward trend in filing applications for industrial property rights is due primarily to a decrease in the activity of domestic applicants (Fig. 2). Thus, the number of applications for inventions from domestic applicants in 2022 decreased by almost 40%, while the activity of foreign applicants decreased by only 6.1% compared to 2021. Since the share of utility model applications from foreign applicants is negligible, the main trends are determined

² URL: <https://zakon.rada.gov.ua/laws/show/816-20#Text>

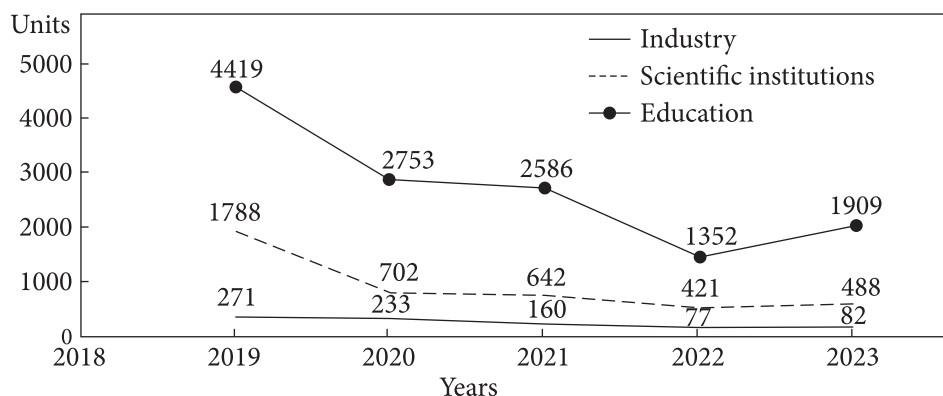


Fig. 4. Trends in domestic filings by sector of economic activity, units

Source: prepared by the authors based on: UANIPIO Statistics and Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/UKRNOIVI-statistics> (accessed: 05.08.2025); URL: <https://ukrpatent.org/atachs/IP-in-Figures-2023-web1-.pdf>

by the activity of domestic applicants, which decreased by almost half in 2022 compared to the previous year.

Despite the positive changes in 2023, the number of applications for inventions and utility models does not exceed the figures for 2021. The average annual growth rate of the number of applications from domestic applicants for the period 2019—2023 was -19.3% (for inventions, -16.8% , for utility models, -20.0%).

It is noteworthy that over the past four years, the share of applications for inventions filed by foreign applicants has increased (Fig. 3) (Khan, Dernis, 2006). A decrease in domestic applicants' patent activity and an increase in foreign applicants' patent activity have led to changes in Ukraine's technological dependence. While in 2009—2019 the coefficient of technological dependence averaged 0.92, in 2020—2023 it almost doubled and averaged 1.83. This result indicates an increase in a country's technological dependence on foreign countries.

Higher education institutions and academic research institutions remain the main sources of Ukraine's innovation potential, with the share of applications amounting to approximately 90% in 2023, as in previous years³. The share of applications for inventions and utility models filed by legal entities operating in the industry has decreased from 4.0% in 2019 to 3.0% in 2023 (Fig. 4) (Khaustov, 2024). The highest rates of decline in inventive activity in the period 2019—2023 were observed in the field of research and development (the average annual growth rate in the number of applications was almost -28%). The average annual growth rates of the number of applications in the industry and education sectors were almost -26% and -19% , respectively.

The decline in inventive activities has also affected Ukraine's global ranking. Thus, according to the World Intellectual Property Organization (WIPO), in 2022,

³ URL: <https://ukrpatent.org/atachs/IP-in-Figures-2023-web1-.pdf>

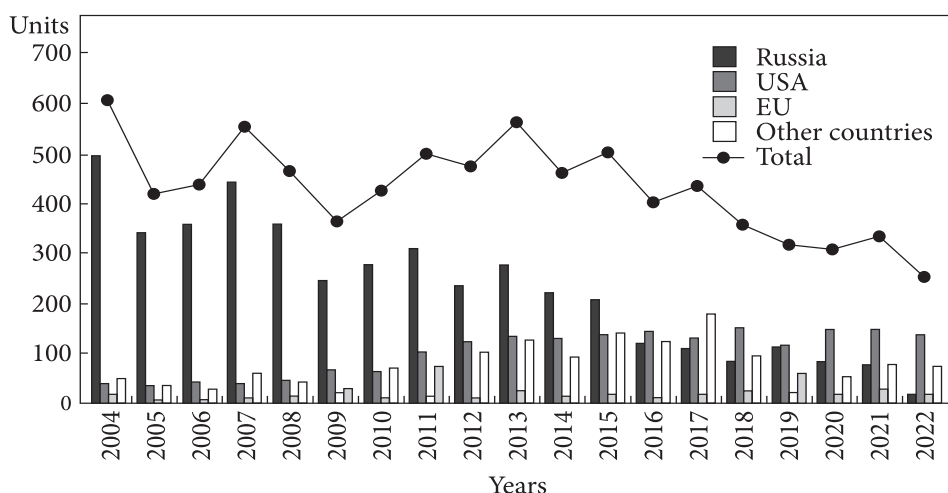


Fig. 5. Trends in filings for inventions by national applicants in foreign countries, units
Source: prepared by the authors based on: WIPO IP Statistics Data Center. *Wipo.int*.
URL: <https://www3.wipo.int/ipstats/key-search/indicator> (accessed: 05.08.2025).

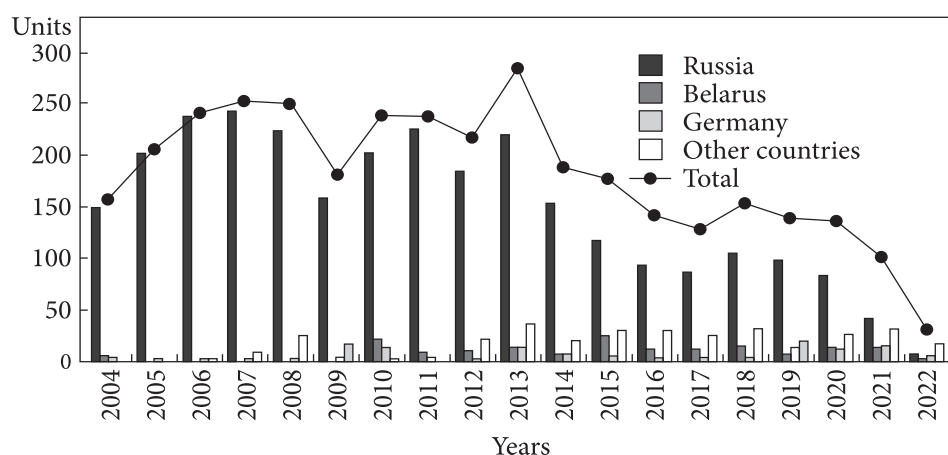


Fig. 6. Trends in utility model filing by domestic applicants in foreign countries, units
Source: prepared by the authors based on: WIPO IP Statistics Data Center. *Wipo.int*.
URL: <https://www3.wipo.int/ipstats/key-search/indicator> (accessed: 05.08.2025).

Ukraine ranked 37th in the overall ranking by the number of applications for inventions (against 32nd in 2021), and 11th among low- and middle-income countries (against 7th in 2021, 3rd in 2012)⁴. In particular, in 2012, Ukraine ranked 18th in the world in the number of invention applications filed by national applicants per unit of GDP. In terms of the number of utility model applications, Ukraine moved from 7th to 10th place in the overall ranking (in 2012, among the top 20 intellectual property offices, Ukraine ranked 5th after China, Germany, the Russian Fe-

⁴ Search WIPO Publications. *Wipo.int*. URL: <https://www.wipo.int/publications/en/search.jsp?q=wipo+ip+indicators&rows=10&sort=score> (accessed: 05.08.2025).

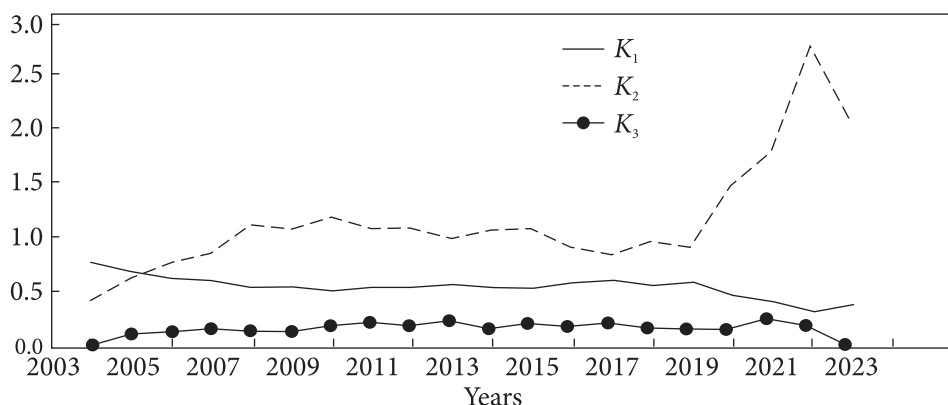


Fig. 7. Trends in changes in coefficients K_1 , K_2 , and K_3 for the period 2004—2023

Source: prepared by the authors based on: Statistics, Plans, Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/statistics> (accessed: 05.08.2025); UANIPIO Statistics and Reports. *The State System of Intellectual Property Legal Protection*. URL: <https://ukrpatent.org/uk/articles/UKRNOIVI-statistics> (accessed: 05.08.2025).

deration, and the Republic of Korea). However, it should be noted that not all countries provide legal protection for utility models such as industrial property rights.

Downward trends were also observed in the foreign patenting processes. According to the WIPO Statistical Database⁵, the number of applications for inventions filed by Ukrainian applicants in foreign countries in 2022 decreased by 24.4% compared to 2021 and by almost 60% compared to 2004 (Fig. 5). In recent years, Ukrainian applicants have been most active in patenting their inventions in the United States, European Patent Office (EPO), and Russian Federation. Naturally, since 2014, there has been a gradual decrease in the number of applications filed with the Russian Federation, and by 2022, their number has decreased more than tenfold compared to 2014. Simultaneously, there was an increase in patenting inventions in the United States.

A similar result was observed in the utility model applications. The number of utility model applications filed by domestic applicants in foreign countries in 2022 decreased by more than three times compared to 2021 and by more than 50 times compared to 2004 (Fig. 6).

The vast majority of utility model applications were filed by the Russian Federation. Since 2014, the number of such applications has decreased gradually. Thus, the number of utility model applications filed in the Russian Federation decreased in 2022 by almost six times in 2021 and by more than 20 times compared with 2014.

As already noted, the scientific and technological potential of a country can be determined using relative indicators of inventive activity, namely, the coefficient of

⁵ WIPO IP Statistics Data Center. *Wipo.int*. URL: <https://www3.wipo.int/ipstats/key-search/indicator> (accessed: 05.08.2025).

technological self-sufficiency K_1 , the coefficient of technological dependence K_2 , and the coefficient of diffusion K_3 .

This was calculated using the following formula

$$\begin{aligned} K_1 &= N_{(i) \text{ (domestic)}} / N_{(i) \text{ (foreign)}}, \\ K_2 &= N_{(i) \text{ (foreign)}} / N_{(i) \text{ (domestic)}}, \\ K_3 &= N_{(i) \text{ (abroad)}} / N_{(i-1) \text{ (domestic)}} \end{aligned}$$

where $N_{(i) \text{ (domestic)}}$ is the number of applications filed by domestic applicants in Ukraine in the i -th year, $N_{(i) \text{ (foreign)}}$ is the number of applications filed by foreign applicants in Ukraine in the i -th year, $N_{(i) \text{ (domestic)}}$ is the total number of applications filed in Ukraine in the i -th year, $N_{(i) \text{ (abroad)}}$ is the number of applications filed by domestic applicants abroad in the i -th year, and $N_{(i-1) \text{ (domestic)}}$ is the number of applications filed by national applicants in Ukraine in year $i - 1$.

The dynamics of the changes in these coefficients for the period 2004—2023 are shown in Fig. 7.

The data indicate a gradual decrease in the coefficient of technological self-sufficiency and an increase in the coefficient of technological dependence during the analyzed period, with such changes being especially noticeable in 2020—2023 (Fig. 7). Thus, in 2023, the coefficient of technological self-sufficiency decreased by more than two times, and the coefficient of technological dependence increased by more than 4.5 times compared to 2004.

The dissemination coefficient remains practically unchanged but is very low; that is, the number of applications filed by domestic applicants abroad is much lower than the number of applications filed by them in Ukraine.

The experience of foreign patent office shows that patent statistics are used not only to analyze the efficiency of intellectual property offices but also for macroeconomic analysis and assessment of innovation activity, as patent statistics are one of the most objective sources for assessing quantitative indicators of innovation (Khan, Dernis, 2006).

The purpose of such a macroeconomic analysis is to determine the general trends in innovative development, one of which is the state and dynamics of inventive activity and the structure of patenting inventions in the distribution of all thematic ranges of the International Patent Classification (IPC). Based on this analysis, it is possible to identify promising areas of scientific and innovative development and draw conclusions about the effectiveness of national innovation policy (Shenkarenko, 2013). Unfortunately, this area of research in Ukraine has received little attention

The European Community (EU) provides evidence that intellectual property is an important component of an innovation system. According to the Oslo Manual, which is an internationally recognized standard methodology for collecting and interpreting innovation statistics, intellectual property activities are among the eight activities that enterprises can undertake in pursuit of knowledge-based innovation (Gault, 2023).

Business innovation activities include all research, financing, and commercial activities undertaken by enterprises that are expected to lead to innovation. These include:

- activities in the field of scientific research and experimental development (R&D);
- engineering, design and other creative activities;
- marketing and brand management;
- activities related to intellectual property (IP);
- employee training activities;
- software and database development;
- activities related to the acquisition or lease of tangible assets;
- innovation management activities.

Intellectual property-related activities include the protection or use of knowledge created during research and experimental development, software development, engineering, design, and other creative work. Intellectual property activities include all administrative and legal work related to filing, registration, documentation, disposition, exchange, licensing, introduction, and protection of an enterprise's own IP; all activities related to the acquisition of IP from other organizations, for example, through licensing or outright purchase of IP, as well as activities related to the sale of IP to third parties.

Available EU statistics on innovation include the following:

- the number of enterprises that filed applications for inventions, registered industrial designs and trademarks, or used trade secrets, disaggregated by type of economic activity and size of enterprise;
- the number of enterprises that granted licenses, sold or exchanged IP rights, disaggregated by type of transaction, type of economic activity, and size of enterprise;
- the number of enterprises that acquired rights or licenses to use IPR, broken down by the type of organization that granted the rights, type of economic activity, and size of the enterprise.

These statistics on IPR were published on the Eurostat website⁶ based on the results of the CIS 2018 and CIS 2020 (Community Innovation Survey) statistical surveys conducted by the EU after the revision of the Oslo Guidelines in 2018, in accordance with EU Regulation No. 995/2012 of October 26, 2012⁷.

Starting from CIS 2022 onwards, statistical surveys were conducted in accordance with Regulation (EU) No. 2019/2152 of the European Parliament and Council of November 27, 2019, on European business statistics (hereinafter re-

⁶ Eurostat. URL: <https://ec.europa.eu/eurostat/> (accessed: 05.08.2025).

⁷ Commission Implementing Regulation (EU) No 995/2012 of 26 October 2012 laying down detailed rules for the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on science and technology (Text with EEA relevance). *EUR-Lex*. URL: <https://eur-lex.europa.eu/legal-content/lt/TXT/?uri=CELEX%3A32012R0995>

ferred to as EU Regulation 2019/2152)⁸ and Commission Implementing Regulation (EU) No. 2022/1092 of June 30, 2022, laying down technical specifications for data requirements on the topic of innovation, in accordance with EU Regulation 2019/2152 (hereinafter referred to as EU Regulation 2022/1092)⁹.

In accordance with EU Regulation 2022/1092, the data set included in the statistical survey of innovation includes eight indicators related to intellectual property, namely:

- filing of an application for an invention;
- registration of industrial design;
- registration of trademark;
- application for copyright registration;
- use of trade secrets;
- transfer of licenses for the use of IPR;
- sales (or transfers) of rights to their IPR to third parties;
- exchange of IP (sharing, cross-licensing, etc.).

These data were collected according to the sectors of economic activity, size of the enterprise, and innovation status of the enterprise.

Statistical observations in Ukraine in 2023 were carried out in accordance with Order of the State Statistics Service of Ukraine No. 418 dated 28.12.2022, which approved the “Methodological Provisions of the State Statistical Observation of the Innovation Activities of Enterprises,” which describes the main provisions, rules, and methods of conducting this state statistical observation. These Methodological Provisions considered the provisions of Regulation (EU) 2019/2152 and Regulation (EU) 2022/1092, as well as the recommendations set out in the Oslo Guidelines for the collection, presentation, and use of innovation data, the Community Innovation Survey (CIS) 2022 questionnaire¹⁰, and the European Innovation Scoreboard (EIS) (Babenko, 2020; Khaustov, 2018), all of which have been the main tools for evaluating European innovation policy since 2000.

The purpose of this statistical observation is to generate information on the creation and implementation of innovations by enterprises to inform the analysis of their innovation activities. Among the indicators formed within the framework of the statistical observation “Survey of innovation activity of industrial enterprises” (form No. 1 — innovation) are:

- the number of new technologies acquired by industrial enterprises (the indicator characterizes the number of property rights to technology and/or its com-

⁸ Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics, repealing 10 legal acts in the field of business statistics (Text with EEA relevance). *EUR-Lex*. URL: <http://data.europa.eu/eli/reg/2019/2152/oj> (accessed: 05.08.2025).

⁹ Commission Implementing Regulation (EU) 2022/1092 of 30 June 2022 laying down technical specifications of data requirements for the topic ‘Innovation’ pursuant to Regulation (EU) 2019/2152 of the European Parliament and of the Council (Text with EEA relevance). *EUR-Lex*. URL: http://data.europa.eu/eli/reg_impl/2022/1092/oj (accessed: 05.08.2025).

¹⁰ Harmonized Data Collection for the CIS 2022. URL: https://ec.europa.eu/eurostat/cache/metadata/en/inn_cis13_esms.htm (accessed: 05.08.2025).

ponents in the form of scientific and applied results, intellectual property rights, know-how acquired in year T);

- the number of new technologies transferred by industrial enterprises (the indicator characterizes the number of property rights to technology and/or its components in the form of scientific and applied results, intellectual property rights, and know-how transferred in year T).

These indicators are formed according to the forms of acquisition/transfer:

- acquisition/transfer of intellectual property rights;
- licenses for the use of inventions, industrial design, and utility models;
- R&D results;
- know-how, agreements for the acquisition/transfer of technology;
- in Ukraine and outside Ukraine.

State statistical observation indicators were compiled for Ukraine as a whole, by region, and by sector of economic activity at the level of the Classification of Economic Activities (NACE) section. Moreover, there are significant problems with the ability to use state statistical observation data and contradictions with the EU requirements for statistical information.

Thus, the statistical observation form No. 1-innovation does not provide for the formation of indicators related to the legal protection of intellectual property rights, namely, the number of filed applications for IPR (as provided for by EU Regulation 2022/1092).

Statistical data on this form of observation are collected once every two years (in an odd year), and information is provided only for the reporting year. The latest data on the licensing of intellectual property rights were published in the statistical report "Scientific and Innovative Activity of Ukraine" in 2019. The statistics on technology transfer/acquisition published in 2019 contain information only on the number of acquired/transferred technologies in Ukraine and outside Ukraine, including the transfer/acquisition of:

- rights to patents, licenses for inventions, utility models, industrial designs (without breakdown by type of transaction);

- R&D results;
- know-how agreements on the acquisition (transfer) of technologies;
- purchase (sale) of equipment;
- other.

The total number of transferred/acquired technologies is provided by regions of Ukraine and sectors of economic activity without a breakdown in the form of transfer/acquisition, which does not allow for a more detailed analysis of the transfer of intellectual property rights and licensing activities of industrial enterprises.

The published data for 2021 and 2023 on the transfer/acquisition of technologies make it impossible to conduct any analysis, as they contain incomplete data on the total number of acquired/transferred technologies by type of economic activity, without a breakdown by form of acquisition/transfer.

In addition, it should be noted that the activity of industrial enterprises in filing applications for IPR, particularly inventions and utility models, is very low.

Therefore, even if the above statistical data are available, the analysis of activities related to the transfer of intellectual property rights and licensing of such objects will not reflect the full picture.

Administrative data may provide more detailed information on specific elements of the innovation process, such as applications for intellectual property rights and other indicators of IPR-related activities. After all, according to the Law of Ukraine “On State Statistics”, the source of statistical information is, among other things, administrative data of state authorities (except for state statistics authorities), local governments, and other legal entities.

This is in line with the provisions of Regulation (EC) No. 223/2009 of the European Parliament and of the Council of March 11, 2009, on European statistics, which lays down the basic framework for European statistics, in particular, the legal basis for the compilation, production, and dissemination of European statistics. In accordance with Article 24 of this Regulation, national statistical offices and the Commission (Eurostat), to reduce the burden on respondents, have access to administrative data sources to the extent necessary for the development, production, and dissemination of European statistics¹⁰.

The National Intellectual Property Authority, represented by the Ukrainian National Office for Intellectual Property and Innovations (UANIPIO), is the administrator of Ukraine’s statistics on the transfer of intellectual property rights and licenses for their use.

It should be borne in mind that under current legislation, particularly the Civil Code of Ukraine, only agreements on the transfer of exclusive intellectual property rights are subject to mandatory state registration.

Licenses for the use of intellectual property rights and license agreements are not subject to mandatory state registration; that is, UANIPIO data on concluded license agreements may be incomplete. Therefore, the statistical data of UANIPIO and the statistical data of the State Statistics Service on concluded license agreements should complement each other.

This information contains data on the number of filed applications and granted titles of protection for all industrial property rights (inventions, utility models, industrial designs, and trademarks) broken down by applicants (domestic, legal, and foreign entities). This information is presented in the following sections:

- breakdown by country;
- breakdown by Ukraine regions for domestic applicants;
- breakdown by economic activity sector;

¹¹ Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics and repealing Regulation (EC, Euratom) No 1101/2008 of the European Parliament and of the Council on the transmission of data subject to statistical confidentiality to the Statistical Office of the European Communities, Council Regulation (EC) No 322/97 on Community Statistics, and Council Decision 89/382/EEC, Euratom establishing a Committee on the Statistical Programmes of the European Communities (Text with relevance for the EEA and for Switzerland). *EUR-Lex*. URL: <http://data.europa.eu/eli/reg/2009/223/oj> (accessed: 05.08.2025).

- breakdown by technical fields according to the methodology of the World Intellectual Property Organization.

In addition, information was provided on agreements on the disposal of industrial property rights broken down by industrial property rights and types of agreements. In other words, the information provided complemented the statistical data of the State Statistics Service on science and innovation and provided a more complete picture of the state of innovation activity in Ukraine. Thus, to obtain a complete picture of licensing activities in order to cover all subjects of intellectual property activities, it is necessary to consider the statistical data of UANIPIO.

Another important aspect of the analysis of patent statistics is the study of inventive activity in various sectors of the economy to identify the most promising industries, both at the stage of filing applications and at the stage of implementation of inventions in production, to identify priority areas for investing public funds in the development of the most promising industries. Such an analysis requires the creation of a system of special indicators that would allow combining data from patents and economic statistics, comparing indicators such as the efficiency of scientific and technical activities and the number of field applications for inventions, the number of used inventions, and the main results of innovation activities, determining the prospects of international technological relations of the state, etc.

We believe that the following indicators should be used:

1. Number of patent applications per 100 scientists.
2. Number of registered patents per 100 scientists.
3. Number of applications per 1 million UAH R&D expenditure.
4. Volume of industrial production per 1 application.
5. Production of innovative products per 1 application.
6. Volume of exported innovative products per 1 application.

However, it is difficult to calculate such indicators for individual industries (types of economic activity) based on existing data because of the discrepancy between the structure of the International Patent Classification (IPC) and the structure of the classification of economic sectors (types of economic activity) used in Ukraine. Therefore, to compare patent statistical data with economic indicators, it is necessary to develop tables of correspondence between IPC headings and the Classification of Economic Activities (NACE).

The development of such a correspondence table should be based on two concepts: the industrial origin of inventions (utility models) and the industrial use of inventions (utility models).

The concept of industry use of inventions is based on the fact that, using the technical content of each IPC index, it is possible to establish the types of economic activity in which each particular invention can be used (Greif, 1992; Schmoch, 2008).

The concept of the origin of an invention is based on the sector of economic activity to which the applicant company for each invention belongs. This approach makes it possible to establish a link between the input object in the form of a R&D result and the output object in the form of a patent, as well as its potential use at the

industry level, which is an important tool for the in-depth analysis of processes related to invention and innovation. Therefore, the system of compliance with IPC and NACE can become an effective tool for shaping national industrial property policies and a basis for creating special programs on priority areas of science and technology development and economic sectors in general.

CONCLUSION AND RECOMMENDATION

1. Bring the data of the state statistical observation of Ukraine in line with the EU requirements for statistical information
2. State statistical authorities should resume the annual collection and publication of data on statistical observation forms.
3. To resume the practice of using statistical data from UANIPIO, particularly concerning the disposal of intellectual property rights, namely the transfer of IP rights and licenses for the use of IP. At the same time, to recommend that UANIPIO provide the said information by region, type of economic activity, broken down by type of owner (national, including legal entities, foreign), type of contract, and IP object.
4. In accordance with EU practice, the State Statistics Service of Ukraine should ensure the publication of information on the acquisition/transfer of technologies in all possible sections provided for in the state statistical observation form No. 1-innovation, broken down by transaction type.
5. To develop tables of correspondence between IPC headings and the Classification of Economic Activities (NACE) for permanent use.
6. We conducted a detailed analysis of the content of the forms of innovation and research activities survey to include issues that are important and relevant for the Ukrainian economy, with further amendments to the forms of state statistical reporting on innovation and research activities.

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ПОКАЗНИКИ ІНТЕЛЕКТУАЛЬНОЇ ВЛАСНОСТІ В ІННОВАЦІЙНІЙ ДІЯЛЬНОСТІ УКРАЇНИ

Здійснено аналіз тенденцій патентування в Україні у 2004—2023 рр., що дозволив зробити висновок про їх негативний характер.

Інновації є найважливішим чинником економічного розвитку в сучасному світі, який характеризується швидкими технологічними змінами і глобальною конкуренцією. Давно відомо, що основними факторами активізації інноваційної діяльності в будь-якій країні чи технічній галузі є виключно економічні фактори, такі як зміни в структурі ринку, збільшення інвестицій у НДДКР та ін., що формують науково-технічну політику. При цьому водночас, як правило, спостерігаються інтенсифікація винахідницької діяльності та збільшення кількості патентних документів у відповідних технічних галузях. Іншими словами, статистичні дані щодо зростання обсягу патентної документації є важливими показниками активізації інноваційної діяльності.

Існує прямий зв'язок між патентуванням і рівнем економічного розвитку країни, кількістю виданих патентів у країні й витратами на НДДКР.

Патентна статистика слугує найважливішою інформаційною базою для проведення різноманітних наукових, технічних і економічних досліджень, у тому числі з оцінювання функціонування патентної системи в країні й аналізу стану і динаміки науково-технічного потенціалу винаходів як у країні в цілому, так і в окремих регіонах.

Визначено відносні показники винахідницької діяльності, які можуть характеризувати науково-технічний потенціал держави. Надано рекомендації з удосконалення статистичної інформації у сфері інновацій та інтелектуальної власності.

Ключові слова: інноваційна діяльність; інтелектуальна власність; винахідницька діяльність; статистичні спостереження; економічна діяльність.