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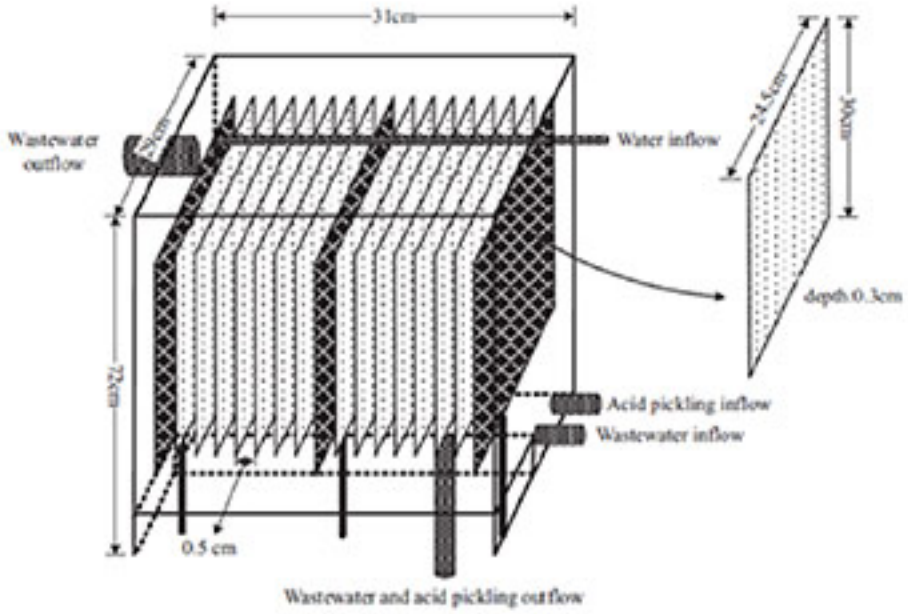
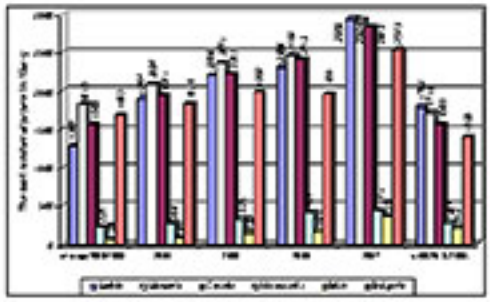
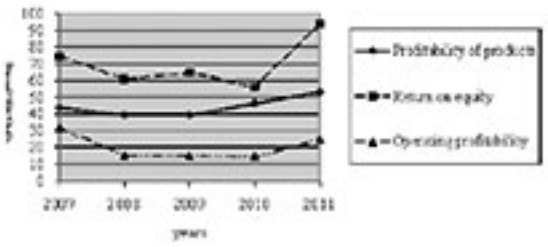


Pulse electrocoagulation reactor



Review of total number of scientific works published in Serbia and surrounding countries



Profitability trend data of UMH on an annual basis

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ELECTROCHEMICAL METHODS FOR ARSENIC REMOVAL FROM INDUSTRIAL WASTEWATER DISCHARGES

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Abstract: *Arsenic standard for drinking water is well defined and is set at 10 μg/l with WHO provisional guideline value for arsenic in drinking water in 1993. Arsenic limits for industrial wastewater discharges can vary significantly, and may even be set below the drinking water standard since it is often specify as daily and monthly maximum discharge limits. Electrochemical methods are not fully established yet but some of them could be excellent complementary method or even primary ones. Electrocoagulation can reduce arsenic by 99.9% or more. Thus is an excellent single technology for the mining waste waters characterized by low content of arsenic. For the chemical industry and metallurgy it could be an effective polishing method since it could achieve less than 10 ppb for the input up to 50 ppm of arsenic. Indirect electrooxidation is useful for conversion of arsenite to arsenate which significantly improves arsenic removal efficiencies since As(III) is poorly removed by the most arsenic removal technologies. Electrodeposition is not used for arsenic removal except in laboratory studies and it is underestimated. This method could be ideal to complement IE and RO for effluent and concentrate treatment.*

Keywords*: arsenic, wastewaters, electrocoagulation, electrooxidation, electrodeposition.*

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1. INTRODUCTION

The primary aim of the WHO Guidelines for Drinking-water Quality (GDWQ) is the protection of public health. WHO has had a public position on arsenic in drinking water since 1958. The second edition of WHO GDWQ (1993) established 0.01 mg/dm3 as a provisional guideline value for arsenic in drinking water and the value remains in the last, fourth, edition (2011). Temporality of the value is with a view to reducing the concentration of arsenic in drinking-water, because lower levels preferred for health protection are not reliably measurable and are out of the treatment achievability [1].
Table 1 contains the guideline for drinking water but it can be generalized and applied on all arsenic containing waters, like industrial waste.

Table 1 Analytical and technological limitation for lower maximal arsenic concentration [2]

Provisional guideline value	0.01 mg/litre. The guideline value is designated as provisional in view of the scientific uncertainties.
Basis of guideline derivation	There remains considerable uncertainty over the actual risks at low concentrations, and available data on mode of action do not

	provide a biological basis for using either linear or non-linear extrapolation. In view of the significant uncertainties surrounding the risk assessment for arsenic carcinogenicity, the practical quantification limit in the region of 1–10 mg/litre and the practical difficulties in removing arsenic from drinking-water, the guideline value of 10 mg/litre is retained. In view of the scientific uncertainties, the guideline value is designated as provisional.
Limit of detection	0.1 mg/litre by ICP/MS; 2 mg/litre by hydride generation AAS or FAAS
Treatment achievability	It is technically feasible to achieve arsenic concentrations of 5 mg/litre or lower using any of several possible treatment methods. However, this requires careful process optimization and control, and a more reasonable expectation is that 10 mg/litre should be achievable by conventional treatment, e.g., coagulation.

Scientific uncertainties are obvious. Even with the limit of detection order of magnitude lower than maximum allowed level it is expensive and technically demanding for precise control. Limits of the technology are relative but practical feasibility is average of the last generation of treatment, combination of methods, and it is obvious that at least twice as high concentration would be set as the limit.

2. ARSENIC REMOVAL FROM INDUSTRIAL WASTEWATER DISCHARGES

Requirements for waste streams are very demanding and usually are not expressed in maximal allowed concentration but in daily and monthly maximum discharge limits. This leads to the situation where the concentration limit in industrial waste streams could be even lower than 0.01 mg/dm3 as for drinking water. For example, some power plants in the United States have recently been limited to arsenic discharges as low as 4 μg/l, which is lower than the arsenic standard for drinking water and very near maximal capabilities of conventional treatments such as coagulation [3].
It is usual practice that process or combination have to achieve at least 50 ppb and with polishing method feasible to meet the drinking water standard of 10 μg/dm3 and reach even lower discharge up to 1 μg/dm3 although not consistently.

Common methods for removing arsenic from industry wastewaters are well known and include:

- Precipitation processes, including coagulation/filtration, enhanced coagulation, lime softening, coagulation assisted microfiltration, and enhanced lime softening;
- Adsorptive processes, including adsorption onto activated alumina, activated carbon and iron/manganese oxide based or coated filter media;
- Ion exchange (IX), processes, specifically anion exchange;
- Membrane processes, including nanofiltration (NF), reverse osmosis (RO) and electrodialysis.

In EPA report Arsenic Treat Technologies for Soil, Waste and Water (EPA, 2002), an extended description, including cost figures and performance data, is given of the following techniques [4]: precipitation, membrane filtration, adsorption, ion exchange and permeable reactive barriers.

Arsenic removal technologies can be broadly classified as purely adsorption-based technologies (for example, ion exchange or granular iron media adsorption), purely membrane-based technologies such as nanofiltration (NF) or reverse osmosis (RO), or technologies that use a combination of adsorption followed by filtration/microfiltration. Purely membrane-based technologies are generally cost prohibitive for arsenic removal applications, and, moreover, generate large quantities of arsenic-rich brines that require treatment/disposal. Therefore, only adsorption processes, and adsorption followed by filtration (membrane or media filtration), are widely used [3].

For high concentration of arsenic with other heavy metals in waste water selective neutralization using continuous cascade line reactor could be technology of choice but it can not reach discharge limits of above mentioned technologies.

Electrochemical technologies (EHT) are not established as existing ones, but are either a good supplement to them or alternative solutions in some cases.

Disadvantages of membrane technologies and ion exchange, especially large volumes of waste brines (up to 1% of volume of treated water) with high concentrations of arsenic (up to 20 mg/dm3) would be solved by EHT. Lower to moderate flow rates of waste waters can be treated only by EHT with results better then with classical coagulation [6].

3. ELECTROCHEMICAL METHODS

3.1 Electrocoagulation

Electrocoagulation is the only EHT already in use for arsenic removal from industrial waste. It can be used in both cases: high concentrations of arsenic and very low ones.

In the first case, usual concentrations are about 1g/l of arsenic when it could be obtained about 0.10mg/dm3 which provide 99.9–99.99% removal efficiency. In such cases the polishing method has to be used because effluent has few times (up to 10) higher concentration than allowed. In the second case EC can be used as a single method or as a polishing one, when it could be the final step for some other method. Typical efficiency is about 99.99% which reduces arsenic from 50ppm to 5 ppb, which can satisfy even the most restrictive legislations [7]. Usually it is the polishing method for classical precipitation processes, chemical coagulation/filtration but, ironically (because it is usually vice versa), for the IX processes.

Even when coagulation can reach requirements, EC is superior due to several reasons. The most important is that the operation cost is 5 to 10 times lower. For the small plant, with capacity of 1.2 m3/h and with 6000 m3/h treated waste waters per year, the estimated yearly operating cost using EC instead of chemical coagulation is saving $374,700.00 per year. This does not include labor, sludge transportation, or disposal costs [6]. Another advantage of EC is the small space that this technology needs, which could be important for the urban areas.

Fig. 1 System for Electrocoagulation with 0.20m3/min. capacity [6]

New approach to the issue is using the pulse current for EC. This variant of EC technology has its roots whole decade before full implementation in late 80s of XX century, when digital electronic systems gave a greater ability to control the process, better reliability and lower cost than the corresponding analog electronic.

For now, the technology is proven to be very effective for the removal of suspended solids with 95% removal efficiency using current density of only 40 A/m2 and hydraulic retention time of 8 minutes and without the addition of coagulants [8]. Principal scheme of the reactor of the type is shown in figure 2.

Application area of these systems is increasing and includes the removal of heavy metals from industrial waste waters.

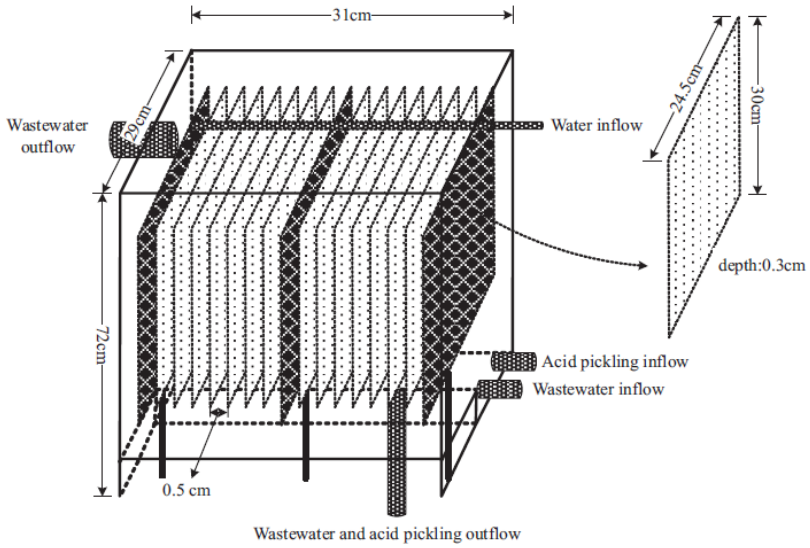

Fig. 2 Pulse electrocoagulation reactor [8]

3.2 Electrodeposition

This method is very difficult to apply in practice although many laboratory investigations were done and papers published. Electrodeposition (ED) has several disadvantages as the method for arsenic removal. First of all is that arsenic is not a simple ion (cation) in the solution but the anion, $AsO4\tilde{3}$ or depending on pH, $HAsO4\tilde{2}$ in base and $H2AsO\tilde{4}$ in acid solutions for +V arsenic or like H3AsO3 for +III arsenic. This is unfavorable because of the negatively charged cathode in galvanic systems. Consequently, current efficiency is usually very low. Second, the important disadvantage

is the possibility of arsine realizing because elementary hydrogen, from cathode (parallel reaction), in contact with ions AsO_2^- and AsO_4^- ions could realize arsine [9, 10].

Nevertheless, electrochemical recovery of arsenic is possible to achieve in two steps, the first is chemical reduction of As(V) to As(III) and the second is electrochemical reduction of As(III) to elementary As. It should still further be noted that at relatively low arsenite concentrations, hydrogen evolution will present a competing reaction, which generally reduces the current efficiency. During the experiment, the current was adjusted downwards as the arsenic concentration declined. Subsequent analysis of the data indicated current efficiencies in the vicinity of 100% at the start of the reduction (when the concentration was 8 grams per liter of arsenic) and persisted down to 200 ppm where current efficiency had declined to 70%. The reaction was terminated at 100 ppm arsenic species [11].

Simultaneous removal of As and Cr with excellent removal efficiency could be achieved. The research sample containing 30.46 ppm Cr and 511 ppb As was electrochemically treated. The conductivity of the groundwater was increased by adding NaCl (2 g per liter of solution); the conductivity was raised to 4.36 mS/cm. Initial sample pH was 7.03 and initial temperature was 26.7 °C. An excellent As removal efficiency of 94% was achieved for a wastewater sample with an initial As concentration of 511 ppb at an applied electric charge of 12 Amp-min. (720C) and at treatment time of 7 minutes. It also shows excellent Cr removal of around 99% for a synthetic wastewater with an initial Cr concentration of 30.5 ppm at an applied electric charge of 10 Amp-min. (600C) and at treatment time of 6.5 minutes [12]. Current efficiency was low for both of them, about 10% for the chromium and 3% for the As and indicate that further research should be done. The final concentration of arsenic of 30 ppb is a good result although some improvement is necessary for the final stage for arsenic removal.

Finally, an interesting and original approach to this topic is the electrolytic extraction of arsenic by the concomitant reduction of the cupric cation and arsenite anion. XRD diffraction data indicated that these deposits were mixtures of copper and copper arsenides Cu3As and Cu5As2. Electrolysis was carried out in an undivided cell with graphite cathode and copper anode, under a controlled nitrogen atmosphere. The evolution of arsine gas (AsH3) was not observed under these conditions [13].

This method is, therefore, confirmed in literature and experimental work on synthetic solutions with arsenic concentration from 1.0 to 5.0 mg/dm3.

4. CONCLUSION

Electrochemical technologies unleash full potential when combined with each other and especially with other methods such as ion exchange and membrane processes (NF and RO). EHT has potential to work with those technologies in synergy because their disadvantages, like the generation of arsenic-rich effluents (concentrates), can be efficiently treated with EHT especially EC of lower quantities of concentrate, then primary waste is just perfect for EC which has a problem with large flow rates (quantities of waste), so both of the problems become the advantage. They can be useful with adsorption methods in the process of lowering high concentrations of arsenic similar to precipitation processes.

ACKNOWLEDGMENT

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UDK: 004.738.5:339 ; 658.818.4 ID: 203159564 **Review Article**

RESOLVING COMPLAINTS IN ONLINE SHOPPING

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Abstract: *Companies have much to gain by handling complaints rather than trying to avoid them. Effective resolving complaints can improve customer retention, promote a positive company image and boost profitability. In some situations, a satisfied complainant may end up being more loyal than a customer who had no problem at all. The resolving of complaints is one of the most important elements of the quality of services within a company. The paper aims to examine the complaints in online shopping.*

Keywords: *the process of resolving complaints, complaints, the internet selling, buyer's satisfaction, online shopping.*

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1. INTRODUCTION

Complaints arise as a result of the sale of goods or services to the customers. They have different expectations and requirements, which the company would satisfy to the maximum extent if possible. A large number of recorded complaints are not necessarily an indicator of poor part of the business as well as a small number does not mean that the company works well. The customers who complain are often more loyal than those who never do. One of the first signs of deterioration in relations with business customers is precisely the lack of complaints [1].

Customer satisfaction does not have a direct positive link to customer retention. Reichheld [2] found that even satisfied customers can switch relationships. Dissatisfied customers do not necessarily leave, and satisfied customers do not necessarily stay in a relationship. Even though it has been indisputably shown that service quality contributes significantly to the start of a relationship, we will determine whether quality also contributes to relationship maintenance, next to other factors that have been proposed and found to influence relationship commitment.

The quality of services is considered to be a critical success factor for contemporary service companies. Service quality is conceptual as well as empirical link to customer satisfaction, which turned it into the core marketing instrument, making it the most researched area in services marketing. In addition, the accumulated research has linked positively with profitability. This link, however, is not straightforward. The contribution of service quality to profitability is generally explained by two underlying processes. First, service quality is regarded as one of the few means for service differentiation and competitive advantage which attracts new customers and contributes to the market share. Second, service quality is viewed as an important means for customer retention.

Various studies have shown the positive correlation between quality of service and company profitability. It has been argued that service excellence enhances customers'

inclination to buy again, to buy more, to buy other services, to become less price sensitive, and to tell others about their positive experiences [3].

2. RESOLVING COMPLAINTS

The firm must understand the nature of buyer response to its dissatisfaction with the various, mainly for the company, negative consequences.

Consumers have several choices when a service failure is experienced. Consumers are able to choose between switching to a competitor, complaining to the seller, complaining to a third party, using negative word-of-mouth or simply doing nothing and resolving to be satisfied with a less than desirable level of service quality [4].

Customers, who are not satisfied with the product or services, respond in different ways [5]:

- with an immediate complaint to the seller (to give the company the opportunity to respond immediately, the company is the best possible solution, given as an alternative to satisfy the customer and maintain business with him in the future),
- the subsequent complaint to the seller by phone or in writing or directly to the leadership of the company (the company still has the opportunity to correct the mistake),
- spread the negative experience of word of mouth, which means that talking about her friends, colleagues (in this case the company cannot do anything, except in the case that the buyer has sent a written complaint to the company)

Griffin and Lowenstein [6] indicate the main seven reasons why customers do not complain:

- do not know where or how to complain to the seller,
- they are too busy and do not or may not want to take time for complaints,
- regarded as a harassment complaint and preferred to avoid,
- do not believe that the company will do anything about the complaint,
- do not see any direct benefit or advantage of the complaints,
- fear of the hostile attitude or revenge of the company,
- what they want may be given by the competitor and it is better / easier to go to the competitors.

The operational view on complaint management covers the process by which complaints are handled and customers recovered. This process highlights several factors, which are important for the successful implementation of complaint management, including speedy response, reliability, and consistency of response, ease of access to the complaint process, keeping the complainant informed, and well-trained staff who understands the complaint process. Specifically, effective complaint management can [7]:

- promote more positive word-of-mouth;
- increase customer perception of quality;
- lead to cross-selling opportunities to satisfied complainants;
- improve bottom-line performance;
- improve marketing intelligence and
- promote a positive company image.

An effective complaint management process can be an important tool for organizations to obtain customer feedback. Such feedback may be very useful in making company improvements that increase customer satisfaction, then loyalty, and finally profit. Furthermore, a dissatisfied consumer may hesitate from complaining if he/she is uncertain on where/or how to deliver the complaint or, even worse, if he/she doubts the

retailers' interest in receiving the complaint. Dissatisfied customers could greatly damage a retailer's reputation by engaging in negative word-of-mouth communication, especially in today's online instantaneous and far-reaching environment.

It is therefore highly important that the retailer convinces its customers that complaints are welcome and that they will be handled seriously. Easy-to-use and non-confrontational methods of eliciting feedback are essential for a successful complaint management system [8].

3. RESOLVING COMPLAINTS IN ONLINE SHOP

The legal basis for the complaints of goods bought in online shopping in Slovenia is the Consumer Protection Act. The Act regulates the rights of consumers in providing, selling and other forms of marketing goods and services by businesses and the obligations of public authorities and other entities that provide these rights.

Operating in a small and at the same time, very competitive market such as Slovenia, is not easy. For example, one big trade company in Slovenia selling quality products by online shop.

The company's main goals are to meet customers needs and expectations and on the other side to improve their business performance.

Therefore, it is very important to study the impact of complaints on users who buy products in the online shop. Within one year there were 2447 contracts in an e-store, but there were also 60 complaints, making 6.54%. The next year, the percentage of complaints increased to 8%. According to surveys, the company came to the conclusion that the customer in e-stores - as in traditional stores, the most important factor in the process of resolving complaints is a person who resolves complaints. Of course, it depends on how quickly and how the complaint will be resolved itself.

In order to reduce the number of complaints and increase the number of purchases, the company developed a number of different activities:

1. Offer customers the product mix in both width and depth, which was still in stock (as presented in the offer on the website) and then ensure the delivery of goods to be in time;
2. Provide customers adequate information by products catalogue, adjusted to final customers, that buyers can easily purchase the goods;
3. Ensure customers telephone support, advice, suggestions, interviews with experts and virtual guides;
4. Offer better quality services to customer by involving suppliers, whose task should be to provide all necessary information on goods, accurate, and as short term supply of goods and direct delivery to the customer of certain products;
5. Additional services (company portal in which the buyer verifies his/her status, sells gift coupons in electronic form, makes greetings by online shop, sends e-mail to the desired address, offers goods with discount and so on);
6. Payment in a similar manner as in shopping centers (credit card, debit card, collect cash, gift vouchers or other forms, e-moneta, NLB-click, e-money, e-vouchers, invoice, credit, check…) ;
7. Searching for ordering must be efficient and easy to handle for the buyer, with a variety of search criteria, all the time the customer can view the content of the shopping basket and at the end should easily complete the contract;

8. Administrator in the online shops should be able to create groups of different products for different purposes (sales campaigns or target group of customers) and, of course, various games and services for sales promotion;
9. All developments in online shop should be monitored by an analytical system that can analyze the developments in online shop and set off the appropriate action depending on the results.

4. CONCLUSION

Online retailing has grown and expanded exponentially since its relatively recent inception. The importance of the Internet to retailers can no longer be ignored, as most brick-and-mortar businesses have established or plan to launch an online counterpart.
If a company wants to resolve complaints of customers, the management of the company and all other employees, must strictly follow the mission, vision and values of the company. The result is a strategic partnership with the best customers.

The analysis of the complaints in online shop in the Slovenian trade company indicate that three factors (prompt resolving of complaints, the way how complaints are resolved and the person who is resolving complaints); impact the number of sales transaction in the online shop. In analyzing the ratings of satisfaction by resolving customer complaints, we can conclude that the buyers are generally satisfied with resolving complaints.

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UDK: 005.342:655.4 ; 655.4:338.33 ID : 203166476 **Review Article**

INNOVATIVE DIVERSIFICATION IN THE PUBLISHING BUSINESS: INTERNATIONAL ASPECT

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Abstract*. A comparative analysis of diversification processes at publishing and printing companies in the world and domestic markets has been carried out. The choice of corporate diversification strategies depending on a stage of a company life cycle development has been substantiated. Basic development trends of the industry based on the analysis of calculated profitability indexes of products, activities and assets have been determined. The classification of a company innovative diversification has been suggested.*

Key words*: diversification, innovations, publishers, acquisitions, mergers, profitability, strategy.*

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1. INTRODUCTION

Ukraine continues to undergo a systemic economic crisis. As a result, the level of uncertainty of conditions and prospects for the functioning of enterprises remains rather high. The efficiency of enterprises reduces significantly resulting in the reduction of profitability, decrease of output volumes, deteriorating of general financial results, etc. However, not all companies, even within the same industry, are equally exposed to the crisis.

Enterprises that are able to quickly and adequately respond to external changes and select an innovative development strategy can ensure a stable operation even under conditions of general business activity decline. It is innovative diversification strategy which can provide high management results in times of crisis.

Such renowned scientists as A. Thompson, A. Strickland, M. Porter, I. Ansoff, A. Aronov, H. J. Goldstein have devoted their works to the study of a company diversification strategy. In Ukraine the study of this matter is carried out by V.V. Vitlynskyy, V.G. Gerasymchuk, A.P. Nalyvayko, V.S. Ponomarenko, Z.E. Shershnova, K. Biletskaya, S.M. Popova, A.A. Sharko. However, despite the growth of scientific researches on this subject in recent years, such issues as the influence of an innovating activity of a company on a selection of its development strategy and the study of practical approaches to determination of the effectiveness of a company diversification strategy are still scarcely explored.

The main goal of the paper is to study the general development trends of publishing and printing industry companies based on the diversification of their activities and funds, and develop a classification for innovative diversification through acquisitions and portfolio investments.

2. THE ANALYSIS OF PROCESSES AND TYPES OF DIVERSIFICATION

2.1. The Choice of Corporate Strategies

The analysis of studies on the process of diversification resulted in some divergences on the definition of diversification concept itself. In our point of view, existing wordings reflect the essence of diversification process and have the right to exist. However they require a clarification. The performed analysis of studies [1, p. 181-196; 2, p. 4-12; 3, p. 178-197; 4, p. 344-345; 5, p. 150-161; 6, p. 15-20; 24, p. 97-100; 25 p. 181-182; 26, p. 200, 217 - 219] reveals that there is no universally accepted classification of diversification. By denominating a trend and pointing out a method of diversification, its fundamental characteristics, advantages and disadvantages, most authors do not specify the scheme for the choice of a variant of diversification which is the most profitable for a company.

We believe that the choice of corporate diversification strategies should be based on a life cycle analysis of a company which includes a continuity of stages of growth - instability - survival [2, p.4]. Survival strategies are used under conditions of a severe crisis of entrepreneurial functioning and are focused on the sale and liquidation of a business, unprofitable and low-profit enterprises. Stages of instability correspond to the recovery strategy, economy and restructurisation of the portfolio of projects in different business areas. Corporate strategies for diversification of the production on a company life cycle growth stage imply the entry into new activity areas and can be implemented in the following forms: acquisitions, creation of new enterprises (companies, firms) or joint ventures. An acquisition of an already established company is the most widely used form of diversification. Its advantage is a rapid growth of presence at target markets overcoming such entry barriers as the elimination of a technological inferiority, establishment of a connection with suppliers and the availability of a distribution network.

Basic corporate strategies at the growth stage are presented by a vertical diversification, combined, diversification into related and nonrelated branches. Vertical integration implies the absorption of suppliers and customers including retail chains. Its benefit is the control over all stages of production, marketing, and maintenance.

The essence of a corporate strategy for diversification into related industries corresponds to a strategy of concentrated diversification with a firm going beyond its industrial chain and looking for new activities that complement already existing ones in technological and commercial terms to reach synergies and expand a potential market. Corporate strategies of diversification in a nonrelated field are involved with a conglomerate type of diversification. As a rule, the growth of an enterprise by the acquisition of other firms increases the market price per share and a financial stability of a company. These strategies have many advantages: the commercial risk is distributed over various areas, financial resources can flow into more profitable areas, and internal rates of return stabilize.

2.2. Innovative Diversification, its Nature and Classification

In the modern context innovative diversification becomes relevant as a process of portfolio investment in assets of innovatively-active enterprises or their direct acquisition for the purpose of distributing impact into new areas of activity (expanding the nomenclature and geographical sphere of product and services distribution, discovery of new markets). It has its proper areas of implementation and actualization. According to

the methods of implementation of diversification, we distinguish a direct and portfolio investment of assets. According to the areas of implementation - related and unrelated diversification. In case of a related diversification, a new business sphere is characterized by a significant unity with the main company activity and signifies the availability of potentials of the scale economy or synergism. Unrelated diversification does not imply the availability of a substantial similarity between markets, distribution channels and production technologies. The strategy of unrelated and conglomerate diversification implies development of new product types and services that may appear as an addition to the main offer, contribute to its sales on the key markets and lead the way to new ones. Based on the generalization of existing studies [7, p.6-8; 8, p.7-8; 9, p.10-11], the author developed the classification of this process. The activity of RR Donnelley has been chosen as an example (Fig.1)

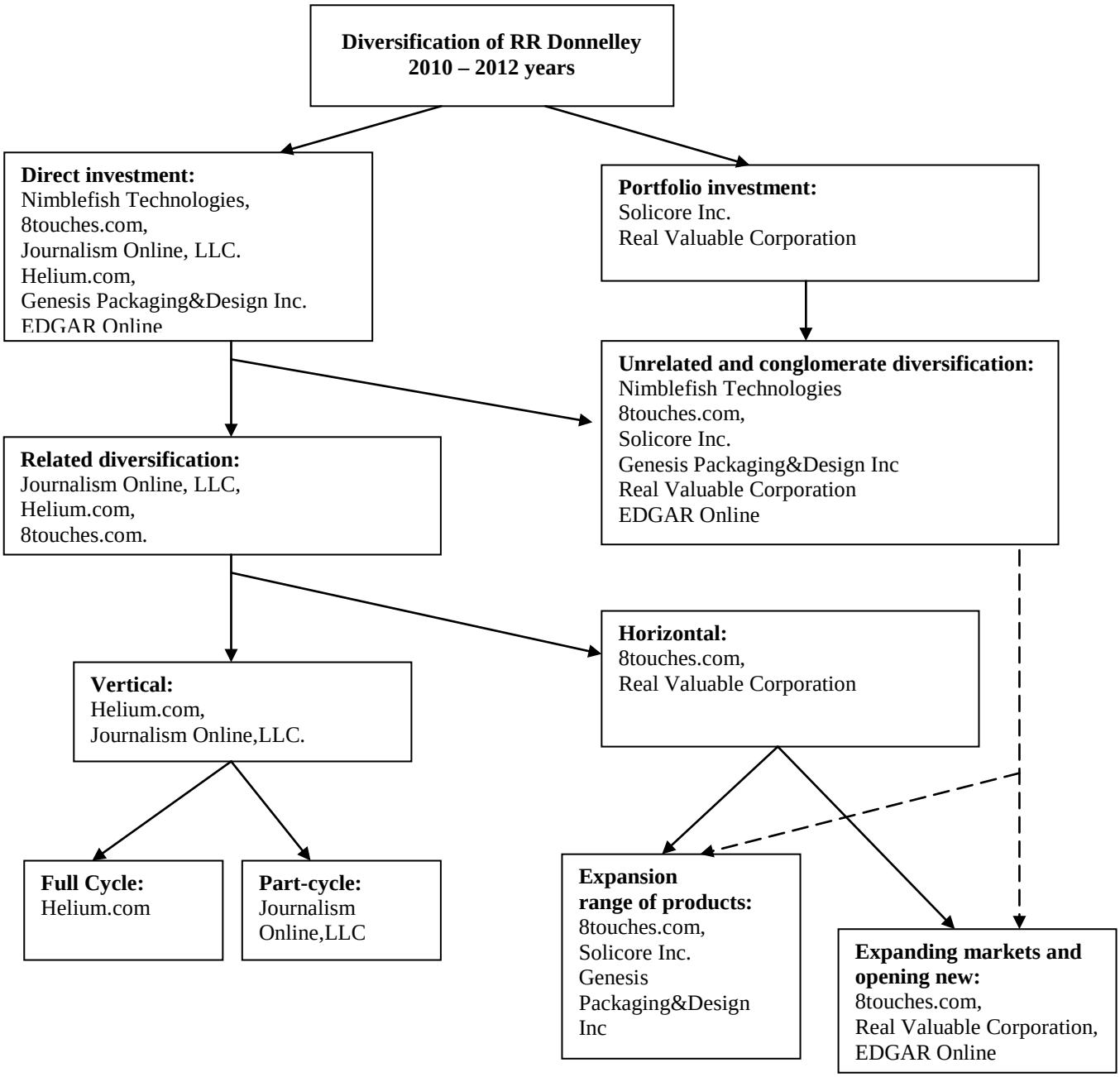

Fig.1. The classification of process of innovative diversification
(Developed by the author according to materials [10])

US-based RR Donnelley, with annual sales of $10 billion and the staff comprising more than 55 million people, is one of the largest and most successful printing corporations in the world [10]. It implements an aggressive acquisition strategy of high-tech firms to diversify its activity and strengthen market positions. During 2010 - 2012 it purchased such companies as Nimblefish Technologies - the provider of services for multichannel marketing that cooperates with leading companies in retail, technology, telecommunications and hotel business industries; such companies as 8touches.com - the site that offers tools for creating personalized advertising materials (> 1000 templates); such companies as Journalism Online, LLC - the manufacturer of innovative software Press+ that allows publishers to complement their sites with a function of pay-per-view materials (to sell web content).

RR Donnelley has made portfolio investments in assets of Solicore Inc., a world leader in the production of embedded batteries for smart cards, RFID-devices, specialized medical equipment and electronic sensors making it possible to meet technological needs of customers who develop innovative printed products using miniature batteries. The corporation carried out an acquisition of Helium.com, the largest community of copywriters in the world, a social platform that allows authors to publish their articles while publishers and content managers can choose interesting materials for publications in books, magazines, and websites. Most importantly, the purchase of this platform will allow RR Donnelley Corporation to offer publishers and other clients a cyclical turnaround of production, as well as to cover all stages of content management: from the initial phase to publication.

Moreover, the acquisition of assets of Genesis Packaging & Design Inc., which specializes in the productions of a unique packaging including the design, printing, cutting, processing and assembly, has been carried out. It enables the corporation to improve the level of service for companies operating in food and pharmaceutical industries, wholesale and retail trade, manufacturers of appliance electronics and consumer products, publishers of educational literature and other clients. RR Donnelley purchased the block of shares of Real Valuable Corporation, the manufacturer of CoffeeTable - the app for iPad which allows browsing directories of retail stores (even when the gadget is offline) and make purchases. In consequence of the investment in CoffeeTable, the company is able to help clients to deliver their content to a target audience through reliable channels and at the right time.

RR Donnelley Corporation acquired EDGAR Online, the leader in the development of software and integrated solutions in the sphere of financial reporting, publishing of financial data and risk assessment. It implies the purchase of best-in-class technologies in the sphere of XBRL (an open standard for electronic financial reports), which is essential for customers and potential shareholders.

2.3. Implications and Effects of Innovative Diversification

The analysis of classification carried out in Fig.1 enables to come to certain conclusions regarding the direction of innovative diversification undertaken by RR Donnelley. Thus, a direct investment of funds took place by the means of related and unrelated diversification while a portfolio investment - only by the means of unrelated diversification. The purchase of a number of high-tech companies had a dual synergistic effect associated, first of all, with the main activity of the company and, secondly, with the development of new products and discovery of new markets. Thus, the acquisition of 8 touches.com enables RR Donnelley to create personalized advertising materials to promote printing products, and target applications for new industries and vertical markets.

By purchasing a stock of shares in Real Valuable Corporation, the company expanded a feasibility to bring information to both its target audience and potential buyers of consumer products. Intensive processes of acquisition and portfolio investment have made significant changes in the profile of the company: in addition to printing, pre- and post-printing services, RR Donnelley range now includes packaging, photography, design, direct marketing, creation and processing of content, fulfillment, production of e-books, data processing, business process outsourcing, and others. RR Donnelley provides solutions in the sphere of communications related to the needs of various industries, such as publishing, education, investments, healthcare, manufacturing, etc.

2.4. Innovative Diversification in the Global Publishing Market

The acquisition of Zagat Survey restaurant guide and publishing assets of John Wiley & Sons which owned the brand and produced Frommer's guides for travel by Google, is the example of related horizontal diversification [12]. The key object of acquisition is an online resource of Frommers.com publisher - an online travel service that accumulates information about holiday destinations and a variety of interactive tools for travelers. Thus an internet company diversifies its activities and spreads the influence to new market segments.

The merging of assets of two world publishing leaders: Penguin and Random House, which led to the formation of a new global publishing group Penguin Random, is also an example of a related horizontal diversification manifested through direct capital investments. Penguin Random will include all business units of Penguin and Random House in the U.S., Canada, UK, Australia, New Zealand, India, and South Africa, Penguin publishing assets in China, and Random House in Spain and Latin America. A new holding with a turnover of $4 billion, which controls 26% of the world market of printed consumer literature, plans to invest in new formats of digital publishing, digital publishing models, sales channels, products and services in growing segments of the market [11].

The activities of German publisher Hubert Burda Media, which compensates the decrease in revenue from the sale of printed matter by the increase of its presence in the internet market by acquiring the stock of shares in a social network Hing in 2009 and by the decision to buy the entire network at $311 million after shifting to the strategy of direct investments in 2013, is an example of an unrelated diversification strategy. [13].

3. A GENERAL DESCRIPTION OF THE DOMESTIC PUBLISHING MARKET

3.1 Primary Trends of Functioning of the Publishing Market of Ukraine

The reduction in the global market of printed media caused by the advent of new alternative mass media and the transfer from an offset to digital printing is now giving way to the stagnation. It is witnessed from the results of "Printed media and polygraph industry market size in the United States: 2010 - 2015" [23], according to which the world market of printed products will grow by 0.4% over the next 5 years. A significant decline in a total circulation of printed matter continues in the former Soviet Union: thus in Russia the decline constituted 300% [16, p.164], in Ukraine the scope of book publishing has decreased by 1200% within the previous 20 years (from 6 to 0.5 copy per a citizen) [17, p.7]. Among 30 thousand of registered print publications only 15% are being actually published [18, p.20]. Small and medium-sized printing and publishing houses go bankrupt: within more than 3 thousand publishing houses listed in the State

Register of Ukraine only 400 operate in the national book market [18, p.11]. This fall has acquired a significant relevance in the past year: 70% of publishers reduced the supply of printed matter by 25% on average per year; encyclopedias and reference materials - by 50% [17, p.7].

3.2. The Analysis of Profitability of SJSC "Ukrvydavpoligrafiya"

The activity analysis of Ukrainian PPI (publishing and printing industry) enterprises including suppliers of paper and consumables, as well as companies involved in the book trade, unravels negative trends in the industry: they bear losses and face negative profitability indexes of sales according to a net profit (Table 1), calculated by the formula [22, p.30]:

$$R1 = NP: D \quad [1]$$

where R1 - profitability index;
NP - net income;
D - net operating income.

This index calculates the share of net profit in the net income from the sales of company products. The product commercial viability analysis of listed enterprises indicates a sharp decline in their business activity and profitability. Profitability decline rates of sales accelerate every year. A considerable range of variations of the index under analysis from year to year indicates the degree of its fluctuations and an increased risk.

Table 1 - Return on sales of PPI companies

Indexes, % / Years	2007	2008	2009	2010	2011
1. Lviv book factory "Atlas"	-0.3	-0.7	0.09	-10.4	-41.3
2. "Kyivska Pravda" publishing house	-8.4	-7.4.	-1.3.	-3.2.	-20.8
3. "Prapor" publishing house	0.9	13.7	-85.5	-366	-12.7
4. Kharkiv book factory "Globus"	4.4.	-7.2.	3.6.	2.9	-4.5.
5. "Kharkiv" publishing house	-3.0	-29.0	-12.9	-8.2.	-10.3
6. "Volynska oblasna printing house»	4.3.	1.0	2.1.	0.2	-5.1.
7. "Kharkivska printing house №2"	1,3.	-29.4	-36.4	-37.5	-534
8. "Polihrafknyha", KyivKyiv	-8.9	-29.2	-18.3	-11.1	-39.5
9. "Bilotserkivska knyjna fabryka"	0	-0.7	0.09	-10.4	-41.3
10. "Galytska knyga" (trade)	1.8	1.1.	-9.3.	-11.6.	-9.6
11. UkrNRI of Special Printing Methods	5.4.	0	0.4	2.1.	0.2
12. "Kyivpoligraphmash"	39.7	3.71	2.1.	1,3.	0.4
13. OJSC "Ukrknyha"	4.3.	0.9	-135.8	-25.2	962.7
14. PJSC "Lvivpolihrafpostach"	-2.9	-3.2.	-12.7	-13.9	-5.9.
15. PJSC "Ukrpolihrafpostach"	2.1.	4.3.	-10.6	-5.7.	-0.5

Calculated by the author according to data [19]

Thus, the profitability of "Atlas" factory decreased by 137 times in five years and turned into the loss ration; "Prapor" publishing house - by 14,1 times; at "Kyivpoligrafmash" it decreased by 99 times. Profitability - is a qualitative index

characterizing the return rate of production costs and sales of products, the effectiveness of company activities, its ability to grow the capital and therefore update the technological basis and implement innovations in the production process, which could make the output cheaper and more competitive. Products rentability has to be a positive and gradually increasing value. At the premises of SJSC "Ukrvydavpoligrafiya" this index is negative within the entire study period because it bears losses instead of gaining profits. Let us calculate average profit margins of enterprises being the part of SJSC "Ukrvydavpoligrafiya" (Table 2).

Table 2 - Average annual profitability indexes on SJSC "Ukrvydavpoligrafiya"

Indexes, % / Year	2007	2008	2009	2010	2011
1. Profitability of sales (net profit)	0.10	-7.50	-13.9	-10.1	-15.0
2. Profitability of sales (gross profit)	23.1	15.6	10.9	12.8	2.4
3. Return on assets	2. 3	-4.6.	-6.9	-5.6.	-6.4
4. Return on equity	2.8	-6.9	-10.7	-9.4	-13.1

Indexes calculated on the basis of statistical data [19]

In keeping with the period under analysis, the profitability of sales according to net profit at SJSC "Ukrvydavpoligrafiya" decreased by 150 times on average; profitability of sales according to gross profit - by 9.6 times; return on assets - by 8.7 times; return on equity - by 15 times. The trend data of these exponents is given in Fig.2.

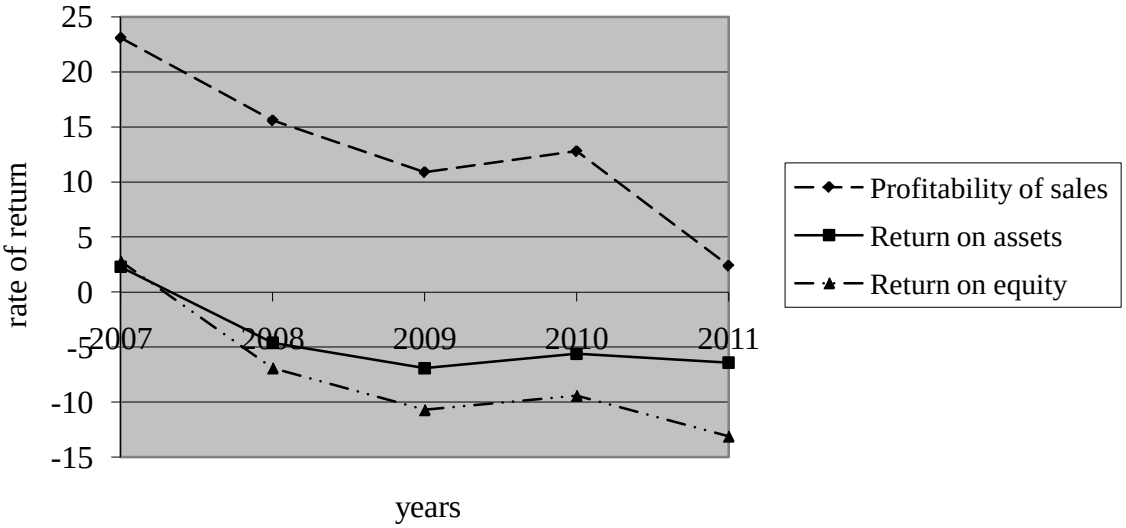

Fig. 2. The trend data of average profitability at SJSC "Ukrvydavpoligrafiya" on annual basis
Source: Private graphic display based on Table 2

3.2 Activities for Innovative Diversification at UMH Publishing Holding

Amid the crisis that characterizes most PPI businesses in Ukraine, profitability indexes of the largest publishing holding in Ukraine, a multimedia company UMH (United Media Holding), which comprises a group of companies UMH (Ukrainian Media Holding) and a publishing house "Populyarnaya Pressa" which runs business in Russia,

Belarus and Kazakhstan, appear remarkably positive. It unites 60 publications, 8 radio stations, printing and publishing integrated works, a printing house and retail chain of newspaper outlets. It is obvious that the holding is actively implementing a related horizontal diversification taking a leading position in the markets of the Internet, radio and press in Ukraine and other former Soviet countries [21]. The company foundational business – is production of content for all types of media. The holding includes four strategic business units - companies: UMH Online, UMH Radio & TV, UMH Publishing and UMH Russia. Target markets of the company - adult post-Soviet Russian-speaking population, which is about 155 million people whereas the company is currently covering about 12% of the audience, or 18.6 million people. More than 4400 employees work in 43 offices across Russia and Ukraine. Processes of merging and acquisitions continue as evidenced on the purchase of 52.14% of stock shares at KP Media with its US capital by United Media Holding [15, p.12]. Alongside with active development of digital technologies, the Internet has become an important priority in the business development of UMH group: via purchase and development of its own projects, the company formed a portfolio of over 15 projects with 47% covering of Ukrainian audience.

I nnovative activity of UMH is manifested by the acquisition of licenses including Russian newspaper brands "Argumenty and Fakty" and "Komsomolskaya Pravda", or the "Futbol" football magazine. In only six years the structure of the UMH increased by more than 10 successful media projects while the dynamics of the group development allowed it to become a major player in the press market. An important event for the company was the signing of the license agreement for the publication of Forbes magazine in Ukraine in 2010. The project was launched very successfully: the Forbes-Ukraine magazine is published each month, a business resource Forbes.ua is operation, conferences are held. According to the license agreement, the Forbes magazine is published in 26 countries. The Ukrainian magazine hits the top five in view of achieved results in 2012 among licensed media under the Forbes brand.

3.3 The Analysis of Profitability of UMH

The study of UMH holding business activity dynamics from 2007 to 2011 (Table 2) enables to evaluate the effectiveness of its operations, expressed by indexes of profitability, calculated using the approach [22, p.29 - 30]. Activities regarding innovative diversification of the holding are primarily manifested by the growth of all types of income and therefore all kinds of profitability, by the effectiveness of its activities. Thus sales margins according to gross profit increase from year to year: they indicate how much profit from sales accrues per one monetary unit of net income and are calculated using the formula:

$$R2 = WP: D \quad [2]$$

where R2 - margins of sales according to gross profit
WP - gross profit, or the revenue from sales of products
D - net income from sales.

On average, at SJSC "Ukrvydavpoligrafiya" they constitute 44.4% while mid-year growth rates reached 13%. The return on equity characterizes how well a company uses its own capital. It is a peculiar index for owners and potential shareholders. It varies on an annual basis from 55,5% to 108,8% and is calculated as follows:

$$R3 = NP : Kp \quad [3]$$

where R3 - return on equity,
NP - net profit,
D - net operating income.

Operating profitability indicates the amount of profit from operating activities attributable to a hryvnia of costs associated with total operating expenses. It varies from 14,5% to 31.7%, i.e. mid-year profitability constitutes 20.4%, which exceeds performance indicators of international firms in the global market.

Table 3 - The profitability of sold products of UMH holding on an annual basis

Indexes, % / Years	**2007**	**2008**	**2009**	**2010**	**2011**
1. Profitability of products, %	43.7	39.5	39.5	46.5	53.0
2. Return on equity, %	74.8	60.8	64.7	56.5	93.8
3. Operating profitability, %	31.7	15.5	15.5	14.5	24.8

Calculated by the author according to financial reports of UMH [20]

Let us investigate the trend of profitability indexes at UMH on an annual basis in the graph presented in Fig. 3. It is obvious that all three indexes have a positive trend

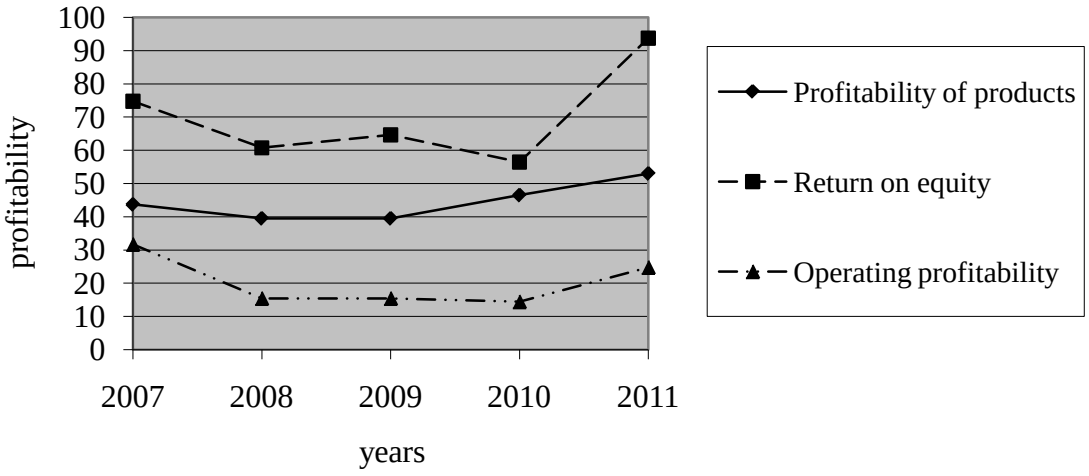

Fig. 3. Profitability trend data of UMH on an annual basis
Source: Private graphic display based on Table 3

for growth, after overcoming consequences of the world financial crisis in 2008 - 2009, and demonstrate a steady growth. It proves the effectiveness for innovative diversification of the holding, increase of its financial stability, growth of the business activity and cost effectiveness, increase of its products profitability, activities and assets.

4. SUMMARY

The processes of mergers and acquisitions of publishing and printing assets of foreign companies in the global market, which resulted in the strengthening of their market positions, discovery of new markets and technologies, as well as the creation of great holdings, have been studied.

The classification of activities for innovative diversification of a publishing and printing company, on the example of US-based RR Donnelley implementing an aggressive strategy of acquisitions of high-tech firms, has been carried out. As a result, the company benefits from both vertical and horizontal diversification. RR Donnelley covers all phases of working with the content from the initial phase to publication. Its profile is noticeably changing as well: in addition to printing, pre- and post-printing works, it carries out photographing, packaging, designing, direct marketing, creation and processing of the content, fulfillment, production of e-books, data processing, and outsourcing of business processes.

The trend for reduction of the national printed publications market, its causes and consequences, such as reduced profitability of PPI enterprises, their unprofitability and bankruptcy, has been analyzed. Attributable indexes of industry enterprises cost effectiveness have been calculated. The implementation of innovative diversification strategy for publishing and printing enterprises which will enhance their financial stability, growth of business activity and cost efficiency, increase in profitability of their products, activities and assets, has been suggested.

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UDK: 338.23:336.74 ; 336.71:330.322 ID: 203166732 **Review Article**

IMPACT ASSESSMENT TOOLS OF MONETARY POLICY NATIONAL BANKS ON THE PARAMETERS OFTHEINVESTMENT ACTIVITY OF THE BANKING SECTOR

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Abstract: *Based on the analysis of financial parameters of the economy and the monetary authorities investigate the state of the monetary sphere in Ukraine and abroad. Directions influence monetization opportunities for the formation of the investment potential of the banking sector. We consider monetary regulation by the government and the Central Bank by the following set of tools: changing reserve requirements, changes in the refinancing rate. Settles a special role in the investment activity in the banking sector, the Central Bank, the carrying out of control and regulatory function.*

Keywords: *refinancing rate, the banking sector, the required reserves, the money supply, the units multiplier*

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1. INTRODUCTION

In order to make a strategic decision- in the context of monetary policy it is necessary to assess the significance of the impact of individual methods and tools on the dynamics of investment in order to predict the possible consequences of the use of various instruments regulating the money supply. One such tool is the discount rate – monetary instrument by which the regulator sets the benchmark for commercial banks involved and the cost of any financial resources.

2. IMPACT TOOLS OF MONETARY POLICY NBU OPTIONS INVESTMENT ACTIVITY OF COMMERCIAL BANKS

Important stabilizing role to maintain liquidity in the banking system plays refinancing. A bank by adjusting the level of refinancing rates affects the value of the monetary base. In the case of higher demand for credit and risk "overheating" economy (National Bank of Ukraine) NBU 's policy "expensive money", the refinancing rate is increasing. The increase in the discount rate reduces the demand for commercial banks for loans provided through the "discount window" and reduces the amount on reserve accounts of commercial banks in the Bank (monetary base). Changes in the monetary base lead to corresponding changes in money supply enhancing the effect of the money multiplier. Due to the rising cost of credit the demand for investment is reduced, slowing growth and inflation, increasing unemployment. If downturn in economic activity, stagnation of the NBU, in contrast, has a policy of "cheap money", lowering the refinancing rate, thereby expanding the amount of lending by stimulating investment and growth. In this case, the risk of rising prices increases. As the volume of loans obtained through the "discount window" is currently low, the refinancing rate rather takes the role

of an indicator as to future intentions NBU monetary policy, indirectly affecting the level of market interest rates ("signal effect"). Change of the refinancing may not be an effective instrument of monetary policy, because, firstly, the volume of refinancing is not fully controlled by the NBU, and secondly, the application of the mechanism is rather cumbersome and the consequences are not always predictable. Fig. 1 shows the dynamics of changes in the interest rate for refinancing with respect to the relative change in the money supply.

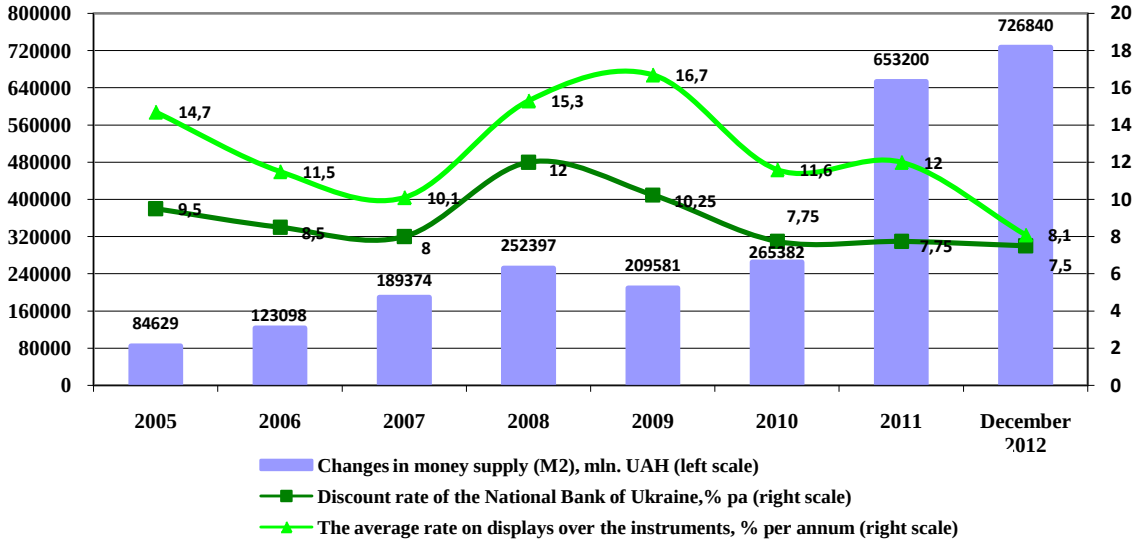

Figure 1. Dynamics of changes in the refinancing rate in relation to the relative change in the money supply Compiled by the author based on [1]

Fig. 2 shows the dynamics of changes in the refinancing rate and weighted average interest rates on corporate loans.

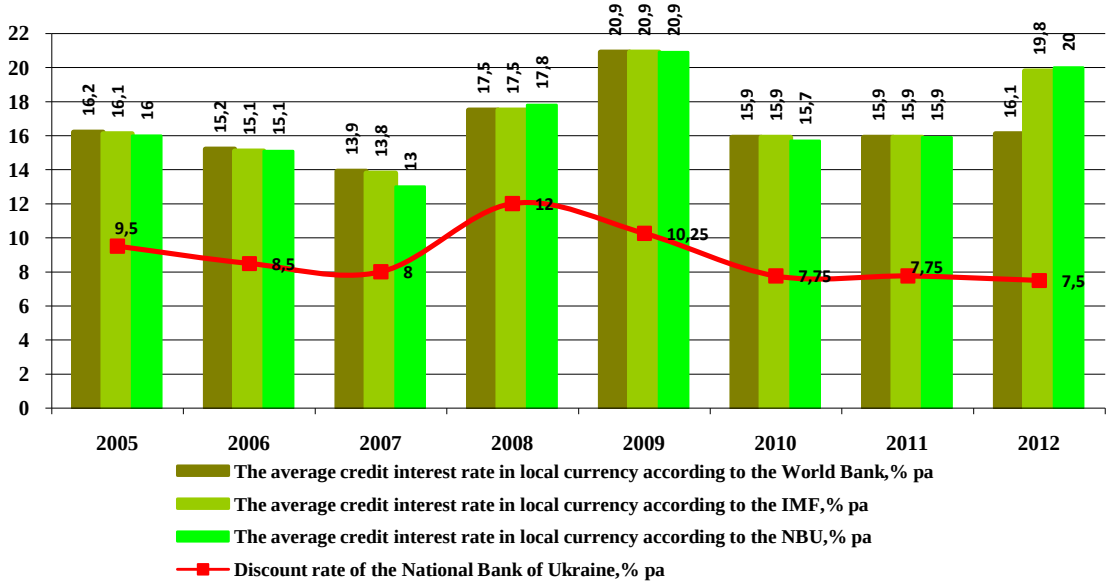

Figure 2. Dynamics of changes in interest rates and refinance weighted average interest rate on loans to legal entities 2005, 2012, % pa Compiled by the author based on [2-6]

The discount rate is the lowest among the Bank and the interest rate is the basic indicator of valuation of cash. The interest rate can adjust to the level of prices in the economy. The chain, which justifies the process, is as follows. A high discount rate leads to a reluctance of commercial banks to loan from the Bank at high interest. This reduces the level of bank reserves and hence their capacity for lending to businesses. The amount of money in circulation is significantly reduced, thus decreasing the overall level of prices. Low NBU discount rate encourages banks to obtain cheap credit. The amount of money in circulation increases, while increasing the price. If present indicated graphically you get a declining function (Fig. 3).

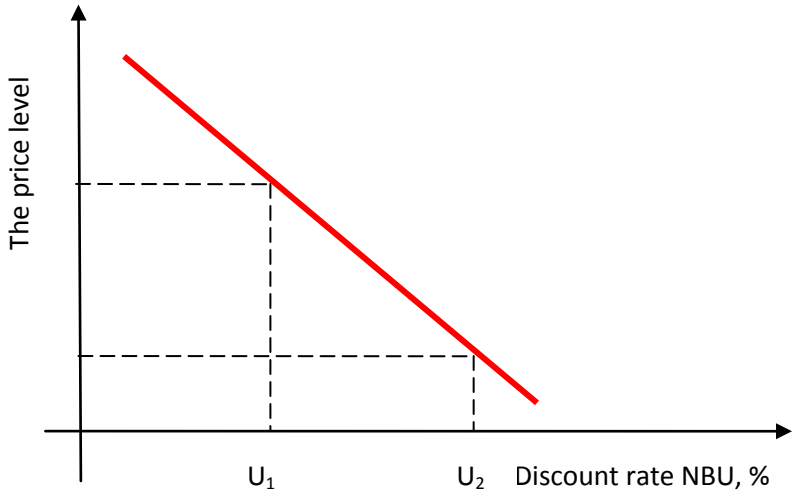

Figure 3. The dependence of prices in the economy of the NBU discount rate

As shown in Fig. 3, a greater level of interest rate corresponds to a lower price level. NBU rate is varying within the U1 and U2 (in practice usually 1-12 %) which can change the money supply and, as a result, prices in the economy, and thus result in inflation (deflation) in some of the "target" (goals). Targeting inflation – monetary policy to ensure a certain level of price increases, is a common approach to regulating the money supply through monetary measures – integrated management of interest rate, exchange rate, money supply.

IMF makes loans on terms of state power appropriate monetary policy. The fact that a high level of monetization of the economy, not only does not cause the inflation, but it can provide a low level. For example, an attempt of the financial power of China in 2004 to reduce the level of monetization of the economy (from 160% to 157% of GDP) led to an increase in inflation of 1% to 4%. However, the availability of credit in local currency provided a steady growth of Chinese economy.

Analyze whether this process occurs in real life. Indeed, interest rates are included in the consumer price. Try to visually direct function (see Fig. 3) to its limits. Orient the discount rate to infinity. Apply the formula "value" with the inclusion of interest rate and introduce the function graphically. Obviously, the guiding rate to infinity, the cost of goods should also strive to infinity. And, accordingly, the guiding rate to zero or negative value to decrease. That is the form the "price-rate" should take (Fig. 4).

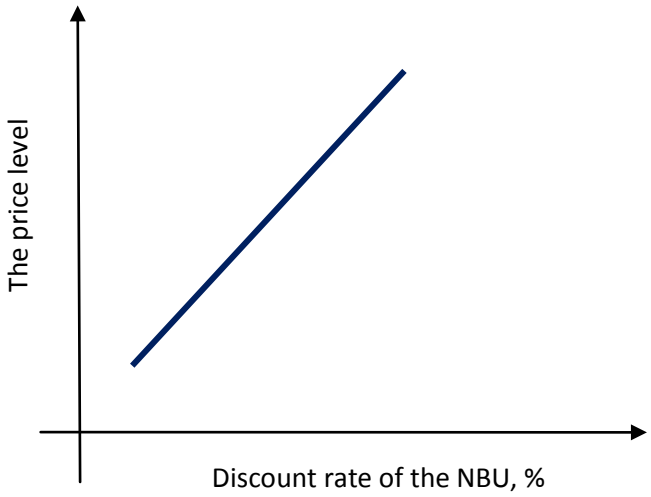

Figure 4. The dependence of prices in the economy of the NBU discount rate

The question arises whether it is possible and the situation in real life? Because the interest rate cannot be less than zero, the behavior of this function near zero indicates not appropriate. But you can imagine the existence of negative interest rates. For example, an entity which in such unusual situations got underpaid for the loan – can reduce the selling price by at least the amount of the negative rate. Hypothesis - presence of negative inflation rate. Minimum level of prices must meet the minimum discount rate. For example, the discount rate of the Central Bank in the early '90s reaching its maximum value (in April 1994 – 210 %). Compared to conventional – 1-10 %, it can be considered infinite. Indeed an entity never takes a loan with a guaranteed impossibility of return. This is probably the only short-term speculation. Instead, and inflation over a long period amounted to hundreds of percent. Consumer Price Index and average discount rate in Ukraine in 2001, 2012 is shown in Fig. 5.

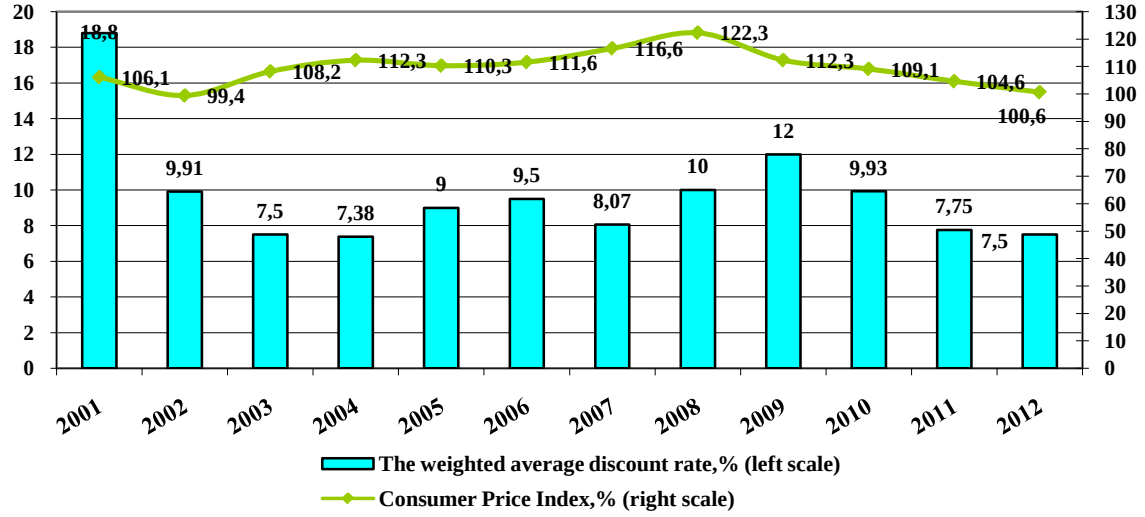

Figure 5. Value index of consumer prices and the weighted average discount rate of the National Bank, 2001, 2012, %
Compiled by the author based on [7-8]

Fig. 6 shows the dependence of average interest rates on loans and deposits of refinancing.

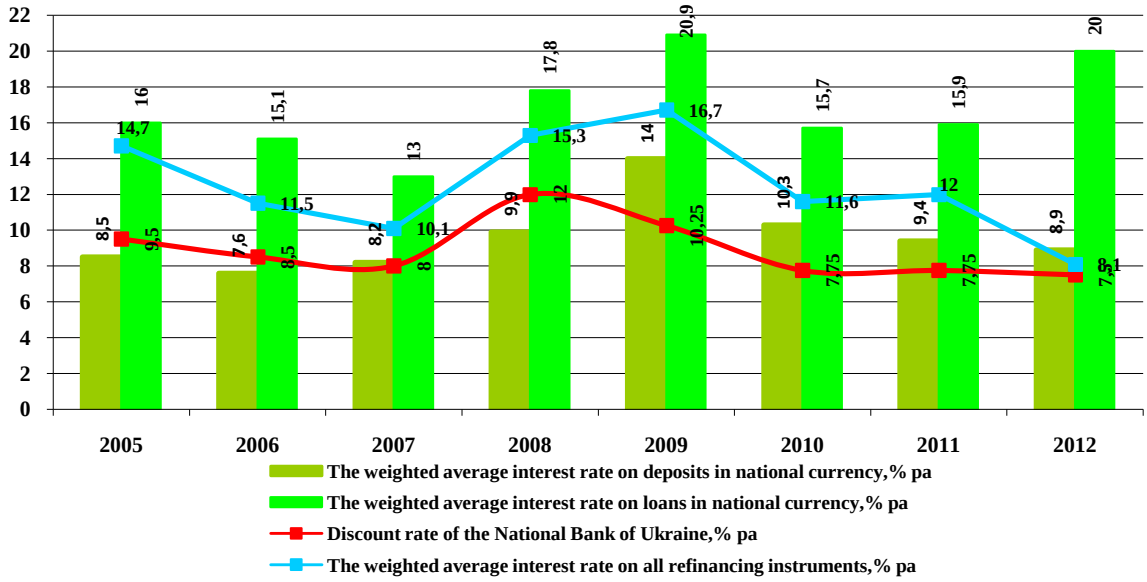

Figure 6. The dependence of the average interest rates on loans and deposits from interest rate refinance, % pa
Compiled by the author based on [3-8]

It should be noted that the total deposits in 2011 increased by 17.6% – to 486.8 UAH billion. Corporate deposits increased by 26.3% – to 179.4 UAH billion, retail deposits by 13.1% – to 307.4 UAH billion. The total loans in 2011 increased by 9.6% – to 793.2 UAH billion. Fig. 7 shows the dependence of the net inflow of direct investments from inflation (CPI).

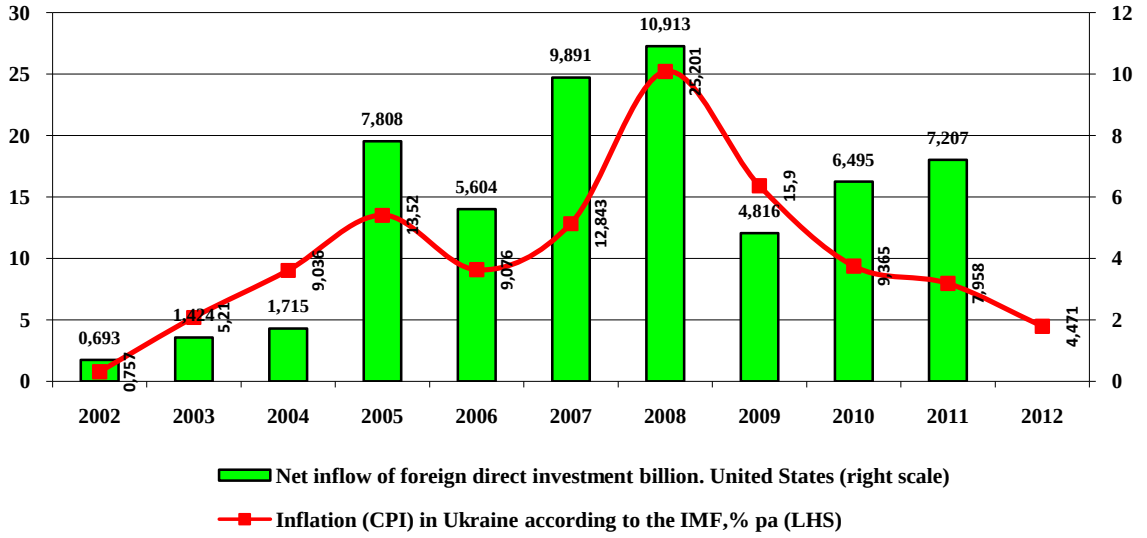

Figure 7. The dependence of the net inflow of direct investments from inflation (CPI) 2002, 2012
Compiled by the author based on [9-10]

Consider another situation. The Federal Reserve (Fed) to influence the U.S. economy uses two types of interest rates. The interest rate on federal funds – the interest rate at which banks are free to place funds held in accounts at the Fed and other banks for overnight. The Fed controls the interest rate on federal funds through operations with government securities. Discount rate can be regarded as interest rate at which the Fed provides loans to maintain liquidity.

Banks are required to keep a portion of the funds raised from the public accounts FRS as required reserves. If for some reason the bank did not have enough money, he can borrow some excess reserves to another bank. This is the sale of federal funds. Percentage, under which one bank lends to another, is set by the bank. Why should the bank carry out the decisions of the Fed and lend at 0.25 %? In fact, it should not. Fed Decision belongs to the so-called target rate which is determined by the level that is necessary to regulate the market. Real interest rate at which banks trade with each other, called to consider the effective interest rate. The task of the U.S. Federal Reserve is to adjust the effective (real) interest rate to the target. In Fig. 8 there is the model of the U.S. Federal Reserve to influence financial system.

U.S. Federal Reserve decides the issue by buying (selling) of securities, increasing (decreasing) the number of reserves in the banking system. If excess reserves are increasing, the number of actors lends their increases, the rate falls and the Fed achieves its goal. By increasing the excess reserves, the Fed stimulates the supply of money, which leads to lower rates. This percentage, at which the Fed lends to banks (loans are secured by securities). In fact, the bank has a choice, take a loan from another bank or go to the Fed. However, since the discount rate is slightly higher for this method is rarely resorted to lending banks, and plays a key role for the federal funds rate. The cost of money in the interbank lending market affects the overall level of credit interest rates in the economy. If banks can get cheap money, they lend at lower interest rates. Surplus to create the U.S. Federal Reserve, are directed into the economy, thus increasing the money supply. Since 2008 the Fed has created huge excess reserves. The value of the bank multiplier dropped to record levels.

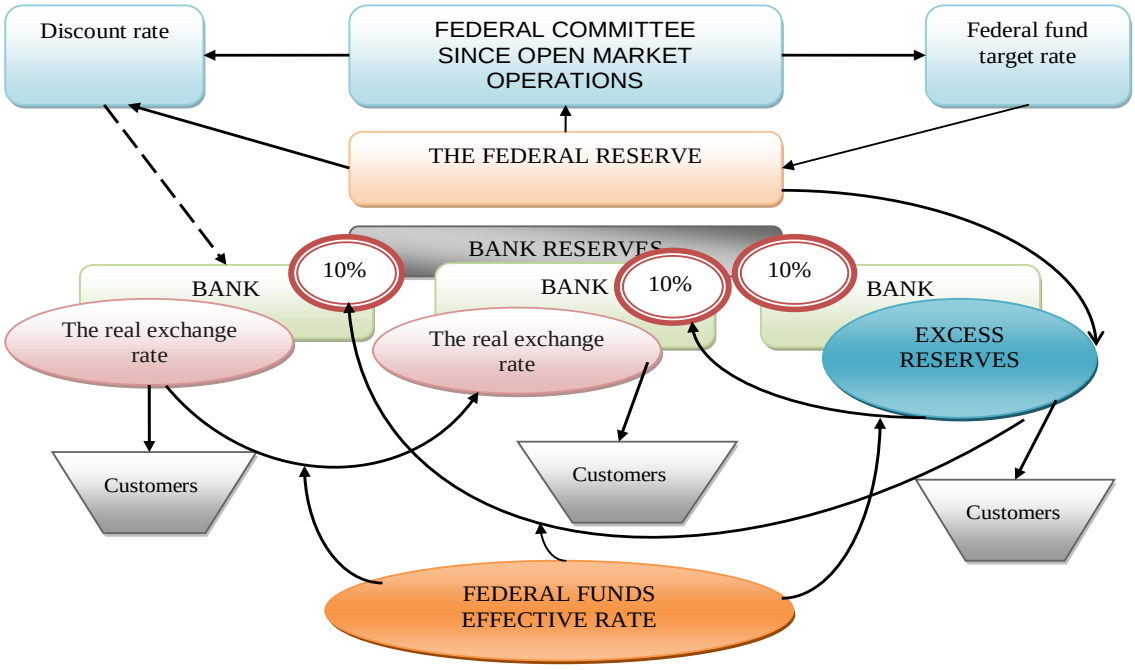

Figure 8. Model impact of the U.S. Federal Reserve's financial system
Compiled by the author based on [11]

This means that the accumulated excess reserves of Fed depository but do not lend to the real sector, while the target for the federal funds rate is zero. Most of these excess reserves are borrowed in origin, and therefore, raising the target for the federal funds rate, the Fed can remove these provisions from the market and prevent high inflation.

Consider another example. In the period 2001 to 2006 Japan's central bank has a policy of zero interest rate in an effort to combat state with negative inflation and anaemic growth in business activity. Since 2008 target of the Central Bank of Japan discount rate on overnight loans to commercial banks amounted to 0.1%. At the end of 2008 Japan's central bank discount rate changed twice – from 0.5% to 0.1% (Fig. 9).

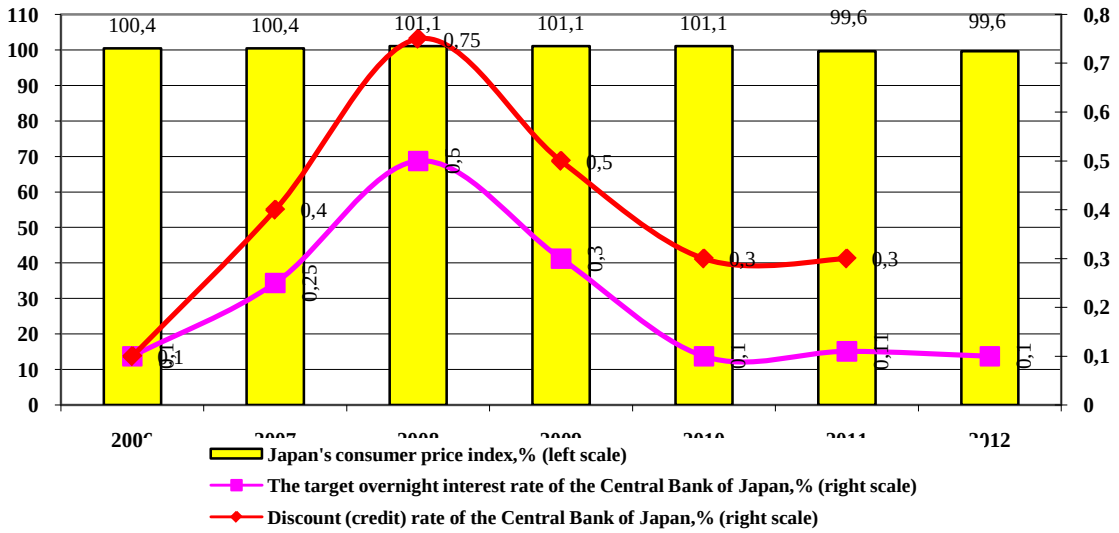

Figure 9. Value index of consumer prices, discount and overnight interest rates of the Central Bank of Japan during 2001, 2012, %
Compiled by the author based on [12-14]

In 2012 discount rate of the Central Bank of Japan was at 0.0-0.1 %. The target interest rate for overnight loans – the average level of interest sought by the Central Bank of Japan money market deposits. Japan's central bank influences the level of rates by operations with government securities. Discount rate – is the interest rate at which the Central Bank of Japan provides loans to banks to support their liquidity. In 2012 Central Bank of Japan eased monetary policy by increasing the purchase of government bonds by 10 trillion yen (123.8 billion U.S.) in order to reach a new inflation target of 1% for the economy out of deflation. On the other hand, the Bank of Japan cut 5 trillion yen amount of funds allocated for operations with fixed interest rate [15].

So, the prices have increased substantially to raise the discount rate. But Japan's central bank lowers the rate to zero. As you can see, the level of interest rates is shown in Fig. 3. Striving for more (less) boundary behavior tool "prices– rate", it changes significantly (see Fig. 4). Presented in graphical form (Fig. 10).

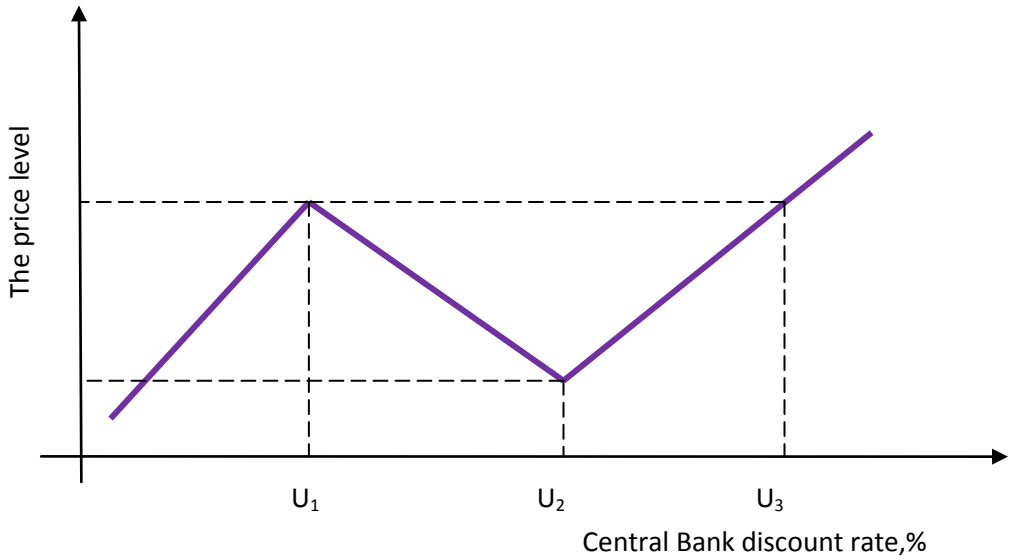

Figure 10. The dependence of prices in the economy of the discount rate of the Central Bank

Analysis of Fig. 10 showed that the economic approach from across the infinity of variations describes only a small part of the possible values of U1 to U2. Everything else that goes beyond its limits, the science does not describe. Apply methodological approach as opposed to a virtual financial approach implements a similar character functions (Fig. 11).

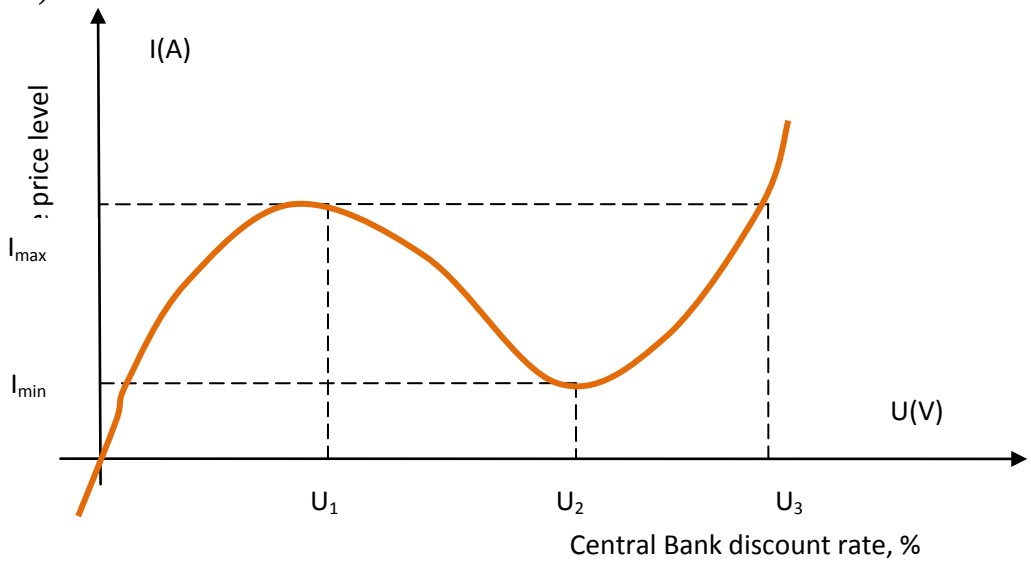

Figure 11. The dependence of prices in the economy of the discount rate of the Central Bank

The proposed methodological approach acts like an electronic device – a tunnel diode. It is interesting that in a narrow range of direct voltage from U1 to U2 it has a negative differential resistance. In other words, increasing the voltage applied to it, the current that goes through it is not growing and declining. The effect of negative resistance is used to amplify or generate vibrations. The question is what causes a negative resistance in the money supply? What is this uncharacteristic "price gap" in the range of the level of rates from U1 to U2, which appears to function and, therefore, should be smooth from start to finish (to infinity).

There is a so-called effect of banking (credit, money) multiplier. Engaging at U1, and since virtually limited to increase the monetary base, it really increases the payments in the economy. And the effect on the economy similar reduction rate of the Central Bank. In this case (this snippet functions) implemented inverse process, where the increasing rate of the Central Bank reduces rather than increases prices in the economy. The hypothesis that the decline in prices (the scope of the negative differential resistance) is the money multiplier leads to many conclusions. This "gap" graphics may appear only in a two-tier banking system, where there is a potential barrier between the Central bank in real sector of the economy. This barrier is often a system of commercial banks.

Thus, the money multiplier cannot act (multiply) the monetary base at zero or near-zero value of central bank rates (below threshold). For commercial banks of the second level it is not necessary, because why to attract money from the economy to deposits if they can always borrow from the Central Bank at low interest. Therefore, interest on deposits is low and interest to investors. Besides, what good commercial banks to pay a large percentage of deposits if there is another, more attractive source of funding, while a low percentage. What would have lowered interest rates of the Central Bank – this will give an opportunity to put in place the money multiplier, multiplier because the ring is "terminated".

However, the multiplier cannot normally operate and high interest rates. Profits will not get the real sector that refuses to take out loans at high interest rates due to the impossibility of return. Similarly, commercial banks do not make loans due to concerns about their return entities. Real economic activity is slowing down, and with it the money multiplier. And in the first and in the latter case the second level of the banking system stops converting the accumulated savings (deposits) in new investments (loans). Circulation of money on direct participation of commercial banks stalled. Accumulation accumulates in the population, creating the conditions for overall financial instability. In the case of a one-tier banking system is possible to realize the process shown in Fig. 11 (without lots of negative resistance), because for tier banking system there is no difference between money involved in economics and money generated by the banking system itself. Household deposits for the existence of a one-tier banking system include the method of sterilization of money, not liabilities for the issuance of new loans. In pure form, it can be considered a planned economy.

Combining the first method to the second, try to explain why the economy is not considered possible scenarios beyond levels U1-U2. And trying to implement a process shown in Fig. 3, although in practice it still acts like mechanism shown in Fig. 11. The usual situation of self-destruction offset purchase "government securities", "toxic assets" (in the planned control mode). Outside the interval U1-U2, it does not exist. The banking system is effectively transformed into a one-tier system, where the change rate of the Central Bank broadcast through commercial banks (with additional interest) on the real sector. There are additional losses in the chain. As for the theoretical calculation of the U1-U2, the central bank can detect them only through empirical research and monitoring of the situation. Levels of U1-U2 are not associated with the behavior of the Central Bank, not some static ideal interest rate of the Central Bank, not the desire of commercial banks to receive profits, and the environment in which they exist, because it sets environment parameters levels U1-U2.

The ideal environment for the operation of the money multiplier can be considered a developed economy with a lot of property that is not mortgaged. As the banking multiplier of all or most of the property faces the pledge. For inhibition of multiplication is not necessary that all the collateral was subject to lien. Sufficient magnitude can be considered a minor part of it. Central Bank to boost lending to low use rates and zero

requirements required obligatory reserves of commercial banks. However, the banks refuse to lend at close to zero percent, because in this case they do not get high profits and rapidly grow risks. Each borrower, getting a loan has to pay not only for themselves (interest on the loan for his mortgaged property), but also (in the form of high prices contractors) for the entity that took credit earlier (and included in its interest rates by their credit). Given the level of prices and personal income, the borrower expects the impossibility of repayment and loss of deposit. From a theoretical point of view, to exclude this situation it can occur if the economy has created a new property which is much faster than it includes mortgage interest in commercial banks. In practice this does not happen, and the excessive production leads to a fall in prices. There is deflation, which automatically brakes multiplier, thereby reducing the production activity. Entities are also not able to return the loan debt with a steep fall in prices.

If the property is pledged, it is possible multiplier reduced. Deep and intense "abyss" of negative differential resistance eventually turns into invisible gap (see Fig. 11). Using bulk no collateral, the credit activity of banks is reduced. The second level of the banking system degrades. Central Bank, according to the function (see Fig. 10), shall decide on lowering the interest rate, which should cause inflation. Therefore, the Central Bank lowers the rate to zero and thus finally lose their ability to keep the animation within the U1-U2, therefore, there is even more deflation. Value index of consumer prices, discount and target interest rate of the U.S. Federal Reserve during 2001, 2012 is shown in Fig. 12.

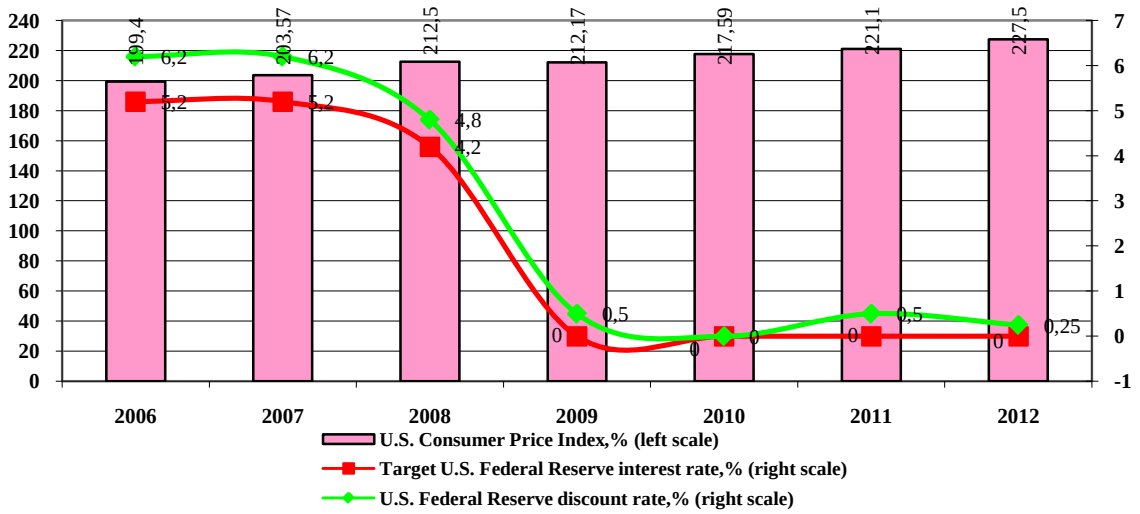

Figure 12. Value index of consumer prices, discount and target interest rate of the U.S. Federal Reserve during 2001, 2012 %
Compiled by the author based on [16-18]

From a theoretical point of view inflation crisis conditions could be obtained by raising interest rates significantly higher than U2. However, this automatically means of braking, while the multiplier does not start. The banking system is a unicameral de facto two-tier structure while maintaining de jure [19].

Another instrument for the change in the monetary base is open market operations – Operations Bank of purchase / sale of treasury bills and other securities (other than securities confirming the corporate rights) and liabilities determined by the Board of the NBU. This tool has a corresponding advantage. First, the operations are carried out on the initiative of the NBU, which can control their volume (as opposed to changes in the refinancing rate at which the volume of lending is not fully controlled by the NBU).

Second the flexibility and accuracy of the financial instrument to achieve the necessary changes in the monetary base. Third, open market operations quickly and easily reversed. Finally open market operations do not require lengthy administrative approvals and provide quick corrective influence on the dynamics of the money supply.

The NBU purchase of government securities increases the monetary base (the sum of reserves of the banking system), and thus the money supply. Sale transaction rather reduces the monetary base and reduces the amount of the money supply. If money glut situation, expanding the money supply and price increases and the Bank sells government securities. In this case, decreasing reserves of banks reduced lending opportunities and the amount of money in circulation, more expensive credit and falling prices. This, in turn, triggers the production stagnation and rising unemployment. The total value of shares sold in some countries as a percentage of GDP during 2002 to 2011 is shown in Fig. 13.

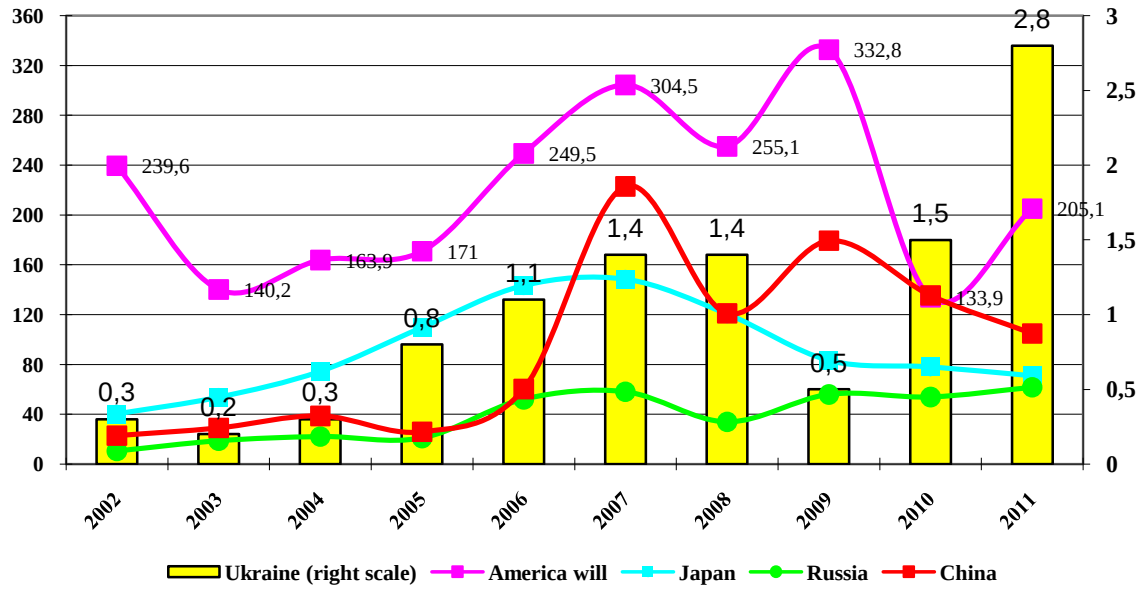

Figure 13. The total value of shares sold in selected countries, % of GDP
Compiled by the author based on [20]

At the "super cooling" conditions, lack of money in circulation and the growth rate of the NBU's policy of credit expansion – buying government securities and transferring funds to reserve accounts of commercial banks increased lending opportunities and the money supply to stimulate the growth of economic activity but can induce price increases. Open market operations can be divided into two types: dynamic – aimed at changing the volume of reserves and the monetary base, safety – aimed at weakening the influence exerted on the monetary base by other factors. In recent years, instead of direct transactions of purchase and sale of securities is increasingly used repurchase agreement (REPO). When purchasing securities NBU makes them mandatory redemption sellers after some time (not more than a week) at a fixed rate. The advantage of temporal data operations lies in their flexibility and softer the effect. Turnover rate of shares sold in certain countries during 2002 to 2011 is shown in Fig. 14.

High turnover rate indicates a low cost operation. Turnover ratio complements the ratio of sales to GDP, because the turnover ratio is related to the size of the market and sales relative to the economy. Small liquid market will have a high turnover ratio but a low share price sale. Full index of liquidity include trading costs and the time uncertainty of finding an analogue to the settlement agreements.

In February 2012 the National Bank of Ukraine had open market operations in government securities. The volume of government bonds purchased was (at par) 0.75 UAH billion (from the year accounted for almost 2.1 UAH billion). The sale of government bonds from the portfolio of the National Bank in February 2012 is not conducted. NBU has also purchases of government bonds through bilateral quoting whose volume was 0.7 UAH billion. Sale of government bonds through bilateral quotations was not carried out in February (from the year sold 1.3 UAH billion).

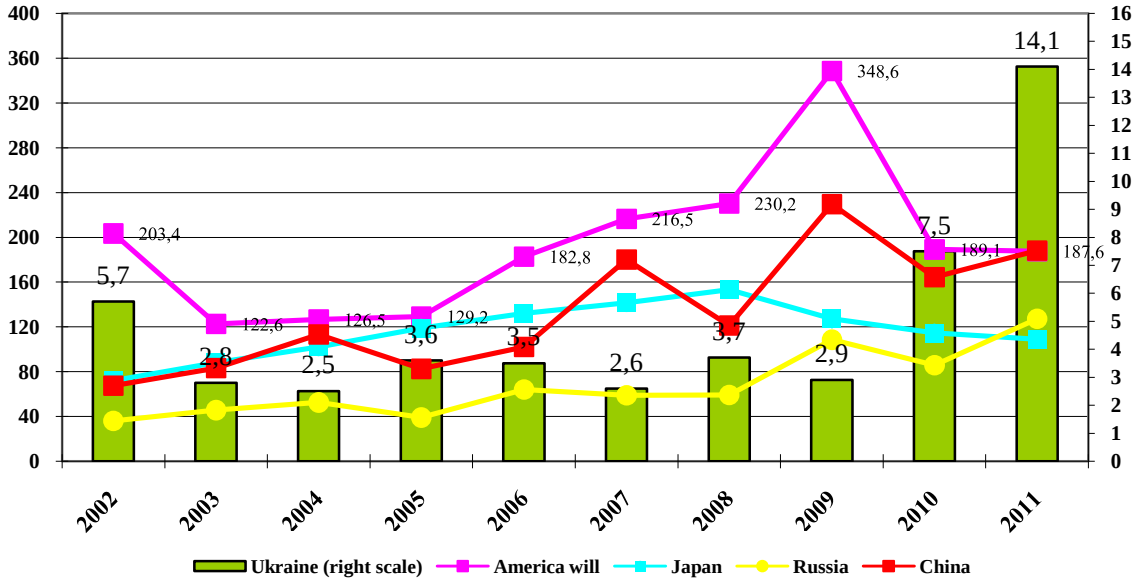

Figure 14. Turnover rate of shares sold in certain countries during 2002 to 2011, %
Compiled by the author based on [21]

Despite attempts to stabilize the situation in interest rates, the yield bonds are increasingly dependent not on targets of economic policy and the need to raise funds in the budget. Therefore, the private investment market government securities played most destabilizing role. Based on the results of the State budget received funds in the amount in national currency – 3.7 UAH billion, foreign currency – 277.7 million USA [22].

The weighted average yield, which in February brought the T-bills auctions with their initial public offering, was in national currency – 13.86% per annum in foreign currency – 9.27% per annum. Repayment and payment of interest on government bonds were made on time and in full, in February 2012 amounted to 6.8 UAH billion, including principal debt – 4.5 UAH billion, payment of interest – UAH 2.3 billion.

3. CONCLUSION

The main strategic directions of restoring credit and investment banks in the Ukrainian context of the impact on the economy offered: de-dollarization of the economy, the internal long-term financial resources, optimization of banks with foreign capital that focuses on lending to Ukrainian economy, strengthening the supervision of individual banks basis with a focus on relative rather than quantitative, containment of inflation and interest rates to minimize the formation of infrastructure of distressed assets, development and implementation long-term measures for gradual control of the country to set strategic objectives.

Falling profit margins, and hence commodity prices due to increased competition, not only leads to the stabilization of the economy, but also causes of the crisis of overproduction. This leads to the destruction of social and economic structures within which the accumulation of capital and the creation of new structures is carried. The purchasing power of currencies and their rates, relative to each other, does not depend on the amount of gold available to governments and central banks, and from actions taken by them. Today it's different "anti-crisis" measures, many of which include the issuance of new money in large quantities. Figuratively it can be said that the money secured judgment of politicians.

Improving the quality of banking products in terms of lending will focus consistent financial institutions to increase the attractiveness and accessibility of banking products to their customers. Banks should pay due attention to the reduction of unnecessary administrative and procedural costs. Lower costs will support a competitive interest rate (market) level. Clever minimization of documents for a loan and shortening the review of applications by banks with the use of automation and remote access will significantly change the situation in the field of interaction with customers of banks. Improving quality and expanding of banking and other financial services contribute to government and the NBU work to improve legislation on consumer credit, credit cooperatives and microfinance. Based on the experience of the Law of Ukraine "on the Organization Formation and Circulation of Credit Histories" appropriate measures for improvement of the credit bureau and the Central Catalogue of Credit Histories to improve the quality of credit are implement. NBU should continue the practice of placing in the media and on its website on the Internet material that clarifies the provision of banking services.

The necessity to address the reduction of state participation in the capital of the large Ukrainian financial institutions, supervision and regulation of the market of services of non-credit institutions, is providing the establishment and operation of innovative infrastructure facilities, development of the national payment system, positioning Ukrainian banks in international banking market. Implementation of these measures should ensure qualitative improvement of credit conditions of the real sector, progressive and sustainable development of the internal market and a solid foundation of balanced national economic growth.

We found that as a result of transformation processes of monetary policy in developed countries and increased fluctuations in world currencies, there were preconditions for the formation of new currency blocs and bilateral settlement mechanisms based on the use of local currency in international financial calculations, as well as the emergence of new international financial centers, including Ukraine (Kyiv). There is a real opportunity to increase the share of Ukrainian hryvnia in international payments, allowing you to start using the rate as a regional reserve currency and reduce currency risks for Ukraine and EU partners. In order to create favorable conditions for international payments using the rate of the Government and the National Bank of Ukraine are invited to consider changes to monetary, tax and customs laws and regulations in the settlement. To ensure the calculations in the created an international financial center requires the development and improvement of the national payment system, including by expanding the use of electronic banking fees and increased interest of banks to use this system. Creating an International Financial Center will integrate the Ukrainian banking sector in the global markets, will provide a comprehensive improvement of the existing system of regulation of the financial market.

To simplify procedures, measures are proposed which aim at ensuring favorable conditions for public offerings and for facilitating the registration of securities issuance.

The problem of accelerating procedures mergers and acquisitions related to the inability to make now joining limited liability company to joint stock companies, should be addressed at the legislative level.

In order to enhance competition in the banking sector, creation of the legal framework of antitrust regulation and the protection of competition in the banking products and services, further increasing the transparency of the banking sector, reducing the concentration by amalgamation and consolidation of medium and small banks, is required. The main trend of institutional development should remain functioning, whre universal banks offer a wide range of products and services.

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UDK: 330.341.1(497.11) ID: 203167500 **Review Article**

SCIENTIFIC AND TECHNOLOGICAL PROGRESS AS A FACTOR OF ECONOMIC DEVELOPMENT IN SERBIA

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The Faculty of Management Zajecar

Abstract: *The position of a country within modern international division of work is determined on the basis of utilization of the latest achievements of science and technology at its economy. This is the time when scientific-technological development, more than ever, becomes the paradigm of economic development of each country. In order to obtain a corresponding basis for scientific technological progress, there have been provided adequate measures for improvement of scientific research basis in our country. On the basis of experience in utilization of programmes for financing of innovation process at OECD countries, in this paper utilization of the most adequate instruments in Serbia is recommended and this is: donations for early stage of commercialization and entrepreneurship capital for later stage. The possibilities for adjusting these instruments are different for many countries including the countries of our region.*

Key words: *Technological progress, research and development, transition, economic development*

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1. INTRODUCTION

Technological progress is the most dynamic factor of any economic development. Along with the improvement of existing and creation of new technologies, it contributes to the improvement of existing products and creation of new ones and hence leads to the improvement of an organization as a whole. The level of technological progress of a country influences the level of social and economic development. The choice of ways and methods of carrying out the aims of technological development is the question of a company strategy. This means that the organization can decide upon independent technological development for purchasing of ready made technological know-how by means of technology transfer or by combination of purchased and own technological know-how. Regardless of the organization's strategic option for its technological development, research and development present the skeleton of their technological development [1]. The speed of development of scientific-technological progress depends on the scale of engagement of science, knowledge and skills of people, that indicates the relation between scientific-technological progress and education system. Besides, there are also corresponding financial instruments intended for stimulating and supporting development and commercialization of innovations. Therefore, basic financial instruments are distinguished and also those intended for ECA region proposed by the World Bank. In many countries of the previous USSR (Russia, Ukraine, Kazakhstan) and their satellites as well as in the republics of previous Socialist Federal Republic of Yugoslavia (Serbia, Croatia), the succession of research and human capital provides stimulation for revitalization of their research capacities and scientific progress [2].

2. THE SCIENTIFIC-RESEARCH ACTIVITY IN SERBIA

The basic tool of a society development for sure belongs to development and utilization of science. Today, its influence is obviously unavoidable, then it could be considered to be a scientific-technological progress. The changes in scientific knowledge bring to radical, revolutionary changes in a way of industrial manufacturing. The scientific-technological progress includes improvement of existing and creating the new technologies, finalizing the existing, and creating new products and improvements of organization and leadership [3].

The most important component of science is research. It represents the utilization of human intelligence and experience in organized and systemized scientific way of solving problems. The research usually involves systematical utilization of human common sense on studying the problems whose solution has not been known so far; planned search or critical examination in due of finding the new knowledge so that it could be useful. The scientific research is different from other kinds of research because the problematic of its work is within limits of the law of reasonable logics and common sense. Without self development in areas of technical and bio-technical science, but also in areas of mathematical and medical science, the country becomes endangered to become completely technically and technologically dependent of the most developed countries. Scientific-research and research-development activity represent very important base of technological and completely social-economic development of one country. By following the movement of indicators of development of this area, the development base of an economy and its economic subjects can be seen.

The position of science in Serbia is still not on a satisfactory level because it is still based on individual enthusiasm. The strategy for technological development of the Republic of Serbia must anticipate the ways of opening towards the world and values of the world's science and technology. According to the research done by professor Tibor Sabo, the basic quantitative indicators of development of scientific production in Serbia are shown on figures (1,2,3) [4].

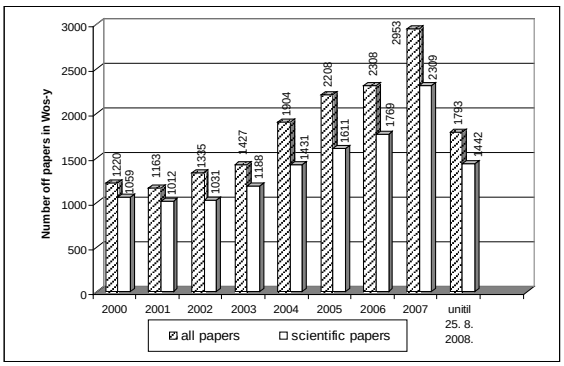

Figure 1. Review of number of published papers in Serbia from 2000 to 2008.
Origin: [4]

By analyzing figure 1 according to the number of published papers in WOS-Y (World Organization Students–Young) in Serbia from 2000 until August 2008, the increase of the number of all published papers can be seen as well as a certain increase of published scientific works. The number of all published papers increased in the year 2007 by 2.4 times comparing to the year 2000, while the number of scientific works increased 2.18 times. If we take a look at the year 2000, the participation of scientific works in all

works in Serbia was 84.8%, while in the year 2007 the participation of scientific works in relation to others decreased to 72.11%, which indicates a lack of investments in knowledge production through research and development.

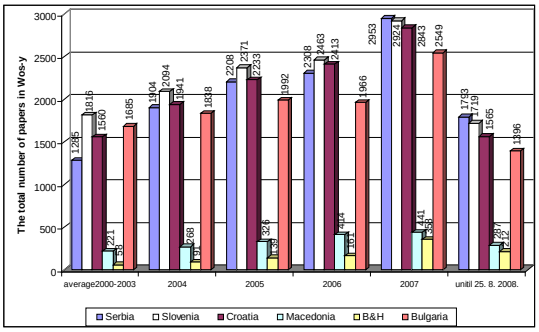

Figure 2. Review of total number of scientific works published in Serbia and surrounding countriesOrigin: [4]

According to figure 2, it can be concluded that the number of published papers in WOS-Y, in Serbia had a growing tendency, in comparison to the countries from the same region. In 2004, Serbia was the third, right behind Slovenia and Croatia, in front of Macedonia (FYROM), Bosnia and Herzegovina, and Bulgaria. In the next year and in 2006 as well, it kept the same position, so in 2007 it overtook the first position in comparison to the countries of the region. This indicates the evident activity of Serbia within scientific work publishing area, and this trend was in progress during the first eight months of 2008.

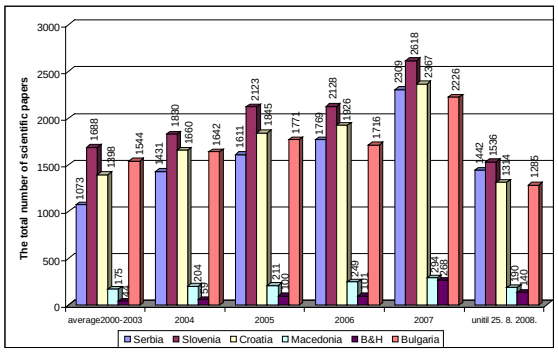

Figure 3. Review of total number of scientific research works published in Serbia and surrounding countries Origin: [4]

By analyzing figure 3, it can be concluded that according to the numbers of published scientific papers, Serbia holds the third place in 2004, 2005 and 2006. From the previous figure it is obvious that Serbia held the first position in 2007 by the entire number of published papers, which was not the case with scientific works. According to the number of published scientific research works in 2007, Serbia was on the third place, which meant that the scientific research was not encouraged enough, and that extra effort should have been applied in the development of scientific research work. If the first eight months of 2008 are considered, it can be concluded that Serbia is on the second place by the number of published scientific papers, which indicates an improvement of scientific-research activities. Even with this improvement within the first eight months in 2008, Serbia is still behind by number of scientific research works, in comparison to the developed countries of the region.

According to this type of indicators, it can be concluded that the entire situation in Serbia in the last few years has had a dramatic impact on developing and researching capacities in the country. In such conditions young people stopped being interested in research activities, and turned themselves to service activities. The most wanted activity of their interest is business management. To improve the situation it is necessary to find out the reasons for such indicators and to take adequate measures so that Serbia gets better results within research-development areas.

3. PROPOSAL OF MEASURES FOR PROMOTING RESEARCH-DEVELOPING ACTIVITIES

According to the given indicators presented in the analysis of the research-developing activities in Serbia, it can be concluded that the entire situation in the last few years has influenced the developing and researching capacity in the country. Relatively small amounts set aside for research and development activities, and the brain drain, made the situation even worse - impoverished material and human resources base of scientific research activities in Serbia. The consequences of very hard transition process, especially the privatization process, points out the fact that the new management in organizations is oriented to the profit increase. This causes development-departments to close and stops the cooperation based on the research activities. The utilization of measures for development of technological progress should be the priority for the Government of the Republic of Serbia and the Ministry of Science and Technological Development, with the aim to create knowledge through research and development, diffusion of knowledge by education and utilization of knowledge through innovations [5].

Considering the present situation of research-development activities, it can be concluded that economic and the entire development of Serbia is going to be based on organized research and development that should bring to constant technological development in the form of improving the existing technologies and creating new products, processes and services. To provide the competitive and improved modern system of research and development, the Republic of Serbia must do the following tasks [6]:

- provide technological revitalization of research units;
- equalize private and public research development units during the use of public funds;
- improve their international competiveness and encourage international links and cooperation with eminent foreign institutes;
- reduce leaving of the best researchers abroad by special programmes for the most talented young scientists;
- install unique information systems for all scientific-research organizations, and improve possibilities for using the information-communication technologies;
- bring the system of e–management;
- encourage spreading of the knowledge and sharing of science information as public goods (scientific gatherings and international sharing of information);
- establish (according to needs of Serbian economy) scientific-technological parks, incubators and development innovation centers;
- make connections with Serbian academic diaspora for the purpose of returning of our scientists to Serbia as well as to make better mobility of our researchers within the country and abroad.

Based on the Report of the National Council for Scientific and Technological Development from 2000 to 2010, an important indicator that tells about the scientific and research potential of a country is the number of researchers per thousand population. According to the National Council, Serbia has the lowest number of researchers, seven times less than Finland or five times less than Denmark and Norway. It is clear that the number of researchers in the country must increase in the future, which has been partly accomplished by hiring a large number of researchers in projects of the new project cycle (2011-2014). For the further development of science and technology it is necessary to invest more, because Serbia was the country that until 2011 had by far the lowest % of GDP that was allocated for science.

Apart from this, the survey indicates that in the developed countries where investments are very high and which have a much larger number of researchers per thousand population, research activities are not focused only on the production of scientific papers, but are directed towards the creation of patents and technological innovations. On the basis of the facts listed above, technological development and innovation activity require experienced researchers and developed material base, so it is necessary that national priorities in science and technology development are followed by a gradual increase in budget allocation that by 2015 should reach 1% [7].

4. FINANCIAL INSTRUMENTS FOR ENCOURAGING TECHNOLOGICAL DEVELOPMENT IN TRANSITIONAL COUNTRIES

To improve technological process in Serbia, the World Bank suggests actions which are aiming to offer solutions for creating politics which will increase and keep the productivity and its growth, by doing this, they are creating good environment for the usage of economy knowledge, maintaining and learning the innovations. The goal of financial instruments recommended in the Study is to encourage IR in companies, and push-up the cooperation between the companies, universities and research institutes in implementation of innovated projects. By using the experience in interventions within OECD countries, the basic models of financial instruments that were used in OECD countries have been considered, including subventions, loans, encourage tax, and subvention purchase, and described recommended instruments for ECA region, including the IR subventions (mini-subventions, adjusted subventions, and the contractors capital) which could be used in our country as well. Basic models of instruments for encouragement of research and development are [8]:

1. **Subventions**–one form of subventions are grants (non-returnable help), which demand one part of adequate investments from the grant beneficiary. Grants have two clear advantages over the loans for improvement of innovation. First, supplying the finances through adequate grant reduces the contractor's risk ,which is the biggest obstacle in securing the encouragement to the innovators to lean towards commercial use. In the case of technological or commercial failure the loss for the contractors is limited to their own adequate investment, and they don't have to return the grant. Second, IR and innovating activities demand high direct investments that may generate positive flow of cash on non-predictable level at some point in the future.
2. **Loans**– can be an important part in the future stages of innovational process, when the risk for contractor reduces, with greater chances for success and reduces the distance from the market.
3. Stimulation taxes-are wide spread, especially in Europe, for basic encouragement of IR investments through wide spectrum of companies. Altogether, stimulation

taxes encourage investors or companies to invest in IR or new companies trough tax credits and lower tax rates. Stimulation taxes can appear in few forms: direct tax loans for investment, reduction of profit taxes or tax rate on investments, and tax loans for neutralization of loss from the investments in small and middle size companies. **Stimulation taxes** are generally neutral - they are used in all suitable companies and from the same reason they are supporting one of the main principles of designing the instruments. Nevertheless, in USA, the study of Hall and Van Reenen, (1999) indicates that one dollar of tax deduction for IR is stimulating one dollar in extra IR.

4. **Subvention supplies**–are variations of direct programme grants, which is partly on government's budget for research and it is reserved for the small innovative companies. This type of program is most sufficient in large economies with significant sponsorship from the government, whose budgets are dedicated for commercial pointed research.

Based on the experiences of the developed countries, and having in mind that financial resorts are needed from the initiative idea to commercialization, as a stimulus for the improvement of technological progress in the ECE region and Serbia regardless that is in transition, it is essential to use these instruments in practical work: mini grants; adequate donations; and VC support [9].

1. **Mini grants**-represent the first stage of financing and turning to commercialization of given innovation. The purpose of a mini grants program is double: (1) to stimulate involving of contractor enterprises, and activities in innovation field by supplying mini grants for help of potential contractors, by taking their existing ideas, and determining if those ideas can be included in commercial investments, (2) to help scientists and entrepreneurs who have limited experience in making successful companies by giving them technical support and consulting services that can help them to make concept in business function that may be needed to take their products to market. Mini grants are small grants designed to give support to identified commercially good ideas and science work.
2. **Matching grants**-Program of adequate grants is functioning by encouraging share risks with companies and orienting selection process toward IR programs which are suitable for generating of innovations that could be commercialized. Qualified companies or consortiums of academic institutes, will apply for grants for certain IR projects which are observed by the independent research department. If granted, the candidates get grant of 50%-70% of state IR budget for some projects. Successful projects (the ones that lead to sale) will be obliged to return the grant, as an honorary from income, according to the amount of grant in dollars. Sharing the risk with company represents a relief, regardless of the negative consequences "choosing the winner" by the public sector party.
3. **Support of entrepreneur's capital**- Entrepreneur's capital is directed to projects which passed the early stage; this project could be supported but do not have to be supported by the grant program to reach the stage where they are good enough to be interesting for entrepreneur's capital. For reaching the high commercial returns, which are expected by the investors they are searching for the companies that successfully developed innovation, proven its technical ability and founded possible commercial use and market. At this point, entrepreneur's capital provides funds for spreading the manufacture, market development, and consumers base, and plays the main part in supporting the next stage of commercialization.

In order to be able to conduct the suggested measures, Serbia needs to make an adequate innovation system. This system should include adequate institutions (universities, research institutes), instruments, (state financial support) and encouraging the rights on intellectual property, and strong market competition. This is the only way for Serbia to provide the secure base for improving the science–technological progress, and to create the opportunity for the fast economic and industrial development.

5. CONCLUSION

Science–technological progress demands utilization of new knowledge in business organizing, and technical and technological innovations, new techniques and technologies, inventing and involving new products, new ways of organization and managing the factories. The research-developing activities have to be maintained. The entire economic development of Republic of Serbia has to be based on research and development of innovation activities; therefore, we have to apply the measures that are used in countries of OECD. The instruments for ECA region are developed on instruments such as mini grants, matching grants and entrepreneur's capital.

The previous socialist countries, Serbia being one of them, have had long tradition of learning and researching, but the commercial results were week. Then again this background creates hope that basic research and commercial innovations could be reconstructed, refined and improved enabling the countries in transition to develop the economy based on knowledge, to create innovations and technologies easier than countries without that kind of foundation.

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UDK : 332.1(282.243.7) ; 005.51 ID: 203168268 **Review Article**

REGIONAL DEVELOPMENT CONCEPT FOR CREATING EFFICIENT ECONOMY AND SUPPORT TO LOCAL ECONOMY

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Abstract: *The importance of regional development in creating competitiveness of economy is talked about more often. In this work there is an attempt to give a topical answer within defining all needed activities at the level an economy so that its competitive position is made. One of the main aspects of this work is putting an accent on systematic activity of different levels in creating competitive position for economy. At lower system parts the environment has to be defined, and then according to such an analysis an optimal combination of factors. A contemporary approach to the development and a significance of each system level in the concept are shown. The material has been reinforced by a part of investigation and analysis of influential factors for the starting of regional economic development in Danube Valley area.*

Keywords*: development, strategy, concept, region, Danube Valley area*
JEL Classification: R11

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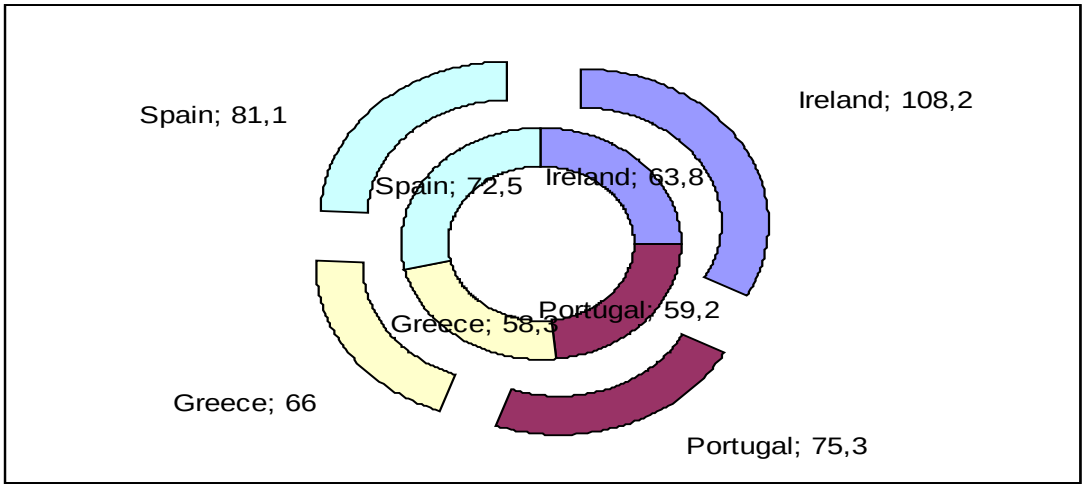
1. INTRODUCTION – REGION DEFINING AND CONCEPT OF REGIONAL DEVELOPMENT

Regional development means process of starting, structuring and reaching the sustainable development, where it is important to take into account very complex regional situation and apply adequate actions and instruments. In most cases region is defined as geographical area smaller than national territory where it is placed. Therefore, region can be one municipality, more municipalities or states. Regions do not have to match with administrative borders, because their scope of definition depends on what they refer to: labor market area, area of river basins and similar (Cameford & Callagham, 1985).

Region, also, can be observed from the aspect of more countries. Example: during the economic crises at the end of 70s and beginning of 80s, when Western European enterprises became less competitive comparing to enterprises in USA and Japan, a time of recession in European economy has started. In order to find the way out of such situation, it was necessary that Western European countries act with joint coordinated actions, because individual actions did not give proper results. In that sense, European Council in 1984 in Fontenblo concluded that it was necessary to speed up regional integrations. During the next year, a Consolidation Plan was defined and the Commission with Jack Delor as its Head, was formed. As a result, Delor package 1 (1989-1993.) and Delor package 2 (1993-1999.) was made. Some of the effects of joint activities can be seen in the following chart:

Chart 1. Increase of GDP in four poorest country members of EU



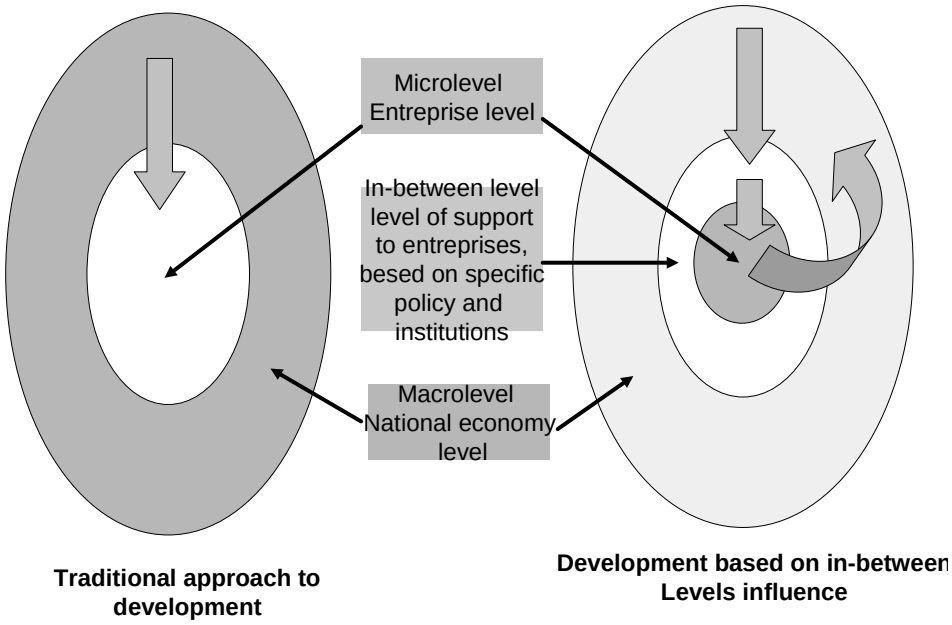
Source: European Commission http://europa. eu.int/comm/regional_policy/sources/ docof.c/of.cial/reports/pdf/taba

There are three levels in strategy management on which decisions of strategic importance are made. These levels are: business system levels, specific businesses levels and business function levels. Moreover, there are also social strategies (Cameford & Callagham, 1985). In that case we speak about local, regional or national strategy of economic development.

National strategy is focused on national economic development and does not consider development of specific local or regional areas as very important. Besides that, influence of national strategies on lower levels is big, especially in respect to macro economy and monetary policy. National regulations and national tax policy have enormous influence on the establishment of entrepreneurial climate at local or regional levels. In that respect decentralization of specific functions and transfer of responsibilities to lower levels is part of the national strategy.

Regional level of strategic support to enterprises is based on organizational, management and technological needs of business system: strategic management, production organization, technology development, product development and value chain organization (Jőrg Meyer/S., 2002).

A need for establishment of in-between level (local and regional), as systematic support for enterprises development is based on the fact that enterprises on local level build competitive advantage mostly as ***one location advantage***. This results in the need for regional or local enterprises to unite, which is the only proper way to compete strong global competition. This leads us to the conclusion of necessity to build up and support proper business environment on regional and local level, as well as to organize new way of strategic management. This is basic and most important task of in-between level where it is necessary to harmonize structure and strategy (Smilor W. R., 1996).



Picture 1. Levels of systematic influence on economical development

Due to fact that above mentioned approach of local level development results in conflict of interest among participating subjects, it is of strategic importance to establish local configuration and clear definition of common goals among all participants in local economic development and to create adequate organizational structure and development strategy.

Table 1. Stimulating measures of different instances

Municipality	Quick and simple registration of shops. Financial help. Tax relieves. Two years of exemption from paying levies. Easier approach to buyers. Business work space. Regular distributing of competition. Investment credits. Linking with backers. The return of self-confidence to inhabitants. Illegal business control.
Region	References. Relationship with stronger distributors. Co-operation with the state. Linking of entrepreneurs in the region and with other regions.
State	Non-refundable means for the start. Reduction of documentation necessary for permission acquisition. Exemption from paying levies in the first year. Marketing – sales, the relationship with strategic partners. Non-returnable help. Long term credits. Conversion course work. Legal regulations. Lower taxes at the beginning of the project. Better exchange with foreign partners. Fight for visa abolishment.
Entrepreneur organization	Help in finding clients. More care about membership. Help in capital. Better relationships with entrepreneurs. Help in finding a new program. Help in marketing. Linking of allied organizations. Mutual support and resources renunciation. Linking of entrepreneurs and mutual approach to the state and banks and struggle for better conditions.

Furthermore we can say that in almost all developed countries there are means (Entrepreneur incubators, technological parks, methodologies of development) aimed at start up of businesses, which most directly influence the start up of the regional and local economic development. The lack of such means in Serbia presents the limiting factor for the development of small enterprises. International organizations, such as USAID and HELP have assistance programs to small enterprises in Serbia as small grants for start ups, but they are limited to individual target groups and certain regions. Norwegian organization 'Jarenprodukt Udvikling' provides consulting services, establishes Cooperatives and provides means for Cooperative Fund for its members (in Serbia it is limited only to two municipalities, Kragujevac and Bac).

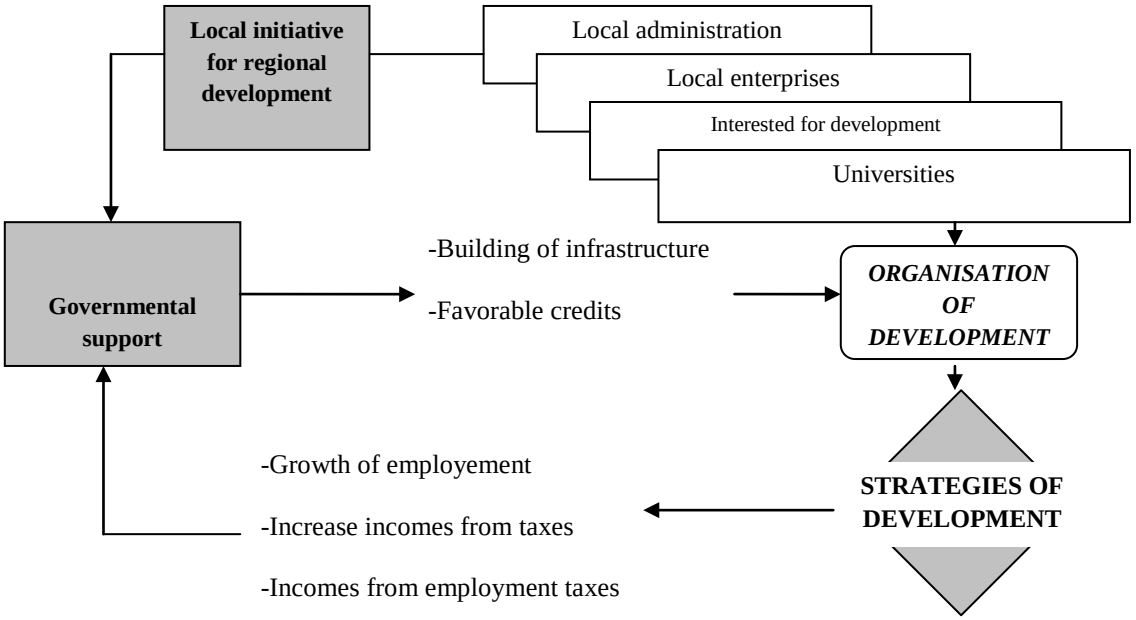
At the end it should be emphasized that in the context of further economy development, which is based on small enterprise development, there is a need for foreign and state development institution support, but first of all it is necessary that enterprises receive support from regional and local levels.

2. THE IMPORTANCE AND INFLUENCE OF STATE IN STRATEGIC ECONOMY DEVELOPMENT OF REGION

Government support to the development of regional economy subjects depends first of all, on the concept and activities of regional and local development carriers and their wish for faster and better development of its own economic environment. It means that Government provides general development subsidies but its realization mostly depends on regional factors. Regional factors can be as follows: local administration, local enterprises, the other subjects interested in local development and, unavoidably, Universities if existing in the area.

Strategies created by the Government consider development of national economy as the main goal, but at the same time, it is good support to local economic development, too. Primary support to enterprises and the local economy from the national level is in creation of regulatory infrastructure, with which Government provides general development conditions, and local factors are obliged to create and make development policy which can be applied in a best way in existing conditions. Also, the Government is in charge of the regulation of tax policies and tax obligations, which can be of crucial stimulation for favorable or unfavorable development of the local economy.

Furthermore, building of infrastructure is under authority of the republic administration, which can be important for future development of lower levels jurisdiction.



Picture 2. Model of economic development organization and Concept of Governmental support to local and regional economic development and expected feedback effects (Vojnovic et al., 2009)

National development programs, defined by the Government, are strategically directed at the improvement of the global economy. Certainly, the interest of these programs is the development of regional economies which clearly supports the entire development and presents its constitutional element.
In line with the above mentioned, regions are stimulated to create their own development strategies in order to be able to expect financial or any other support.

3. EFFECTS OF THE MEDIUM – LEVEL ON DEVELOPMENT STRATEGY CHOICE

The newly established circumstances especially in the economies in transition suppose wider scope of support to company development. Being aware of the fact that the economies are focused mostly on two levels - macro and micro levels - leads to the conclusion that this is not enough, especially in case of fragile economies in the course of re-structure and transformation. Gap between the macro & micro levels and effective coordination between the two, very often presents an extremely huge obstacle for many businesses for whom this may be one of the main reasons of their disappearance from the economic scene and definite ruin.

Thus, it is necessary to define the local development alliances at the medium level as the adequate support to the business development within those frames. The medium level is therefore the optimal level of significant influence on business strategies definition in the companies operating within those frames. This confirms the supposition made by Jorg Meyer Stamer according to which on the global economy competitors to each other are not individual businesses but groups of industrial companies with network-shaped organization and development schedule depending primarily on the economic and other potentials of only one location. Because of ever stronger pressure from the higher levels and the severe competition local and regional communities feel it necessary for

their regions to develop and support business environment to protect their own economies (Jőrg Meyer/S., 2001). Logical consequence is the obligation of the local factors to improve and make faster privatization process because in the opposite case businesses with the present business strategies and way of function are incapable of being competitive to the highly developed economies and their business. This is why the regional economic development is so important. Proof of this is that in the recent years large number of development coalitions has been established almost all over the world.

4. IMPORTANCE OF DEVELOPMENT MEANS IN LOCAL ECONOMIC DEVELOPMENT – A practical example from the Danube region

At the local level development there are subjects of local factors and of micro level. At the micro level - the level of company these activities encourage the construction of competitiveness:

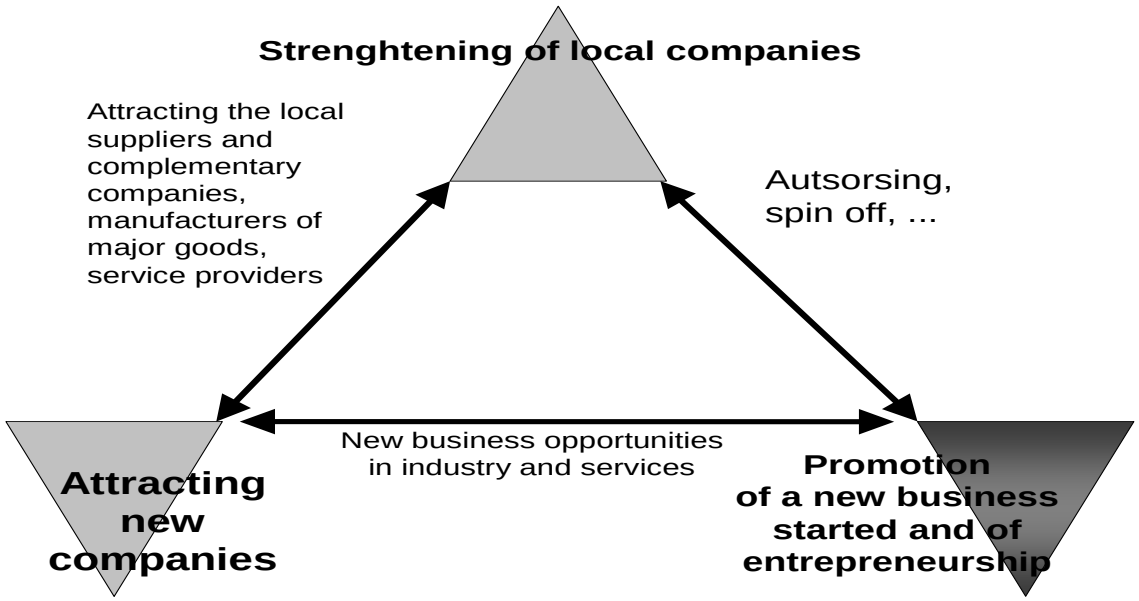
- organizing production in order to effectively operate,
- organization of product development in terms of quality and innovation more frequently,
- organization of production and services,

Increasing demand for better quality products led to the need that the company be reorganized to be able to meet the demand. To increase the quality, size and efficiency at this level, extensive changes in these areas are required. The local community, providing business support through development funding, most notably entrepreneurial incubator, provides important support in this process. A practical example of such support of local economic development follows.

Entrepreneurs'' incubation support has stimulative influence on those making the decision to start a business, their operation and survival in business, and helps in realization of a good business idea. Thus, the main business incubator effects are: in more rapid and easier starting, easier access to financial sources and creditors in the start-up phase; advisory and educational assistance to newly established companies; easier access to domestic and foreign markets by enabling fast connecting and development, etc. In addition to the effects imposed on the enterprises, one can expect certain effects on the local, regional and wider community. Among the major effects there may be: VAT-based income for the municipality, region and republic; newly opened jobs; income made on personal income of the newly employed labor; faster community development, etc.

Potential beneficiaries of a business incubator may be: entrepreneurs, newly established micro and small enterprises, as well as the cooperatives and/or cooperative organizations performing the registered activity for longer than a year, and the existing rapidly growing enterprises oriented towards the business process innovation and new technologies which, applied by the enterprises performing their registered activity for not longer than a year, to support their rapid development and increase the number of employees.

Business incubation through small enterprise breeding is in direct relation with the local and regional development. One of the major economic development target groups on this level is new business initiation and entrepreneurship promotion.



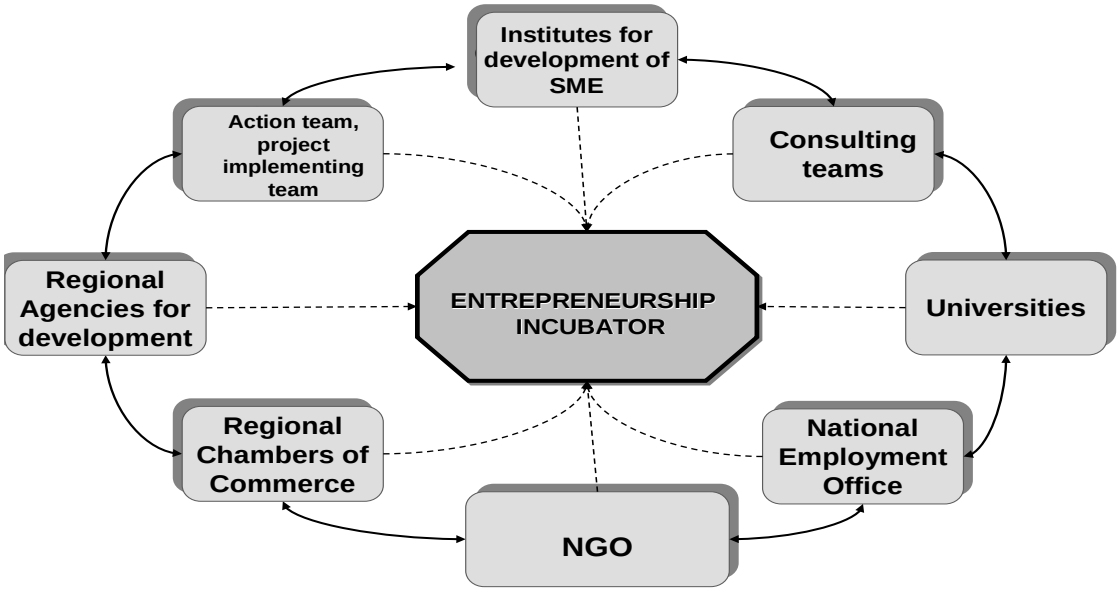
Picture 3. Target groups of Local Economic Development [www.viram.de]

Business incubation is a process of dynamic development intended to initiate development of economies, especially and primarily the local and regional ones. This process minimizes the number of enterprises ruined in the first (start-up) phase of their life cycle. The start-up phase of an enterprise is the most difficult phase for its business operation and also the phase in which the enterprise is most easily hurt due to the reasons resulting from: lack of professional experience, lack of knowledge, inadequate technology, lack of financial sources for investment in production and development, having no access to any credit source, foreign capital, etc. Percentage of the enterprises ruined in these circumstances, is approx. 80%, while in business incubation the percentage is about four (http://www. Zchfp.sk-vusapl.html) times lower i.e. 20% approx. Also, entering business incubators, i.e. being "incubated" enables faster growth and development of the enterprise itself and, its direct influence on the employment rate increase and the entrepreneurship idea realization.

Last 30 years were significant by an increased number of business incubators recorded in many developed countries and, also, by the first positive steps made in those less developed countries.

For example, Germany had its first center established in 1983, and now, there are more than 200. In the USA - there are over 500. China was the first communist country that understood the importance of the centers for development, so that they have about 70 centers there. Through its entrepreneurship and innovation centers (European Business and Innovation Centre Network) EU, is giving support to over 180 business centers in EU member-countries.

However, satisfactory development incubators operation requires support and development of agencies for regional development. Incubators should be based on partnership of the private and public sectors, including everyone interested in development of economy - from national to local and individual level.



Picture 4. Composing elements for functional operation of small enterprise incubator (Vojnovic, 2006.)

This means that countries in development should understand the importance of the support given to small enterprises and also to have their activities oriented accordingly, and especially in the part related to establishment of institutions for development and support of newly established small enterprises. As a rule, even these organizations are short of experience since they are also in their initial (start-up) phase, having no certain knowledge applicable in practice, and that is why they should base their activities upon the experience of the developed countries and also to be capable of situational adjustment according to the existing economy (commercial) and other circumstances.

4.1. Short Preview of the Area

The analysis of the necessary support for the future business subjects of regional and local economic development in Danube Valley area is presented in this part. The objective of the survey was to find out what the necessities of potential entrepreneurs were, in order to create a feasibility study of the entrepreneurial incubator in Smederevska Palanka.

The Danube Valley area is one of the smaller ones according to the surface, but it is in the top according to the population density per km² and the number of towns and villages in the Republic of Serbia.

Table 2. Space and demographic in the Danube Valley Area

Name of the municipality	Velika Plana	Smederevo	Smed. Palanka	**The Danube Valley Area**
Surface in km2	345	481	422	**1248**
Number of inhabitants 1991	47.341	110.768	57.947	**216.056**
Number of inhabitants 2002	44.470	109.809	56.011	**210.290**
Number of inhabitants 2002/99	-2.871	-959	-1.936	**-5.766**

Source: Statistical Yearbook RS, 2006/2007., The Republic Institute for Statistics RS

There are 2 806 companies doing business in various activities in the area. The most significant business systems are Sartid and Gosa, which are at the same time the biggest generators of the economic development.

Gross social product of the Danube Valley area in relation to the republic average was 81.56% in 2002, whereas in 2005 it decreased to 45.25%. By buying Sartid from the part of US-Steel, the national income in industry, especially in Smederevo, was increased in 2004. On the basis of data from Regional Chamber of Commerce of Pozarevac, the realized physical volume of industrial production in the region in 2004 has increased for 16.5% in relation to 2003. In 2009, the activities of industry decreased because of the reduced production in Smederevo Ironworks.

Table 3. Number of founded companies according to activity sectors Industry

Industry	198
Agriculture	92
Construction	90
Trade	513
Education	562
Social-political organizations	541
Other	810
Total:	2806

Source: Statistical Yearbook RS, 2006/2007., The Republic Institute for Statistics RS

The number of employees in the companies of the area and the number of self-employed is 45.799 workers.

Table 4. Number of employed and self/employed in the Danube Valley Area firms and organizations

Name of the municipality	in firms and organizations	Entrepreneurs and their employees	Total
Velika Plana	4.877	2.598	7.475
Smederevo	18.352	9.147	27.499
Smed. Palanka	6.956	3.869	10.825
The Danube Valley Area	**30.185**	**15.614**	**45.799**

Source: Statistical Yearbook RS, 2006/2007., The Republic Institute for Statistics RS

According to the Monthly Statistical Bulletin of the National Service for Employment from 2008, the number of the unemployed in the Danube Valley area was 18.590 in March 2008, whereas that number was 24.782 in 2005. It is evident that in the mentioned period there was a decrease in the number of the unemployed, so the index was 0.75. It is characteristic that there were 44% of the unemployed who were looking for the job for the first time, 29% were younger than 30, and even 41% of them were without any qualification whatsoever.

4.2. Regional Economic Development of Danube Valley Area –The survey about the support necessary for the starting of entrepreneur activities

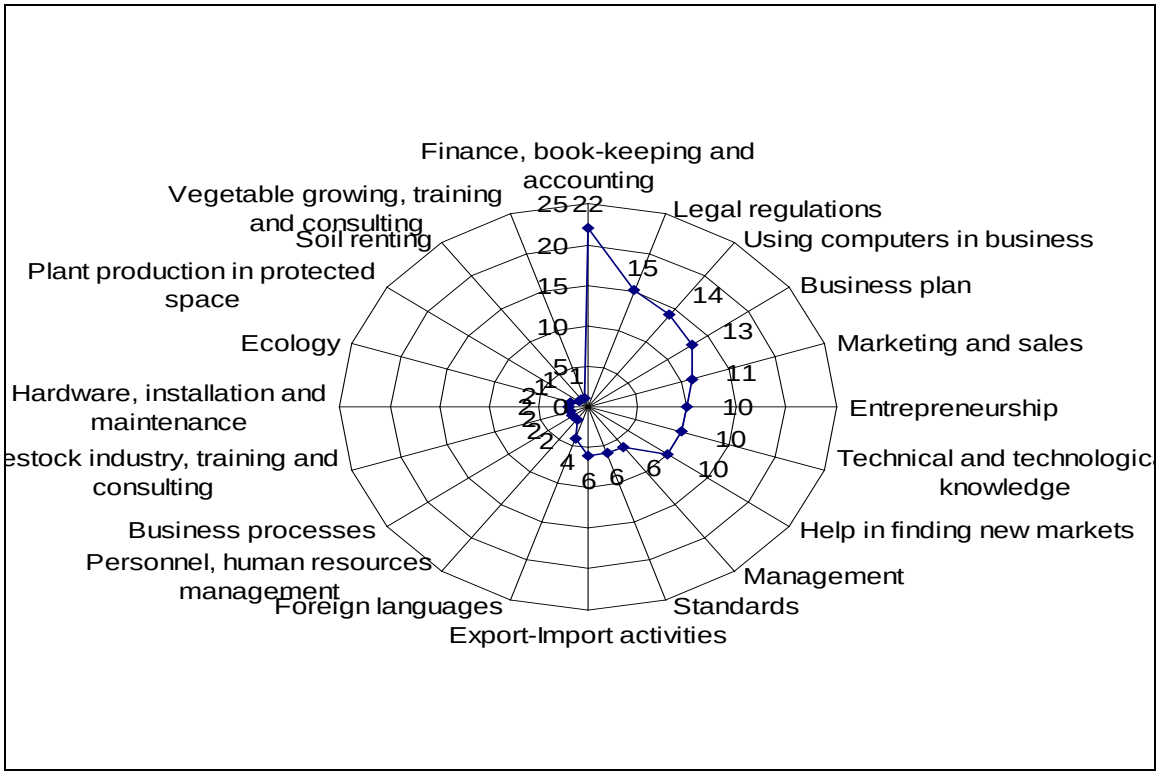
If there was an organization which would provide services from various areas at subsidized prices, from which area would we need the services?

Table 5. The need for services at subsidized prices

Necessary services at subsidized prices	**Number of potential entrepreneurs**
Finance, book-keeping and accounting	22
Legal regulations	15
Using computers in business	14
Business plan	13
Marketing and sales	11
Entrepreneurship	10
Technical and technological knowledge	10
Help in finding new markets	10
Management	6
Standards	6
Export-Import activities	6
Foreign languages	4
Personnel, human resources management	2
Business processes	2
Livestock industry, training and consulting	2

Hardware, installation and maintenance	2
Ecology	2
Plant production in protected space	1
Soil renting	1
Vegetable growing, training and consulting	1

Chart 2. The need for services at subsidized prices



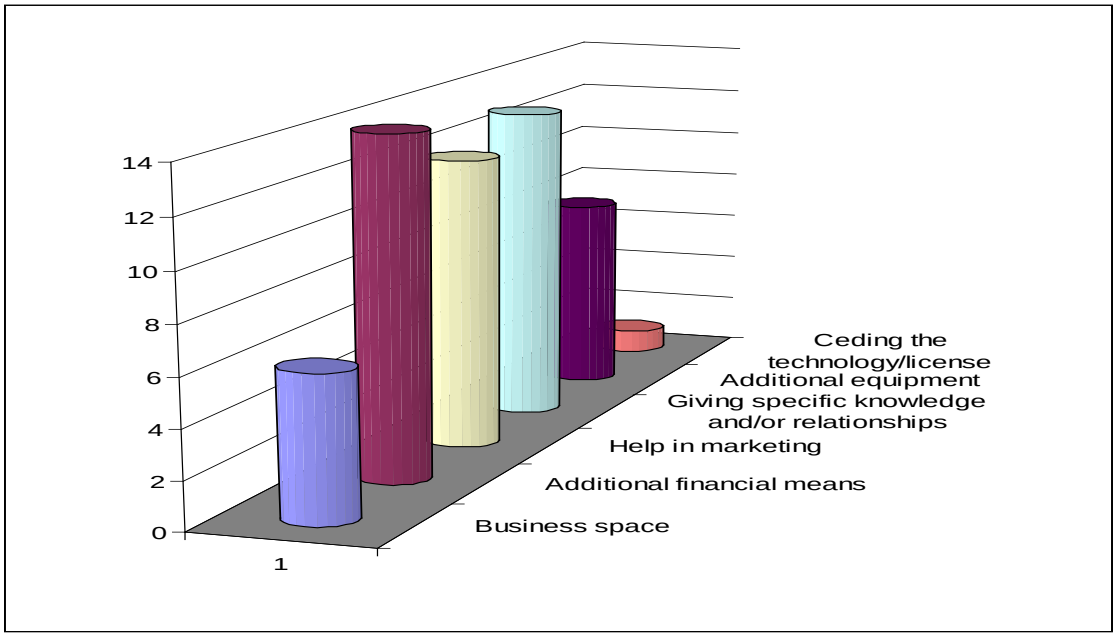
It can be clearly seen from the table that the greatest number of interviewees would use book-keeping services (22), then legal services (15), using computers in business (14), business plan creation services (13), marketing and sales services (11), help in finding new markets services, and then services in the field of entrepreneurship, standards, management, etc.

Why do we need the support?

Table 6. Needs for support

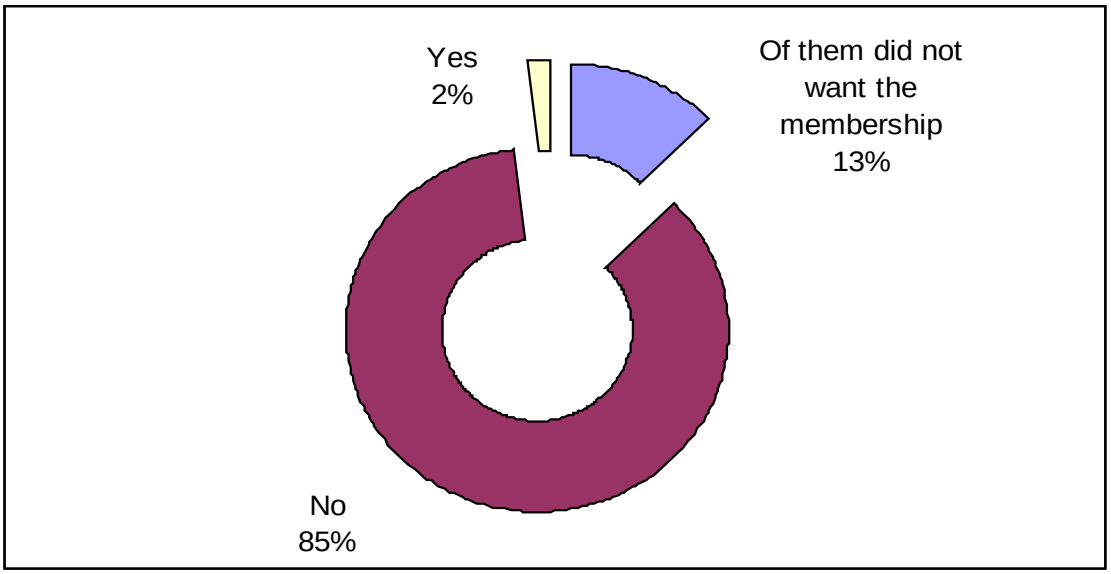
Reasons	Number of potential entrepreneurs	%
Business space	6	11
The interviewees declared that they needed the support first of all for additional financial means	14	26
Help in marketing	12	22
Giving specific knowledge and/or relationships	13	24
And only after that for additional equipment	8	15
And least for the ceding of the technology and license	1	2

Chart 3. The representation of the needs for support



Membership in entrepreneurial organizations?

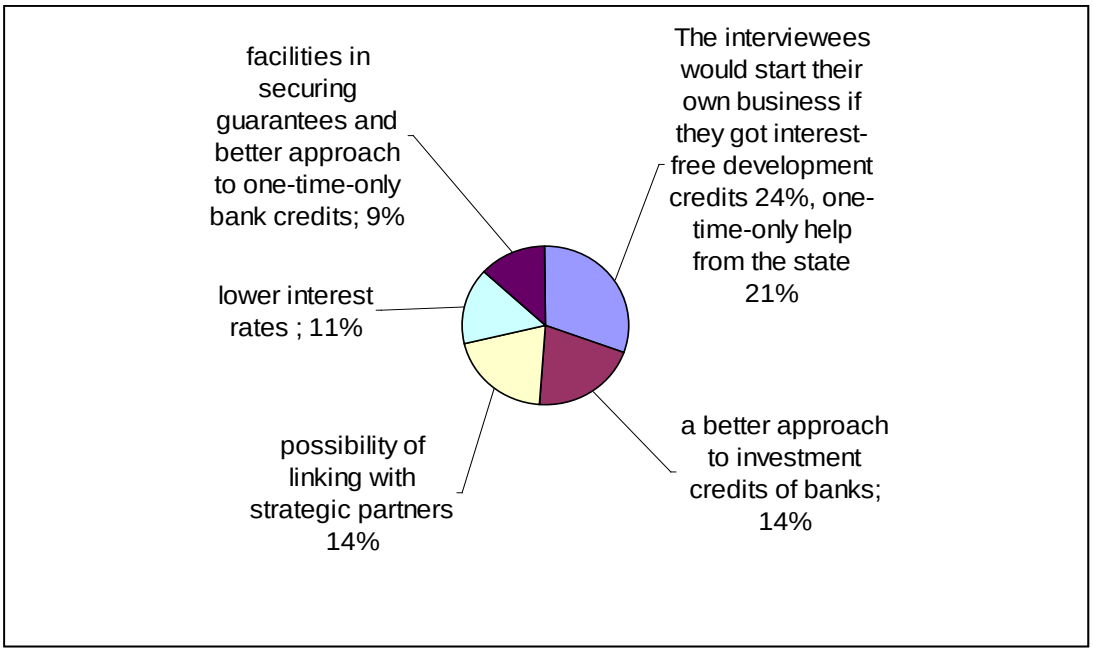
Chart 4. Membership in entrepreneurial organizations



The majority of interviewees – 85% declared that they are not, but they would like to become a member of an entrepreneurial organization; 13% of them did not want the membership.

What would make you invest in the foundation of your own firm or shop?

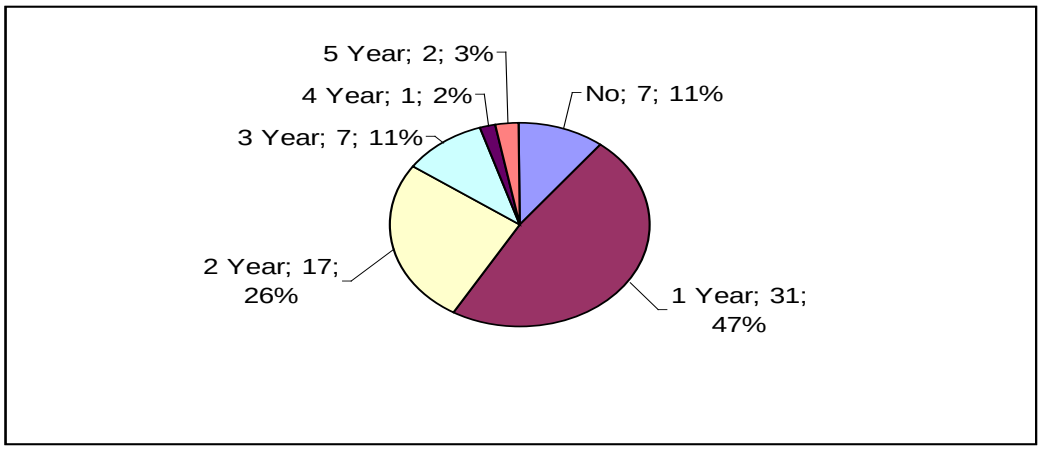
Chart 5. The representation of stimulating measures for starting one's own business



The interviewees would start their own business if they got interest-free development credits 24%, one-time-only help from the state 21%, a better approach to investment credits of banks 14%, possibility of linking with strategic partners 14%, lower interest rates 11%, facilities in securing guarantees and better approach to one-time-only bank credits 9%.

If they were given help under privileged conditions, in what time would they become independent and do well?

Chart 6. The time needed for becoming independent and doing well



The interviewees declared that they needed subvention in the first year 54%, in the second year 29%, and only 2% i.e. 3% in the fourth and fifth year.

5. CONCLUSION

The establishment of the regional economy competitiveness based on financing from the state level (traditional principle) with the aim of economy improvement in specific areas did not prove to be efficient. Big investments have been made, but they did not result in development. New approaches to regional development have different implication: the initiative comes from regions itself while the state gives support. The support to regional development has the characteristic of interest. The aim of the state is to support regional development expecting the effects which should come as the result of development.

Regional development becomes organized by creating institutions through regional agencies for development with the net of departments on municipality level. Agencies for development should create coalition with all subjects that have an expressed interest in development. It is necessary to make the closest cooperation with chambers, not neglecting the rest of participants. By envisaging and analyzing factors that are predominant in the region, it is possible to reach the facts on the basis of which the priority of objectives and strategies is defined. In regional development it is necessary to use new development means and development methodologies.

This kind of development concept is practical, because it includes all those who want to co-operate, it does not cost much and gives results, which is of special significance for undeveloped countries. On the basis of the survey (only on the presented part), the conclusion is that potential entrepreneurs need support mostly in capital and knowledge.

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