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DETERMINATION OF ROYALTY RATES
FOR INTERNATIONAL TECHNOLOGY TRANSFER AGREEMENTS

The existing approaches used for setting the royalty rates for technology transfer agreements and based on the experience of research institutions of the National Academy of Sciences of Ukraine, research organizations and universities in Europe and USA have been reviewed. The existing rates have been analyzed; recommendations on setting the royalty rates for technology transfer agreements between research institutions and foreign and domestic partners have been elaborated.

K e y w o r d s : royalty rates, license agreement, technology transfer agreement, licensee, and licensor.

Setting of royalty rates for the use of inventions and other intellectual property rights is one of the most difficult issues of conducting of technology transfer agreements. The experience of conclusion of technology transfer agreements between the institutions of the National Academy of Sciences of Ukraine (NAS) and corporations of the USA, France, Canada, China, Korea, and other countries has showed that there are different approaches and challenges related to setting of initial royalty rates for negotiations.

The approaches to setting royalty rates used by some research institutions and universities in the United States and several European countries and by the research institutions of Ukraine has been generalized by the Center for Intellectual Property and Technology Transfer of the NAS Ukraine.

The purpose of this paper is to review the existing approaches to the setting of royalty rates, to generalize the rates, and to make recommendations for setting the royalty rates for technology transfer agreements between research institutions and foreign and Ukrainian firms.

Pursuant to the law of Ukraine, the royalty is defined as «*any payment received as a fee for the use*

of, or for the right to use any copyright and related rights on literary, artistic or scientific work, including software and other records on data storage devices, video or audio tapes, cinematographic films or tapes for radio or television broadcasting, transmissions (programs) of broadcasting organizations, any patent, registered mark for goods and services or trade mark, design, secret drawing, model, formula, process, right to information concerning industrial, commercial or research experience (know-how)» [1].

In international practice, there are the following approaches to setting the royalty rates [2–7]:

1) Use of standard royalty rates for certain sectors of industry;

2) Determination of royalty rates as part of the licensee's profit (typically, 25%);

3) Determination of royalty rates on the basis of economic indicators of enterprises;

4) Determination of royalty rates based on the analysis of specific transactions (comparative method);

5) use of court-awarded royalty rates.

The analysis of royalty rates in more than 600 international and domestic technology transfer cases (1990–2000) (mainly, related to inventions in various areas of engineering) [8] has showed the following royalty rates:

✦ 33% of royalty rates is less than or equal to 3%;
✦ 36% of royalty rates is less than or equal to 4%;
✦ 56% of royalty rates is less than or equal to 5%;
✦ 61% of royalty rates is less than or equal to 6%;
✦ 66% of royalty rates is less than or equal to 7%;
✦ 72% of royalty rates is less than or equal to 8%;
✦ 74% of royalty rates is less than or equal to 9%;
✦ 90% of royalty rates is less than or equal to 10%.

The analysis is based on the information on technology transfer agreements in the following areas: automotive, chemistry, electronics, electrical, communications, construction, agriculture, computer hardware and software, medical, and so on. The data on the frequency of application of royalty rates is given below.

The above statistical data show that in the majority of cases (90%), applicable royalty rates do not exceed 10%. However, in certain cases (especially, if they do not apply to serial production), royalty rates can be higher.

1. TYPES OF ROYALTY RATES

In the present-day practice of technology transfer agreements, there are the following main types of royalties: *lump sum payments, periodic royalties, minimum royalties, and running royalties* [9].

1.1. Lump Sum

The lump sum is fixed and paid as single payment or in parts, but certainly at the early stages of the license agreement.

Usually, the technology transfer agreements provide for either the periodic royalties (floating rates royalties, minimum royalty) or the lump sum and periodic royalties (other types of royalties).

Research by *S. Degnan* and *C. Horton* [10] indicates that 60% of license agreements provide for payment of lump sum. The lump sum payments apply in the cases where the licensee is an unknown company and it is doubtful whether it is able to establish a successful commercial release and marketing of licensed products, as well as in the cases where it is extremely difficult to control the output of licensed products (for example, if there is a risk of the licensor's failure to obtain data on product output).

The payment of lump sum and periodic royalty (other types of royalties) is the most widespread approach. According to *Jay P. Friedenson* [11], the size of lump sum ranges USD 5 thousand – USD 1 million (the most common rate is USD 100 000 – 300 000) and is paid before or after (partially before and partially after) the transfer of documentation, samples, installation of equipment and so on.

To calculate the reasonable amount of royalty in the form of lump sum one can use the following formula:

$$P = V \times R, \qquad (1)$$

where P is amount of lump sum payment, V is value (volume, number, etc.) of products to
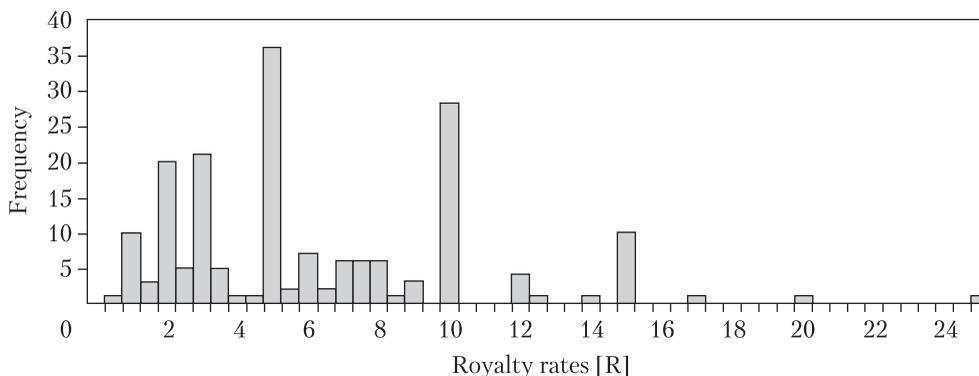
Frequency of use of royalty rates in technology transfer agreements [8]

be potentially produced by the licensee, and R is standard royalty rate. So, royalty cash flow is converted into a fixed payment. In this case, changes in the value of money over time (which is calculated using special methods of evaluation [12]) are not taken into consideration, and the lump sum is overestimated. However, this quite simple estimate helps to get some initial amount to be negotiated.

If a lump sum is combined with periodic royalties the lump sum is reduced by the amount of periodical royalties anticipated.

If the license agreement provides also the manufacturing of a prototypes and/or purchase of equipment, these costs are taken into account separately.

1.2. Periodical Royalties

The most common type of payment is determined as a percentage of:
+ Sales price or net price of products (sales price of products net of taxes, transportation cost, insurance and installation);
+ The net or gross profit;
+ Number of products manufactured under license;
+ The gross production of the licensee (kilograms of materials, gallons of paint, kilometers of fiber, etc.);
+ Cost of licensed products.

In the case of process licensing, usually, the royalty rate is based on production volume (weight, volume, square footage, running meters) [13].

1.3. Minimum Royalties

The minimum royalty is the lowest limit of royalty rate, i.e. minimum estimated price of the license, which can be acceptable for the licensor to cover the costs associated with the development of intellectual property object (IPO) and the sale of license, including marketing costs, remuneration to authors of IPO, and know-how to be provided to the licensee.

Usually, the minimum royalties are used as guarantee against the licensee's failure to com-

mercialize the subject of license within the term of license and to use IPO for manufacturing products. It can be used as an alternative to the termination of agreement, for a specified period.

1.4. Floating rate royalties

The variable rate royalty is used for different volumes of product manufacture using IPO [12]. As the output increases, the royalty rate usually decreases. Also, the royalty rate can be reduced if sales increase.

2. FACTORS AFFECTING THE DETERMINATION OF ROYALTY RATE

The highest royalty rates apply if the subject of license is securely protected by license documents worldwide. Usually, the sale of non-patented products reduces the royalty rate, insofar as it is very difficult to keep the unprotected information secret. In connection with this, in the world practice, the «know-how» license often complements the license for the use of invention, the other IPO, for which copyright protection was obtained.

The royalty rate depends on the type and term of the license agreement. For the exclusive licenses, the royalty rates are higher by 1–2% as compared with the non-exclusive licenses. The longer the term of the license agreement, the lower is the royalty rate.

There are also objective limits of royalty within which the agreement is mutually beneficial for the parties. The specific amount of royalty is adjusted upon the results of analysis of the following factors [14]:
+ Territory of the agreement;
+ Scope of legal protection (the absence of patent decreases the royalties);
+ Terms of the mutual exchange with improvements (on paid or free basis);
+ Degree of dependency of the licensee from the licensor;
+ Competing proposals;
+ Volume of technical documents transmitted (if only technical documentation is transferred the royalties can decrease by 30%);

✦ Amount of investments required;
✦ Possible costs of the licensee spent on its own alternative R&D;
✦ Technological capabilities of the licensee to gain profit from the use of IPO;
✦ Reputation capabilities of the licensee to gain profit from the use of IPO;
✦ Output of licensed products manufactured by the licensee;
✦ Share of the licensee's revenues generated using IPO, etc.

3. ROYALTY RATES AS PERCENTAGE OF LICENSEE'S PROFIT
3.1. 25% Rule

If it is possible to estimate the licensee's profit, the royalty rate determination could be based on *«25% Rule»* which is widely used (as well in the litigation) [15, 16].

The distribution of profit between the licensor and the licensee is considered fair provided the licensor has 25% and the licensee gets 75%, i.e. it is believed that the use of IPO generates 25% of the licensee's profit.

The development of «25% Rule» has been studied by *R. Goldscheider* and *J. Jarosz* [15]. This approach is considered to originate from the practice of making licensing agreements when for 5% royalty rate and 20% sales profit, the share of profit corresponding to this 5% rate was equal to 25%. However, this approach appeared earlier.

Thus, in 1938, in the U.S., having heard the case of determining a reasonable royalty, the 6th circuit Court of Appeals heard expert testimony to the affect that... ordinary royalty rates to the inventor should bear a certain proportion to the profits made by the manufacturer and that the inventor was entitled to a proportion ranging from probably 10% of the net profits to as high as 30% in each specific case.

The above distribution of profit is explained by the costs usually incurred by the licensee, namely:
✦ To rework technology to the level used in manufacturing;
✦ To purchase, to install, and to test equipment;

✦ To manufacture a pilot batch of production or a prototype;
✦ To manufacture and to maintain stock of products;
✦ To create customized products;
✦ To do marketing of products;
✦ To sell products;
✦ To supply and to distribute products (logistics);
✦ To process returns and to refund;
✦ To prepare reporting, to pay royalties, etc.

The above approach is based on the assumption that the development of technology is one of the four steps on the product's path to the market (the other three steps are rework of technology to manufacturing needs, production, and marketing).

Thus, for example, if profit accounts for from 10 to 40% of the sales revenues, the application of 25% Rule results in the royalty rates as showed in Table 1.

Also, there is the *«33% Rule»* [16] that is used in the case when the technology is ready for practical application at the stage of production (the path to the market consists of three steps: *development of technology, manufacture,* and *sale*). Therefore, one third of the sales revenues is referred to the technology development, i.e. intellectual property rights incorporated into the technology generate one third of profit. Hence, if profit makes up 20% of sales revenues and the licensor has a share of 33%, the royalty rate is 6.6%.

The royalty rates and corporate profits have been studied in [15] and are given in Table 2. To analyze the royalty rates, the data of 1533 licensing agreements signed in late 1980s–2000 were used from Royalty-Source.com database.

Table 1

Calculation of Royalty Using the 25% Rule

Share in sales revenues, %	Licensor's share in profit according to 25% rule	Calculated share of royalty in product cost, %
10	25	2.5
20	25	5
30	25	7.5
40	25	10

Licensed Royalty Rates (late 1980s—2000)

Industry	Number of licenses	Minimum royalty rate, %	Maximum royalty rate, %	Median royalty rate, %
Automotive	35	1.0	15.0	4.0
Chemical	72	0.5	25.0	3.6
Computers	68	0.2	15.0	4.0
Consumer goods	90	0	17.0	5.0
Electronics	132	0.5	15.0	4.0
Energy&Enviroment	86	0.5	20.0	5.0
Food	32	0.3	7.0	2.8
Healthcare products	280	0.1	77.0	4.8
Internet	47	0.3	40.0	7.5
Machine/Tools	84	0.5	25.0	4.5
Media&Entertainment	19	2.0	50.0	8.0
Pharma & Biotech	328	0.1	40.0	5.1
Semiconductors	78	0.0	30.0	3.2
Software	119	0	70.0	6.8
Telecom	63	0.4	25.0	4.7
Total	1.533	0.0	77.0	4.5

Royalty Rates and Licensee Profits (1990—2000)

Industry	Average royalty, %	Average profit, %	Royalty as percentage of profit, %
Automotive	5.0	6.3	79.7
Chemical	3.0	11.6	25.9
Computers	2.8	8.0	34.4
Consumer goods	5.0	16.2	30.8
Electronics	4.5	8.8	51.3
Energy&Enviroment	3.5	6.6	52.9
Food	2.3	7.9	28.7
Healthcare products	4.0	17.8	22.4
Internet	5.0	1.0	492.6
Machine/Tools	3.4	9.4	35.8
Media & Entertainment	9.0	−304.5	−3.0
Pharma & Biotech	4.5	24.5	17.7
Semiconductors	2.5	29.3	8.5
Software	7.5	33.2	22.6
Telecom	5.0	14.1	35.5
Total	4.3	15.9	26.7

On the basis of *Bloomberg* database, information about profit margins of U.S. companies was generalized and 347 companies that entered license agreements were selected. The comparison of median royalty rates, average operating profits of the companies and royalty as a percentage of the profit are showed in Table 3.

Thus, these empirical studies have showed that the median royalty rate in the industry is 4.3%. It corresponds to 15.9% average profit and 26.7% royalty share in profits.

However, in some industries, this share accounts for 79.7% of profit (automotive), 52.9% (energy and environment), and 51.3% (electronics), etc.

3.2. Determination of Licensor's Share in Technology-Generated Profit

Other approach involves determining the licensor's share in technology-generated profit as multiplying three coefficients [17]:

$$D = K1 \times K2 \times K3 \times 100, \qquad (1)$$

where K1 is coefficient of results achieved; K2 is complexity factor; and K3 is novelty factor. The value of the coefficients are given in Annex 8.

It should be noted that the authors of this approach have not presented data on correlation of the royalty rates calculated using this approach with the empirical data on royalty rates.

4. STANDARD ROYALTY RATES

Another approach to determining royalty rates is application of average royalty rates based on tabular data for various industries [3, 12, 18]. There are many reviews of royalty rates in licensing agreements [19]. However, they contain data relating to a certain limited industry or market segment and generally use information about licensing agreements made within a certain period of time.

In fact, the license agreement contains a significant number of variables affecting the royalty rate.

The parties may agree on different payment options, including on variable royalty rates for different periods of the license agreement, different sequences of calculations, advanced or deferred payments. Also, the parties can make a cross-licensing agreement (both parties give each other a license to use IP rights belonging to them) with a reduced royalty rate. Such factors as, for example, supply of equipment that is essential to the licensor usually guarantees lower royalty or its zero rate. No royalty is possible if the licensee produces and supplies licensed products to the licensor, and if the licensee sells products under the licensor's name. In both cases, the royalties are compensated by changes in price of goods.

The low royalty rates in certain areas are explained by licensing within multinational corporations (a «family» of corporations) and, sometimes, by licensing for third parties. In particular, this applies to chemicals for agricultural purposes.

Therefore, the consideration of royalty rate apart from the other terms of license agreement is very conventional, but is widely used as initial information for negotiations. In particular, according to *Martin S. Landis* [13], the most common royalty rate for all industries in the United States is 5%. However, in the case of the exclusive license that usually includes the right to judicial protection of rights, the royalty rate increases. The same concerns the single license when the licensor reserves the right to make products for itself, but agrees not to grant licenses to other firms.

4.1. AVERAGE ROYALTY RATE FOR LICENSING AGREEMENTS IN FOREIGN COUNTRIES
Licensing of Inventions

D. McGavock [20] and *S. Degnan* [10] prepared reviews of present-day licensing agreements in terms of factors that affect the value of license agreement and information on royalty rates. The information was obtained on the basis of questionnaire sent out to professionals engaged in licensing practices, mainly, in the United States. *D. McGavock* [20] received and summarized 118 answers, while *S. Degnan* [10] got and processed 428 answers. The generalized royalty rates (1992) are showed in Annex 1.

Having analyzed the licensing in and licensing out agreements, *S. Degnan* and *S. Horton* [10] (1992)

studied the correlation of royalty rates and creative level of intellectual product. The authors of this review developed a three-tier «*scale of creativity*»:

+ *Revolutionary*: satisfies long-felt need or creates a whole new industry;
+ *Major improvement*: significantly enhances quality or product superiority in an existing product, process or service;
+ *Minor improvement*: creates an incremental improvement in an existing product or service.

Each tier corresponds to a range of average royalty rate and a range of median royalties. The generalized royalty rates are given in Annex 2.

Royalty Rates for Medical Products

In 1990, *Tom Kiley* [16] published generalized royalty rates and proposed normative rates in certain pharmaceutical applications (rDNA designates recombinant DNA and MAb monoclonal antibody) (Annex 3).

Harold A. Meyer III [22] analyzed the royalty rates in the pharmaceutical industry of the United States, in 2001. He paid special attention to the fact that the closer is the product to the stage of production the higher is the royalty rate (in %):

+ A patent pending with a strong business plan may be worth 1%
+ An issued patent may be worth 2%
+ A patent with a prototype, such as a pharmaceutical with pre-clinical testing may be worth 2–3%
+ A pharmaceutical with clinical trials may be worth 3–4%
+ A proven drug with FDA approval may be worth 5–7%
+ A drug with market share, such as one pharma distributing through another, may be worth 8–10%

The average royalty rates for licenses granted by the U.S. universities in the field of medical technologies at the early stages of development (1991) [23] are given in Annex 3 (1).

Lita Nelsen (Technology Transfer Office of the Massachusetts Institute of Technology) has made an analysis of royalty rates which firms were ready to pay for technologies to the Institute (presented at the 1989 AUTM Annual Meeting (1989) [24]. The royalty rates for materials, pharmaceuticals, semiconductors, biotechnology, etc. are given in Annex 4.

The royalty rates for different types of technologies, U.S. (2005) [25] are presented in Annex 5. The average royalty rates for various products are summarized in Annex 6.

Licensing of Trademarks

Marty Brockstein and the Editorial Office of *The Licensing Letter*, *EPM Communications of the New York City* summarized royalty rates for licensing of trademarks in various industries in the U.S., in 2002–2003 [25]. They are listed in Annex 7.

4.2. ROYALTY RATES FOR LICENSING AGREEMENTS OF UKRAINIAN ORGANIZATIONS AND FIRMS

Pursuant to Article 22 of the Law of Ukraine on the State Regulation in the Sphere of Technology Transfer, the Cabinet of Ministers of Ukraine approved the Resolution (dated June 4, 2008, no. 520) establishing minimum royalties to be paid by enterprises and organizations for the licensed use of technology and its components to the authors of technology and persons engaged in technology transfer (Table 4) [26].

According to the above Resolution, the minimum rate is determined as a percentage of products sales revenues, caused by the use of new technology or its components. If the technology includes components used partially in the process of product manufacture (in particular, during the implementation of technology, for commissioning works, control tests and determination of product characteristics) i.e. such components are used from time to time, but are necessary for the manufacture of goods and services, the terms and procedure for payment of royalties for their use are set in the technology transfer agreement.

It should be noted that according to the above law and CMU resolution, the obligation to pay a fee for the use of technology and its components apply to all institutions, organizations, and corpo-

rations irrespective of type of ownership, including the foreign corporations with whom Ukrainian companies make technology transfer agreements.

The defined rates are minimum and applicable unless the parties agree to use higher rates in the licensing agreement related to transfer of technology or its components. The analysis of rates used in the practice of licensing agreements with foreign organizations and national companies has showed that usually the royalty rates are above the mentioned rates (see Annexes 1–6).

Yu.S. Zaitsev recommends to make an adjustment for the difference in economic conditions between the CIS countries and the foreign economies for royalty rates used in foreign countries [27].

In this case, the standard royalty rate is multiplied by ratio of the product profitability in a given industry in CIS countries to that in the foreign economies:

$$R = R_c \times \frac{K}{K_c}, \qquad (2)$$

where R is royalty rate calculated for a given license agreement; R_c is royalty rate based on the analysis of international practice of licensing agreements; K is profitability in a particular industry in the CIS countries, K_c is profitability in a particular industry in the advanced economies.

The authors of *Intellectual Property Management* [28] provide information on the royalty rates as percentage of sales depending on the technology level (in %):

✦ Revolutionary technology: 7–13;
✦ Major improvement in quality: 4–8;
✦ Minor improvement of existing product, percent of sales revenues: 2–5;
✦ Sales, million per year: 1;
✦ Sales, hundred thousands, annually: 2–3;
✦ Sales, ten thousands, annually: 3–7;
✦ Specialized goods: 8–10.

5. DETERMINATION OF ROYALTY RATES ON THE BASIS OF INDICATORS OF ECONOMIC ACTIVITY OF THE ENTERPRISE

If a standard royalty rate for a particular type of product is not available, it is possible to calculate it on the basis of enterprise's economic activity indicators, including profitability [29]. The mentioned approach is similar to the 25% rule (see 3.1).

The royalty rate is defined as

$$R = \frac{prof \times D}{(1 + prof)}, \qquad (3)$$

where R is royalty rate calculated as a ratio of product of profitability (*prof*) and licensor's share in sales revenues D to $(1 + prof)$, where *prof* is profitability of manufacture and sales of product under the agreement.

Based on this formula, one can see that the bigger is the licensor's contribution to the development of innovation and effective functioning of the licensee's business, the greater is the licensor's share (D) in sales revenues.

Table 4

Minimum Royalties Paid to the Authors of Technology and Persons Engaged in Technology Transfer

Products (goods manufactured or services provided with the use of new technology)	Min. royalties, % of sales revenues
1. Mass production goods	0.5
2. Customized products (for special purposes or customers)	1
3. Products with unique properties (goods manufactured and services provided for meeting the urgent needs of the economy and the national security, and for protecting human life and health; the volume of such goods is limited, the customers are defined in accordance with the established procedure; the introduction of technology demands the direct involvement of its authors.	3

6. DETERMINATION OF ROYALTY RATES BASED ON THE ANALYSIS OF SPECIFIC TRANSACTIONS (COMPARATIVE METHOD)

Consulting companies specialized in licensing and licensing firms constantly gather information on specific conditions of license agreements in relevant industries. Their sources are public information on certain types of transactions in the United States, in particular, on agreements in pharmacology and biotechnology [16, 30]. In addition, there are paid databases of royalty rates and license agreements [31–33], journals [34], reports [35] and other information concerning such agreements.

R.C. Razgaitis overviewed the sources of information on licensing agreements and royalty rates in [3, 16]. The sources of information were journals, databases, license agreements and royalty rates, reports; published license agreements; information of licensing offices of universities in US and other countries; conditions of purchase/sale of licenses and their cost offered by various institutions and organizations; summary of medical product and diagnostic method manufacturers; court decisions and so on.

The examples of financial conditions of license agreements for individual industrial sectors are given by *Intellectual Property Research Associates* (*IPRA, Inc.*), United States [4] and include a description of license transactions for plastic materials, technology for manufacture of batteries; medical areas: allergy testing system, antimicrobial technology, testing of blood clots, etc.; recycling of aluminum, petroleum processing, oil sludge remediation; tire recycling and so on.

The departments responsible for innovative technology transfer and intellectual property of research institutions are recommended to accumulate relevant information on royalty rates and other conditions of license agreements obtained from various sources.

7. THE USE OF COURT PRACTICE DATA ON ROYALTY RATES

Among the widespread methods, there is setting the royalty rates on the basis of the court practice of USA and other countries.

Russell L. Parr [2] analyzed decisions of U.S. local courts in 1990–2004. The analysis of 107 district court decisions showed that the royalty rates determined by courts are higher as compared with the industry average royalty rate. The respective average rates as determined by courts account for 11% for all industries, in particular: 9.9% – Chemical Industry, 10.2% – Computer and Electronic Products), 12.9% – Electrical Equipment, 12.3% – Machinery Manufacturing, 11.7% – Transportation Equipment, etc.

CONCLUSIONS

Approaches to setting the royalty rates for license and other technology transfer agreements provide for the following possible steps:

For the transactions with foreign firms:

1. To determine the licensee's profit from manufacture of products under the license and the share attributable to the licensor; to set royalty rate on the basis of available information about sale prices and production costs.

2. To determine standard royalty rates applicable to the respective field or products and processes taking into account all sources of information.

3. To take into consideration the CMU Resolution «On the approval of minimum royalties rates payable to the authors of technology and employees engaged in its transfer» of June 4, 2008, no. 520.

4. To collect information on licensing agreements of corresponding branches of industry.

5. To consider the experience of lump-sum payments and minimum royalty rates. The last paid in particularly for failure in application of licensed product within specified period. To sign a license agreement for a period of 3–10 years with an option to renew and to review the financial conditions of royalty payment.

For the transactions with local companies:

1. To take into consideration the CMU Resolution «On the approval of minimum rates of fee

payable to developers of technology and employees engaged in its transfer» of June 4, 2008, no. 520.

2. To implement steps mentioned in paragraphs 1—5. To estimate royalty rates based on indica-tors of economic activity of the enterprises, if respective data are available (see Section 5) and to adjust the royalty rates used in foreign countries to the CIS market (see Section 4).

Licensing out royalty rates by industry category (1992) [20]

Industry	Royalty, %						
	0—2	2—5	5—10	10—15	15—20	20—25	Over
Aerospace		40	55	5			
Automotive	35	45	20				
Chemical	18	57.4	23.9	0.5			0.1
Computer	42.5	57.5					
Electronics		50	45	5			
Energy		50	15	10		25	
Food/Consumer	12.5	62.5	25				
General manufacturing	21.3	51.5	20.3	2.6	0.8	0.8	2.6
Government/University	7.9	38.9	36.4	16.2	0.4	0.6	
Healthcare Equipment	10	10	80				
Pharmaceuticals	1.3	20.7	67	8.7	1.3	0.7	0.3
Telecommunications				100			
Others	11.2	41.2	28.7	16.2	0.9	0.9	0.9

Correlation Between the Royalties and the Creative Level of Intellectual Product [10]

In-licensing

	Revolutionary, %	Major improvement,%	Minor improvement, %
Average	7—13	4—8	2—5
Median	5—10	3—7	1—4

Out-licensing

	Revolutionary, %	Major improvement,%	Minor improvement, %
Average	7—14	5—9	3—6
Median	5—10	4—8	2—5

Standard Royalty Rates Proposed for Certain Pharmaceutical Industries [21]
(rDNA designates recombinant DNA and MAb monoclonal antibody)

	Exclusive license, %	Non-exclusive license, %
Development rDNA[a] drug	7—10	3—4
Approvable rDNA[a] drug	12—15	5—8
Therapeutic mAB[b]	5—7	3—4
Diagnostic mAB[b]	3—4	1—2
Drug delivery component	2—3	0.5—2

a — Recombinant DNA; b— Monoclonal antibodies

**Average Royalties for Licenses Issued by U.S. Universities
in the Medical Sphere for Technologies at Early Stages [23]**

Technology/Industry	Royalty, %	Technology/Industry	Royalty, %
Reagents/Process	1—3	Diagnosis In Vivo	3—8
Reagents/Kits	2—10	Therapeutics	4—12
Diagnosis In Vitro	2—6	Medical instrumentation	4—10

**Royalties used for license agreements with Massachusetts Institute
of Technology and other US universities [24]**

Product	Royalty, %	Comments
Materials processes	1—4	0.1—1% for commodities
		0.2—2% for processes
Medical equipment/devices	3—5	
Software	5—15	
Semiconductors	1—2	Chip design
Pharmaceuticals	8—10	Composition of materials
	12—20	With clinical tests
Diagnostics	4—5	New entity
	2—4	New method/old entity
Biotechnologies	0.25—1.5	Process[a] /non-exclusive license
	1—2	Process[a] /exclusive license

a — expression systems, cell lines. Growth media/conditions

**Royalties for Different
Types of technologies, U.S., 2005 [25]**

Industry	Range, %	Industry	Range, %
Aerospace	2—15	Software	5—15
Chemical	1—10	Semiconductors	1—12
Health care facilities	5—10	Pharmaceuticals	8—20
Electronics	3—12	Diagnostics	2—5
Medical instrumentation	3—5		

Average Royalties for Different Types of Products[1]

No.	Industry or type of product	Royalty, %
1	Conveying equipment	4.0—6.0
2	Foundry equipment	1.5—2
3	Equipment for cement works	3—5
4	Equipment for the steel industry	4—6
5	Equipment for the chemical industry	3—5
6	Equipment for the food industry	1
7	Equipment for water treatment	5
8	Refrigeration equipment	1—4
9	Heating systems	4—6
10	Furnaces	4—6
11	Kettles	5
12	Air conditioners	3—4
13	Valves, fans	3—6
14	Boiler equipment	3—5
15	Compressors, pumps	5—7
16	Motors for the industrial use	4—5
17	Equipment for the textile industry	6—7
18	Metal structures	2—4
19	Equipment for the textile industry	3—5
20	Printing machinery	4
21	Electrical equipment	4—7
22	Relay apparatuses	4—6
23	Signal equipment	1—1.5
24	Electrical instrumentation	3—5
25	Electronic equipment	4—8

[1] The maximum royalties are advisable for the licensed products manufactured in small quantities or upon individual order and the minimum ones are to be used for the mass production. Data sources: [5, 12].

No.	Industry or type of product	Royalty, %
26	Industry or type of product	1—2
27	Semiconductors	3—4
28	Radio valves	3—4
29	Batteries	2—4
30	Cables and wires	4—5
31	Elevators	4—6
32	Metal-working	5—7
33	Tools, hardware	3.5—5
34	Welding equipment	5
35	Drives	3—5
36	Photo and movie-making products,	4—7
37	Medical equipment and devices	5—7
38	Measuring equipment and gauges	3
39	Stationery and office equipment	2—4
40	Car engines and their components	2—3
41	Car spare parts	1—2
42	Tugs and towing trucks	3—5
43	Bikes	3—5
44	Railroad equipment	2—5
45	Agricultural machinery	2—3
46	Hardware products	3
47	Hand tools, manual machines	1—2
48	Razors and knives	3
49	Metal furniture	1.5—2
50	Semi-finished goods	3—5
51	Foundry	3—5
52	Construction machinery	1.5—2
53	Fertilizers	1
54	Chemical fertilizers	3
55	Dyes	3
56	Aromatic substances	3
57	Products of organic chemistry	2—4
58	Pharmaceutical products	2—4
59	Caoutchouc	3—3.5
60	Glassware	2—4
61	Paints	2—3
62	Adhesives	1—3
63	Photo products, chemicals	2—3
64	Mineral oils	2—3
65	Textile fibers	3
66	Fabrics for clothing	3—4
67	Fabrics for industrial use	2—4
68	Knitwear, underwear	1—2.5

No.	Industry or type of product	Royalty, %
69	Leather goods	3
70	Wooden furniture	2—3
71	Paper	1—2
72	Packaging paper and cardboard	2—3
73	Carbon paper	1—2
74	Books, printed publications, games (without copyright)	3—6
75	Sports goods	1—3
76	Perfumery products	2—5
77	Discs	2—5
78	Plastic ware	3
79	Boats, rigging	3—5
80	Construction materials	1—2
81	Aircraft, weapons	6—10
82	Foodstuffs	1—2
83	Food for livestock	2—3
84	Beverages	2—5
85	Refrigeration equipment for industry	4—6
86	Machine-building industry	4.5—7.5
87	Automotive industry	1—3
88	Chemical engineering	4—7
89	Radioelectronics — Industrial, — Household appliances	 1.5—5 0.5—3.0
90	Chemical industry	1—3.5
91	Pharmaceutical industry	4—7
92	Conveyors, belts	3.5—6
93	Materials, techniques	4—8
94	Engineering developments	8—15
95	Recourse framework	20—25
96	Paper, textile Industry	1—2
97	Consumer durables	0.5—5.0
98	License fee for trademarks	1—10
99	Reagents for research purposes	1—6
100	Diagnostic products	5—8
101	Therapeutic products	5—10
102	Vaccines	5—10
103	Products of animal origin	3—6
104	Vegetable products	3—5

Average royalties for licensing trademarks in the U.S. by product category, 2002—2003 [25]

Product category	Average royalty 2003, %	Average royalty 2002, %	Range, %
Accessories	8.9	8.6	5—13
Apparel	8.8	7.1	5—14
Domestics	7.3	5.0	3—12
Electronics	5.0	6.5	2.5—9
Food/beverages	5.7	6.9	4—8
Footwear	10.0	5.3	7—12
Furniture/home furnishings	7.0	6.6	2.5—14
Gifts/novelties	8.3	8.7	5—15
Health/beauty	7.4	8.7	5—12
Houseware	7.0	6.6	3—14
Infant products	N/A	N/A	N/A
Music/video	7.0	N/A	3—10
Publishing	10.6	10.2	5—18
Sporting goods	8.8	N/A	7—15
Stationery /paper	10.0	7.8	5—15
Toys / games	8.4	9.3	3—12
Video games/software	4.2	8.2	3—6
Overall average	8.4	8.3	2.5—18

Coefficients for Determination of Licensor's Share in Technology-Generated Profit (2002) [17]

Table 1. Coefficient of Achieved Results

No.	Achieved result	K1
1	Specified secondary characteristics that are not critical to the specific production (process) achieved	0.2
2	Performance achieved and certified in the acts, specifications, passports, and drawings	0.3
3	Key technical characteristics that are critical for specific products (process) achieved and documented	0.4
4	New advanced key technical characteristics of the product (process) achieved and documented	0.6
5	New product (process) with high key technological parameters as compared with the similar existing products obtained	0.8
6	New product (process) with advanced new parameters mastered for the first time	1

Table 2. Complexity Factor

No.	Complexity of task solved	K2
1	The problem is solved by structural variation of a simple part, by variation of a parameter, a simple process, a simple transaction or an ingredient of formulation	0.2
2	The problem is solved by structural variation of a complex or fabricated part, a minor node or a mechanism or by variation of two or more minor parameters of simple processes; variation of two or more non-key operations; variation of two or more non-key ingredients of formulation	0.3
3	The problem is solved by structural variation of one key or several minor nodes, mechanisms, non-key part of processes or non-key part of formulation	0.4
4	The problem is solved by structural variation of several key nodes, key technological processes or key part of formulation	0.5
5	The problem is solved by structural variation of machine, tool, device, apparatus, structure, processes, formulation, etc.	0.7
6	The problem is solved by structural variation of machine, tool, device, apparatus, structure with complex kinematics, control equipment using radio electronic circuits, power machines, engines, assemblies, complex processes, complex formulations, etc.	0.9
7	The problem is solved by structural variation of machine, tool, device, apparatus, or structure with a complex control system of automated lines consisting of new types of equipment, control and regulation systems; complex, integrated processes, particularly complicated formulations, etc.	1.1
8	The problem is solved by structural variation of processes and formulations of particular complexity mainly relating to new branches of science and technology	1.25

Table 3. Novelty Factor

No.	Novelty	K3
1	The problem is solved using known means for new assignments	0.25
2	The problem is solved using a set of known solutions that produces a required technical result	0.3
3	The problem is solved using an invention having a prototype matching with the new solution by most of the major features	0.4
4	The problem is solved using an invention having a prototype that matches with the new solution by half of the major features	0.5
5	The problem is solved using an invention having a prototype not matching with the new solution by most of the major features	0.6
6	The problem is solved using an invention characterized by a set of material differences, having no prototype	0.8

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ВИЗНАЧЕННЯ СТАВОК РОЯЛТІ У МІЖНАРОДНИХ ДОГОВОРАХ ПРО ПЕРЕДАЧУ ТЕХНОЛОГІЙ

Розглянуто та узагальнено існуючі підходи, що застосовуються до визначення ставок роялті при укладанні договорів про трансфер технологій на основі досвіду організацій НАН України, наукових установ та університетів ряду європейських країн та США. Проведено аналіз застосування існуючих ставок та наведено рекомендації щодо порядку визначення ставок роялті при укладанні договорів про трансфер технологій між науковими установами України та зарубіжними партнерами.

Ключові слова: ставки роялті, ліцензійний договір, договір про трансфер технологій, ліцензіат, ліцензіар.

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Рассмотрены и обобщены подходы, которые применяются для определения ставок роялти при заключении договоров про трансфер технологий на основании опыта заключения контрактов организациями Национальной академии наук Украины, научных учреждений и университетов Европы и США. Приведены рекомендации об определении ставок роялти при заключении договоров о трансфере технологий между научными учреждениями Украины и зарубежными партнерами.

Ключевые слова: ставки роялти, лицензионный договор, договор о трансфере технологий, лицензиат, лицензиар.