ISSN 1682-9123

AZƏRBAYCAN RESPUBLİKASI
ODLAR YURDU UNİVERSİTETİ

ODLAR YURDU UNİVERSİTETİNİN ELMİ VƏ PEDAQOJİ XƏBƏRLƏRİ

THE SCIENTIFIC AND PEDAGOGICAL NEWS OF ODLAR YURDU UNIVERSITY

НАУЧНЫЕ И ПЕДАГОГИЧЕСКИЕ ИЗВЕСТИЯ УНИВЕРСИТЕТА ОДЛАР ЮРДУ

№ 55

Baku ✯ 2020

The journal is reviewed and abstracted by VINITI (No. 10211-5335 / 54-34)

Editorial office address:
Republic of Azerbaijan, Baku AZ1072, Koroglu Rahimov street 13, Odlar Yurdu University, General Department
Tel .: (office) (+994 12) 465 82 62, (+994 12) 465 82 00
(mob.) (+994 51) 572 34 36, (+994 50) 378 86 30
Fax: (+994 12) 465 67 05
http://www.journal.oyu.edu.az
e-mail: journal@oyu.edu.az

OYU-2020

Az.073 «Odlar Yurdu» Publishing house, 2020

FOUNDER:

University of Land of Fire

The magazine has been published since December 1998

The frequency is at least twice a year.

The magazine is officially registered by the Ministry of Justice of the Republic of Azerbaijan. Registration number: AB022011, 27.11.1998

The journal is published by the Higher Attestation Commission under the President of the Republic of Azerbaijan included in the list of recommended scientific publications in mathematics, mechanics, economics, engineering, medicine, pharmacy, biology, agrarian, law, history, anthropology, psychology, pedagogy and philology.

Editorial office address: Baku AZ1072, Koroglu Rahimov street 13, Odlar Yurdu University, General Department

Tel .: (051) 572 34 36
Fax: (012) 465 67 05
http: // journal.oyu.edu.az

УЧРЕДИТЕЛЬ:

Университет Одлар Юрду

Издается с декабря 1998 года

Выходит не менее двух раз в год

Официально зарегистрирован Министерством Юстиции Азербайджанской Республики. Регистрационный номер: AB022011 от 27.11.1998

Включен в перечень изданий, рекомендованных ВАК при Президенте Азербайджанской Республики для публикации основных результатов кандидатских и докторских диссертаций в области математики, механики, экономики, технических наук, медицины, фармакологии, биологии, аграрной науки, права, истории, антропологии, политологии, психологии, педагогики и филологии

Адрес редакции: Баку AZ1072, ул. Кѐроглу Рахимова 13, Университет Одлар Юрду, Общий отдел

Тел.: (051) 572 34 36
Факс: (012) 465 67 05
http:// journal.oyu.edu.az
e-mail: journal@oyu.edu.az

ODLAR YURDU UNİVERSİTETİNİN ELMİ VƏ PEDAQOJİ XƏBƏRLƏRİ
THE SCIENTIFIC AND PEDAGOGICAL NEWS OF ODLAR YURDU UNIVERSITY

2020 - № 55

APPLICATION OF COMPUTER AIDED DESIGN BASED ON FUZZY LOGIC MODELS IN ARCHITECTURAL DESIGN AREAS

R.A.Imamguluyev
Odlar Yurdu University, Baku, Azerbaijan, aydınoglu@mail.ru

ABSTRACT. Research has been conducted in this work to present the benefits of using computer technology in architectural and design fields. Teaching methods used in design specialty in the Odlar Yurdu University are analyzed.

KEYWORDS: fuzzy logic, architecture, design, computer, CAD

1. Introduction

The rapidly developing technological processes and fuzzy logic methods in the world, along with many different areas, have a significant impact on architectural design.. Creative searches in the field of architectural design bring designers to create unconventional looks and new features through new computer technologies and applications. At the same time, thanks to computer technology, the original use of different and wide-ranging colors in design work is an increasingly important part of the work.

In addition to accelerating the development of technical tools, the relationship between the architectural and design areas with computer technology has become increasingly strong, and the architectural methods have changed as a result of these processes, resulting in the creation of new products. Using CAD (computer-aided design) software, designers have been able to obtain non-symmetric visual images that are almost realistic in a variety of styles.

Thus, with the help of new computer technologies, it was possible to implement projects that had a different appearance and features than those of ordinary structures, which were not feasible in the past and further development of the process can be achieved through computer applications of fuzzy logic methods. With this in mind, the application of computer technology in the field of architecture and design is indispensable, and the economic, social, aesthetic, and similar requirements have made it an urgent

task to address the problems of using fuzzy logic.

In this work, research was conducted to present the benefits of computer technology in architectural and design areas. Teaching and learning methods provided for Odlar Yurdu University students have been analyzed. The students were evaluated based on a fuzzy logic model between the design work done by the students in the third semester using computer technology and the traditional methods.

The following are the requirements for designing students' work in traditional and computer environments.

• "Preparation Hour",
• “Spatial demand”,
• “Sensitivity-Quality”,
• “Visualization”,
• “Easy to adjust”,
• “Application of new alternatives”,
• “Easy to archive”,
• " Remote change is possible".

Based on the above requirements, students' work has been assessed. Based on the results obtained, it was found that while the conventional method of preparation of a 2-D project was spent 240 minutes, the average CAD programs spent 90 minutes and the traditional method of developing a 3-dimensional model was 300 minutes. however, the CAD programs were able to prepare for the latest 120-min period. The differences between conventional methods and computer technology based on the criteria set by several students are also presented in Table 1. Each of the criteria was used by the classroom administrators as the criteria "Very weak", "Weak", "Medium", "Good", "Very good".

		Preparation Time (min)	Spatial demand (m2)	Sensitivity-Quality	Visualization	Easy to adjust	Application of new alternatives	Easy to archive	Remote change is possible
Traditional Expression Techniques	2D plans on paper	240	1,5	Medium	Weak	Weak	Weak	Medium	Very weak
	3D plans on paper	180	1,5	Medium	Medium	Very weak	Weak	Medium	Very weak
	3d models	300	2,5	Weak	Medium	Very weak	Weak	Very weak	Very weak
CAD expression Technicians	2D plans with CAD	90	0,81	Very good	Medium	Very good	Very good	Very good	Very good
	3D plans with CAD	120	0,81	Very good	Good	Very good	Very good	Very good	Very good
	CAD+3D printer	90	0.81	Very good	Very good	Very good	Very good	Very good	Very good

Table 1. Comparison table of presentation techniques

According to research, computer presentation methods are superior to traditional presentation methods. Advantages of computerized presentation methods are:

1) Create many different alternatives by spending less time.
2) Computer modeling of three-dimensional objects, the ability to obtain photorealistic images with light, shadow and color effects.
3) Models can be observed in 3D from any point.
4) Ability to follow the design process from start to finish during the drawing and modeling stages.
5) Make small changes without breaking the structure.
6) The ability to store information for a long time.

2. Practical applications of fuzzy technologies

When both input and output are used with membership functions, conventional expressions between them are drawn up in this form: If (input UF x), then (output UF y). For example, "if time is spent too much, then the cost of success is very low" Picture 1. In the general approach, the model can have more than one input parameter and must be combined with the AND, OR, NOT. The parameters and rules are unstable, they can be changed under different conditions, which increases the model's usability. In the fuzzy process, each rule is evaluated to determine the output, and in the end the Fuzzy Inference System is the average of all outputs. In this way, each design work is done with a quantity that indicates that it is ultimately successful in terms of time and quality. This value is in the range [0 1]. When the process is complete, a list is created and can be used for visualization. It is possible to implement the model based on the values given in Table 1.

Picture 1. Traditional and CAD design

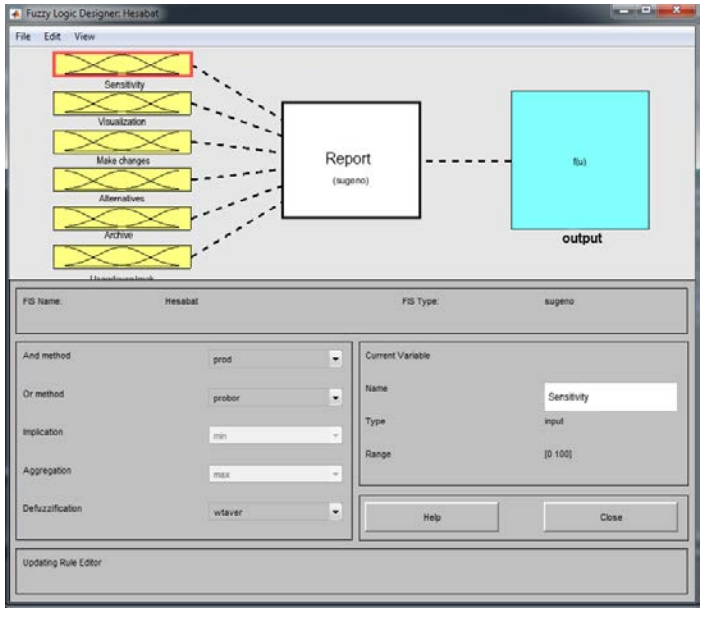
Sugeno-type Fuzzy Logic Framework (Sugeno-type Fuzzy Inference System) has been evaluated between the traditional method and the CAD method, and as a result the advantages of computer technology have been chosen. The MATLAB program has developed a logical system with 6 inputs - 1 output type and a fuzzy logic with 30 conditional constraints.

Input settings:

1) "Sensitivity-quality",
2) "Visualization",
3) "Easy to make changes",

4) "Application of new alternatives",
5) "It's easy to archive",
6) "Remote change ability".

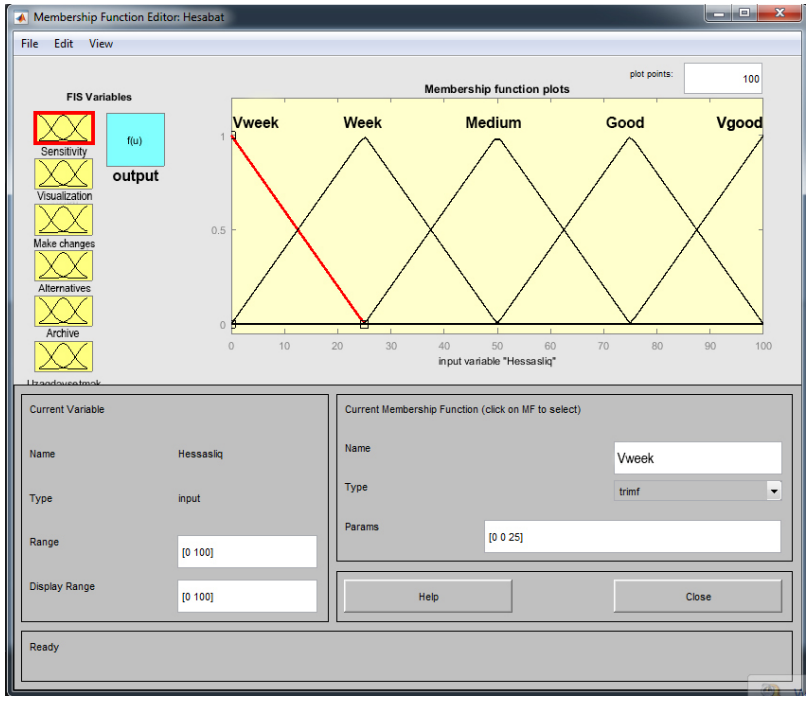
The output parameter is one: Value Picture 2. It is the FIS-Editor window of the QSTS preparation process.



Picture 2. The FIS-Editor window.

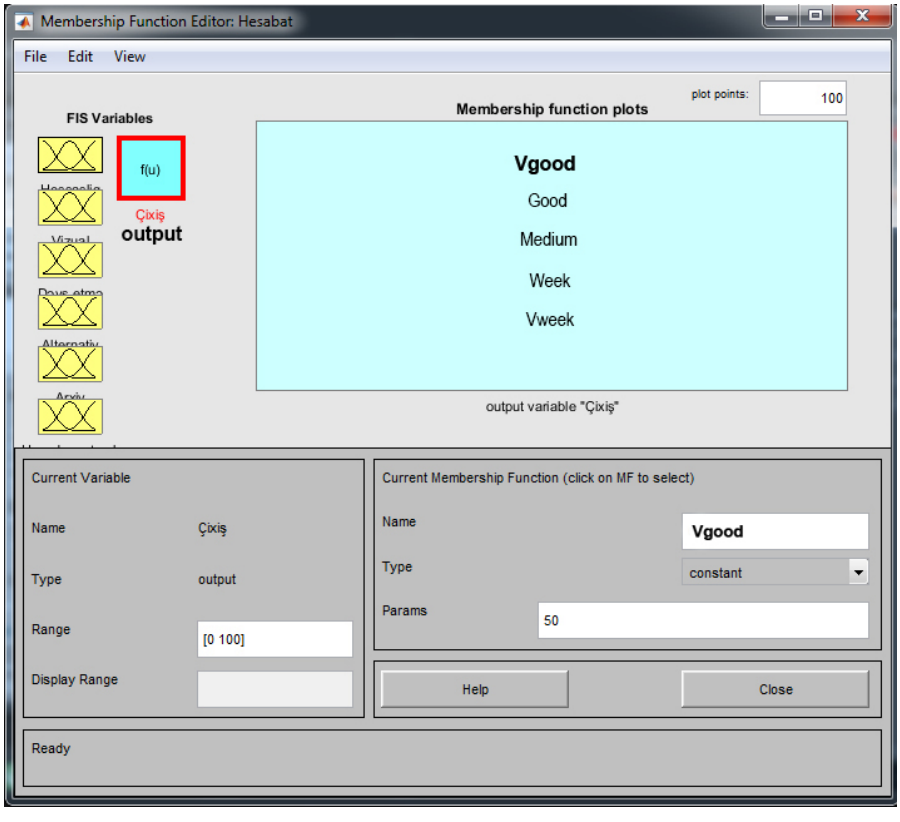
Picture 3 shows the member function adjustment window according to the criteria input parameter. The range of parameters for the adjusted criterion is as follows:

$\mu_{Vweak} = \Delta(0\ 0\ 25)$
$\mu_{Weak} = \Delta(0\ 25\ 50)$
$\mu_{Medium} = \Delta(25\ 50\ 75)$
$\mu_{Good} = \Delta(50\ 75\ 100)$
$\mu_{Vgood} = \Delta(75\ 100\ 100)$



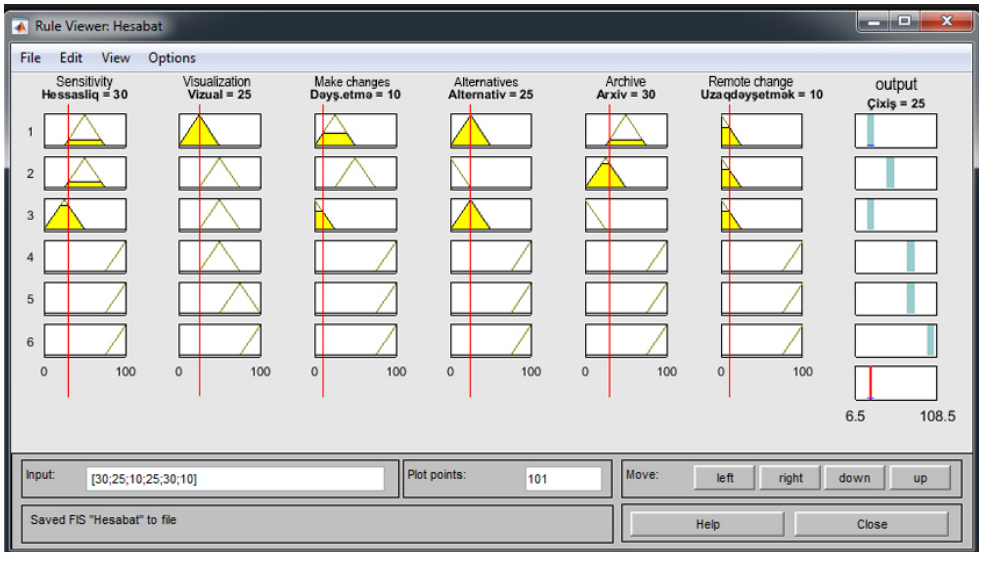
Picture 3. For the application of criteria fuzzy member functions edit window

In order to achieve speeches, you need to be trained in the system. The training process stops when the maximum epox number is reached or the training reaches the wrong level. Picture 4 shows a member function editing window, where the member functions are presented in linear equations, and are called as very weak, weak, medium, good, and very good.



Picture 4. A member function editing window to get output values

These output rules can be viewed in the Viewer window. Picture 5 rules displays the viewer window.



Picture 5. The window of fuzzy rules

Result. Based on the results obtained with fuzzy logic, the advantages of computer-assisted design were revealed. Undoubtedly, the impact of computer technology on architectural and design domains is enormous. Thus, the use of computer-assisted design software for architectural and design areas is important.

References

1. Wells NM, Evans GW, Yang Y. Environments and Health: Planning Decisions As Public-Health Decisions. Journal of Architectural and Planning Research 2010;27(2):124-143
2. Mehmet Şamil Demiryürek. AutoCAD 2018
3. Gökalp Baykal, Murat Öğütlü Tuncay Bakkal. AutoCAD 2019
4. Kelly L. Murdock's Autodesk 3ds Max 2017 Complete Reference Guide Perfect. Paperback – September 20, 2016
5. Pradeep Mamgain. Exploring 3D Modeling with 3ds Max 2019: A Beginner's Guide
6. Michalek J., Choudhary R., Papalambros P. Architectural layout design optimization. Engineering Optimization 2002;34(5):461-484

7. Wong S.S.Y., Chan K.C.C. EvoArch: An evolutionary algorithm for architectural layout design. Computer-Aided Design 2009;41(9):649-667
8. Liang L.Y. An Improved Cost Optimisation Algorithm for Site Building Layout Planning. Architectural Science Review 2008;51(3):269-276
9. Ligmann-Zielinska A., Church R., Jankowski P. Sustainable Urban Land Use Allocation With Spatial Optimization. Proceedings The 8th International Conference on Geocomputation 2005, University of Michigan, Ann Arbor
10. El Ansary A.M., Shalaby M.F. Evolutionary optimization technique for site layout planning. Sustainable Cities and Society 2014;11:48-55
11. Zadeh L.A. Toward a theory of fuzzy information granulation and its centrality in human reasoning and fuzzy logic. Fuzzy Sets and Systems 1997;90:111-127
12. Tanaka K. (Translated by Tiimira T.) [1997] An Introduction to Fuzzy Logic for Practical Applications. Springer-Verlag, New York, pp. 1-119
13. Driankov D., Hellendoom H. and Rein Frank M. [1996] An Introduction to Fuzzy Control, Narosa Publishing House, New Delhi

Submitted 23.01.2020
Accepted 27.02.2020

ESTIMATION OF THERMO-PHYSICAL AND PERMEABILITY PARAMETERS OF LAYERS BASED ON TEMPERATURE MEASUREMENTS

B.Kh.Feyzullaev
Odlar Yurdu University, Baku, Azerbaijan, feyzullayevbabek@gmail.com

ABSTRACT. Variation method for determining the thermophysical parameters and conductivity parameters of gas condensate system in an unstable gas mode under inaccurate conditions and the lack of initial geological and mountain data is developed in this article. Impact of reservoir deformation and non-isothermal process on these parameters is estimated.

KEYWORDS: pressure, temperature, permeability, variation method, non-isothermal process, Joule-Thomson coefficient

Introduction. The leakage of gas-liquid systems in deep gas condensate fields occurs under conditions of high reservoir pressure and temperature. Since the role of thermodynamic factors increases with increasing sedimentation depth of gas condensate fields, and changes in pressure in such fields during operation lead to changes in thermal conditions, these changes, in turn, affect the filtration of liquids in porous media and consequently the development of the fields.

Identification of reservoir parameters depending on the distribution of temperature regions, taking into account phase transitions based on equations representing nonisothermal filtration of a multiphase system in a deformed porous medium, increases the information content of the interpretation of actual data from mining studies. For example, in the case of heat dissipation in a layer, it is sufficient to take into account only the convective heat distribution. Heat transfer through solid rock does not have a strong effect on the technical and technological parameters compared to convective distribution, although it is necessary to take into account the temperature distribution for both reasons. In some cases, this factor must be considered separately, given that the properties of heat distribution over so-

lid rock can have a significant impact on technical and technological parameters [1-3].

Taking into account the heat distribution in the reservoir from various causes and factors, it is important to evaluate the thermal ($\varepsilon_i, \eta_i, i = 1,2$) and collector conductivity parameters based on historical development data, especially based on the regularity of temperature distribution in the well.

Problem statement and solution. In the considered model of gas-condensate mixture filtration, taking into account temperature changes, the problem of determining the thermodynamic parameters is posed as a change in the minimum of the J functional value of the temperature value between the measured and calculated values at different time points:

$$J(\varepsilon_1, \varepsilon_2, \eta_1, \eta_2, \alpha_k) = \int_0^{\overline{T}} \left[T(R_q, t) - T_q(t)\right]^2 dt + \varepsilon_0(\varepsilon_1^2 + \varepsilon_2^2 + \eta_1^2 + \eta_2^2 + \alpha_k^2). \quad (1)$$

Here $T(R_q, t)$ and $T_{q.}(t)$ are the measured and theoretically calculated values of the temperature in the well, respectively; ε_i - Coul-Thomson coefficient [$^0C/Pa$]; η_i - adiabatic coefficient [$^0C/Pa$] ($i = 1,2$ - indicates the index for condensate and gas, respectively); $\overline{T}$ is a processing time; α_k is a coefficient considering the change in permeability which depends on the pressure.

$$k(p) = k_0\left(\frac{p}{p_0}\right)^{\alpha_k}$$

Functional of $J(\varepsilon_1, \varepsilon_2, \eta_1, \eta_2, \alpha_k)$ is an indicator of quality that determines how accurately a mathematical model expresses a real physical process characterized by parameter values $T_q(t)$. In this case, the calculation of quality management indicators is carried out according to the parameters $\varepsilon_1, \varepsilon_2, \eta_1, \eta_2$ and α_k.

The temperature value $T_q(R_q, t)$ is determined from the solution of the boundary value problem, which expresses the non-isothermal spatial lea-

kage of the gas condensate mixture into the central well of radius R_q operating with the flow $q(t)$ flow rate. For this purpose, the following assumptions are made:

- pressure p_0, condensate saturation s_0,and temperature T_0,at all points in the reservoir before the well is put into operation.
- the rock is considered thermally isotropic;
- capillary effects are not taken into account;
- the well is completed depending on the degree and nature of the hole and covers the entire thickness of the horizontal layer with a sufficiently large length;
- the boundary of the layer, the ceiling and the heel are impassable;
- filtration of gas and liquid condensate obeys Darcy's law;
- the effect of changes in the temperature of the layer on the parameters characterizing the layer and the liquid is not taken into account;
- the temperature of the fluid and the porous medium is the same at any point in the reservoir;
- the viscosity and density of the condensate and gas phase depend only on pressure;
- the influence of heat transferred to the temperature of the layer by its heel and ceiling is not taken into account;
- takes into account the thermal conductivity of the medium and the influence of barothermic effects on the temperature range of the layer;

In such a setting, the problem of identifying the parameters ε_i, η_i $(i=1,2)$ and α_k is reduced to the choice of their values such that $J(\varepsilon_1,\varepsilon_2,\eta_1,\eta_2,\alpha_k)\Rightarrow \min$.

The function (t) is determined from the solution of the following boundary value problem [4,5]:

$$\frac{1}{r}\frac{\partial}{\partial r}\left[A(\alpha_k,p,s,T)r\frac{\partial p}{\partial r}\right]=\frac{\partial B(p,s,T)}{\partial t}, \tag{2}$$

$$\frac{1}{r}\frac{\partial}{\partial r}\left[C(\alpha_k,p,s,T)r\frac{\partial p}{\partial r}\right]=\frac{\partial D(p,s,T)}{\partial t}, \tag{3}$$

$$\frac{\partial}{\partial t}[C^{**}(p,s,T)] - E(\alpha_k, p, s, T)\frac{\partial p}{\partial r}\frac{\partial T}{\partial r} - G(\alpha_k, p, s, T)(\frac{\partial p}{\partial r})^2 -$$

$$- M(p,s,T)\frac{\partial p}{\partial t} = \frac{1}{r}(\frac{\partial}{\partial r}(r\lambda^*(p,s,T)\frac{\partial T}{\partial r})), \quad (4)$$

$$p(r,t)\big|_{t=0} = p_0, \quad s(r,t)\big|_{t=0} = s_0\,,\ T(r,t)\big|_{t=0} = T_0, \quad (5)$$

$$2\pi h\left[A(\alpha_k, p, s, T) + C(\alpha_k, p, s, T)\right] r\frac{\partial p}{\partial r}\bigg|_{r=R_q} = q(t), \quad (6)$$

$$-\lambda^*\frac{\partial T}{\partial r}\bigg|_{r=R_q} = \alpha^*(T - T_q)\,, \quad (7)$$

$$\frac{\partial p(r,t)}{\partial r}\bigg|_{r=R_k} = 0, \qquad \frac{\partial s(r,t)}{\partial r}\bigg|_{r=R_k} = 0\,,\ T(r,t)\big|_{r=R_k} = T_0\,, \quad (8)$$

Here

$$A(\alpha_k, p, s, T) = k(p)\left[\frac{F_q(s)p\beta\left[1 - C(p)\gamma(p)\right]}{\mu_q(p)z(p)p_{at}} + \frac{F_k(s)S_k(p)}{\mu_k(p)a_k(p)}\right];$$

$$B(p,s,T) = Q(p,T) + sN(p,T);$$

$$C(\alpha_k, p, s, T) = k(p)\left[\frac{F_q(s)p\beta C(p)}{\mu_q(p)z(p)p_{at}} + \frac{F_k(s)}{\mu_k(p)a_k(p)}\right];$$

$$N(p,T) = m\left[\frac{S_k(p)}{a_k(p)} - \frac{p\beta\left[1 - C(p)\bar{\gamma}(p)\right]}{z(p)p_{at}}\right];$$

$$Q(p,T) = m\frac{p\beta\left[1 - C(p)\bar{\gamma}(p)\right]}{z(p)p_{at}};\ D(p,s,T) = \overline{M}(p,T) + s\overline{B}(p,T);$$

$$\overline{B}(p,T) = m\left[\frac{1}{a_k(p)} - \frac{p\beta C(p)}{z(p)p_{at}}\right];\ \overline{M}(p,T) = m\frac{p\beta c(p)}{z(p)p_{at}};\ \beta = \frac{293}{T + 273};$$

$$E(\alpha_k, p, s, T) = k(p)\left[\frac{F_q(s)c_2(p,T)\rho_2(p,T)}{\mu_q(p)} + \frac{F_k(s)c_1(p,T)\rho_1(p,T)}{\mu_k(p)}\right];$$

$$G(\alpha_k, p, s, T) = k(p)\left[\frac{F_q(s)c_2(p,T)\rho_2(p,T)}{\mu_q(p)}\varepsilon_2(p,T) + \frac{F_k(s)c_1(p,T)\rho_1(p,T)}{\mu_k(p)}\varepsilon_1(p,T)\right];$$

$$M(p,s,T) = m\left[c_2(p,T)\rho_2(p,T)(1-s)\eta_2(p,T) + c_1(p,T)\rho_1(p,T)s\eta_1(p,T)\right];$$

$$C^*(p,s,T) = m\sum_{i=1}^{2} s_i c_i \rho_i + (1-m)c_0\rho_0;\; C^{**} = C^*(p,s,T)T;$$

$$\lambda^*(p,s,T) = m\sum_{i=1}^{2} s_i\lambda_i + (1-m)\lambda_0;\;\; \sum_{i=1}^{2} s_i = 1;$$

$p(r,t)$ is a pressure; $s(r,t)$ is a condensate saturation; $F_q(s)$ and $F_k(s)$ are the functions of the relative phase conductivities of the gas and liquid phases, respectively; $C(p)$ is an amount of condensate in the gas phase; $\overline{\gamma}(p)$ is the ratio of the volumetric weights of the condensate in the liquid and gas phases under normal conditions; $S_k(p)$ is the amount of gas solubility in the liquid; $a_k(p)$ is the volume coefficient of the liquid phase; m is the porosity coefficient of the rock; t is a time; p_{at} is an atmospheric pressure; β and $z(p)$ are temperature correction and gas phase compression ratios, respectively; $\mu_q(p)$ and $\mu_k(p)$ are viscosities of gas and liquid phases, respectively; T is a temperature; c_i is a specific heat capacity; λ^* is an effective thermal conductivity of the layer saturated with gas-condensate mixture; $\lambda_i\,(i=1,2)$ and λ_0 are effective thermal conductivity of condensate, gas and solid phases, respectively; $\rho_i (i=1,2)$ is a density; C^* is a volume capacity of the layer saturated with gas-condensate mixture; c_0 and ρ_0 are heat capacity and density of the solid phase, respectively; α^* is a coefficient characterizing the intensity of heat transfer between the layer and the well wall; (r) is a radial coordinate axis; $s_1 = s,\; s_2 = 1-s$.

The solution of the inverse problem is determined by the gradient method using the expression $\frac{\partial J(\alpha_i)}{\partial \alpha_i}$ of the function (1) for the parameter $\varepsilon_1 \equiv \alpha_1$, $\varepsilon_2 \equiv \alpha_2$, $\eta_1 \equiv \alpha_3$, $\eta_1 \equiv \alpha_4$ and $\alpha_k \equiv \alpha_5$[6].

To calculate the growth of the function (1), multiply equations (2), (3) and (4) by the functions Ψ_1, Ψ_2 and Ψ_3 integrate over the area $G = \left\{R_q \le r \le R_k, 0 \le t \le \overline{T}\right\}$ and add the obtained integrals to (1), we obtain:

$$J(\alpha_1,\alpha_2,\alpha_3,\alpha_4,\alpha_5) = \int_0^{\overline{T}} \left[T(R_q,t) - T_q(t)\right]^2 dt +$$

$$+ \iint_G \Psi_1(r,t)\left[\frac{1}{r}\frac{\partial}{\partial r}\left\{rA(\alpha_5,p,s,T)\frac{\partial p}{\partial r}\right\} + \frac{\partial B(p,s,T)}{\partial t}\right]drdt +$$

$$+ \iint_G \Psi_2(r,t)\left[\frac{1}{r}\frac{\partial}{\partial r}\left\{rC(\alpha_5,p,s,T)\frac{\partial p}{\partial r}\right\} + \frac{\partial D(p,s,T)}{\partial t}\right]drdt +$$

$$+ \iint_G \Psi_3(r,t)\left[\frac{\partial C^{**}(p,s,T)}{\partial t} - E(\alpha_5,p,s,T)\frac{\partial p}{\partial r}\frac{\partial T}{\partial r} - \right.$$

$$- G(\alpha_1,\alpha_2,\alpha_5,p,s,T)\left(\frac{\partial p}{\partial r}\right)^2 - M(\alpha_3,\alpha_4,p,s,T)\frac{\partial p}{\partial t} -$$

$$\left. - \frac{1}{r}\frac{\partial}{\partial r}\left(r\lambda^*(p,s,T)\frac{\partial T}{\partial r}\right)\right]drdt + \varepsilon_0(\alpha_1^2+\alpha_2^2+\alpha_3^2+\alpha_4^2+\alpha_5^2) \to \min. \quad (9)$$

Let us increase the variables α_i, $i = \overline{1,5}$ in the function (9). In this case, α_i $(i = 1,5)$, $\Delta\alpha_i$ method, and the variables p, T and s_k equal Δp, ΔT, Δs_k.

Let us choose the functions $\Psi_1(r,t)$, $\Psi_2(r,t)$ and $\Psi_3(r,t)$ as a solution of the following addition boundary value problem to (2)-(8):

$$B_p\frac{\partial \Psi_1}{\partial t} + D_p\frac{\partial \Psi_2}{\partial t} + M\frac{\partial \Psi_3}{\partial t} = \left[\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)rA_p + \frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)rC_p\right]\frac{\partial p}{\partial r} -$$

$$-\frac{\partial}{\partial r}\left[\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)rA\right]-\frac{\partial}{\partial r}\left[\frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)rC\right]-2\frac{\partial}{\partial r}\left(\Psi_3 G\frac{\partial p}{\partial r}\right)+$$

$$+E_p\Psi_3\frac{\partial p}{\partial r}\frac{\partial T}{\partial r}+G_p\Psi_3\left[\frac{\partial p}{\partial r}\right]^2+M_p\Psi_3\frac{\partial p}{\partial t}-$$

$$-r\lambda_p^*\frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\frac{\partial T}{\partial r}+\frac{C_p^{**}}{C_T^{**}}\left(r\lambda_T^*\frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\frac{\partial T}{\partial r}-\right.$$

$$\left.-\frac{\partial}{\partial r}\left(r\lambda^*\frac{\partial}{\partial r}\left[\frac{\Psi_3}{r}\right]\right)\right)-\Psi_3\frac{\partial M}{\partial t}, \qquad (10)$$

$$B_s\frac{\partial\Psi_1}{\partial t}+D_s\frac{\partial\Psi_2}{\partial t}=\left[\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)rA_s+\frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)rC_s\right]\frac{\partial p}{\partial r}+$$

$$+E_s\Psi_3\frac{\partial p}{\partial r}\frac{\partial T}{\partial r}+G_s\Psi_3\left[\frac{\partial p}{\partial r}\right]^2+M_s\Psi_3\frac{\partial p}{\partial t}-r\lambda_s^*\frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\frac{\partial T}{\partial r}+$$

$$+\frac{C_s^{**}}{C_T^{**}}\left(r\lambda_T^*\frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\frac{\partial T}{\partial r}-\frac{\partial}{\partial r}\left(r\lambda^*\frac{\partial}{\partial r}\left[\frac{\Psi_3}{r}\right]\right)\right), \qquad (11)$$

$$B_T\frac{\partial\Psi_1}{\partial t}+D_T\frac{\partial\Psi_2}{\partial t}=\left[\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)rA_T+\frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)rC_T\right]\frac{\partial p}{\partial r}+$$

$$+\frac{\partial}{\partial r}\left(\Psi_3 E\frac{\partial p}{\partial r}\right)+M_T\Psi_3\frac{\partial p}{\partial t}+E_T\Psi_3\frac{\partial p}{\partial r}\frac{\partial T}{\partial r}+$$

$$+G_T\Psi_3\left[\frac{\partial p}{\partial r}\right]^2+\left(r\lambda_T^*\frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\frac{\partial T}{\partial r}-\frac{\partial}{\partial r}\left(r\lambda^*\frac{\partial}{\partial r}\left[\frac{\Psi_3}{r}\right]\right)\right). \qquad (12)$$

The initial and boundary conditions are as follows:

$$\Psi_1(r,\overline{T})=0,\ \Psi_2(r,\overline{T})=0,\Psi_3(r,\overline{T})=0, \qquad (13)$$

$$\left\{\Psi_1\left\{\left[A_s - A(A+C)^{-1}(A_s + C_s)\right]\left[E\frac{\partial p}{\partial r} + \lambda_T^*\frac{\partial T}{\partial r} - \alpha^*\right]\frac{\partial p}{\partial r} - \right.\right.$$

$$\left. - \left[A_T - A(A+C)^{-1}(A_T + C_T)\right]\lambda_s^*\frac{\partial T}{\partial r}\frac{\partial p}{\partial r}\right\} +$$

$$+ \Psi_2\left\{\left[C_s - C(A+C)^{-1}(A_s + C_s)\right]\left[E\frac{\partial p}{\partial r} + \lambda_T^*\frac{\partial T}{\partial r} - \alpha^*\right]\frac{\partial p}{\partial r} - \right.$$

$$\left. - \left[C_T - C(A+C)^{-1}(A_T + C_T)\right]\lambda_s^*\frac{\partial T}{\partial r}\frac{\partial p}{\partial r}\right\} -$$

$$\left. - 2\lambda_s^*\frac{\partial T}{\partial r}\frac{\partial p}{\partial r}(T(r,t) - T_q(t))\right\}\Bigg|_{r=R_q} = 0\ , \qquad (14)$$

$$\left\{\Psi_1\left\{\left[A_p - A(A+C)^{-1}(A_p + C_p)\right]\left[E\frac{\partial p}{\partial r} + \lambda_T^*\frac{\partial T}{\partial r} - \alpha^*\right]\frac{\partial p}{\partial r} - \right.\right.$$

$$\left. - \left[A_T - A(A+C)^{-1}(A_T + C_T)\right]\left[2G\frac{\partial p}{\partial r} + (E + \lambda_p^*)\frac{\partial T}{\partial r}\right]\frac{\partial p}{\partial r}\right\} +$$

$$+ \Psi_2\left\{\left[C_p - C(A+C)^{-1}(A_p + C_p)\right]\left[E\frac{\partial p}{\partial r} + \lambda_T^*\frac{\partial T}{\partial r} - \alpha^*\right]\frac{\partial p}{\partial r} - \right.$$

$$\left. - \left[C_T - C(A+C)^{-1}(A_T + C_T)\right]\left[2G\frac{\partial p}{\partial r} + (E + \lambda_p^*)\frac{\partial T}{\partial r}\right]\frac{\partial p}{\partial r}\right\} +$$

$$\left. - \left[E\frac{\partial p}{\partial r} + \lambda_T^*\frac{\partial T}{\partial r} - \alpha\right]\left(\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)rA + \frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)rC + 2\left(T(r,t) - T_q(t)\right)\right)\right\}\Bigg|_{r=R_q} = 0, \qquad (15)$$

$$\left.\frac{\partial \Psi_3}{\partial r}\right|_{r=R_q} = 0, \quad \left.\frac{\partial}{\partial r}\left(\frac{\Psi_1}{r}\right)\right|_{r=R_k} = 0,$$

$$\frac{\partial}{\partial r}\left(\frac{\Psi_2}{r}\right)\Bigg|_{r=R_k} = 0, \quad \frac{\partial}{\partial r}\left(\frac{\Psi_3}{r}\right)\Bigg|_{r=R_k} = 0. \tag{16}$$

Here A_p, B_p, C_p, D_p, C_p^{**}, λ_p^*, A_s, B_s, C_s, D_s, C_s^{**}, λ_s^* derivatives of the function A, B, C, D, C^{**}, λ^* according to the variables p and s; C_T^{**}, λ_T^* - C^{**} and λ^* are derivatives of the function T.

The increase in the function $J(\alpha_1,\alpha_2,\alpha_3,\alpha_4,\alpha_5)$ can be expressed as follows:

$$\Delta J(\alpha_1,\alpha_2,\alpha_3,\alpha_4,\alpha_5) = -\sum_{i=1}^{2}\Delta\alpha_i\left\{\iint_G \Psi_3\left[G_{\alpha_i}\left(\frac{\partial p}{\partial r}\right)^2\right]drdt - 2\varepsilon_0\alpha_i\right\} +$$

$$-\sum_{i=3}^{4}\Delta\alpha_i\left\{\iint_G \Psi_3 M_{\alpha_i}\frac{\partial p}{\partial t}drdt - 2\varepsilon_0\alpha_i\right\} +$$

$$+\Delta\alpha_5\left\{\iint_G\left[\Psi_1\left(\frac{1}{r}\frac{\partial}{\partial r}\left(rA_{\alpha_5}\frac{\partial p}{\partial r}\right)\right)+\Psi_2\left(\frac{1}{r}\frac{\partial}{\partial r}\left(rC_{\alpha_5}\frac{\partial p}{\partial r}\right)\right)-\right.\right.$$

$$\left.\left.-\Psi_3\left(E_{\alpha_5}\frac{\partial p}{\partial r}\frac{\partial T}{\partial r}+G_{\alpha_5}\left(\frac{\partial p}{\partial r}\right)^2\right)\right]drdt +\right.$$

$$\left.+\int_0^{\bar{T}}\left[\Psi_1 A+\Psi_2 C\right](A+C)^{-1}(A_{\alpha_5}+C_{\alpha_5})\frac{\partial p}{\partial r}\Bigg|r=R_q\,dt + 2\varepsilon_0\alpha_5\right\}, \tag{17}$$

Here are the derivatives of the functions G_{α_i}, M_{α_i} - G and M according to α_i; A_{α_5}, C_{α_5}, E_{α_5}, G_{α_5} - A, C, E and G are derivatives of α_5.

Thus, the gradient of the function $J(\alpha_1,\alpha_2,\alpha_3,\alpha_4,\alpha_5)$ is as follows:

$$\frac{\partial J}{\partial \alpha} = \left(\frac{\partial J}{\partial \alpha_1},\ldots,\frac{\partial J}{\partial \alpha_5}\right), \tag{18}$$

here $$\frac{\partial J}{\partial \alpha_i} = -\iint\limits_G \Psi_3 \left[G_{\alpha_i} \left(\frac{\partial p}{\partial r}\right)^2 \right] dr dt + 2\varepsilon_0 \alpha_i \ , \ i=1,2 \ ,$$

$$\frac{\partial J}{\partial \alpha_i} = -\iint\limits_G \Psi_3 M_{\alpha_i} \frac{\partial p}{\partial t} dr dt + 2\varepsilon_0 \alpha_i , \ i=3,4 \ ,$$

$$\frac{\partial J}{\partial \alpha_5} = \iint\limits_G \left[\Psi_1 \left(\frac{1}{r} \frac{\partial}{\partial r} \left(r A_{\alpha_5} \frac{\partial p}{\partial r} \right) \right) + \Psi_2 \left(\frac{1}{r} \frac{\partial}{\partial r} \left(r C_{\alpha_5} \frac{\partial p}{\partial r} \right) \right) - \right.$$

$$\left. - \Psi_3 \left(E_{\alpha_5} \frac{\partial p}{\partial r} \frac{\partial T}{\partial r} + G_{\alpha_5} \left(\frac{\partial p}{\partial r}\right)^2 \right) \right] dr dt +$$

$$+ \int\limits_0^{\overline{T}} \left[\Psi_1 A + \Psi_2 C \right] (A + C)^{-1} (A_{\alpha_5} + C_{\alpha_5}) \frac{\partial p}{\partial r} \Big| r = R_q \, dt + 2\varepsilon_0 \alpha_5 . \qquad (19)$$

The optimal values of the parameters $\alpha_1 = \varepsilon_1, \alpha_2 = \varepsilon_2, \alpha_3 = \eta_1, \ \alpha_4 = \eta_2, \ \alpha_5 = \alpha_k$ are determined by the following iteration formula:

$$\alpha_i^{k+1} = \alpha_i^k - \lambda_k \frac{\partial J(\alpha_1^k, ..., \alpha_4^k)}{\partial \alpha_i}, \quad i = \overline{1,4}. \qquad (20)$$

Thus, the algorithm for solving the inverse problem for determining the unknown parameters is as follows:

The initial value of the parameters $\alpha_i \ (i = \overline{1,5})$ is given and the straightforward problem (2)-(8) is solved by the method of finite differences based on the known development date of the layer $[0, \overline{T}]$ [7] and the distribution of layer pressure, temperature and condensate saturation in the layer at different steps of time is determined by calculations and then the boundary value problem (10)-(16) is solved on the basis of known solutions. Based on the results of the solutions of the straight and double problem, the value of the gradient of the function (1) is determined.

- optimization parameters are found by iteration (20).

- the iteration procedure for determining the parameters continues until the values of the function in the two adjacent iterations compensate for the difference in accuracy.

The implementation of the solution algorithm. Algorithm for identifying the thermodynamic parameters

$T_0 = 65\ ^0\text{C}$, $p_0 = 40\ \text{MPa}$, $p_{at} = 0.1\text{MPa}$, $s_0 = 0$, $Q_q = 3\cdot 10^6$ m^3/day,

$m = 0.2$, $R_k = 1000$ m, $R_q = 0.1$ m, $\lambda^{\bullet}$=2.28 Coul·m^2/kg·sec·°C,

$C^{\bullet} = 1800$ Coul /kg ·°C, $c_1 = 1880$ Coul /kg ·°C, $c_2 = 3200$ Coul /kg ·°C, $\varepsilon_1 = 0.02\cdot 10^{-5}$ °Coul /Pa, $\varepsilon_2 = -0.3\cdot 10^{-5}$°Coul /Pa, $k = 0.05\cdot 10^{-12}$ m^2,

$\rho_1 = 691.997$ kg/m^3, $\rho_2 = 230.666$ kg/m^3, $\rho_0 = 2200$ kg/m^3,

initial data and physical properties of the gas-condensate system dependence of

$$\mu_q(p) = 0.0126 + 0.257\cdot 10^{-4} p + 0.1633\cdot 10^{-7} p^2;$$

$$S_k(p) = 0.814286\, p;$$

$$\mu_k(p) = 0.6 - 0.3295\cdot 10^{-2} p + 0.1044\cdot 10^{-4} p^2 - 0.1558\cdot 10^{-7} p^3 + 0.85\cdot 10^{-11} p^4;$$

$$z(p) = 1.0 - 0.1162\cdot 10^{-2} p + 0.3744\cdot 10^{-5} p^2 - 0.2965\cdot 10^{-9} p^3 - 0.1975\cdot 10^{-11} p^4;$$

$$c(p) = 0.637\cdot 10^{-4} - 0.5057\cdot 10^{-6} p + 0.6265\cdot 10^{-8} p^2 - 0.1595\cdot 10^{-10} p^3 + 0.13\cdot 10^{-13} p^4;$$

$$a_k(p) = 1.116 + 0.1157\cdot 10^{-2} p + 0.23674\cdot 10^{-6} p^2;$$

$$\bar{\gamma}(p) = 194.899 - 0.42974\cdot 10^{-1} p + 0.1335\cdot 10^{-4} p^2 - 0.6053\cdot 10^{-6} p^3 + 0.622\cdot 10^{-9} p^4;$$

pressure dependence and also functions of relative phase conductivities on gas and condensate

$$F_q(s) = -1.1702 s^3 + 3.0586 s^2 - 2.7635 s + 0.8705;$$

$$F_k(s) = 0.8712 s^2 - 0.0326 s + 0.0045.$$

approved by selection.

During the problem solving the values of thermodynamic coefficients $\varepsilon_1 = 0.1\cdot 10^{-5}$; $\varepsilon_2 = 0.25\cdot 10^{-5}$; $\eta_1 = 0.3\cdot 10^{-5}$; $\eta_2 = 0.5\cdot 10^{-5}$; $\alpha_k = 0.1$

are accepted in a first approximation. The results are shown in Figures 1-4.

Sixteen iterations were required to obtain the true values $\varepsilon_1 = -0.3 \cdot 10^{-5}; \varepsilon_2 = 0.02 \cdot 10^{-5}; \eta_1 = -0.2 \cdot 10^{-5}; \eta_2 = \eta_2 = 0.0 \cdot 13^{-5}, \alpha_k = 0.35$ with a given accuracy. It was in the first iteration $J = 0.913$. It is characterized by the value $J = 0.000153$ at the end of the iteration process (Fig.1). In this case the temperature in the well was calculated theoretically and compared with the actual values are given in Figure 2.

In this case, the values of the pressure change of the identified conductivity function were compared with the values of this quantity for the isothermal process, while maintaining the values of similar initial data (Fig. 3). In the second case, the identification of the permeability function was carried out in accordance with the combination of calculated and actual values of pressure in the well (Fig. 4). Compared to the isothermal processit was found that the rate of reduction of the permeability of the deformed layer in the non-isothermal process is more intensive. In the process of non-isothermal filtration, more intensive sedimentation of retrograde condensate in the wellbore zone due to a certain decrease in the formation temperature reduces the phase permeability due to gas and condensate, and as a result the overall permeability of the formation decreases faster than the isothermal filtration variant (Fig. 3).

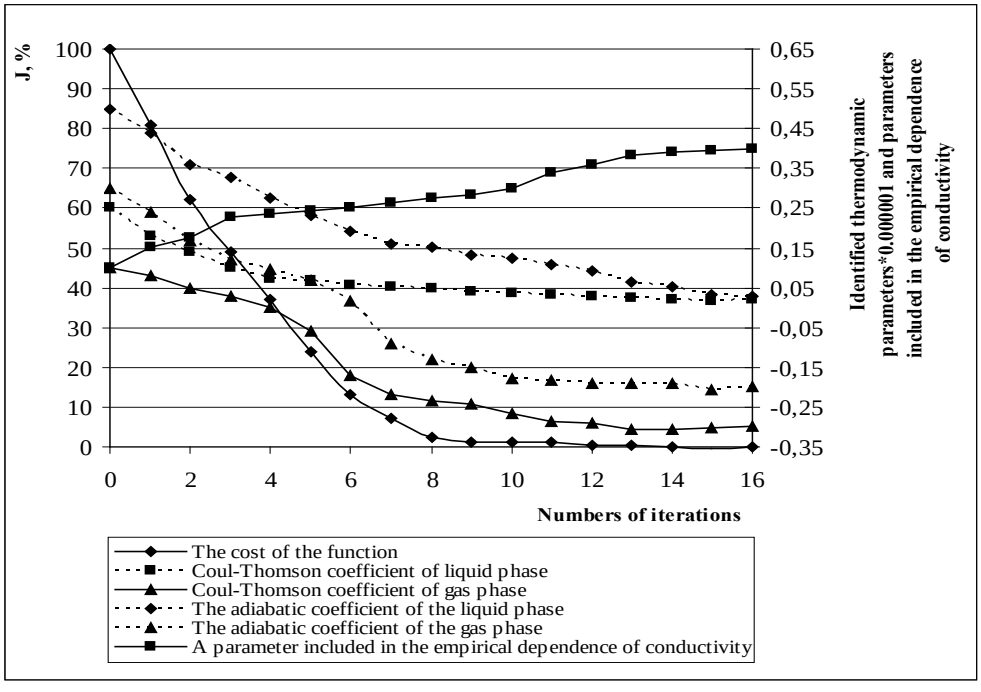


Fig.1. Determining the exact value of the parameters.
Dependence of the function on the iterative process

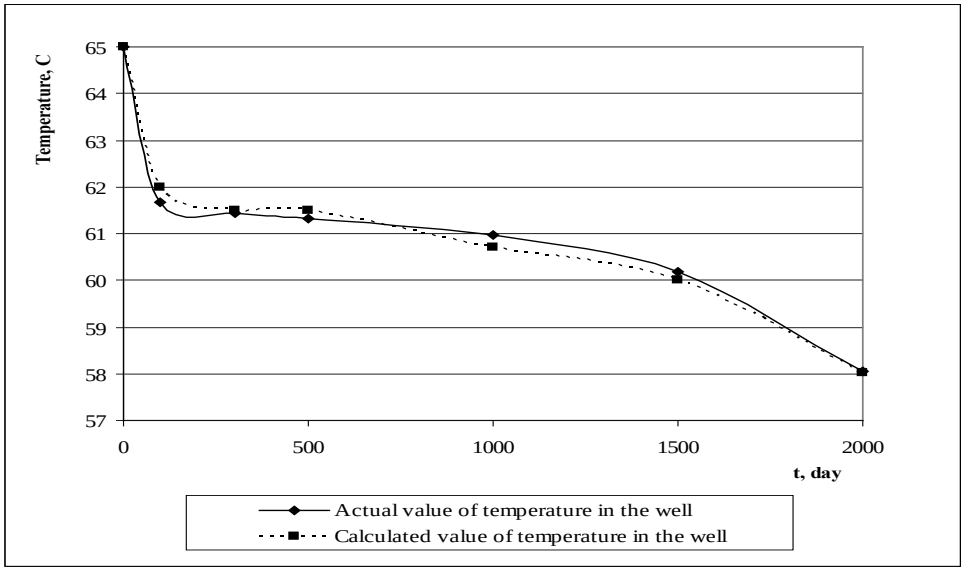


Fig.2. Variation of actual and theoretically calculated values of temperature in the well over time

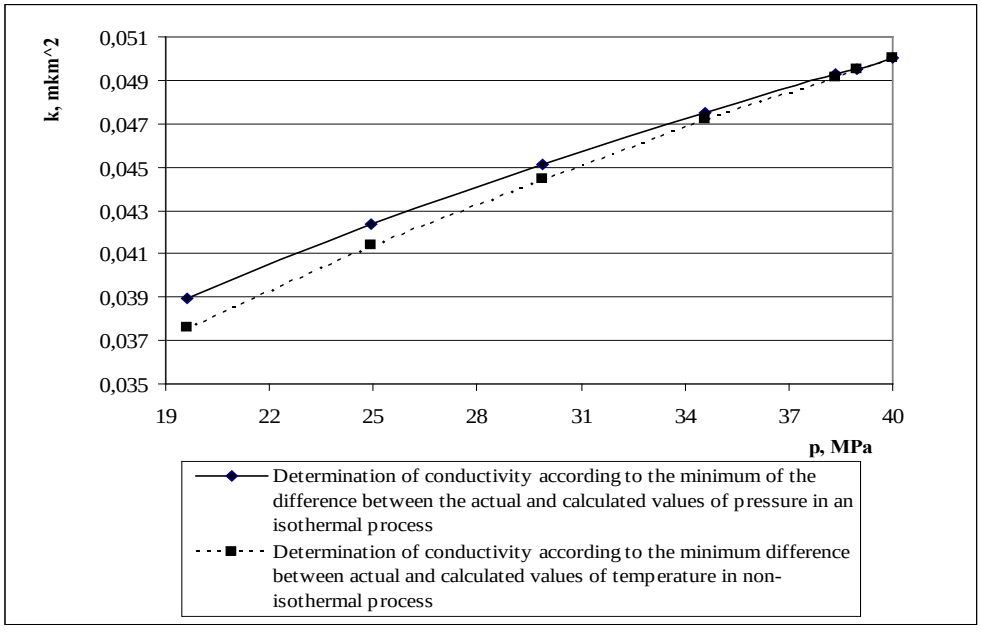


Fig.3. Pressure dependence of conductivity function

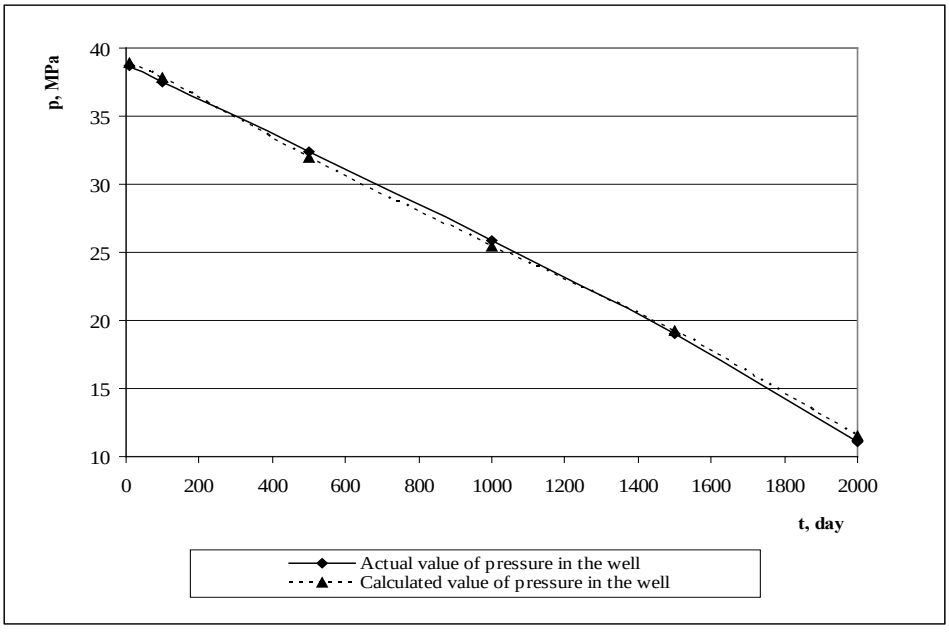


Fig.4. Time dependence of actual and theoretically calculated values of well pressure

The computational experiments performed demonstrate the fundamental possibility of joint determination of thermodynamic parameters and conductivity properties of the rock during the filtration of the gas condensate mixture.

Thus, a variation method was proposed to identify the filtration-capacity and thermal-physical parameters of the rock in accordance with real conditions due to changes in the actual data of its temperature during operation, and the effect of deformation characteristics of the collector and non-isothermal process on the values of thermal-physical parameters was evaluated.

References

1. Kotlyar L.A., Sidorova M.V. On the joint interpretation of the data of non-stationary bar and thermometry of a well // News of universities. Series “Geology and Intelligence”, 2013, No. 6, p. 52-56

2. Ramazanov A.Sh., Valiulin R.A., Sadretdinov A.A. et al. Thermohydrodynamic studies in a well to determine parameters in a borehole zone of a formation and flow rates of a multilayer system / SPE 136256, Russian Oil and Gas Technical Conference and Exhibition, Moscow, 2010, 23 pp.
3. Khairullin M.Kh., Khisamov R.S., Shamsiev M.N. et al. Hydrodynamic methods for studying vertical wells with a hydraulic fracture. Moscow – Izhevsk: Institute for Computer Research, Research Center "Regular and Chaotic Dynamics", 2012, 84 p.
4. Dzhalalov G.I., Feizullaev B.Kh. Investigation of the influence of non-isothermal filtration during field development on the results of hydrodynamic modeling during adaptation // VNIIOENG, "Automation, telemechanization and communication in the oil industry", 2017, No. 3, pp. 41-47
5. Chekalyuk E.B. Thermodynamics of the oil reservoir. M.: Nedra, 1965, 238 s.
6. Vasiliev F.P. Methods for solving extreme problems. M .: Nauka, 1980, 520 p.
7. Aziz H., Settari E. Mathematical modeling of reservoir systems: Per. from English. M .: Nedra, 1982. 407 p.

Submitted 12.05.2020
Accepted 02.06.2020

DIVERSITIVE OPERATIONS IN THE INDUSTRY AND EFFECTIVE MECHANISMS TO ECONOMY

R.E.Isgenderov, G.O.Aliyeva
Azerbaijan Technical University, Baku, Azerbaijan, gunayaliyeva1986@mail.ru

ABSTRACT. The methods of conducting diversitive operations in industrial enterprises are described in this article. It is noted that in all cases the production of goods should be expanded and increased.

KEYWORDS: industrial enterprise, diversification, sales shares, market, competition

As a transition from the production structure of the commodity to the industry in any area, diversification characterizes the modernization of the course of operations that do not correspond to the specialty in all cases. As a result of the diversification, the enterprise turns into a complex industrial complex or conglomerate, modernizing its direction of specialization.

As a result of the development of science and technology, the industrial revolution in the economy and the development of information technology have an enormous growth in enterprise activity. Although in the early 20th Century there was a strong tendency for deep-seated specialization in industrial enterprises, there has been some slowdown since the 1980s and '90s. Diversification operations are not narrowly focused on the core business areas of the specialized businesses, but also include a wide range of goods and the companies that produce the products are not specialized in one type of product.

Diversification is the process by which an entity continues to operate in order to achieve its objectives by entering other areas, other market segments, relative or completely different areas. Most businesses start as a narrow-minded enterprise focused on specific segments of the local market. In the early stages of its operations, the production range of these enterprises is very narrow and its competitive position is weak. The development of the newly established enterprise is primarily due to the growing popularity of

the buyers. Successful businesses in their segments are trying to expand the geographical boundaries of their markets at a later stage, which is usually followed by a sequence of local, regional, national and international markets.

An industry-specific enterprise faces a number of obstacles to profit from the expansion of its product markets. Such barriers can be attributed to factors such as:

a) existing competitor;

b) potential competitors;

c) buyers, suppliers;

d) substitute products that determine market attractiveness.

As a result of these factors and diversification, specialized enterprise markets can gain access to new markets that are suitable for their operations at every stage. If an enterprise can operate in the same area and earn sufficient profits, it needs large investment and high-risk activities [2, p.102-145].

a) Increasing the sales of enterprise products by reducing their competitors' market share by implementing a new diversification strategy in their field of activity;

b) The implementation of the diversification strategy should be based on field and external realities.

In the first option, the effectiveness of strategic directions is determined by the ability of competitors in that area to react. The second option requires more extensive marketing research, identifying industry-specific attractiveness through which diversification operations seek to enter, identifying new development trends and risks determining strategies for implementing diversification strategies. Before any diversion operations can be selected, one of them can be selected after a rigorous study to determine the efficiency and risk factors for both options. Analyzes of well-known companies in different countries over the years, such as Polaroid, Gerber, Apple Computer, Timex, Coca Cola, and McDonalds show that sometimes they can develop for many years without diversification. In a specialized industrial enterprise, it is possible to have a number of strategic advantages of limited or large scale production and economic activities, including:

- Overcoming difficulties in defining the mission of the enterprise;
- Referring to the extensive and intensive experience of the group of buyers in the direction chosen by the governing bodies of the enterprise in the context of flexible adaptation in modern conditions;
- The main management of the enterprise in the regulation of its activities is the integration of its production and sales problems into market relations;
- Competitive advantages of the enterprise are clearly defined, its strategic development directions and prospects are optimized.

When creating new products in the industry while performing diversification operations in the industry, there are some (major specialized) activities that can be attributed to the following:

a) Any change in technology can reduce the competitive advantage of an enterprise;

b) Reduction of efficiency due to various economic and political reasons for loss of markets in whole or in part (inflation, wars, application of new environmental standards, changes in economic policies of the state, etc.)

c) Establishment of new types of enterprises with higher efficiency to meet the same demand and identifying inefficiencies in integrating existing businesses into production areas.

The diversification of industrial enterprises in view of market demand may be due to the integration of long-term economic and production activities into new conditions. At the same time, it is necessary to draw up an expert opinion on the field and to take into account specialized conclusions. At the same time, it is more appropriate to implement existing diversification operations in various industries rather than at the overall enterprise level, with a view to greater integration into new economic and technical relations. At the same time, the use of fixed assets is largely unchanged, with the preference for the use of the material resources involved in the enterprise under a serious savings regime and the level of productivity in the workplace is gradually renewed. On the eve of diversifying operations in a field enterprise, it may be useful to apply a forecasting form, taking into account similar types of production both internally and externally. Predicting diversification operations that will be

applied to the production areas will help to accurately evaluate the time-consuming reconstruction of the enterprise scale and optimize the scope of operations.

Various projections on development-oriented diversification operations show that the current global economy's operating economy is limited by the necessary resources. Given that current economic systems operate mainly on depleted and non-renewable natural resources, the search for alternative principles and methods for existing economic principles is always topical. Recycling of technical and biological wastes during consumption of goods has a great economic importance. This principle forms the basis for mastering the new industrial paradigm, including the processes involved in recycling, and the process of recycling, depending on its designation and current status. The versatility and adaptability have become one of the most important concepts of our modern age. Diversification in the economy builds maximum efficiency and resilience over the durability of all products, materials and systems against external shocks. In other words, durable products extend the life of the product and provide additional marginal benefits. While solar, wind and geothermal energy sources do not have a large share in the traditional economy, the circular economy is one of the key principles in the use of renewable energy sources. This point is evident in the form of completely new products and production mechanisms. The use of renewable energy sources reduces production costs as well as contributes to solving environmental problems. The systemic principle is not simply a circular economy, but rather a conception of how the parts of the system in scientific paradigm interact with each other, as well as the whole. The elements of the system must have certain balances in terms of infrastructure, environment and social context. Generally, one of the key principles of a circular economy is that of a systematic approach. Thanks to a systematic approach, the circular economy requires the involvement of technical and biological waste in the economic process, and the achievement of social and environmental problems. In a circular economy, the cost of a product is linked to certain criteria and should take into account the real costs for economic benefits, and the costs that are outside the valuation mechanism should be taken into account. Unreasonable artificial increases should be deducted from the final price,

otherwise the entire circular economy will be essentially changed as a result of the breach of transparency resulting in low efficiency.

The circular economy model, built on the principles of diversification in industry, not only minimizes waste, but also ensures sustainability, allowing natural resources to be restored and reintroduced to biological systems. With a constant renewal and regenerative nature, the circular economy model allows the product to sustain the longevity of products, materials and components while delivering the highest value. This accelerates the development of new economic principles in the areas that can provide industry, in particular increasing the country's competitiveness and transition to a new industrial structure.

There are several motivating factors for successful economic diversification. Clearly, for this purpose it is important to have proper institutions in the country. These institutions must ensure the rule of law, in particular the inviolability of property rights and the protection of competition. Of course, the factors we cite are not the same as those in developing countries, which are usually developing resources. In Malaysia or Indonesia, which we refer to our case-based practices, these types of institutions were poorly developed when diversification policies were implemented. However, the experience of many countries has shown that parallel to the success of diversification, institutional reform has played a major role. Studies show that it is not important for the overall quality of institutions to stand in the democratic rankings of the country as a whole. Unfortunately, the biggest obstacles to diversification in Azerbaijan are in this direction. Restrictions on access to the market and financial resources, the lack of a competitive environment, and the most serious problems in the protection of the right to livelihoods are the foremost institutional reform. The weakest part of the Strategic Road Map is that the institutional reform has a definite effect. Another stimulating factor of diversification is the desirable level of infrastructure. This factor is very important for promoting investment in the processing and other industries. Traditionally, investments in natural resource economies are local and are focused exclusively on raw materials, with the country's infrastructure (roads, electricity, water, communications, etc.) being the same. This is especially true for oil countries. Yes, the range of oil production is not very wide and can even be

offshore. However, the infrastructure of other parts of the country (usually the capital city) is not ready to accept large business investments. The infrastructure rebuilding that started during the growth period in Azerbaijan has changed significantly in this regard. Naturally, large investments in infrastructure compared with other neighboring countries can be considered as a good incentive not only for the socio-economic development of the country, but also for the attraction of new investments. For comparison, even infrastructure development in Malaysia, particularly Indonesia, which has demonstrated successful diversification practices, has not been so developed. Thus, the development of infrastructure, which is another key factor for successful diversification, is well-established in Azerbaijan. As usual, macroeconomic conditions are important for successful diversification. For this purpose, first of all, it is important to have macroeconomic balance and financial stability. The processes currently underway in Azerbaijan are indicative of macroeconomic imbalances and lack of financial stability. In this situation, it is very difficult to implement economic diversification. Economic diversification requires sufficient resources from the government. These funds are mainly focused on the implementation of reforms, implementation of structural changes, investments in human capital, the implementation of the needed preferences and so on. In other words, economic diversification is a major expense item for the government that must be prepared for its consistent and sustainable implementation by the government in terms of finance and macroeconomic policy in this context. The implementation of appropriate fiscal and monetary policies for diversification policies is an integral part of the success that can be achieved. At the same time, tax policy and budget revenues should be reconciled with the availability of non-oil refineries and other industries. In the current fiscal arena, fiscal deficits can be driven by economic diversification, with the aim of mobilizing budgetary resources by any means [5].

With modern information society, traditional industries already have some advantages in terms of economic efficiency by integrating with each other, but using modern principles of circular economics can create more sophisticated industries to engage in this process and create more serious structures in future. Industry management as a single organizational entity

and the application of diversification will result in the production of more competitive, more competitive, economically relevant products. The main and recent stages of integration from the linear economic system to the circular economic structure can be considered to enhance the competitiveness of the low-level industry. Organization of transformation in accordance with the requirements of production tools and the circular economic system - this is an active type of adaptation, because the adaptation processes at this stage, especially those in raw materials and technologies, in turn involve changes in the essence and structure of industrial production. Proper classification of existing technologies and alignment of the necessary directions with the industry will result in a more accurate determination of the flow of raw materials and materials in the future, so that the circular economy of the country begins to cooperate properly with other sectors of the national economy. Field mobilization is of great importance in mobilizing social and economic entities to address raw and material shortages. This enables the principles of circular economy to integrate better into the industry and to integrate it with modern information and production (eg 3D printing, bioinformatics, raw materials, etc.) in research and development (R&D) and economic policy to improve its competitiveness.

Priorities for the socio-economic development of Azerbaijan for 2016-2019 have been identified. Thus, the country will continue to work towards ensuring sustainable economic growth, maintaining macroeconomic stability, diversifying the economy, accelerating the development of non-cash sectors and regions, creating free competition and favorable investment climate for the development of the private sector [1]. The budgetary and tax policy of the Azerbaijan Republic has ensured the effectiveness and sustainability of the economy, modernization and diversification of its leading sectors, maintaining social priority, increasing the welfare of the population, refugees and vulnerable social groups. In the medium term, macroeconomic environment in the country and abroad is aimed at ensuring sustainable growth of the country's macroeconomic indicators, taking into account the priority directions of socio-economic development of Azerbaijan. The development of the non-oil sector in the coming years envisages the timely and full implementation of tax obligations in medium

and large companies, a gradual reduction of tax debts, transfer from the State Oil Fund of the Azerbaijan Republic to the state budget and increased tax and customs regulations.

State regulation is particularly important in terms of certification of products that go out of the diversification system in an industrial enterprise and providing the necessary support to support it in the public domain. Further development of principles of transparency in the standards of production will create the necessary infrastructure for proper marketing and business communications of circular economic system products. Most importantly, optimization of supply channels for the supply of biomaterials and longevity materials, which are the cornerstones of a circular economic system, plays a crucial role in the third phase, as it is a complex economic process that can be largely managed by the state. A fair solution is essential for preventing or creating unfair business, unfair competition and other violations in the field of economic business and legislation, as the state needs a lot of sensitive issues, especially in competition, until the system is segregated and dominant in the industry. The most important step between the final and stages of alignment of the industry with the circular economic principles is the formation of recycling systems. Thus, the creation of recycling infrastructure, which is essential for the revitalization of circular economy products, which will go through certain production and consumption processes, will in the long run provide a cheaper understanding of the same industry products. This is a very important indicator of ensuring competitive advantage based on the newly created value. Accordingly, the principles of circular economy in the industrial sector have always maintained their relevance to the competitive advantage of industrial enterprises. Michael Porter's competitive strategies - value leadership, focus on diversification may be strategically different. Thus, products manufactured by the principles of a circular economy are suitable for the consumer and the costumer, as they are more cost effective and more profitable. Porter's 5 competitive strategies, mainly for industrial production, which play an important role in the economy, are likely to apply their relevance in a circular economy system and traditional economic models and systems can no longer provide the desired results.

Conclusion

As a result, it is possible to prevent further shocks by ensuring the integration of an ever-increasing circular economy concept into the industrial economy in order to protect society from such a risk and to reduce the economic downturn by increasing the competitiveness of its products. In addition, it is important that the products produced in the industry are properly communicated to the modern environment in the traditional methods of production, ensuring the proper positioning process between consumers and so that the principles of the economy can make their contribution to the industry.

References

1. State Program for Industrial Development in the Azerbaijan Republic for 2015-2020. Presidential Decree dated 26.12.2014
2. Guliyev T.A. Fundamentals of Management, Baku, 2013
3. Garayev I.C. Price formation. Baku, 2015
4. Allahverdiyev N.V. Regulation of investment processes. Baku, 2003, 167 p.
5. www.economy.gov.az
6. www.iqtisad.net
7. www.azstat.org

Submitted 10.01.2020
Accepted 29.01.2020

SMALL BUSINESS AND LEASING

P.A.Gurbanov
Western Caspian University, Baku, Azerbaijan, parviz.gurban@gmail.com

ABSTRACT. In this article, the leasing is considered as a specific form of entrepreneurship, including targeted discount loans and long term rental of production tools from state budget. It is noted that the usage of leasing in agro-industrial complex allows to provide high quality service and to get new, modern and expensive technology.

KEYWORDS: leasing, small business, competitiveness, liquidity, credit, investments

Small and medium enterprises have great potential in addressing the economic and social problems of the country. However, a number of problems like lack of startup capital and current assets, high bank lending rates makes the use of leasing operations for the needs of small and medium-size businesses urgent.

Azerbaijan was the first among the CIS countries that has reflected the legal basis of leasing operations in its legislation. Thus, the Supreme Council of the Republic of Azerbaijan has adopted "About Leasing Services" Law of the Republic of Azerbaijan by the decision No. 931 on November 29, 1994.

It should be noted that the relevance of the use of leasing operations by small and medium business sector has been aroused by the financial crisis in 1998. Leasing which supports the production modernization and increases labor productivity and competitiveness by contributing to the creation of new jobs is one of the real chances for businesses.

According to statistics, small and medium enterprises create great demand for leasing in majority of industrially developed countries.

A number of specific characteristics of small businesses are in dire need of support at the early stages of their formation:

- limitation of the scope of production means used;

- narrow specialization;
- small size and scope for applying the financial resources used;
- low level of capitalization, in other words, a small portion of the revenue to be used for the expansion of the fixed capital;
- lack of funding sources;
- limited capacity for expansion and renewal of production, difficulties with the introduction of new technology;
- loss of competitiveness of the producs in domestic and foreign markets because of physically worn out and morally outdated materials and technical base;
- lower pledge ability.

Traditionally, small businesses are identified with financial institutions that are not able to provide collateral liquidity of high-risk transactions (say bank may not have sufficient liquidity to pay for real estate expenses, but show interest in leasing) as well as having a large number of unfinished (or unjustified) projects. Due to the development of illegal (hidden) business, investors do not have real opportunities to control the intended use of debt.That is why it is important to support small business indirectly. One of such methods is leasing.

Leasing financing allows to remove a number of restrictions related to characteristics of small business.

Thus, during expertise of a leasing project issued by a small enterprise, the leasing company pays special attention to the settlement of previous loans, not to the value of fixed assets, but to financial flows of the entity to enable timely and approved payments.

When reviewing an application for a loan, financial institutions are interested in a financial biography that confirms the reputation of an enterprise that repays its debts on a timely basis. However, to obtain such information, an enterprise must obtain a loan at least once. High prices, lack of privileges for repayment of principal and interest, short-term repayment of bank loans cause investment disadvantage. As a result, the share of fixed assets per employee involved in the production process is low.

The advantage of leasing for small business is that specialized leasing companies are linked to the supply chain partnerships. Such a situation allows lowering prices for the subject of leasing.

Leasing campaigns can provide a wide range of additional services: the search for modern equipment, the analysis of opportunities for its use, supply, installation, commissioning and operation in the small business sector.

Leasing companies operating in the system of state support for small businesses and receiving low-cost financial resources from the state basically are working with small businesses. "Agroleasing" Open Joint Stock Company well known as investor in business development, is an example.

These campaigns have a working mechanism for reviewing projects and leasing applications, allowing them to make small transactions with minimal operating costs. Typically, small-scale deals (contracts) are not profitable for financial and credit institutions to conduct more expensive and long-term expertise, to collect and process information, to enter into leasing and other related contracts.

Leasing often refers to small businesses that do not require a large amount of initial capital and have a relatively shorter production cycle and high turnover.The benefits of leasing allow small businesses to be equipped with advanced technology, taking into account production characteristics (universality, versatility, speed of equipment adjustment, short-term self-sufficiency).

As is known, from a marketing point of view, SMEs are a promising segment of the market for services. Leasing companies working with small business representatives

diversify risks as they have a broad portfolio of projects. However, the specifics of doing business with small businesses create additional risks for the following reasons:

• chronic (regular) shortage of working capital;

• insufficient resources for unforeseen situations compared to large businesses;

• lack of sufficient production areas (areas, buildings);

• difficulties in registering land rights and facilities for placing leased equipment;
• lack of qualified personnel for the use of leased machinery and equipment;
• variety of equipment used;
• lack of managerial experience of senior (upper) middle class senior managers;
• insufficient level of management of long-term investment projects;
• low level of economic and financial information presented, which results in revaluation of investment opportunities of leasing projects;
• lack of knowledge in developing business plans that meet the requirements of leasing campaigns;
• insufficient leasing projects.

Fast-growing small businesses that move from one area of production to another often do not need long-term leasing contracts (for example, 5-10 years contracts).

Short-term deals (operative leasing) for leasing campaigns are at high risk due to the low residual value of the leasing subject. Experience shows that long-term leasing contracts with small enterprises in the Republic of Azerbaijan usually last 1-3 years.

Small businesses that start their business from scratch do not report the results of their operations 2-3 years ago (eg enterprise balance). Therefore, the leasing campaign is required to secure leasing deals (prepayment), guarantee of another enterprise, bank guarantee. However, the bank guarantee for small businesses is either inaccessible or significantly undermines the economic efficiency of the leasing transaction.

It is important to add to the risks that the interests of small businesses in the leasing services sector are reflected in the Law. The existing legal framework of the leasing services market does not provide incentives for small businesses in leasing relationships, thus reducing their access to small businesses.

However, in many areas, leasing for small business development has great potential.

In modern economic conditions, there is a widespread use of leasing in the agricultural sector of the country, including agriculture, but its purpose and development problems remain to be less explored.

However, in many areas, leasing for small business development has great potential. Thus, leasing is referred to as a specific form of entrepreneurial activity. Here are the issues related to temporary use of leasing from the state budget and leasing of production facilities in accordance with the terms of the leasing contract for the subsequent leasing of agricultural commodity producers.

Undoubtedly, one of the types of agro-leasing is leasing, and the second is the entrepreneurial activity of the enterprise to meet the needs of agricultural commodity producers in the interest of the profits obtained from the operation of these resources on a rental basis.

However, in our view, in modern conditions, agrolysis is a mechanism of interaction between financial and production capital, as well as a way of investing production in the agrarian sector.

For the state, which plays a key role in ensuring the country's food security, agrolysis is a resource supply channel for agricultural commodity producers to achieve agrarian stabilization and economic growth.

In general, agrolysis is presented as a possible solution to the problem of inconsistency between the need and affordability of fixed assets in agriculture.

Agroleasing requires an objective management system and incorporates credit, lease, sales and investment relationships as the most complex organizational and economic process.

In modern times, the provision of the agricultural and industrial complex (AEC) with machinery, equipment and pedigree livestock needs to focus on small businesses. It is true that small agricultural enterprises almost do not repair existing equipment and machinery. This reduces the stock ratios as well as the supply of up-to-date equipment, increases the load on equipment and increases the timing of agricultural work.

The use of leasing in the agro-industrial complexes allows acquiring new, modern and expensive equipment and providing high-quality service. The implementation of leasing payments in the natural form (such as agricultural products) is in the best interest of both the small business and the state.

References

1. T.H.Huseynov. Azerbaijan's national economic development model: theory and practice. B.: Science, 2015, 466 p.
2. Ibragimov I.H. Entrepreneurship regulation issues. B.: Sada, 2010, 248 p.
3. Maharramov A.M. Entrepreneurship: Theory and Practice (monograph). Baku, 2009
4. Gurbanov P.A. International leasing operations. Baku: Great, 2012, 124 p.
5. Газман В.Д. Финансовый лизинг. М.: Высшая школа экономики, 2010, 392 с.

Submitted 23.01.2020
Accepted 05.02.2020

THE ROLE OF TRANSNATIONAL CORPORATIONS IN THE CONTEXT OF GLOBALIZATION AND COMPETITION

B.T.Hasanova
Azerbaijan State Economic University, Baku, Azerbaijan, bellahasanova@gmail.com

ABSTRACT. Characteristics of corporate activities and the possible obstacles to these activities in a highly competitive environment are highlighted in this work. The efficiency and the role of transnational corporations in globalization are discussed.

KEYWORDS: transnational corporations, global economy, economic development

Continuous development of the transnationalization process explains the relevance, usefulness and scientific significance of the study of the chosen topic. The relevance of this work is explained by the fact that in the modern period the world economy is characterized by a high degree of globalization, which ensures and controls the unified functioning of the world economy. In modern times, a key indicator of the development of international production is foreign direct investment (FDI), which is the main instrument for building up international production. Transnational corporations are the main driving forces in this process. Being an important element in the development of the world economy and international relations, transnational corporations reflect the intensification of international competition.

The most important global financial and commodity flows that determine the development of the world economy pass precisely through transnational corporations and the transnational banks associated with them. The rapid growth of foreign direct investment, the deepening of the international division of labor, in particular, the expansion of the company's technological division of labor has provoked the emergence of powerful international scientific and industrial complexes with branches in different countries. In recent years, TNCs have made a major breakthrough on the world stage, turning into the main heroes of the global economy.

There are many diverse reasons for the emergence of TNCs. The most significant reason among them is the process of internationalization of economic activity, which leads to the development of productive forces beyond national borders. TNCs are the main participants in the international division of labor. The internationalization of production is the process of forming branches through the export of capital. Thus, TNCs are the result of an internationalization strategy that is in the nature of the expansion of economic ties.

The fundamental prerequisites of globalization are the transition from the centralization of the economy to its decentralization, the use of new communication technologies, the transition from the national economy to the global one, the transition from the industrial to the information society. One of the important directions of globalization is the activity of transnational corporations.

The most important global financial and commodity flows that determine the development of the world economy pass precisely through transnational corporations and the transnational banks associated with them. The rapid growth of foreign direct investment, the deepening of the international division of labor, in particular, the expansion of the company's technological division of labor has provoked the emergence of powerful international scientific and industrial complexes with branches in different countries.

A transnational corporation (TNC) is a company that owns foreign assets and unites several branches abroad under its wing. This complex one has sufficient potential to have a significant impact on many sectors of the global economy. The relationship between branches and the parent company is based on the principle of transparency. Despite the fact that these branches are adapted to the environment of the host country, the immanence of the nature of this process can be traced, since in the end they operate under the motto of the main company. A negative aspect of this form is the property liability of the entire corporation, and not just the part that is owned by the branch.

The independence of the branches is limited by strict control of the home country. The limited possibilities of the domestic market make the idea of creating foreign representative offices abroad attractive. TNCs allow

not only access to world markets, but also produce a competitive assortment of goods. The main feature of TNCs is the desire to break away from the national soil, the global nature of functioning, the planning structure, and centralized control over the supply and marketing of products.

In order for a company to be called transnational, compliance with at least one of the following traits is required:

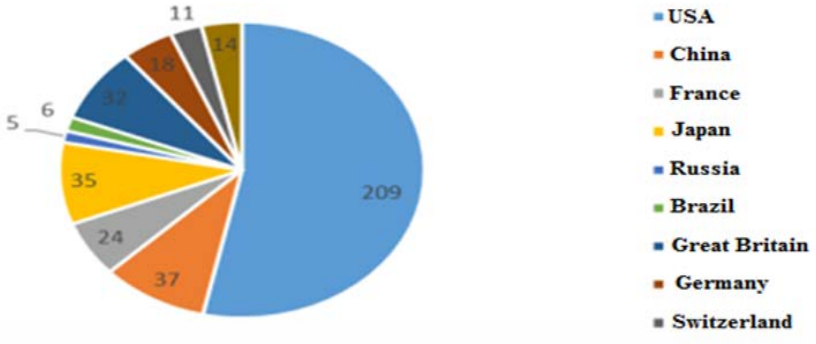
- the location of all functioning branches outside the territory on which the country of residence is located;
- sales of products on the world market;
- representation of the subjective ownership structure by citizens of various countries.

Sometimes companies meet all three of these criteria at the same time. TNCs are able to significantly reduce the risks of their operations by locating their production in different countries. Multinational corporations are an urgent requirement of the modern world economy.

In the definition of transnational corporations, two concepts that are important to note are the home country of the corporation and the host country. The home country is understood as the location of the headquarters of the multinational corporation, and the host country is the country in which the assets of the multinationals are directed. The parent company is located at the very beginning of the TNCs` management chain and plans the entire future strategy of the corporation. Developed countries such as the USA, Western Europe and Japan often act as the home country. But in the modern period there are many TNCs from developing countries, for example, Taiwan, South Korea.

Transnational corporations today permeate all countries, growing into wide networks. The geography of TNCs is so vast that it is difficult to imagine the economic success of countries without the participation and intervention of international corporations. Along with highly developed countries, the share of developing countries in the total volume of functioning TNCs is growing day by day. Transition countries, thanks to their advantages in the field of innovation, are stepping on the heels of economic powers. Below on the graph we can visually consider the geography of the leading TNCs.

Fig. 1: The number of TNCs in the world by the end of 2018



Source: https://moluch.ru/archive/245/56546/

Transnational corporations contribute to the strengthening of scientific and technological progress. Along with a large number of positive points of transnational corporations, it is also important to note the negative sides. An example is the imposition of a non-characteristic sectoral structure of production for developing countries, environmental pollution, exploitation of local natural resources, and redirection of profits into their pockets. Regardless, Transnational corporations still regulate a large part of world trade.

Transnational corporations allow countries with technological advantage access to the resources of other countries, which also provides a competitive environment in the global market. Currently, multinational corporations are increasingly focusing on the specialization of countries in the production of goods. Transnational corporations, placing their investments, pay special attention to finding new markets, reducing production costs, searching for resources.

The process of formation of TNCs is also explained by their economic efficiency, which is caused by an expanded spectrum of production within the framework of individual sectors of the economy.

An integral role in the creation of TNCs belongs to the approving decision of the states in relation to them. This is due to the fact that it is thanks to these formations that countries can survive in conditions of fierce competition, profit, significantly reducing production costs. In order to reinforce the activities of TNCs in the international arena and provide them with markets for the sale of manufactured products, countries conclude economic, trade, political agreements and alliances with them. An example of this is the promotion of Samsung by the Korean government.

Due to the fact that TNCs are the primary carriers of the innovation burden, they are the main source of investment for research and high-tech industries; along with this they finance the improvement of qualifications of working personnel. This inevitably leads, in turn, to the fact that TNCs secure monopoly positions in these areas. TNCs through their subsidiaries and branches carry out international operations, which further consolidate their concentration of capital and production.

TNCs have incomparable resilience to crises, as they operate in many corners of the earth, which gives them the ability to control and financial advantage.

The reasons for the formation of TNCs can also be called a number of arguments, which gives them an indisputable advantage in contrast to companies having a single base point within their own country. The effect of large-scale production and interethnic differences lead to super profits of TNCs. The ability to enhance efficiency and competitiveness, production, managerial and marketing experience of TNCs are mobile assets that allow corporations to transfer their units to the territory of other countries.

TNCs have a significant priority in access to raw materials, to cheaper and, nevertheless, professional personnel of the host country. They also use the markets of their affiliates to sell their products.

TNCs, in order to extend the life cycle, can transfer obsolete technologies and products to their overseas branches, meanwhile mobilizing all their potential to develop innovations in the home country.

Foreign direct investment, that is, sometimes allows corporations to overcome the obstacles created by tariff barriers that stand in the way of export. Due to the fact that in the 60s Europe taxed exported goods, the United States began to import pure investments in order to circumvent these ta-

riffs.

TNCs are also able to benefit by manipulating the difference in exchange rates of their affiliates. The diversified activities of TNCs make them financially more stable than ordinary corporations operating in one country. TNCs have a choice, determining the location for their units, based on such considerations as political stability, resource availability, pace of economic development, price factor.

Despite the wide range of their network structure, TNCs are able to accumulate their capital in the shortest possible time and redirect to the most profitable channel, limiting production where it leads to losses. Foreign economic expansion carried out by transnational corporations is relatively better at managing market risks than the mechanisms of national companies. TNCs on the basis of structural planning, determine the number of foreign missions, while they can safely maneuver this indicator, depending on material returns. They can significantly reduce production if they are still able to profit even with small batches of production. Similar corporations also have access to information about the internal structure, about the upcoming development of national markets. They have access to data on local competing companies.

The reasons why the choice falls on one or another country in the process of opening foreign branches may be: labor legislation of the host countries, wage level, antitrust law, taxation strategy, infrastructure, obligations to protect the environment. The host country exercises close control over the functioning of foreign branches, defining a clear delineation of the nature of their activities.

The organizational and production structure of TNCs allows them to enjoy the privileges of the international division of labor to a greater extent relative to local companies, and steadily maintain the reputation of the company.

The reason for the emergence of TNCs is due to the fact that the TNC process deepens, which makes it inevitable to adjoin a single economic space, otherwise the company will have to deal with such negative reflections of the world economy as transportation costs, monopoly power, and customs barriers. In the end, it’s much more advisable to be inside the system than outside.

TNCs have a number of privileges in contrast to ordinary firms; this is due, for example, to the fact that the national government provides support to foreign missions, thereby reinforcing their legal strategy. In the event of an inevitable failure, the damage is proportionally divided between all TNC structures, which make it feasible and metered. Profit is also distributed among all participants in the process.

In order to get a big profit, TNCs resort to the use of transfer prices, artificially increasing prices during deliveries. In the end, the need to create TNCs is explained by the fact that they are better than anyone else in exercising control over the movement of capital, being the main investors in developing countries, extending a helping hand to them.

Table 1: Most profitable transnational corporations in the world in 2019

Walmart	$500,343 millions
State Grid	$348,903 millions
Sinopec Group	$326,953 millions
China National Petroleum	$326,008 millions
Royal Dutch Shell	$311,870 millions
Toyota	$265,172 millions
Volkswagen	$260,028 millions
BP	$244,582 millions
Exxon Mobile	$244,363 millions
Berkshire Hathaway Inc	$242,137 millions

Source: https://fortune.com/global500/

Transnational corporations, being the protagonist of the world economy, act as the main incentive for the migration of personnel and the professional exchange of experience and knowledge. All of the above reasons in tandem played the best motivators for creating TNCs.

As a rule, TNCs are located in developed countries. This is due to many factors, among which it is important to highlight a noble infrastructure, an extensive network of relations and the position of such countries on the world stage, investment potential and technological arsenal. All of us, regardless of our location, are under the pressure of TNCs.

We can often not notice the world's exposure to the effects of transnational corporations, but in everyday life we are surrounded by the results of transnational corporations, this is almost the entire range of products without which we cannot imagine our everyday life. This is everything from McDonald's burgers to high-tech products that are in high demand. In connection with the growth of TNCs throughout and the strengthening of their power, we can say that they are the main subject of the global economic system. TNCs control not only production, but also services.

Transnational corporations have a very large market and scientific-production potential, which provides them with a stable position in the selected market segment, thereby correlating behind them the receipt of high profits. TNCs continue to grow, rapidly increasing their number from day to day.

The determination of the sectoral structure of TNCs is influenced by a number of factors: dependence of the choice of industries on income level, demographic conditions, namely population density, individual history of the countries where TNC branches are located. If the average income level in the country is not high, then the choice of TNCs falls mainly on three sectors of the manufacturing sector that meet the most important human needs, such as the textile sector, drinks and food. In countries with relatively high income ranges TNCs focus on industries in the field of engineering, instrumentation and other innovative structures of the manufacturing industry.

Table 2: Distribution of the largest TNCs by production specialization to countries in 2018

Field of activity	The number of TNCs	Founding Countries
Oil and gas	31	USA, China, Russia etc.
High technological production	19	USA Japan Taiwan etc.
Banking and financial	71	USA China Australia etc.
Production of cars, spare parts	17	Japan Germany USA etc.
Food production	8	Switzerland USA UK etc.
Pharmaceutical Manufacturing and Biotechnology	30	Switzerland France etc.
Software, computer services	16	USA Germany India Japan etc.
Retail industry	16	USA Spain Mexico etc.

Source: https://moluch.ru/archive/245/56546/

Between branches of transnational corporations and ordinary companies there is a clear distinguishing feature. It lies in the fact that, unlike foreign companies, material resources are allocated for the creation of TNC branches, thanks to which a local businessman is formed as a national legal entity on the part of a local businessman. This feature of TNCs provides affiliates with great advantages, enabling them to participate in the interethnic relations of the local country and privileges as a national entity. Being a local business entity, branches of TNCs are able to significantly reduce possible commercial and political risks. The branch of the multinational corporation is well informed about the local legislation of the country, as well as about the state policy towards entrepreneurs. TNCs form

their branches in accordance with all requirements of the legislation of the host country, legally registering them in the form of branches (branches), company associations or subsidiaries.

TNCs use various forms of expansion of the world market to spread their activities. These forms do not imply participation in the share capital of foreign countries, but only operate on contractual relationships. Such forms of transnational corporations include franchising, licensing, management contracts, the transfer of enterprises on a turn-key basis, the provision of marketing services, and agreements on the implementation of mutual operations at specified time intervals.

Conclusion

The modern economic space is a single whole system of interaction between all functioning entities. Recently, as a result of the internationalization of the world economy, the conditions of competition in the sphere of production of countries have become tougher, which leads to the transformation of all areas of the economy. Countries come to comprehend the fact that the do-it-yourself strategy is losing its significance in the context of the globalization of the economy, and for this reason they seek to quickly join the process of spontaneous integration of business operations. They are very willing to open up to the influx of foreign direct investment by signing international investment agreements. In order to attract TNCs, the host countries are creating favorable conditions in the form of tax easing, legal protection, and guarantees against political threats.

This process contributes to the exit of countries from the zones of peripheral development of the world economy. The most effective catalyst in this process are transnational corporations. The strongest impetus for the formation of TNCs was the increase in production capacity and the desire to more profitably realize sales, taking advantage of all the advantages of comparative advantage. TNCs, being an integral part of the global nature of the economy, are not only an economically important entity, but also a political and social one.

TNCs, being an economically important institution, contribute not only to liberalization, cooperation and strengthening the ties of national economies, but also to the equalization of economic conditions of countries

through the rational distribution of individual units of the production process around the world. TNCs are the best opportunity to use stagnant capital without using it, finding it a profitable solution in the economies of other countries. The influence of the economic functioning of TNCs affects all spheres of life. Corporations contribute not only to a deeper division of labor, but also to more detailed specialization. They become the cause of structural changes in the economy and the dynamic transformation of economic relations. Continuous struggle for the buyer leads to an aggravation of relations between rivals, which entails the absorption by large corporations of small companies, improvement of the production process, implementation of non-price measures of competition and non-market means of struggle. The merciless struggle for a potential buyer, for new sales markets and resources encourages TNCs to take a more reasonable approach to assessing their own capabilities and pursuing an intelligence policy in order to monitor the successful experience of other corporations.

References

1. Andrea Goldstein, Emerging Economies' Multinationals: Explaining the Case of Tata // Transnational corporations, vol. 17, 2008. p. 85-109
2. Antonio Majocchi, Roger Strange, The FDI location decision: does liberalization matter? // Transnational corporations, vol. 16, 2007. p. 1-40
3. Fabienne Fortanier, Foreign direct investment and host country economic growth: Does the investor's country of origin play a role? // Transnational corporations, vol. 16, 2007. p. 41-76
4. John H. Dunning, Towards a new paradigm of development: implications for the determinants of international business // Transnational corporations, vol. 15, 2006, p. 173-227
5. The Rise Of Transnational Corporations From Emerging Markets Threat or Opportunity? edited by Karl P. Sauvant, Edward Elgar Publishing Ltd, 2008, 391 p.
6. The universe of the largest transnational corporations, New York: United Nations, 2007, 71 p.
7. Бабанова К. Ориентиры конкурентоспособности ТНК // Экономист, № 9, 2006. - с. 63-66

8. Бабанова К., Стратегии ТНК в условиях глобальной экономики // Экономические стратегии № 4, 2006. с. 128-133
9. Конина Н.Ю., Глобализация и изменение внешней среды деятельности ТНК // Экономические науки. № 42. 2008. - с. 398-401
10. Конина Н.Ю., Глобальная производственная система как источник конкурентных преимуществ ТНК // Экономические науки. № 53. 2009. - с. 356-362
11. Мамедов А. Бюджетирование капитала транснациональных корпораций // Финансы. № 5. 2007, с. 71-73
12. http://www.economicportal.ru
13. https://businessman.ru
14. https://moluch.ru/archive/245/56546/
15. https://fortune.com/global500/
16. https://www.forbes.ru/tehno/internet-i-telekommunikatsii/46869-google-ushel-iz-kitaya
17. Annual ranking of the world's largest corporations. https://money.cnn.com/magazines/fortune/global500/

Submitted 02.05.2020
Accepted 07.05.2020

FEATURES OF THE ECONOMIC DEVELOPMENT MODEL OF AZERBAIJAN AND THE PROBLEMS OF ECONOMIC SECURITY OF ENTERPRISES

A.A.Hasanov
Odlar Yurdu University, Baku, Azerbaijan, ashraf1951@mail.ru

ABSTRACT. This work focuses on the achievements of market economy in Azerbaijan. Important steps to upgrading an economic infrastructure, successes in agricultural development, basic macroeconomic indicators and the share of private sector in GDP are discussed.

KEYWORDS: globalization, privatization, economic security, accounting, audit

At the present stage of scientific and technological progress, the development of productive forces and the media, their internationalization act as a motor of globalization.

The globalization of the world economy is the transformation of the world space into a single zone where information, goods and services, capital freely move, where ideas spread freely and their carriers move freely, stimulating the development of modern institutions and debugging mechanisms for their interaction.

The nature of modern developed societies and the direction of the social changes that are taking place in them, coupled with the political, economic, ethnic, moral, religious, as well as creative and innovative functions of the educational system - when higher education becomes widespread - shows the general development of civilization in the 21st Century.

The Republic of Azerbaijan has chosen the strategic path of integration into the world community with an understanding of the prospects for global integration.

The Republic of Azerbaijan is located in the eastern part of Transcaucasia. Washed in the east by the Caspian Sea, it borders with Russia, Ar-

menia, Georgia (country) and Iran. Azerbaijan is an industrial-agrarian republic. More than half of the country's gross national product is created in industry. The main wealth of the republic and the basis for the development of the industrial sector is oil. This explains the high concentration of industrial production on the Absheron peninsula and in cities such as Baku and Sumgayit, where 70% of all enterprises of the country are located (the Absheron peninsula and offshore fields are the main oil production sites in Azerbaijan). First of all, these are enterprises of the oil, oil refining and petrochemical industries. The development of engineering, metallurgy and metalworking in the country was also associated with the needs of oil production and oil refining, first of all, it was the production of drilling and production equipment, steel and pipe production. From other areas of industrial production at the end of the 80's, electrical engineering, the production of household appliances, and various tools stood out. The mining industry (mining of iron ore and alunite in the Dashkesen region), as well as the aluminium industry (Ganja and Sumgait) are of great importance for national economy. The increased energy intensity of industrial production stimulated the development of the electric power industry, which is represented mainly by thermal power plants (82.6%), natural gas and fuel oil, and hydroelectric power plants (17.4%), the largest of which are Mingachevir, Shamkir. Light industry - cotton ginneries working on local raw materials, textile and clothing production, carpet weaving, silk production (Barda, Shirvan, Sheki - ancient silkworm centers) developed in the republic. The food industry is located everywhere and produces almost the entire well-known range of products. Winemaking (production of fine wines, cognacs and champagne), fish processing (sturgeon caviar), tea, tobacco and tobacco products are also developed in Azerbaijan. There are four fish breeding plants.

After the collapse of the USSR, Azerbaijan was among the post-Soviet countries that experienced the deepest economic crisis: in 1994, the reduction in real GDP in Azerbaijan amounted to 52.6% compared to 1990 (in Georgia - 71.0%, in Armenia - 62.4% , in Moldova - 60.6%, in Tajikistan - 53.8%).

However, in the worsening economic situation aggravated by the Karabakh conflict, which absorbed from 50 to 70% of the state budget, the

government of the republic did not dare to undertake radical economic reforms. Although the law on privatization was adopted in early 1993, and on the basis of it the privatization of state-owned vehicles was even carried out in the same year, the process itself did not accept a wide scope. In addition, the rebellion on June 4, 1993 completely suspended the process of economic reform. As a result of objective and subjective reasons, the privatization of state property in Azerbaijan was begun much later than in other CIS countries, only in 1996. This delay in privatization led to the fact that the economy of the republic lost a significant part of the funds available to the country's population and which could be directed to the manufacturing sector. By the start of privatization, a considerable part of the population's accumulations was sent outside the republic (mainly to Russia), depreciated by hyperinflation (price increases reached 500% a month in 1994) or disappeared in various financial pyramids and other financial frauds. The living standards of the population fell sharply by the mid-90's: the minimum wage in these years was 2 thousand manats (about $2), while the cost of living on average per person reached 45 thousand manats ($45) (Yunisov A., 2018).

In accordance with the Privatization Program, the following forms of privatization were defined: - Denationalization of small enterprises through sales, which included: in industry - enterprises with up to 50 employees; in construction - up to 25 people; by transport - up to 15 people; in trade and services - up to 10 people; - corporatization of medium and large enterprises, which included: in industry - enterprises with the number of employees from 51 to 300 people and over 300 people, respectively; in construction - from 26 to 150 people and over 150 people; by transport - from 16 to 75 people and over 75 people; in trade and services - from 11 to 50 people and over 50 people. The program provided for the privatization of 75% of state property for 1995-1998. The value of all state property for that period, according to the State Property Committee, amounted to 70 trillion. manat (15.8 billion dollars), of which it was planned to privatize property worth 50 trillion. manat (11.3 billion dollars). Thus, the price of property per check amounted to 156 thousand manats ($35.3).

At the beginning of privatization, by decision of the government, fixed assets were reevaluated several times, as a result of which the cost of

privatized state property increased to 60 trillion manat (13.6 billion dollars), and the value of one check to 181 thousand manat (41 dollars). According to experts, the real value of privatized property amounted to 90 trillion manat (20.4 billion dollars, Dzhabiev R., 2002).

The new Law "On Privatization of State Property" was adopted by the Milli Majlis of the Republic of Azerbaijan on May 16, 2000.

After the restoration of Azerbaijan's independence, in order to eliminate economic difficulties, the need arose to increase oil and gas production. Due to limited financial capabilities, the government of the republic decided to attract foreign companies to invest in this industry. As a result, on the initiative and under the leadership of the National Leader of Azerbaijan Heydar Aliyev, on September 20, 1994, the first oil contract was signed - the "contract of the century". The amount of the contract is estimated at 7.4 billion dollars.

As a result of the restoration of independence, Azerbaijan needed the development of an economy to overcome the crisis. One of the first steps to implement the reforms was the appeal of President Heydar Aliyev to the country's parliament on June 30, 1995, which served as the beginning of the privatization of state property.

Chart 1. Flow chart of globalization of world economy

After the privatization of agricultural land and collective farm property, the republic's agriculture further deepened its specialization in the cultivation of vegetables, fruits, cotton, tobacco and subtropical crops, as well as in the cultivation of silkworm and sheep. Types of land ownership after privatization: state - 4025197 hectares (56.92%), private - 1662016 hectares (19.66%), municipal - 2054293 hectares (23.42%). In rural areas, about 3.5 million people received land free of charge and forever with the

right to sell, inherit, and donate.

1. Achievements of economic reforms in Azerbaijan

In 2019, the Trans-Anatolian gas pipeline TANAP was commissioned, the main section is the middle link of the giant transnational project of the Southern Gas Corridor (SGC). Also in Greece, the construction of the 550-kilometer section of the Trans-Adriatic Pipeline (TAP - the European section of SGC) was completed and at the very beginning of December 2019 it began testing by supplying Azerbaijani gas from the docked 1.85-kilometer TANAP, through which gas from the second phase of development The Caspian Shah Deniz field has been going on for almost 1.5 years.

The volume of oil in Azerbaijan's energy balance is 60.9 percent. In 2020, this figure is expected to increase to 80.7 percent. Over 75% of oil is produced in offshore fields.

In 2018, out of 5.133 million people of the economically active population, about 4879.3 million people were employed in the country's economy (Goskomstat AR, 2020).

Irrigation system	Road infrastructure	Water supply	Gas supply	Built, or repair done schools and hospitals
4000 km of irrigation canals	12300 km of roads	7960 km of water lines 3990 km of sewer pipes	Coverage 96 %	3104 schools 635 hospital

Table 1. The most important steps towards the modernization of infrastructure in Azerbaijan

51% of the economically active population or 2,487.5 million people were employed in manufacturing industries. The rest of the population is engaged in services.

Indicators	2018		
	Total	including	
		Legal entity	Individual
Total number of business entities	244883	26389	218494
Of them:			
The number of micro entities	237815	19321	218494
The number of small entities	4930	4930	-
Number of medium subjects	2138	2138	-

Table 2. Number of operating business entities in Azerbaijan

According to the State Statistics Committee of the AR, the share of non-oil GDP at the end of 2019 amounted to 54%, the growth rate of this sector accelerated to 3.5%.

Indicators	2018			
	Total	including		
		Micro	small	medium
Created value added, million manats	9836,6	4467,8	1235,5	4133,3
Number of employees, thousand people	283,4	35,0	76,1	172,4
Average monthly nominal salary, manat	445,3	294,9	373,5	517,1
Fixed capital investments, mln. Manats	6953,0	2831,5	1046,7	3074,8

Table 3. The main macroeconomic indicators of business entities

Indicators	2018			
	Total	including		
		Micro	small	medium
Value added	13,4	6,1	1,7	5,6
in the non-oil-gas sector	23,5	10,7	3,0	9,8
Amount of workers	42,9	5,3	11,5	26,1
in the non-oil-gas sector	45,0	5,6	12,1	27,3
Fixed capital investments,	41,8	17,0	6,3	18,5
in the non-oil-gas sector	65,2	26,5	9,8	28,8

Table 4. The share of business entities in the country's economy, %

State budget revenues for 2020 were approved at the level of 24 billion 134.5 million manat (as of March 15, 2020 $1 = 1.7 manat; 14 billion

196.8 million manat), expenses - 26 billion 913.7 million manat (15 billion 831.6 million dollars). The state budget deficit is projected at 2 billion 779.2 million manat. The state budget revenues for 2020 are calculated from the oil price of $ 55 per barrel. In the structure of expenditures for social purposes, 10 billion 373.7 million manat will be allocated.

It should be noted that in the revenue structure, it is planned to provide 13 billion 530 million manat from the oil sector, and 10 billion 604.5 million manat from the non-oil sector.

On 01.01. 2020 Azerbaijan's foreign exchange reserves exceeded $52 billion.

Investments in the Azeri economy in 2019 amounted to $13.5 billion.

At the end of 2019, Azerbaijan took 34th place (76.7 points) among 190 countries in the Doing Business ranking, published annually by the World Bank and is one of the key indicators of economic development in the world.

Today, 80% of Azerbaijan’s GDP falls on the private sector.

Globalization has made the domestic (national) economy not only closely connected, but also dependent on the external economy. The economic space and the market no longer coincide with the territory of any state: there has been a transition from the system “market - state” to the system “many states - one market”.

According to the results of 2018, Azerbaijan’s foreign trade turnover grew by 37% by 2017 and amounted to $ 30.924 billion. At the same time, export in 2018 amounted to $19.459 billion and import - $11.465 billion. Export for the year grew by 41%, import - by 31%. As a result, a foreign trade surplus of $ 7.994 billion was formed, which is 59% more than in 2017.

At the same time, the structure of Azerbaijani exports requires further diversification. According to the State Statistics Committee of Azerbaijan, the share of the oil and gas component in the export structure of goods remains high - 90% according to the results of 2019, including the export of crude oil - 76% (Goskomstat AR, 2020).

In order to reduce the economy’s dependence on the oil and gas sector, the Ministry of Economy of Azerbaijan will prepare a new strategy

for the development of non-oil exports by July 2020. The strategy involves an increase in non-oil exports.

The tourism business is developing very successfully. The number of tourists visiting Azerbaijan in 2019 reached a record level of 3 million 170 thousand guests (Goskomstat AR, 2020).

In the forecast of the government of Azerbaijan for 2020, the GDP growth rate is set at 3%, up to 83.3 billion manat (World Bank, 2020).

These are the sample outcomes of the transitional economy of Azerbaijan as a result of privatization.

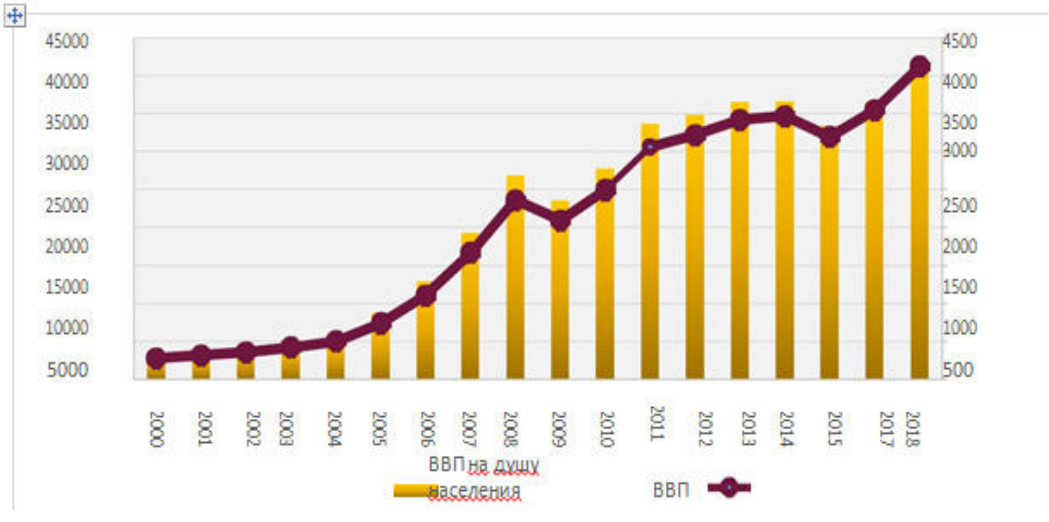


Chart 2: Dynamics of GDP (million US dollars) and GDP per capita in Azerbaijan

2. Special requirements for accounting and auditing in ensuring the economic security of enterprises in the light of the globalization of the economy

In order to deeply analyze the current state of the economy and prepare a new economic development strategy to ensure the sustainability of the country's economic policies and reforms, the Decree of the President of the Republic of Azerbaijan dated March 16, 2016, approved the "Main di-

rections of the strategic roadmap for the national economy and main sectors of the economy", covering 11 sectors of the economy and consisting of 12 documents. Strategic roadmaps include an economic development strategy and an action plan for 2016-2020, a long-term view of the period until 2025 and a targeted view of the period after 2025.

The "Strategic Roadmap for the Development of Financial Services in the Republic of Azerbaijan" was developed to quickly adapt to the processes taking place in the global economy and financial markets, and to support the post-oil economic development model, taking into account the new challenges and opportunities facing the financial sector. The document was developed on the basis of the principles of flexibility, competitiveness, innovativeness, economic development and ensuring the economic security of the financial services sector (Official website of the President of Azerbaijan, 2016). Ensuring the economic security of Azerbaijan and its priorities is the cornerstone in the integration of Azerbaijan into the global economy.

Only with a clear development and strict adherence to the economic security strategy can Azerbaijan take its rightful place in the global economic space.

The main strategic goals of Azerbaijan's economic policy at present are: ensuring personal development, stabilizing the economy, stimulating growth in key sectors that will become the basis of the economy and ensure the country's socio-economic development in the future. Globalization poses the main threat to the national economy through growing international economic competition, which today has become an integral feature of the global economy.

Competition has long gone beyond the boundaries of individual companies, firms, it has become intercountry. As a result, the sensitivity of the economy of each country to external phenomena, the dependence on the development and conjuncture of the world economy, is increasing more and more. Based on this, Azerbaijan is forced to solve its economic problems in the context of globalization, more and more focusing on the situation in the global economy.

In a market economy of various forms of ownership, the independence of enterprises (business entities) is expanding, new economic

phenomena appear, as well as specific market conditions for managing. Regardless of the form of ownership and type of activity, all business entities intend to receive more income and profit. Nevertheless, the level of threats to conducting business of enterprises is increasing, which is accompanied by an ever-increasing role of economic security of an economic entity and accounting in the economic security system.

Azerbaijan's strategic national interests in the economy are multifaceted. The Law of the Republic of Azerbaijan on National Security of June 29, 2004 states that the realization of the national interests of the Republic of Azerbaijan (Law on National Security, 2004).

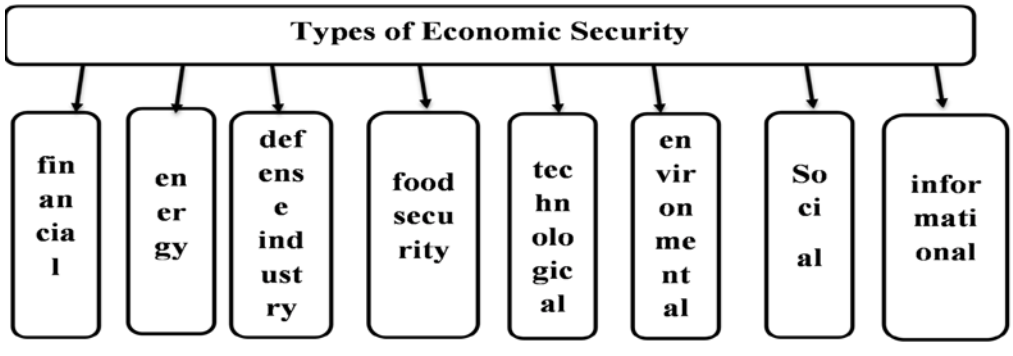


Chart 3. Classification of economic security

According to the Law, the national interests of the Republic of Azerbaijan in the field of economics include:

- increasing economic potential;
- development of a market economy, improving its legal basics;
- ensuring economic stability;
- creation of favorable conditions for internal and external investments for the development of the economy;
- protection and rational use of natural and material resources;
- ensuring free and equal participation in the formation and the activities of regional and global markets (2, 7).

An integral part of economic security is the security of business security. In addition, at present, the concept of "economic security" has moved from the international and national levels to the regional level, the level

of an individual enterprise.

The economic security of the enterprise must be carried out according to a certain system of key indicators. They should reflect the industry specifics and conditions of the enterprise. These include: production, financial and social indicators (Table 1).

The accounting and analytical system is a complex system, a combination of four interconnected and independent systems: * information, * accounting, * analytical and * audit.

The information received from the accountant is used by managers to make important tactical and strategic decisions. Based on these decisions, the enterprise functions in the future. And it is accounting that determines the economic status of an economic entity.

One of the ways to strengthen the economic security of enterprises and, ultimately, the state is to conduct mandatory audits as required by law. An audit is a guarantee of the reliability of accounting (financial) statements. The relationship between the auditor and the auditee subject to statutory audit is partly public in nature, since the result of the statutory audit is the opinion expressed by the auditor in the audit report, which is an integral part of the annual accounting (financial) statements.

In the conditions of the innovative type of socio-economic development, among the main functions of the audit, we can distinguish:

1) at the micro level:

• measurement of the quality of accounting (financial) information;

• providing guarantees of the reliability of financial (accounting) statements to unlimited.

The relationship between the micro level and the macro level is ensured through audit as a circle of interested users of financial statements;

• a tool to reduce entrepreneurial risk;

2) at the macro level:

• ensuring economic security;

• improving the efficiency of the economy;

• an independent form of control guaranteeing financial reliability based on the analysis of the information provided on the activities of an economic entity.

	Main characteristics	Component indicators
1	Production:	production dynamics (growth, decline, stable state, rate of change)
		real level of capacity utilization
		the share of R&D in the total volume of work
		share of research in the total volume of research and development
		rate of renewal of fixed assets (renovation)
		age structure and technical resource of the fleet of machinery and equipment
2	Financial:	volume of the "portfolio" of orders (total estimated sales)
		actual and necessary volume of investments (to maintain and develop the existing potential)
		the share of own sources of financing of working capital, materials, energy for production
3.	Social :	the level of remuneration in relation to the average for industry□ or the economy as a whole
		salary arrears
		loss of working time

Table 5. Indicators of economic security of the enterprise

Chart 4. The relationship between the micro level and the macro level of the business entitiy

The role of audit in ensuring the safety of the enterprise and the state

The economic security of an enterprise also largely depends on the presence of various risks. Risk, as an economic category, is a manifestation of certain phenomena associated with external and internal factors that influence the company.

Types of risks:
external risks;
internal risks;
economic risks;
financial risks;
production risks;
entrepreneurial risks;
other types of risks.

Among internal risks for enterprises, the most important in the era of globalization and digitalization of the economy is the protection of trade secrets.

The accounting data recorded in the primary accounting documents, registers of analytical and synthetic accounting, contracts with counterparties, in the internal financial statements and other information sources, fall under the concept of "commercial secret", introduced by Art. 2 of the Law of the Republic of Azerbaijan “On Trade Secrets” dated Decem-

ber 4, 2001.

	1995	2015	2016	2017	2018	2019
GDP - total	**30,3**	**81,2**	**83,7**	**83,8**	**84,7**	**85,0**
Industry	**5,5**	**83,0**	**87,6**	**87,9**	**89,6**	**89,3**
Construction	**79,0**	**84,5**	**86,8**	**84,6**	**80,2**	**82,9**
Agriculture	**61,5**	**99,8**	**99,9**	**99,9**	**99,9**	**99,9**
Trade and services	**82,4**	**99,6**	**99,6**	**99,7**	**99,8**	**99,7**
Transport	**4,6**	**81,7**	**82,8**	**82,4**	**83,1**	**83,4**
Communication	**10,0**	**81,0**	**80,5**	**81,2**	**82,0**	**82,4**
Social and other services	**24,1**	**57,8**	**58,0**	**56,1**	**56,4**	**60,0**

Table 6. Share of the private sector in GDP at current prices, in%. (Statsbornik AR, 2019)

In the face of fierce competition for private sector enterprises, the confidentiality of internal financial statements and audit findings is vital.

Commercial secret, being a mode of confidentiality of information, allows its holder, under existing or possible circumstances, to increase revenues, avoid unjustified expenses, maintain a position in the market of goods, works, services or receive other commercial benefits (Steve Rakhim, 2018).

Subject to commercial secrecy to a greater extent is information generated by or used in the work of the accounting Department.

However, the commercial secret provision does not provide effective protection when conducting an in-house or on-site tax audit. The fact is that the tax legislation does not prevent controllers from obtaining all information on media (article 23 of the tax code, paragraphs 23.1.2 and 23.1.3), even

if they contain information constituting a trade secret.

References

1. Yunusov A. 2018. Problems and possible ways of development of Azerbaijan // World economy and international relations. - M., No. 11. - S. 103-111
2. Jabiev R. 2002. Azerbaijan: Privatization of state property and its consequences // Center. Asia and the Caucasus. - Lulea, No. 2 (20), p. 158–165
3. Statistical compilation of AR. 2018. 2020. Key macroeconomic indicators. https://www.stat.gov.az/, https://www.stat.gov.az/source/system_nat_accounts/
4. World Bank, 2020. http://interfax.az/view/788615.
5. Decree of the President of the Republic of Azerbaijan on the approval of strategic roadmaps for the national economy and major sectors of the economy. 2016. https://ru.president.az/articles/21953
6. The Law of the Republic of Azerbaijan "On National Security" of June 29, 2004. http://base.spinform.ru/show_doc.fwx?rgn=7431
7. Tolstova A.S. 2018. Accounting risks and their impact on the reliability of financial statements. M .: Direct Media, p. 254
8. Steve Rahim. 2018. The place of accounting in ensuring the economic security of enterprises (companies) // Translated by G. Ermolenko - Journal of Accounting & Marketing
9. http://www.masters.donntu.org/2016/iem/yermolenko/library/article7.htm

Submitted 07.05.2020
Accepted 19.05.2020

FOREIGN ECONOMIC RELATIONS OF AZERBAIJAN WITH CIS COUNTRIES: PROBLEMS AND PROSPECTS

I.R.Mammadova
Azerbaijan State University of Economics, Baku, Azerbaijan,
ilahamammadova6@gmail.com

ABSTRACT. This article discusses the theoretical and practical problems of integrational processes in the Commonwealth of Independent States (CIS) and the participation of Azerbaijan therein. The analysis of the establishment of CIS, evolution of its development, and challenges faced by Azerbaijan with regard to the problems and prospects of integrational cooperation with CIS is presented.

KEYWORDS: CIS, cooperation, economic relations

CIS is an intergovernmental organization which was formed of originally ten post-Soviet republics in Eurasia, following the dissolution of the Soviet Union (USSR) in 1991. It has an area of 20.37 million km² and an estimated population of nearly 240 million. The Commonwealth of Independent States promotes cooperation in political, economic and military affairs and has certain powers to coordinate trade, finance, lawmaking and security. It has also encouraged cooperation on cross-border crime prevention.

Cooperation within the framework of the CIS which is aimed at determining the directions of economic integration among the member states, is established for the purpose of preserving intergovernmental relations between former USSR countries.

Commonwealth of Independent States: History and member states

The CIS has its origins in the USSR which was established by the Treaty and Declaration of the Creation of the Soviet Union by the Russian SFSR, Ukrainian SSR and Byelorussian SSR in 1922. When the USSR began to fall in 1991, these republics signed the Belavezha Accords on De-

cember 8, 1991, declaring that the Soviet Union would cease to exist and proclaimed the CIS in its place. The Alma-Ata Protocol was signed a few days later. By this protocol it was declared that the Soviet Union was dissolved and the Russian Federation was to be the state as the successor of the USSR. The Baltic States (Estonia, Lithuania and Latvia) chose not to participate, because they consider their membership in the USSR as an illegal occupation. In 2008 Georgia withdrew its membership from the CIS. Ukraine ended the participation in CIS statutory bodies on May 19, 2018.

Table 1. General information about CIS countries

Country	Population (2018)	GDP 2018 (USD)	GDP growth (2018)	GDP per capita (2018)	Human Development Index (2018)
Belarus	9,452,617	59,662,495,092	3.0%	6,290	0.817
Kazakhstan	18,319,618	179,339,994,859	4.1%	9,813	0.817
Kyrgyzstan	6,304,030	8,092,836,609	3.5%	1,281	0.674
Russia	145,734,038	1,657,554,647,150	2.3%	11,289	0.824
Tajikistan	9,100,835	7,522,947,810	7.3%	827	0.656
Uzbekistan	32,476,244	50,499,921,558	5.1%	1,532	0.71
Azerbaijan	9,949,537	46,939,529,412	1.4%	4,721	0.754
Moldova	4,051,944	11,443,671,436	3.4%	3,227	0.711
Armenia	2,951,745	12,433,089,919	5.2%	4,212	0.76

Source: United Nations statistics division. www.un.org

Table 1 shows main information of CIS member countries, such as their GDP, HDI results, populations etc.

Several international organizations, human rights groups and outside observers have criticized the CIS and its member states for its repressive human rights abuses, limited civil rights and indefinite imprisonment or execution of political figures and dissidents.

There are mainly 9 areas of cooperation within the framework of the

CIS and the main purpose of the CIS is the development of multilateral relations of CIS member states on economic, humanitarian, military and political spheres.

In the CIS operates more than 90 agencies, 8 of them are statutory, 69 specialized and 15 other bodies.

The statutory bodies are: The Council of Heads of State; The Council of Heads of Government; The Council of Ministers of Foreign Affairs; The Economic Court; the Inter-Parliamentary Assembly; Executive Committee; The Council of Defense Ministers; The Council of Border Troops Commanders.

Executive Committee serves as a permanently operating, managerial, administrative and liaison body of the CIS.

The Commonwealth of Independent States, one of the most important institutions in the center of Eurasian integration, has always maintained its importance for Azerbaijan. It is possible that immediately after the collapse of the USSR, this union created under the leadership of Russia, aimed at preventing the integration of the former Soviet republics into Europe, originally intended to rescue the USSR on a new confederate basis. However, the position of several states joining the union to restore the political, economic, social and cultural ties that exist only between the former republics has made it possible to function as an intergovernmental body.

Azerbaijan-CIS Relations

On October 5, 2007 Azerbaijan has signed a decision of the Council of Heads of State on the concept of the further development of CIS with the special opinion where reflected the basic principles of the Republic of Azerbaijan within the framework of CIS.

Today, the internal activities of these countries, including Azerbaijan, confirm that the CIS is an intergovernmental body created on a voluntary and equal basis by the independent states, and has played a role in facilitating economic, political, social and cultural cooperation between these countries.

The Statutory bodies where Republic of Azerbaijan is represented:

The Council of Heads of State; The Council of Heads of Government; The Council of Ministers of Foreign Affairs; The Interparliamentary Assembly; The Council of Defence Ministers; Executive Committee.

The Republic of Azerbaijan participates in only 30 specialized and 11 other bodies. Azerbaijan conducts cooperation with CIS member states mainly on a bilateral basis. At the same time, Azerbaijan continues cooperation within the framework of the CIS on the basis of the national interests and considers the above-mentioned organization as a platform for dialogue.

President of Azerbaijan Ilham Aliyev said at a meeting of the Council of CIS Heads of State on October 10, 2014, that Azerbaijan's initiatives in the CIS space, as well as regional and bilateral relations, contribute to security, stability and cooperation. The initiatives put forward by Azerbaijan and the projects initiated by him serve to strengthen the energy security of the region.

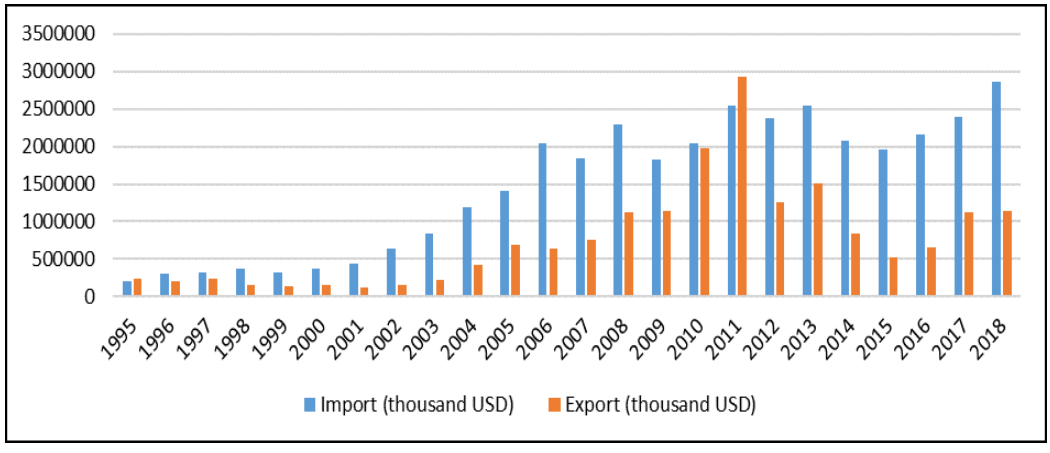
The President of Azerbaijan also spoke about the importance of Azerbaijan in humanitarian cooperation and spoke at the traditional 4th International Humanitarian Forum in Baku a few days ago and said that the issues of inter-religious dialogue, dialogue of civilizations and humanitarian cooperation on multiculturalism are very relevant.

The Heads of State said at the event that the expansion of multilateral cooperation is a priority and the issues discussed at the meeting will strengthen the ties between the countries of the Union.

Thus, Azerbaijan-CIS relations are developing today. In addition to our bilateral relations with the former Soviet republics, our country attaches great importance to multilateral cooperation with these countries within the CIS.

In the diagram below, the trade balance of Azerbaijan with CIS countries has been depicted (Diagram 1). According to the diagram, import of Azerbaijan from CIS countries has been increased steadily, except 2007, 2009 and 2014 economic crisis waves. Export of Azerbaijan to CIS countries shows fluctuating trade. In 2011, export has been in maximum quantity, which has shown minimum level before 2000s and after 2014.

Diagram 1. Trade balance of Azerbaijan with CIS countries



Source: Official website of State Statistical Committee of Azerbaijan. www.stat.gov.az (15/12/2019)

Mutual cooperation between the newly independent states, which began in 1992, continued in September 1993 with the signing of an agreement on the establishment of an economic union within the union by the heads of state and government in Moscow. Initially, this alliance was joined by seven member states: Armenia, Belarus, Kazakhstan, Russia, Tajikistan, Uzbekistan, Kyrgyzstan, Moldova and Ukraine. An agreement on the establishment of an economic union has spurred the creation of a common economic space. According to this agreement, relations should be built on the basis of market principles, joint economic projects that meet the interests of each other, and joint participation in the solution of environmental problems. Product, service, capital, free movement of labor, monetary, budget, tax, price, foreign trade, customs and currency policy should be provided. This agreement is a step-by-step act of the member countries in the integration process the free trade zone - the customs union, the currency union and finally the market.

The creation of a free trade zone suggested the abolition of customs tariffs and the use of quantitative restrictions on the movement of goods be-

tween countries. Any country entering this zone may impose a certain tariff on other countries. The agreement was signed on April 15, 1994. Export of Commonwealth countries in the fuel and energy and mineral sectors. In the 1990s, trade between the CIS countries was 72% of total exports, but by the end of 1990 this figure had fallen to 36.5%. At the same time, Russia's foreign trade relations with non-CIS countries increased by 78%, Ukraine 56%, Uzbekistan 72%, Azerbaijan 57%, Armenia 64%, and Georgia 55%.

One of the successes of the establishment of a single economic space was the agreement on establishment of the Customs Union in 1995 by Belarus, Kazakhstan and Russia. In March 1996 Kyrgyzstan joined, and in February 1999 Tajikistan joined.

Numerous documents were signed during the activities of the Customs Union, including the importance of the documents of the Customs Union and the Common Economic Space of February 26, 1999, of the consolidation and logical development of economic and humanitarian integration on March 26, 1996. These documents define the following areas of cooperation: the formation of a free trade zone, mutual relations of the Customs Union with the third countries, the formation of a common customs territory, a common service and labor market, the formation of a common scientific and technical information space.

Along with certain achievements, the experience of customs union formation revealed a number of serious problems and difficulties. The basic principles of the Customs Union formation have not been solved yet. The economic activity achieved since its inception is still insufficient. The dominant type of integration resulting from the Customs Union depends on a number of important factors, including economic development, production level structure, and geographical features of the country. So far, the formation of a common customs tariff is on a trilateral basis.

Socio-economic situation in the Commonwealth countries cannot be assessed unilaterally. On the one hand, many countries have achieved positive results in reviving economic development and stabilizing political life. On the other hand, political problems in some countries, as well as financial, scientific, educational and environmental issues still remain. In the framework of multilateral cooperation of the member countries, practically no serious tasks have been resolved. Nevertheless, the authors'

analysis of the political situation in the CIS countries and the determination of priority areas for further economic integration indicate that mutual interests should be paid in all sectors and sectors of the economy, especially in the priority sectors of the transport, fuel and agro-industry.

One of the factors that has a negative impact on stabilization in all sectors of the industry today is the lack of long-term co-operation links, the instability in the financial sector and the decline in demand, and insufficient investment resources.

In this regard, not only the legal framework for future development is being created to deepen integration, but concrete steps are being taken at the micro level. These include the development of joint programs and projects of joint ventures, financial and industrial groups and other transnational groups. Implementation of agreed tariff and technical policy in the field of transport and communications will add to the creation of transport corridors. It is required to agree on norms and standards, the main products and services manufacturers. The results of the reforms in the CIS countries show that inter-state regulation of economic, social and institutional reforms is essential for a stable and balanced participation in the world economy.

Based on optimism, it is worth noting that in recent years there have been significant changes in the trade and economic relations of the CIS countries, which bring them closer to the norms and rules of international practice.

First, the interstate equivalent supply system has changed; special state foreign trade relations.

Secondly, the role of indirect regulation of foreign trade activities from government activities through tax, customs and foreign exchange controls has increased.

Third, the formation of a foreign trade mechanism, based on the limited use of foreign non-tariff methods.

Fourth, as a result of consistent liberalization of foreign economic activity, trade relations develop more steadily on the basis of market principles. Currently, the prerequisites for the transition to free trade in the CIS countries are created. The remaining issue is to follow the procedures for the entry into force of the document, to unify the system of indirect taxes on imports and exports of products and services, and to move to general

principles of currency regulation and agreed methodologies. However, the free trade zone is even more ancient in the area of social and economic cooperation, it is not able to solve all of the remaining and emerging problems. There are other tasks that lie ahead in the development and deepening of integration. It is clear that the free trade zone not only stimulates product sharing but also stimulates interaction and relationships in other areas of public life.

The goals of the new organization are the formation of single economic space in 5 countries, the same duties in the union, coordination of structural reforms in the economy of member countries, creation of a unified transport structure and single transport market, application of a single customs tariff, harmonization of national legislation and development of a common policy course in relation to international organizations. One of the important new aspects for the transformation from integration into reality is the establishment of new economic interconnection arrangements within the organization. Central Committee - Integration Committee, as well as inter-parliamentary the Assembly and the Community Court. For this, for the first time in the organization's documents, a quota for allocation of votes and allocation of interstate structures for each country is set. The decision is made, if it is more than two thirds of the votes. The society is open to all countries wishing to join it. One of the real problems of the formation of the economic union under the Customs Union ban was the abolition of the common foreign customs boundaries and the general foreign customs tariffs, and the abolition of customs boundaries, which is a sign of member states.

In 1999, exports of Russian oil products from Belarus to foreign countries increased. This was due to the lack of export customs duties in Belarus, unlike Russia. On April 30, 1994, Kazakhstan, Kyrgyzstan and Uzbekistan signed an agreement on the establishment of a common economic space. Tajikistan joined it on March 30, 1998. Since July 17, 1998, this union has been called the Central Asian Economic Community.

In accordance with paragraphs 3 and 4 of the Agreement, the objectives of the establishment of a single economic space include:

- Creation of economic and organizational and necessary legal conditions for free movement of capital and labor force;

- Policy development in the field of transport and communications for efficient transportation of cargo and passengers;
- Creating conditions for honest competition, including anti-monopoly regulation;
- Ensuring the development of direct economic relations between economic entities and the creation of favorable conditions for the production corporations;
- Joint ventures, production units in priority areas, assistance in the establishment of commercial, financial and credit sectors and organizations;
- Provision of equal economic conditions for the establishment of mechanisms for mutual investment, coordination of investment policy, attraction of foreign investments and loans in the economy and protection of the rights and interests of investment;
- Abolition of customs duties, reduction of taxes, duties and other restrictions;
- Simplification of customs procedures;
- Orientation of customs legislation.

On October 10, 1997, at a meeting of the Presidents of Georgia, Ukraine, Azerbaijan and Moldova, Strasbourg proposed the creation of an interstate union between the four countries. On April 24, 1999, Uzbekistan also officially announced its accession.

The main reasons for the creation of the aforementioned association are in the political and economic spheres, for example, in the fight against separatism, religious extremism and terrorism, peacekeeping, development of the Europe-Caucasus transport corridor, cooperation with NATO within the program.

It is clear that Western countries will continue to pursue their conflicting policies against the CIS countries in the future. At the moment, they pay more attention to the events in the Transcaucasia and Central Asia, which is seen as a support for their leaders to cool their ties with other CIS countries.

The main factors hindering the development of mutual trade among the CIS countries are the following:

- Serious decline in production, crises in the economy and the payment system, low demand, and potential importers' difficulties in selling;

- Lack of mutual trade structure and deficit of trade balance of most countries, close and sometimes even higher prices in mutual trade, resulting in the possibility of similar goods (undoubtedly better quality) from far-abroad countries;

- Technological backwardness of production, the low level of qualification of the labor force, relative working conditions, etc.

- Low quality of products and ecologically clean products produced for the reasons;

- Unparalleled competitive advantage, including reliability in trade co-operation of far-abroad countries, and deliberate diversification of imports to non-CIS countries, in order to reduce the dependency on imports mainly from Russia;

- Ineffective exchange of traditional goods as a result of the unjustified increase of transport and other tariffs, especially transit cargoes (for example, Russia's transit tariffs against Azerbaijan, sometimes exceeding the cost of goods). It has also been operating in the Caucasus region for several years along the Northern Railroad, as well as Tajikistan.

- It is important to note the blockage of the transport artery;

- Noncompliance in the organizational and legal aspects of foreign trade, the need to protect the domestic market against foreign competition, economic security, etc. It shows that the integration processes of the CIS countries are quite complex and contradictory.

Conclusion

Among the factors directly influencing these processes are the completion of socio-economic reforms, differentiating their implementation at different levels and rates of growth, incompatibility of the political and economic interests of member countries, inconsistencies in the legality, regional conflicts, territorial conflicts and other factors that are relevant. It is also worth mentioning that the process of formation of joint ownership has been slowed down and, as a result, a single system of management of transport, energy and communication systems has been established so far.

All these advantageous and disadvantageous elements fasten or slow down the development of trade and economic cooperation within the CIS. It is also important to highlight the ineffectiveness of the main organs of the union in this case.

Considering all this, most of the CIS countries, including Azerbaijan are primarily the executive body of development and implementation of serious measures to reform and change its principles. In this regard, it is possible to draw on the experience of the EU, NAFTA and other regional integration units.

References

1. Hasanli J.S. Complex study of economic relations between Azerbaijan and CIS countries. 85 p., 2015
2. Shakaraliyev A.Sh. Economic policy of a country. Realities and perspectives, 415 p., 2009
3. Chernyavsky S.I. New path of Azerbaijan. 2002
4. Glinka S.P., Kosikova L.S. CIS countries between Russia and the EU (economy and external relations of the states of the "neighborhood zone"). Moscow: IE RAS, 2007
5. Ragimov A.A., Hasanov R.M. Transformational processes and the problem of national security in Azerbaijan. Baku: INFO, 2003
6. Mehmet Dikkaya, Adem Uzumcu. Changing foreign trade relations and trade problems in Azerbaijan.
7. Official website of the Ministry of Foregin Affairs of Azerbaijan Republic. http://www.mfa.gov.az/en/content/947
8. Official web-site of the Ministry of Economy of Azerbaijan Republic, https://www.economy.gov.az/en/article/mdb-2/28204
9. Official web-site of the State Statistical Committee of Azerbaijan. www.stat.gov.az

Submitted 17.05.2020
Accepted 21.05.2020

ANALYSIS OF THE LEASING MARKET IN AZERBAIJAN

G.M.Safarova
Odlar Yurdu University, Baku, Azerbaijan, gunel83@yahoo.com

ABSTRACT. This article deals with the various aspects of leasing activities in Azerbaijan. Insufficient elaboration of some organizational, economic and financial aspects of leasing procedures in Azerbaijan is revealed.

KEYWORDS: leasing, finance, investment

Leasing operations are an effective economic tool for the development of business and entrepreneurship, regardless of the country. As this operation combines the parameters of credit, financial and investment operations, its attractiveness increases. The development of the leasing market in our country, which reflects all these features, has not been in line with the pace of economic development. Nevertheless, the leasing market has begun to take shape in the context of the ongoing structural transformation of the economy and continues to grow and expand.

One of the most important indicators characterizing the state of the leasing market in Azerbaijan is the dynamics of the share of the leasing market in GDP. It shows the volume of leasing operations and the volume of gross domestic product from 2007 to 2018, and the share of leasing operations in the gross domestic product was calculated and determined during those years.

Table 1. The dynamics of the share of the leasing market in the gross domestic product of Azerbaijan in 2007-2018

№	Years	Volume of leasing operations (in million manats)	Gross domestic product (billion manat)	Share of leasing in GDP (in%)	Change compared to the previous year (+ ;-) (with%)
1	2007	186,4	28,360	0,65	-
2	2008	205,7	49,137	0,41	-0,24%

3	2009	89,8	35,601	0,25	-0,16%
4	2010	235,0	42,465	0,55	+0,30%
5	2011	108,0	52,082	0,21	-0,34
6	2012	326,0	54,744	0,6	+0,39
7	2013	91,5	58,182	0,16	-0,44
8	2014	68,0	59,014	0,11	-0,05
9	2015	77,2	54,380	0,14	+0,03
10	2016	102,8	60,452	0,17	+0,03
11	2017	141,4	70,338	0,2	+0,03
12	2018	153,1	79,797	0,19	-0,01

Source: Prepared by the author on the basis of data from the Azerbaijan State Statistics Committee and the Association of Leasing Companies of Azerbaijan

As seen from Table 1, the volume of leasing operations in 2007 amounted to 186.4 million manat, and the gross domestic product amounted to 28.360 billion manat. In the same year, the share of total leasing operations in GDP was 0.65%. In 2015, the total leasing operations amounted to 77.2 million manat, and the total GDP amounted to 54.380 billion manat. The share of leasing in GDP was 0.14%. In 2016, total leasing operations amounted to 102.8 million manat, and total GDP amounted to 60.452 billion manat. The share of leasing in GDP was 0.17%. In 2017, the volume of leasing operations increased to 141.4 million manat, GDP amounted to 70.338 billion manat. The share of leasing in GDP was formed at the level of 0.2%.

In 2018, ie in the last year of the analysis, leasing leasing operations reached 153.1 million manat, GDP amounted to 79.797 billion manat, the share of leasing in GDP was 0.19%.

To analyze this relationship and dependence, let us consider the dependence and relationship between the final indicator of the country's leasing market activity in 2007 and 2018 and the volume of gross domestic product. Here, the annual final results for both indicators and the change in both indicators compared to the previous year, ie increase and decrease, are expressed in percentage terms.

Comparison of the growth dynamics of gross domestic product and leasing operations in Azerbaijan in 2007-2018.

Table 2

№	Years	Gross domestic product (billion manat)	Change compared to the previous year (+ ;-) (in%)	Volume of leasing transactions (mln. man)	Change compared to the previous year (+ ;-) (with%)
1	2007	28,360	-	186,4	-
2	2008	49,137	+73,2	205,7	+10,3
3	2009	35,601	-27,6	89,8	-56,4
4	2010	42,465	+19,3	235,0	+161,7
5	2011	52,082	+22,6	108,0	-54,1
6	2012	54,744	+5,1	326,0	+201,8
7	2013	58,162	+6,2	91,5	-72
8	2014	59,014	+1,5	68,0	-25,7
9	2015	54,380	-7,9	77,2	+13,5
10	2016	60,452	+11,1	102,8	+33,2
11	2017	70,338	+16,3	141,4	+37,5
12	2018	79,797	+13,4	153,1	+8,2
	TOTAL	644,532		1784,9	

Source: Prepared by the author on the basis of data from the Azerbaijan State Statistics Committee and the Association of Leasing Companies of Azerbaijan

As can be seen from Table 2, there has been an increase in the level of both indicators over the past three years. Thus, in 2016, the volume of GDP increased by 11.1% or 6.072 billion manat compared to the previous year, and the volume of leasing operations increased by 33.2% or 25.6 million manat. In the same year, the growth rate of leasing exceeded the GDP growth rate by 2.9 times.

In 2017, the volume of GDP reached 70.338 billion manat, an increase of 16.3% or 9.886 billion manat compared to the previous year. The volume of leasing operations increased by 37.5% or 38.6 million manat, exceeding

the growth rate of GDP by 2.3 times.

In 2018, the volume of GDP reached a record level of 79.797 billion manat. Compared to the previous year, it increased by 13.4% or 9.459 billion manat. In the same year, the volume of leasing operations amounted to 153.1 million manat, an increase of 8.2% or 11.7 million manat compared to the previous year. In the same year, GDP growth exceeded leasing growth by 1.6 times.

Our analysis shows that in the last 12 years, ie in 2007-2018, there was no correspondence between the dynamics of the leasing market and the dynamics of GDP. Thus, during all these years, the growth rate of GDP in 2009 and 2015 showed negative trends, ie a decrease, and during the remaining 9 years, an increase was observed. The leasing market decreased in 2009, 2011, 2013 and 2014, and increased in the remaining years. At the same time, it should be noted that even in years of growth in both indicators, the dependence between GDP and the leasing market appears to be very weak.

One of the important indicators to be considered for a detailed study and analysis of the development features of the leasing market in our country is the dynamics of the share of individual leasing objects in the total contracts for 2013-2018.

Dynamics of share of individual leasing objects in aggregate agreements in the Republic of Azerbaijan for 2013-2018 (in %).

Table 3

№	Name of leasing objects	Years					
		2013	**2014**	**2015**	**2016**	**2017**	**2018**
1	Buildings, structures and installations	9,7	30,9	21,9	6,7	6,9	6,1
2	Machinery and equipment	41,7	29,4	34,7	26,5	27,4	28,3
3	transport wehicles	47,8	38,9	39,8	56,0	58,0	60,0
4	Other fixed assets and facilities	0,8	0,8	3,6	10,8	7,7	5,6
	TOTAL	100	100	100	100	100	100

Source: Compiled by the author based on the information provided by the Association of Leasing Companies of Azerbaijan

The analysis shows that the last place in the total leasing contracts in the leasing market in our country belongs to other objects. Thus, the share of leasing agreements, in which other entities act as leasing entities, was 0.8% in 2013, 2014, 3.6% in 2015, 10.8% in 2016, and 7.7% in 2017. And in 2018 it was 5.6%. The indicator analyzed for other facilities remained stable in the first two years of the analysis, increasing by 2.8% in 2015 and 7.2% in 2016 compared to the previous year. In the next two years, there has been a decline. Thus, this figure decreased by 3.1% in 2017 and 2.1% in 2018 compared to the beginning.

The analysis shows that the instability in the leasing market is reflected in all parameters of the market. Although the share of lease agreements in total leasing agreements has changed significantly over the years, in recent years, contracts for vehicles have ranked first, contracts for machinery and equipment second, buildings and facilities contracts third, and contracts for other facilities fourth. .

Regarding the analyzed indicator, it should be noted that the increase or decrease in the share of leasing objects in aggregate leasing agreements has not become an indicator that ensures the dynamic development of the market. This is also the reason why the share of the leasing market in GDP is very low.

One of the issues to be considered in order to analyze the situation in the leasing market of the country is to study the most important indicators for the major leasing companies operating.

When studying the existing processes in the world leasing market, we see that the most important factors determining the situation in this market are formed on the basis of the elements that arise in connection with the activities of each leasing company in the market, organization, regulation and management of this activity. These elements depend on the standards that leasing companies can set and apply in the market, the areas of service, terms of service, payment rules and levels, annual interest rates, the culture of partnership formed between the entities, and so on. consists of. From this point of view, it is very important to analyze the activities of such companies as MBC Leasing, Finance Leasing, Ata Leasing, Uni Leasing, Qafqaz Leasing, Parex Leasing, Joint Leasing Company, Agroleasing, which are more active than others in the Azeri leasing market.

To further analyze the current state of the leasing market in the Republic of Azerbaijan, let us consider the main indicators of the three private and one state leasing companies, which are the most active participants in this market. These private leasing companies are: 1) MBC Leasing; 2) Standard Leasing; 3) Father Leasing.

Thus, the analysis revealed that as structural changes in the country's economy, modernization, and changes accompanied by increasing dynamics, leasing companies are forced to organize adequate activities for them. To organize such activities, leasing companies, with a reliable, solid resource base, act as a means of increasing economic activity in the country, as a mechanism for realizing investments. In this case, one of the most important issues is to improve its structure in the formation of the capital base, the selection of optimal options for the ratio of special funds and borrowed funds and the methodologically correct use of funds.

References

1. Strategic roadmap for the production of consumer goods at the level of small and medium enterprises in Azerbaijan. Baku, 2016, 86 p.
2. Collection of statistical data of the State Statistics Committee of Azerbaijan. Baku, 2018
3. Abdullayev Sh.A., Askerova R.V. Banking. Textbook. Baku, 2010, 360 p.

Submitted 30.05.2020
Accepted 04.06.2020

CYBER RISK, MARKET FAILURES, AND FINANCIAL STABILITY

N.H.Gurbanova
Azerbaijan Tourism and Management University, Baku, Azerbaijan,
n.gurbanovaa@gmail.com

ABSTRACT. This paper considers the ways in which cyber risks differ from traditional financial shocks. Traditional risks to financial stability, such as contagion from excessive leverage, are discussed.

KEYWORDS: financial stability, cyber attack, financial crisis

Cyber risk has emerged as a key threat to financial stability, following recent attacks on financial institutions. This paper presents a new documentation of cyber risk around the world for financial institutions by analyzing the different types of cyber incidents (data breaches, fraud and business disruption) and identifying patterns using a variety of datasets. The other novel contribution that is outlined is a quantitative framework to assess cyber risk for the financial sector. The standard VaR type framework used to assess various types of stability risk and can be easily applied at the individual country level. This framework is applied in this paper to the available cross-country data and yields illustrative aggregated losses for the financial sector in the sample across a variety of scenarios ranging from 10 to 30 percent of net income.

IMF estimates that average annual losses to financial institutions from cyber-attacks could reach a few hundred billion dollars a year, eroding bank profits and potentially threatening financial stability. Recent cases show that the threat is real. Successful attacks have already resulted in data breaches in which thieves gained access to confidential information, and fraud, such as the theft of $500 million from the Coincheck cryptocurrency exchange. And there is the threat that a targeted institution could be left unable to operate. Not surprisingly, surveys consistently show that risk managers and other executives at financial institutions worry most about cyber-attacks.

The financial sector is particularly vulnerable to cyberattacks. These institutions are attractive targets because of their crucial role in intermediating funds. A successful cyber-attack on one institution could spread rapidly through the highly interconnected financial system. Many institutions still use older systems that might not be resilient to cyber-attacks. And a successful cyber-attack can have direct material consequences through financial losses as well as indirect costs such as diminished reputation. Recent high-profile cases have increasingly put cyber risk on the agenda of the public sector, including international organizations. However, quantitative analysis of cyber risk is still at an early stage, especially due to the lack of data on the cost of cyber-attacks, and difficulties in modeling cyber risk.

The modeling framework uses techniques from actuarial science and operational risk measurement to estimate aggregate losses from cyber-attacks. This requires an assessment of the frequency of cyberattacks on financial institutions and an idea of the distribution of losses from such events. Numerical simulations can then be used to estimate the distribution of aggregate cyber-attack losses. We illustrate our framework using a data set covering recent losses due to cyber-attacks in 50 countries. This provides an example of how potential losses for financial institutions could be estimated. The exercise is difficult and is made even more challenging by major data gaps on cyber risk. Moreover, thankfully, there has yet been no successful, large-scale cyber-attack on the financial system. Our results should thus be considered as illustrative. Taken at face value, they suggest that average annual potential losses from cyber-attacks may be large, close to 9 percent of banks' net income globally, or around $100 billion. In a severe scenario - in which the frequency of cyber-attacks would be twice as high as in the past with greater contagion - losses could be 2½– 3½ times as high as this, or $270 billion to $350 billion. The framework could be used to examine extreme risk scenarios involving massive attacks. The distribution of the data we have collected suggests that in such scenarios, representing the worst 5 percent of cases, average potential losses could reach as high as half of banks' net income, putting the financial sector at risk.

The financial sector has long been at the forefront of cybersecurity and industry-wide information sharing and cooperation. Even so, cyber at-

tacks on financial institutions and financial market infrastructures have become more frequent and sophisticated, prompting ever-larger security investments and increased focus on mitigating and managing cyber risk. Parallel to these efforts, the financial sector, regulators, and national governments have been working to improve overall resiliency and stability in the hopes of preventing a repeat of panics such as the financial crisis a decade ago.

This paper takes the critical next step: examining the intersection of these two efforts. How might cyber risks and financial risks interact to cause systemic crises? Is there anything fundamentally new or different about cyber risks? How should economists, regulators, policymakers, and central bankers focused on financial stability incorporate cyber risks into their models and thinking?

Some of the most direct initiatives on these questions began in 2013, after a White House Executive Order instructed the Department of Homeland Security, in consultation with the Department of Treasury, to identify those financial institutions for which "a cyber incident would have far reaching impact on regional or national economic security. In response, eight leading financial institutions created the Financial Systemic Analysis & Resilience Center (FSARC) in 2016, concentrating sector efforts on "systemic risk to the U.S. financial system from current and emerging cyber security threats.

Over the past two years, Columbia University's School of International and Public Affairs has hosted a series of engagements bringing together industry experts from the FSARC and its member institutions, regulators and other policymakers, and academics with backgrounds in finance and cybersecurity.

This paper is the result of those efforts to better frame the issues and formulate additional steps to understand and mitigate the financial stability risks posed by cyber attacks. It begins with an analysis of traditional risks to financial stability and how they compare to cyber risks; continues with a survey of efforts to date to address these risks; and ends with recommendations.

There is no single comprehensive definition of "financial stability." In general, it refers to the ability of the financial system "to facilitate and en-

hance economic processes, manage risks, and absorb shocks." Even in a stable financial system, asset prices and interest rates can be volatile, banks and financial companies can fail, investors can lose money, and borrowers can default.

Policymakers allow such failures, instead prioritizing stability, that is, the prevention and management of systemic cycles that could severely weaken or shut down the economy. The financial system performs various functions such as facilitating payments and settlements, allocating credit, transferring risk, and providing liquidity, as well as maturity transformation and price discovery. Significant impairment of any of these core functions can cause financial instability.

Financial stability authorities are, therefore, concerned with the ways in which financial markets and institutions can propagate and amplify shocks, regardless of their source. Of notable interest are the dynamics – also called vulnerabilities – that can lead to financial crises (e.g., runs on banks and wholesale funding markets, fire sales of assets, loss of confidence). Historically, these vulnerabilities have led to deep recessions or depressions, deflation, and long subsequent periods of subpar growth and unemployment.

Three features of the financial system can create vulnerability:

Leverage: Higher levels of leverage – that is, indebtedness – are linked to higher levels of systemic vulnerability. Those market participants, positions, and financial institutions with the highest leverage tend to generate the most contagion regardless of the nature of the shock. With high leverage, even a moderate decline in the value of assets can cause a sharp decline in financial institutions' equity and the ability to absorb loss to plummet, resulting in financial distress or insolvency.

Maturity and Risk Transformation: Financial systems transform longer-term, risky, illiquid assets (such as the now-infamous subprime mortgages) into safer, more liquid assets (most obviously, money itself). During this transformation process, a shock to the price of risky illiquid assets can lead to a withdrawal of funding and cause contagion by forcing asset sales and, in the extreme, the failure of core institutions and a systemic crisis.

Procyclicality of the price of risk: This procyclicality interacts with leverage and maturity transformation to magnify asset price booms and busts. For example, falling asset prices drive the value of the collateral of borrowers (i.e., their net worth) down and the cost of borrowing (risk premia and interest rates) up. By increasing the risk to lenders, this dynamic depresses risky asset prices even further, creating a feedback loop of reduced funding, greater losses and higher risk premia.

These vulnerabilities, and particularly interactions between them, can leave financial systems fragile and subject to periodic crises and runs. The timing and specific triggers of crises are hard to predict. As a result, analysis of financial system stability typically focuses less on the shocks and triggers of crises, and more on identifying and dampening the vulnerabilities and propagation mechanisms that make the system unstable in the first place.

The triggers for past crises have mostly been shocks (often seemingly insignificant ones) instigated by financial market participants (e.g., lenders, investors) or by macroeconomic policy changes. This begs the question: how does cybersecurity risk affect financial stability?

The financial sector has long been at the forefront of cybersecurity protection, information sharing, and collaboration. Even so, cyberattacks on banks and other institutions of the global financial system have become more frequent and sophisticated, honing the industry's ever-increasing focus on managing cyber risks.

Parallel to these efforts, the financial sector, regulators, and national governments have been working to improve the overall resilience and stability of the financial system in hope of preventing a repeat of panics such as the financial crisis a decade ago.

Financial Stability

The financial system performs an array of functions such as facilitating payment and settlement, allocating credit, transferring risk, and providing liquidity. Significant impairment of any of these core functions can cause financial instability. While there is no single comprehensive definition of "financial stability," in general, it refers to the ability of the finan-

cial system “to facilitate and enhance economic processes, manage risks, and absorb shocks,” even in the face of significant losses, high volatility, and failures of financial institutions.

For financial stability experts in the world’s central banks, governments, and universities, it is well understood that if the system is in a fragile state, then small behavioral or policy changes can have disproportionately large impacts on stability. Particularly, these authorities are focused on three categories of vulnerabilities.

Market participants, financial instruments, and financial institutions with the highest leverage, that is high levels of indebtedness, tend to generate the most contagion regardless of the nature of the shock. They are sensitive to even moderate declines in values of assets, impairing the ability to absorb losses. In maturity transformation, market participants finance longer-term, risky, illiquid assets (such as the now-infamous subprime mortgages) with safer, more liquid assets (such as cash) that are predominately shorter-term. The greater the amount of maturity transformation, the greater the risk that a shock to the price of the risky illiquid assets would lead to a withdrawal of funding and cause contagion. Asset price changes can be amplified to induce “procyclicality.” In the simplest example, a large decline in the price of long-term assets decreases the value of collateral used by leveraged investors, magnifying losses and causing withdrawal of liquid funding. This in turn creates a feedback loop that causes additional price declines (and associated losses), and further constrains available funding.

These vulnerabilities leave financial systems fragile and subject to periodic crises and runs. The timing and specific triggers of crises are hard to predict. As a result, analysis of systemic stability typically focuses less on the sources of the possible shock than on the vulnerabilities and propagation mechanisms that make the system unstable in the first place.

Traditional financial and macro-policy shocks, though capable of causing widespread harm, tend to arise out of self-preservation rather than malice. A trader trying to corner the market is not seeking to destroy or disrupt the entire system. Likewise, policymakers can misjudge the impact of their policies, but none act with the purpose of creating financial turmoil. Cyber shocks are different. By contrast, they may be targeted and timed to

disable, destroy, corrupt, or compromise market functioning, deliberately initiating financial instability.

How Might Cyber Risks Become Financial Stability Events?

A crucial difference between cyber and financial risk is that experts in financial stability are largely unconcerned about the source of the shock. The financial system is hit by many types of shocks on a regular basis, for example unexpected changes in economic policy, in regulation, or even the failure of a financial company. The impact of these shocks depends critically on how fragile the financial system is when the shock occurs. For example, if leverage and maturity transformation are high, a particular shock could have very large financial and economic impacts, but the same shock would have small impacts if it happens when leverage and maturity transformation are low. In cyber, the source is crucial, as attacks are planned and conducted by sentient adversaries. Though sophisticated attacks require long-term preparation, they can be executed at targets (like single points of failure) and timing (such as "quadruple witching days") for maximum disruption. In addition, cyberspace, like finance, is complex and highly interconnected, so disruptions in one area can cascade easily and in unexpected ways. But compared to finance, cyberspace complexity has not been well modeled or studied.

We believe adversaries might cause three different types of financial disruptions: slow-burn, initiated, or exacerbated. Slow-burn crises - perhaps like Iran's denial-of-service attacks on banks or North Korea's ongoing heists and disruptions - would be death by a thousand cuts. None would trigger a financial crisis, but together they might have a long-term impact. Exacerbated crises could happen when the financial system is teetering on the edge of a crisis, or in the midst of one, and an adversary intentionally gives the system a push with a cyber attack. By comparison, initiated crises arise if an adversary uses cyber capabilities to create a financial crisis that would not otherwise have occurred.

The Office of Financial Research (OFR) of the U.S. Department of the Treasury identifies three "channels" by which these risks could be transmitted, potentially leading to systemic crises.

A lack of financial substitutability as the financial system depends on a few key hubs, typically certain firms or utilities (e.g., clearing houses), to perform critical functions. A wide range of attacks could instigate a broader loss of confidence creating a "run on the banks" such as ATM hacks, takedowns of one or more particularly trusted institutions, hacker-induced flash crashes, or releases of compromising emails from bankers or regulators. Lastly, a loss of data integrity could yield systemic impacts. Cyber intrusions that directly modify or muddy the quality of, say, market prices or the amount of money in consumer accounts, could cause systemic disruption until uncorrupted backups can be found and restored.

We add a fourth channel to the OFR list: lack of IT substitutability, single points of failure in the technological system supporting the financial system. For example, a large (and growing) percent of the world's computing and storage falls to just a few cloud service providers while all companies depend on the same basic Internet protocols, like DNS. Disruptions to any would be likely to cascade quickly.

Government financial institutions play critical roles in ensuring resilience to cyber-enabled shocks. Central banks and ministries of finance have many options to mitigate the impact of a shock. Central banks can inject money into an institution or market that had a victim organization lose significant liquidity due to large-scale malware-enabled fraud, or a situation of trapped liquidity due to a massive ransomware infection. Authorities can provide assurances to the public to calm fears and prevent panic. Government institutions can provide emergency means for clearing and settling or for providing grace periods if a victim firm were unable to do so because of a cyber attack. If the strength of these institutions could be quantitatively assessed, it would be a beneficial addition to this framework.

Mitigation of Cyber risk to minimize losses at large scale forms a very important strategy for financial organizations. This not only spares them from various cyber threats that looms large but also stops creating scope for cyber criminals to profit.

It is suggested by experts that by continuously updating the related web and following mobile security practices they can remain unaffected. Doing regular testing, patching and blocking malware effectively will help the websites to remain unaffected.

The value and popularity of cryptocurrencies has grown significantly in the recent years, making these types of currencies a very attractive target for financially motivated criminals. Therefore it is important to maintain a strong network security, the roles and responsibilities of each type of participant in a block chain network must be clearly defined and enforced.

While both the private sector and the authorities have done much to address the increasing threats arising from cyberattacks, more analysis needs to be done of the emerging threats to financial stability. This could include the industry collaborating more closely with the regulatory community to offer lessons-learned advice and expertise on effective cyber practices and assessments. Public-private collaboration could also be encouraged and further developed, given the shared interest among both the public sector and industry in finding solutions, removing impediments to sharing information, and building resilience across the financial system. To contribute building that cyber-resilience, it is especially important to develop and promote a globally accepted cyber related regulatory landscape that help address the increasing concern of the observed regulatory fragmentation that stems from different jurisdictions issuing cyber-related regulations that are not consistent or even conflict with each other. Fragmentation adds complexity and diverts resources away from security-related activities toward compliance efforts especially for firms that operate in multiple jurisdictions.

References

1. International Telecommunication Union (ITU), “Global Cybersecurity Index (GCI) 2017”. 2017. https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2017-PDF-E.pdf

2. Treasury Department Office of Financial Research. (2017) Cybersecurity and Financial Stability: Risks and Resilience

3. Office of Financial Research. (2017) Cybersecurity and Financial Stability: Risks and Resilience

4. Central Counterparties: Addressing Their Too Important to Fail Nature. IMF Working Paper WP/15/21, 2015

5. Tom Bergin. SWIFT Says Bank Hacks Set to Increase. Reuters, September 26, 2016.

http://www.reuters.com/article/us-cyber-heist-swift-idUSKCN11W1XY
6. CPMI-IOSCO. (2016) Guidance on Cyber Resilience for Financial Market Infrastructures. Retrieved from https://www.bis.org/cpmi/publ/d146.pdf
7. Financial Stability Board. (2018) Cyber Lexicon Consultative Document. Retrieved from http://www.fsb.org/2018/07/cyber-lexicon-consultative-document/
8. Bank for International Settlements, Financial Stability Institute. (2017) Regulatory Approaches to Enhance Banks' Cyber-Security Frameworks. Retrieved from http://www.asbasupervision.com/en/bibl/recommended-reading/1556-lr241/file

Submitted 02.06.2020
Accepted 10.06.2020

ODLAR YURDU UNİVERSİTETİNİN ELMİ VƏ PEDAQOJİ XƏBƏRLƏRİ
THE SCIENTIFIC AND PEDAGOGICAL NEWS OF ODLAR YURDU UNIVERSITY

2020 - № 55

MAIN CHARACTERISTICS AND FORMS OF CONFLICTS IN CONTEMPORARY INTERNATIONAL RELATIONS

E.E.Rahimli
Azerbaijan University of Languages, Baku, Azerbaijan, h_elnara@yahoo.com

ABSTRACT. Forms and main characteristics of today's armed conflicts are described in this article. The distinction between the notion of armed conflict and the one of war is made and analyzed. Also, subcategories of contemporary wars are defined based on «Correlates of War» (CoW) project by American scholar David Singer.

KEYWORDS: armed conflict, war, proxy war, non-state entity

According to world statistics on conflicts and political violence, 285 armed conflicts have taken place in the world since 1946. This includes statistical data on all the military actions that involve participation of at least one state actor and 25 casualties per year, related with battlefield actions. We do not accidentally consider the statistical information from the 1946, because after the two deadly worldwide wars and the collapse of colonial system, which was in power for many centuries, there have been huge changes to the international system and political and ideological characteristics of armed conflicts. And to provide the full insight of the conflict evolution after the Cold War we need to take into consideration all the trends and features of armed conflicts and other kinds of violence, that have evolved since 1946. The most prominent type of conflict in the period between 1946 and 1991 was **proxy war.** A proxy war is a type of conflict in which a major power supports and directs the minor states to a conflict, but doesn't take part in this conflict itself. So in proxy war major powers play the whole behind the scenes role, but are not seen on the "stage". Thus drawing small states in conflict. During the Cold War period proxy war was defined as a confrontation between two great powers – USA and USSR – by using substitute actors to avoid direct confrontation. For the most part such substitutes were minor states, which served as proxies for superpowers. It was deemed that the main reason for superpowers to use proxies was the in-

vention of nuclear weapons and that as a result a superpower confrontation could potentially escalate into the devastating mutually assured destruction scenario. The assumption was that using third parties would reduce the risk of a direct conflict between the superpowers and the risk of an all-out war. As a result, all the major conflicts of the Cold War era, such as Israeli-Palestinian conflict, Kashmir conflict, civil conflict in Philippines, Soviet-Afghan war, Ethiopian wars and many more are cases of proxy war. It is important to state that some of these conflicts remain nowadays. However, the main characteristics of proxy wars since the Cold War era has been changed significantly. And it is relevant to indicate that in the absence of two major global powers competing within a bipolar system, it gets much more difficult to identify proxy war in a modern international system.

Below we will describe the causes of this difficulty. Firstly, if during the Cold War proxy wars were identified by competing ideologies – democracy on the one hand and communism on the other – so now due to the collapse of the world socialist system, there is no global ideological factor, derived from the major power, in any of the post Cold War era proxy wars. Secondly, widespread international support of such actions like humanitarian intervention helps to ideologically justify the involvement of the third party in a conflict. Thirdly, the emergence of new and in the most cases non-state actors have significantly changed the shape of proxy war today. Most of the non-state actors are hard to combat because their forces can usually transcend borders, thus making the conflict transnational in nature. But despite these changed characteristics of the proxy war (proxy conflicts) two main features remain the same as during the Cold War era:

1. All the nuclear power states, somehow engaged in proxy wars avoid going head-to-head with one another (as it was during Cold War with USA and USSR);
2. Any kind of proxy war is a good tool for a power that allows it to be involved in the conflict and ensure the protection of interests without the costs that a direct war would entail.

But proxy war is only one kind of armed conflicts that take place in modern, post bipolar world. There are also some evident trends in conflicts, which are relevant to consider helping us identify the most prominent characteristics of post bipolar era armed conflicts. They are as shown below:

- Anti-colonial and interstate conflicts, which were predominant in the first half of the XX century, have decreased in amount. Today, the main form of conflict is internal to a state (intrastate conflicts), which often includes participation of the third party. In most cases this type of conflict rises to international level.
- The rise in the number of civil or intrastate conflicts, peaking in 1991, was concerning the collapse of the socialist state systems in the world. According to the Uppsala Conflict Data Program (UCDP) 1991 witnessed 52 armed conflicts. In comparison, in 2003 there were registered only 32 armed conflicts in the world. Since 2003, the number of armed conflicts has risen and fallen, ranging between 30 and 52, depending on the political situation that required conflict evolvement.

These trends are indicators of the changes that have occurred in political and military structure of international system since the Second World War. As it was mentioned above most of the cases of conflicts and especially proxy wars, during Cold War engaged participation of two state actors. However the uprising of transnational ideology since 70s have affected to formation of non-state (transnational) actors, which are deeply involved in modern international system's conflicts. First, we would like to make a differentiation between these two terms – war and conflict - that are used in this research and sometimes confused. Most of the political scientists use the term war referring to armed conflicts between two states and any other violent actions which involve participation of a non-state entity are considered a conflict. This is a disputable issue and before classifying, we would like to shed a little bit of light on this matter. So "war" is a term that is used to describe consistent violent acts of states and also non-state actors (ex. civil war), followed by mass destruction of both military and civil objects and places, causing a minimum threshold of fatalities, referred to below and is considered as a form of armed conflict. The notion "conflict" is a wider understanding of war.

A war is consistent, it can continue 5, 10, even 30 years, but conflict is more durable and one conflict can contain multiple war cases. As an example, we may consider the Arab-Israeli conflict. This conflict started in 1948 and is continuing till today. From that time on 17 wars have occurred

within this conflict. This example shows that conflict can contain more than one war in itself. War cases flare up, escalate and then fade out, but the conflict remains unsolved. Conflicts can freeze and then escalate back again. So the stage of escalation of a conflict is called a war. But we also should state that not all cases of armed conflicts could be referred to as war, because it must meet sort of quantitative criteria. This issue is thoroughly described below.

For deeper understanding of modern world armed conflicts we find it important to look through Correlates of War project (CoW), developed by political scientist of the University of Michigan David Singer in 1963. The main aim of this research was to identify what precisely is the war by collecting a significant amount of data on this issue. Using this data the project has conducted many empirical studies about war and conflict. David Singer and Melvin Small, a historian, who joined him in this project, defined a war based on two primary criteria:

1. The threshold of battle-related fatalities in combat;
2. The status of the war participants.

Regarding the first criterion, it was established that 1,000 battle-related deaths could be considered as the level of fatalities that differentiates war from other types of conflict. In terms of the second criterion, it was defined that a state of war could be identified only if the participants on both sides had organizations able to conduct combat (armed forces). Thus their definition of war was as follows: sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related fatalities (later specified as 1,000 battle-related fatalities per twelve month). But Singer and Small's primary goal was in developing a typology that differentiated the various types of war. This typology was based upon their primary criteria and consists of four main categories of war, that are defined as follows:

1. Inter-state wars – this type of wars occur between two or more de-jure recognized states. Both world wars, Iran-Iraq war, Soviet-Afghan war are of this type;
2. Intra-state wars – take place within internationally recognized borders of a state and actors in this type of war are legal government on one side and non-state actor on the other. In this case all ethnic or religious (sometimes ethno-religious) minorities of the state, territorial

autonomies or even opposition political parties, which fight for state power are considered as non-state actors. Any type of civil war not depending on whether it took place over gaining central government control or demand for territorial and ethnic independence or any other kind of issues regarding internal affairs of state are considered this type of war;

3. Extra-state wars – happen between recognized state or states on one hand and a non-state entity on the other. Main difference from intrastate wars is that in this case of war the non-state actor is located outside of the recognized borders of the state. Historical evidence shows that all kinds of "imperial" wars, main aim of which was to extend the borders of empire as much as possible are considered extra-state wars, because in most of the cases empires fought with colonies, which regarded as non-state actors. At the same time all types of anti-colonial war can be regarded as extra-state war. War of Independence between American colonial states and the United Kingdom is considered this type of war;

4. Non-state wars – it is the youngest concept and is considered by political scientists as a war between two or more non-state entities. It can happen across state borders or on a non-state territory. Some cases of modern cyber war can be regarded as this type of war. It is important to state that the International Humanitarian Law does not recognize this type of war.

While mentioning International Humanitarian Law, which is also referred to as Law of War we find it important to identify three types of conflicts that are recognized by international humanitarian law:

1. International armed conflict;
2. Non- international armed conflict;
3. Internationalized armed conflict.

According to the main basis of International Humanitarian Law – Geneva Conventions of 1949, "all cases of declared war or of any armed conflict that may arise between two or more high contracting parties, even if the state of war is not recognized, the convention shall also apply to all cases of partial or total occupation of the territory of a high contracting party even if the said occupation meets with no armed resistance" (Geneva Con-

vention, 1949, common art.2). This means that it is clear that **international armed conflict** is a conflict between the legal armed forces of two different states. As an example we can mention Falklands conflict of 1982 between the United Kingdom and Argentina. The second form of armed conflict recognized by international humanitarian law is non-international armed conflicts. According to Geneva Convention, 'armed conflicts that are non-international in nature occurring in one of the High contracting parties' can be referred to as a non-international armed conflict. This means that one of the parties involved is nongovernmental in nature. However, some forms of violence such as riots, isolated and sporadic acts of irreciprocal violence are not related to such kind of conflicts. Any kind of civil war cases can be an example to this kind of conflict. The last form of armed conflict that refers to international humanitarian law is a post Cold War phenomenon known as **an internationalized armed conflict**. It is very hard to distinct this kind of conflict from the previous one. This kind of conflict occurs in two cases:

- One or more third States or an international organization intervene in support of a state involved in an armed conflict against an organized armed group
- One or more third States or an international organization intervene in support of an organized armed group involved in an armed conflict against a State.

Concluding all the data, mentioned above and based on all the definitions and classifications given in this article we can define following characteristics of armed conflict:

- Since the collapse of the socialist system in the world intrastate conflicts get more and more frequent, but interstate conflicts still take place;
- Objects of conflicts have changed a lot and even cyber space is matter of struggle in contemporary international system;
- Actors of conflict has evolved into both state and non-state format;
- Casualties of most of the armed conflicts are now more among civilians, than among military. Since 1989 cases of violence against civilian population raised to 56%.

In conclusion, we would like to indicate that despite the cases of armed conflicts are decreased in amount since the end of the Cold War, but

the quality of weapons, wide range of objects and actors, and at the same time increased level of unilateral violence cases such as terrorist attacks still makes armed conflicts one of the most dangerous threats to international security. To fight against this problem the world community should pay more attention to improvement of international law and base on collective security systems.

References

1. Small Melvin and J. David Singer. Resort to Arms: International and Civil War,1816–1980. Beverly Hills, CA: Sage, 1982
2. Gertrude C. Chelimo. Defining Armed Conflict in International Humanitarian Law. Inquiries Journal 2011 vol. 3 http://www.inquiriesjournal.com/articles/1697/defining-armed-conflict-in-international-humanitarian-law
3. Internationalized internal armed conflict. https://casebook.icrc.org/glossary/internationalized-internal-armed-conflict
4. Jillian Giberson, The realities of proxy wars in the post cold war era, 13 January, 2019 - https://mjps.ssmu.ca/2019/01/13/realities-proxy-wars-post-cold-war-era/
5. Meredith Reid Sarkees, The COW Typology of War: Defining and Categorizing Wars (Version 4 of the Data) - https://correlatesofwar.org/data-sets/COW-war/the-cow-typology-of-war-defining-and-categorizing-wars/view
6. Salem B.S. Dandan. On Proxy War. Danish Political Science Association Annual Meeting, 25-26 October 2012. https://dpsa.dk/papers/On%20Proxy%20War.pdf
7. Trends in armed conflict, 1946-2017, Conflict Trends, 05.2018, Peace Research Institute Oslo (PRIO). https://reliefweb.int/sites/reliefweb.int/files/resources/Dupuy%2C%20Rustad-%20Trends%20in%20Armed%20Conflict%2C%201946%E2%80%932017%2C%20Conflict%20Trends%205-2018.pdf

Submitted 12.05.2020
Accepted 22.05.2020

GUIDE FOR AUTHORS

1. All the submitted articles must be peer-reviewed. The peer-reviewers name, affiliation, signature and seal must be included.

2. The contents of an article must meet generally accepted international scientific norms. The aim and the purpose of the article as well as its feasibility must be clearly indicated. It should deal with innovative ideas, developments, directions, misdirections, areas which need to be explored, future outlook, prior errors, problems, personnel, funding, or trends in the chosen field.

3. The manuscript with incomplete coverage of the subject will not be accepted.

4. The title of the article must be concise not to exceed 100 characters and be in full conformity with the contents. The article should include keywords. Also, an abstract is required consisting of 50-100 words.

5. Overseas authors are expected to submit their articles electronically to fuadhud@yahoo.com. Local contributors should submit a hard copy (in A4 format) and electronic version of their articles (in a compact disk) directly to the editorial office (see contact addresses at the bottom of this page) or mail it to fuadhud@yahoo.com.

6. Microsoft Word 2003 is the only preferred input program. The font used should be Times New Roman of 12 points. Page size is 17,2x23,3 cm^2. Text must be single spaced with 2.1 cm left/right margins and 2.25 cm top/bottom margins. Figures must be scanned and captioned in 11-points Times New Roman. Formulae should be input using Word Equation. And tabular data should be input using 11-points Times New Roman.

7. Authors are encouraged to submit articles ranging from 5-15 pages (including appendixes, references, figures and tables). Sanction of editorial board is required for the acceptance of manuscripts exceeding 15 pages. The author should check the text for grammar.

8. Each article should include title, name, patronymic, current affiliation, postal address, e-mail and phone numbers of the author who should also provide a written evidence that the presented manuscript has been never published before. Also, the author must indicate the field of science to which his (her) manuscript belongs.

Tel.: (+994 51) 572 34 36
email: journal@oyu.edu.az
Postal Address: General Department, Odlar Yurdu University,
13 K.Rahimov St., Baku AZ1072, Azerbaijan
http://www.journal.oyu.edu.az

C O N T E N T S

Jurnal Azərbaycan Respublikası Mətbuat və İnformasiya
Nazirliyində qeydiyyatdan keçmişdir

This Journal is registered at the Ministry of Press
and Information of the Republic of Azerbaijan

****

Odlar Yurdu Universitetinin poliqrafiya mərkəzində çap olunmuşdur

Printed in Odlar Yurdu University Publishing House

****

Lisenziya №138

10 fevral 1999-cu il

License No. 138

February 10, 1999

Yığılmağa verilmişdir: 15.06.2020. Çapa imzalanmışdır: 25.06.2020
Formatı: 60x84 1/8. Həcmi: 14 ç.v. Ofset çap üsulu. Tiraj: 100

Sent for print: 15.06.2020. Authorized for printing: 25.06.2020
Format: 60x84 1/8. Volume: 14 p.l. Offset printing. 100 copies