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ДРУГИЕ РАЗДЕЛЫ

THE JOURNAL „ECONOMY AND SOCIOLOGY"
AT ITS 65th ANNIVERSARY

In 2018, the scientific-theoretical journal „Economy and Sociology" marks the 65th anniversary of its foundation, years of hard work, professionalism and dedication.

The journal „Economy and Sociology" was founded in 1953 by the Academy of Sciences of Moldovan SSR, Sociology Department of the Institute of Philosophy, Sociology and Law. A special contribution to the founding and development of the journal brought the correspondent member of the Academy of Sciences of Moldova, the founder of the sociological school in the Republic of Moldova, PhD in economics, Professor Andrei Timuş.

Over the years, chief editors have been: Matienco B.T. (1958-1985), Grosul Ia.S., Ursul A.D. (1989), Singur G.N. (1990-1991), Certan S.E. (1992), Ciobanu V. V. (1993-2006).

In 2006, the journal was taken over by the National Institute for Economic Research (NIER) of the ASM, the editor-in-chief being Professor Gheorghe Iliadi, and since 2016 this position has been taken by me.

During 65 years the journal „Economy and Sociology" became a platform with authority for scholars in economics and sociology. Throughout these years, all aspects of economic and social development have been reflected in the pages of the journal: trends in the development of the national and global economy, living standards, social structure and quality of life of the population, etc. Over the last few years, more and more articles have been discussing the current issues of entrepreneurial development, economic competitiveness, innovation, financial stability, demographic dynamics, etc.

The authors of the journal are representatives of different research institutes and universities in the country and abroad, contributing to the presentation and development of methodological aspects in economic and sociological research, elaboration and consolidation of the theoretical bases on sustainable socio-economic development.

Since 2015, the journal has been edited only in English, which has contributed to the increase of the representatives of foreign authors as well as its international visibility.

Thus, the journal has strengthened its position as a high-level scientific platform that debates the most current issues in the economic and social fields, an academic publication presenting the results of the original scientific research that adds value to the development of economic and sociological science.

The journal „Economy and Sociology" is positioned as an edition focused to the needs of specialists in the field, including practitioners, and indisputable offers the opportunity to receive current and qualitative information on new phenomena and trends in the national and world economy.

The anniversary gives me the opportunity to address the current journal management team wishes for prosperity, beautiful achievements and great successes. A special respect and thanks to the authors of the journal for the original publications, which presents the results of their own researches with a scientific novelty, theoretical and practical significance.

The journal develops and improves continuously. We are proud of our publication and do best efforts to improve its scientific level, its international visibility, thus to be a true business card not only of the National Institute for Economic Research but also of the entire scientific community in the Republic of Moldova.

Editor-in-chief of the journal „Economy and Sociology"
Alexandru STRATAN,
Correspondent Member of ASM, PhD, Professor,
Director NIER

ECONOMY

SME SUPPORT POLICY IN THE REPUBLIC OF MOLDOVA AND ASSESSMENT OF ITS IMPACT ON BUSINESS DEVELOPMENT

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Establishment and legal development of small private businesses in the Republic of Moldova became possible only since the 90s at the initial stage of market reforms. Despite the absence of a regulatory framework for business development in this period, the rapid growth in the number of small enterprises has been noted. Although the owners of newly established, privatized and reorganized small enterprises (SE) were lacking in business knowledge, and public administration employees did not have a clear understanding of the role of small and medium enterprises (SMEs)in the economy, however, already in 1992-1994 the basics of entrepreneurship development policy have been laid. Over the last years, state policy aimed at supporting SMEs has been developed considerably in the Republic of Moldova, but the business environment is not favorable enough.

The paper presents the multifaceted analysis of the state support policy of SMEs in the Republic of Moldova and the assessment of its impact on the business from different perspectives – government, international ratings and entrepreneurs. The results of the research revealed that, quite a large number of entrepreneurs over the years pointed to deterioration in the business environment conditions; however, the opinions of certain groups of entrepreneurs vary significantly. This means that the government's economic policy does not consider enough the entrepreneurs' opinion regarding the general business climate changes, as well as the specific problems faced by different groups of entrepreneurs. The research methodology is based on an analysis of statistical data; the legal framework and policy documents; the main international rankings, as well as the results of surveys of different groups of Moldovan entrepreneurs – women, young people, people with disabilities, which were implemented with the participation of the authors in the period 2016-2017.

__Keywords:__ small, medium and micro enterprises (SMEs), SME support policy, policy assessment, business development, barriers for entrepreneurs.

Înfiinţarea şi dezvoltarea juridică a micilor întreprinderi private din Republica Moldova a devenit posibilă încă din anii '90 la faza iniţială de trecere la relaţiile de piaţă. În ciuda absenţei unui cadru de reglementare pentru dezvoltarea afacerilor în această perioadă, s-a observat creşterea rapidă a numărului de întreprinderi mici. Deşi proprietarii întreprinderilor mici nou înfiinţate, privatizate şi reorganizate nu posedau cunoştinţe în afaceri, iar angajaţii administraţiei publice nu aveau o înţelegere clară a rolului IMM-urilor, cu toate acestea, în perioada 1992-1994 au fost stabilite principiile politicii de dezvoltare a antreprenoriatului. În ultimii ani, politica statului care vizează susţinerea întreprinderilor mici şi mijlocii s-a dezvoltat considerabil în Republica Moldova, însă mediul de afaceri nu este încă suficient de favorabil.

Lucrarea prezintă analiza multilaterală a politicii de susţinere a IMM-urilor în Republica Moldova şi evaluarea impactului acesteia asupra afacerilor din diferite perspective – guvern, ratinguri internaţionale şi antreprenori. Rezultatele cercetării au arătat că majoritatea întreprinzătorilor, de-a lungul anilor, au indicat asupra deteriorării condiţiilor mediului de afaceri, deşi opiniile anumitor grupuri de antreprenori diferă semnificativ. Aceasta înseamnă că politica economică a guvernului nu ia suficient în considerare opinia antreprenorilor privind schimbările generale ale climatului de afaceri, precum şi problemele specifice cu care se confruntă diferite grupuri de întreprinzători. Metodologia de cercetare se bazează pe: o analiză a datelor statistice; cadrul juridic şi documentele de politici; principalele rating-uri internaţionale,

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precum şi rezultatele chestionării diferitor grupuri de întreprinzători din R. Moldova – femei, tineri, persoane cu dizabilităţi, care au fost implementate cu participarea autorilor în perioada 2016-2017.

Cuvinte-cheie: întreprinderi mici, mijlocii şi micro (IMM-uri), politică de susţinere pentru IMM-uri, evaluarea politicilor, dezvoltare a afacerilor, bariere pentru antreprenori.

Становление и легальное развитие малых частных предприятий в Республике Молдова стало возможным лишь в 90-е гг. на начальном этапе проведения рыночных реформ. Несмотря на отсутствие нормативно-правовой базы для развития бизнеса, в этот период был отмечен быстрый рост количества малых предприятий. И хотя у владельцев вновь созданных, приватизированных и реорганизованных малых предприятий отсутствовали знания ведения бизнеса, а у работников органов публичного управления не было четкого понимания роли малых и средних предприятий (МСП), тем не менее, уже в 1992-1994г. были заложены основы политики развития предпринимательства. За прошедшие годы в Республике Молдова государственная политика, направленная на поддержку МСП, получила значительное развитие, однако бизнес-среда по-прежнему остается недостаточно благоприятной.

В статье представлен многоаспектный анализ государственной политики поддержки МСП в Республике Молдова и оценка ее воздействия на бизнес с разных точек зрения – правительства, международных рейтингов и предпринимателей. Результаты исследования показали, что достаточно большое количество предпринимателей за последние годы указывает на ухудшение условий деловой среды, при этом мнения определенных групп предпринимателей значительно различаются. Это означает, что экономическая политика правительства не вполне учитывает мнения предпринимателей, касающиеся общего изменения бизнес-среды, а также конкретных проблем, с которыми сталкиваются отдельные группы предпринимателей. Методология исследования базируется на анализе статистических данных, законодательства и документов политики, основных индикаторов международных рейтингов, а также на результатах опросов различных групп молдавских предпринимателей – женщин, молодежи, людей с ограниченными возможностями, которые были реализованы при участии авторов в период 2016-2017 гг.

Ключевые слова: малые, средние и микропредприятия (МСП), политика поддержки МСП, оценка политики, развитие бизнеса, барьеры предпринимателей.

Introduction

The SMEs sector has formed and passed through a considerable development in the Republic of Moldova during the period of market reforms, since 1991 and to date. Throughout this period the government has been developing and implementing a policy of development of small, medium-sized and micro enterprises (SMEs), to which various support measures were used, including the adoption of laws, government policies and targeted programs, as well as the establishment of institutions whose activities are directly aimed at the development of small private businesses.

Certain aspects of SME support policy in the Republic of Moldova were addressed in scientific publications, research projects and reports of international organizations – OECD, World Bank, etc.

In most of cases, research is focused on the access of SMEs to finance, which in Moldova is largely limited. For example, Bartlett et al. [2] noted that poor access to financial resources hinders the development of SMEs and pointed on the main cause of this problem – underdeveloped banking system. At the same time, the economic crisis of 2008-2009 exacerbated the problem of access to financing sources, as credit resources declined not only in the region, but also on a global scale. V.Cerbuşca [4] analyzing various aspects of the SMEs financing in Moldova, also notes that the crediting of small business (along with the use of money from family and friends), and obtaining credit resources for Moldovan SMEs is quite a difficult problem. Kirchner and Giucci [7] mentioned that the insufficient SMEs access to finance in Moldova must be analyzed and discussed from two points of view: not just from the perspective of the problem related to the development of the banking sector, but also from the SMEs development perspective – concerning the improvement of financing their activities.

Another significant problem of SMEs which is reflected in different researches is the high regulatory and administrative burden in the Republic of Moldova. In particular, a survey conducted by the National

Confederation of Employers of the Republic of Moldova has shown that in the list of the most problematic factors for the development of enterprises in the Republic of Moldova there are the following: political instability, a high fiscal burden, lack of adequately trained workforce, poor access to finance, corruption and bribery [14].

Given the pro-European orientation of the country, the Government of the Republic of Moldova has committed itself to take into account in the policy the requirements of the SBA for Europe, which fixes the priority directions of the EU in supporting SMEs. As a result, once in every 2 years, the OECD assesses the implementation of the principles set out in this document, noting the achieved progress and the most important challenges. Thus, in the most recent report (2016), the main challenges were: (i) insufficient attention to the practical implementation of strategies and initiatives, monitoring and evaluation of the achieved results; (ii) shortcomings in the banking sector, which makes it difficult for SMEs to access financial resources; (iii) limited assistance to SMEs aimed at increasing the competitiveness of Moldovan goods in European markets through support for innovation, internationalization and greening [11].

Studies, in which a special attention is paid to the individual groups of entrepreneurs, mainly focus on the group of women entrepreneurs, meaning the different roles of women and men in the labor market, in the family and other spheres of life [13; 19].

According to the authors, although the public policy of entrepreneurship development in the country is carried out around 25 years using a variety of methods and institutions, that were successful in other countries, the state activity does not lead to the desired positive results. One of the reason of this is the fact that the policy does not consider enough the entrepreneurs' opinion regarding the general business climate changes, as well as the specific problems faced by different groups of entrepreneurs.

The paper includes the following topics: (i) a brief analysis of the key indicators of the development of SMEs in the Republic of Moldova; (ii) characterization of the SMEs support policy in the country, including: the history of its formation, the basic elements of support and new directions; (iii) assessment of the public business development policy by various institutions.

The basic methods of the research include: analysis of statistical data, reflecting the development of SMEs in the Republic of Moldova; research of the legal framework and policy documents on the country's business support; assessment of the main international rankings in which Republic of Moldova is present related to the development of business. In order to identify the entrepreneurs' opinion regarding the business environment change, as well as the barriers faced by their businesses, were used the results of surveys of Moldavian entrepreneurs that have been implemented with the active participation of the authors in the last years.

The main indicators of SMEs sector

The scale of the SMEs sector in the Republic of Moldova's economy is significant. In 2017 the National Bureau of Statistics of Moldova (NBS) had records of 54.3 thousand economic agents, of which the absolute majority (98.6% = 53.57 thousand economic agents) were SMEs.

The structure of the SMEs sector includes 3 groups of enterprises - micro, small and medium that differ according to their size (number of employees, sales and assets of the enterprise). Micro-enterprises prevail in the total number of SMEs (86.2%). Small enterprises make 11.3%, medium-sized enterprises – 2.5% of SMEs (Table 1).

Table 1

Main indicators of SMEs sector in 2017

Indicators	Total SME	Including		
		Medium	**Small**	**Micro**
Number of enterprises, unit.	*53573*	1328	6061	46184
% of Total	*98.6*	*2.5*	*11.3*	*86.2*
Average number of employees, persons	*323277*	103460	112028	107789
% of Total	*61.2*	*32.0*	*34.7*	*33.3*

Source: Calculated by the authors on basis of the National Bureau of Statistics of the Republic of Moldova [10].

The SMEs sector has been demonstrating a steady growth tendency during the whole period of economic reforms since the beginning of 1990s. Like in previous years, in 2017, the positive tendency of sustainable growth in the number of SMEs remained steady (53573 units in 2017, compared to 51626 units in 2016) (Figure 1). The growth of companies throughout the years came primarily at the expense of micro and small enterprises, which have a more limited capacity. During 2015-2017, the total number of SMEs

registered within the statistical bodies marked a slight increasing trend, of 5.9%. In this period, within SMEs, a more significant growth in the number of enterprises was produced in micro enterprises, up by 6.3%.

Figure 1. Dynamics of the number of enterprises in 2015-2017, thousand units
Source: The National Bureau of Statistics of the Republic of Moldova [10].

An important indicator that allows evaluating the quantitative and qualitative elements of the SMEs contribution in the economic development of the country is their share in GDP. This figure (Starting with 2007 till 2010 inclusively, and also in 2012 and 2016) has been characterized by a downward trend for many years: just in 2011, 2013, 2014 and 2015 this indicator registered a growth (Figure 2).

Figure 2. The share of SMEs in the GDP during 2006-2016, %
Source: The National Bureau of Statistics of the Republic of Moldova [9].

Characteristics of the SME support policy in the Republic of Moldova

Establishment of SME support policy in the Republic of Moldova. State policy for SMEs development in the Republic of Moldova has already more than a 20-year history. In the early 90s at the stage of market reforms, the regulatory framework for business development has not yet been formed, but there was a very rapid increase in the number of SE in the country. The owners of the newly established, reorganized and privatized SE, often doing business by necessity, having no other employment opportunities and income, acquired business experience in the course of work, in the absence of the necessary knowledge and often not having entrepreneurial skills. Employees of public administration authorities that had to regulate the activities of small business still had not had a clear understanding of its significance and development of the concept. However, already in 1994, the first law specifically aimed at supporting small businesses was adopted, the State program to support entrepreneurship and small business for the period 1994-1997 was adopted and a financial institution – the Fund for support of entrepreneurship and small business development was established.

Analysis of business support policies made in the following years (since the second half of the 90's), showed that the changes concerned not individual accents, but the most significant characteristics of the system. As a result, over the past 20 years, the policy of SMEs development in the Republic of Moldova underwent the following important changes [1]:

➢ In the 90s one of the main tasks of the state policy was to give impetus to the establishment of private business and creation of a competitive environment. That is, in the first place, it was necessary to stimulate growth of small private enterprises. At the present time, continuing to support the increase in the number of SMEs, the government declares the care for development of potential and increasing competitiveness of enterprises in order to ensure sustainable and qualitative growth of the national economy.

➢ In the early stages, the business development policy was directed towards the entire SME sector. However, this sector is made up of a large number of different groups with different specific problems and needs to be supported. At present, there is already some experience to identify the characteristics of individual SMEs groups, in order to take account of their needs in the implementation of policy.

➢ In the first decade of the formation of SMEs, business support has been actually seen as a function of the state, although in legal documents there was mentioned the possibility of cooperation with the business community. However, business establishment involves greater cooperation and dialogue between SMEs and public authorities that it is now gradually beginning to be realized.

➢ Since the early years of economic reform and until recently, the main role in the regulation and business support was assigned to central public administration authorities. And until now, policy on SMEs is carried out largely at the national rather than at the local level. However, it is understood that since the main contribution is made by SMEs at the local level, their support should also be carried out not in the center but in the regions.

➢ In the 90s, the government declared the preferential use of direct economic business support methods (tax credits, soft loans, etc.). In 2000-s, there is marked the shift towards the use of indirect methods of state support aimed at improving the operation of business support institutions and generally improving the general conditions for business development.

Currently, SMEs development policy includes the following major components:

➢ Legislation regulating the establishment and business development that is primarily focused directly on SMEs.

➢ Documents, policy, in particular, public policies and targeted programs designed specifically to support the SMEs sector.

➢ Institutions supporting SMEs.

The development of legislation regulating SMEs. The process of formation of the legislation that opened the possibility to engage in private business activity started in Republic of Moldova during the period of USSR, under the conditions of collapsing of the planned economy. Thus, even in 1986-1991, as a result of the adoption of the Law "On individual labor activity", "On Cooperation in the USSR" and "On general principles of business people in the USSR", active persons obtained legal rights for opening their small private business. At the same time, the legal framework introduced the concept of "small enterprise", meaning that it needs special measures of state support.

In 1992-2000, at the initial stage of market economy, basic legislation governing the development and support of small business in the Republic of Moldova was established:

➢ In 1992, law "On Entrepreneurship and Enterprises" was adopted;

➢ After 2 years, the country's Parliament adopted the first Law "On the promotion and protection of small business";

In the early 2000s, the approach to the state regulation of the sector of small enterprises (SE) at the legislative level has changed: from preferential support for individual SE groups to the establishment of common conditions favorable for the business environment. After 2016 and up to the present time, SMEs development policy is governed primarily by the law "On support of small and medium-sized enterprises", which focuses primarily on the creation of the institutional framework and the development of the main instruments of SME support policies – strategies and programs.

Although the legislation on entrepreneurship is already formed nowadays in the Republic of Moldova, it continues to develop, in particular:

➢ The regulatory reform continues aimed at eliminating contradictory norms of the legislation.

➢ The requirements for assessing the influence of the regulatory impact on the business environment in the development of any legislation are increasing.

➢ The European trends, in particular, the EC recommendations – the provisions of Small Business Act for Europe and the requirements of RM-EU Association Agreement are taken into account in the Republic of Moldova.

Government strategies and programs designed for SMEs. The Republic of Moldova has accumulated years of experience in making and implementing public strategies and programs to support SMEs. Since 1994, when the

first government program focused on SE was adopted, similar policy documents were implemented almost the entire period in the country at the national level.

Nowadays, the use of national strategies and programs in the Republic of Moldova is the main method of state support for SMEs. National Strategy, which is being implemented at the national level today, Strategy for the development of small and medium-sized enterprises 2012-2020 has continuity with the previous document, and takes into account the real economic situation and the prospects for the development of SMEs. Within this document, the Government implements the following priority areas: (i) the harmonization of legal and regulatory framework to the needs of the SMEs sector; (ii) improvement of SMEs' access to finance; (iii) development of human capital through the promotion of entrepreneurship competencies and culture; (iv) improving the competitiveness of SMEs and encouraging the spirit of innovation; (v) promoting the development of SMEs in the regions; (vi) development of partnership in the field of entrepreneurship; (vii) development of women's entrepreneurship; (viii) development of green economy for SMEs. An integral part of the Strategy is the Action Plan for its implementation, which contains a specific list of measures for each priority area for the next 3 years.

Along with the Strategy for the development of small and medium-sized enterprises 2012-2020, Moldova has implemented state programs focused on fairly narrow segment of business. The main target national programs implemented in 2018 are the following:

➢ *Program on Attracting Remittances into the Economy (PARE 1 + 1)* is designed to attract investment and remittances to rural development through the creation and development of SMEs. The program operates on the basis of "1 + 1": every leu invested in business resulting from the funds earned abroad will be supplemented by 1 leu from the state (not more than 200 thousand lei). The target group of the program: migrant workers and recipients of remittances - relatives of the first degree.

➢ *Program "Effective Management of Business" (GEA)* provides for the organization of free courses on basic training modules necessary for potential or new entrepreneurs – financial management, accounting, business planning, human resources management and work legislation; VAT registration and enforcement of the legislation; accounting by domains of application; marketing; international marketing; business planning; external economic activity and customs relations.

These targeted programs include awareness, training and financial support to entrepreneurs components. However, they are designed for a small number of individuals, so they are correctly assessed as a "point" support for SMEs.

Institutional support for SMEs. Among the public institutions involved in the support of SMEs, it is necessary first of all to mention the Ministry of Economy and Infrastructure, which aims to develop public policies for SMEs. In particular, it justifies and prepares for the Government strategic directions of SMEs support at the national level; it monitors and evaluates their implementation. However, in the process of reorganizing the structure of the Ministry, the Department of SME Support Policies was merged with 2 other departments. SMEs are currently regulated by the employees of the Business environment regulation and SMEs Section, which is entrusted with a wide range of functions that go beyond the SMEs policy.

From 2007, the Organization for SMEs Sector Development (ODIMM), a State Agency, under the Ministry of Economy and Infrastructure is activating. The main objectives of its activity: implementation of the state policy in relation to SMEs, coordination of all types of financial assistance to SMEs and work with entrepreneurs.

ODIMM develops and implements targeted state programs. SMEs Support Fund is a part of the agency, which currently provides credit guarantee services to SMEs. The Fund provides loan guarantees for start-ups and already working SMEs, including those whose access to traditional financing sources is limited.

A number of state institutions are involved in the provision of certain services to business, sometimes on concessional terms. Among these are: International Exhibition Centre "Moldexpo"; Organization for Investment and Export Promotion (MIEPO); networked business incubators, providing support to start-up entrepreneurs, working in the districts; Agency for Innovation and Technology Transfer (AITT) etc.

New directions and priorities for SMEs development policy in the Republic of Moldova. In recent years, the Moldovan Government specifically harmonizes the SME support policy with the principles of the Small Business Act for Europe, and starting with 2014, is guided by the Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Moldova, of the other part (RM-EU Association Agreement). Below there are presented some of the new directions of the state policy for SMEs development in the Republic of Moldova.

Clusters. Improving the competitiveness of SMEs and increasing their contribution to economic and social development cannot be achieved just by the efforts of state institutions, but it also involves businesses initiatives through their cooperation and integration in all forms. One of the promising possibilities of SMEs growth potential

is their co-operation in the form of clusters. The Government has developed and adopted in the summer of 2013 the Concept of cluster development of the industrial sector of the Republic of Moldova. Currently, has been elaborated a research project "The analysis of the potential of clusterization in the Republic of Moldova in the industrial sector" allowing identifying in which sectors and regions of the country cluster initiatives could have a greater chance of success.

The statistical analysis for the mapping process led to the identification at the regional level of several industries that have a higher degree of specialization. Among them can be highlighted [7]:

➢ manufacture of beverages (in the Classification of Economic Activities of Moldova – C110) in the Central region, the South region and in ATU Gagauzia;

➢ manufacture of wearing apparel, except fur (C141) in the North region, the South region, in ATU Gagauzia;

➢ manufacture of wire and cable; manufacture of connection to them (C273) in the North region;

➢ manufacture of bakery and pastry (C107) in the Central region and in the South region;

➢ manufacture of other textiles (C139) in the Central region.

Women entrepreneurship. Research of the participation of Moldovan women in the economy, including entrepreneurial activity, showed the existence of gender inequality. Although the women from the Republic of Moldova have significant experience and have a good education, their entrepreneurial potential still remains largely untapped. Women are owners and managers, to a greater extent, of small enterprises (by number of employees) and enterprises and businesses in a developing stage. Support for women's entrepreneurship, until recently, was carried out in the framework of employment and gender equality policies. But in 2016, adjustments were made in the Strategy for the Development of the SMEs sector in the period 2012-2020, in particular, a new priority had been added – "The development of women's entrepreneurship in the Republic of Moldova", which provides for specific measures supporting women's entrepreneurship.

"Green" economy. The low level of competitiveness of the Moldovan SMEs does not allow them to actively promote their products on the European markets. Given the high share of agricultural production and processing industry in the Moldovan economy, the competitive advantage for Moldovan producers could be products related to "green" economy. A survey conducted by NIER (National Institute for Economic Research), showed that even businessmen who are aware that the greening of business will provide them with a competitive edge, face significant financial problems and difficulties of an administrative nature. In order to reduce the above-mentioned barriers, "The development of green economy for SMEs" priority, which provides more precise measures of support, was added in the 2016 in the Strategy for the Development of the SMEs sector in the period 2012-2020.

Evaluation of public policy by the Government, international rankings and Moldovan entrepreneurs

All major policy documents adopted by the Moldovan Government point on the need to improve conditions for business development. In particular, measures aimed at creating a favorable business environment are provided by the National Development Strategy "Moldova-2020", Government's action programs, the Roadmap for the improvement of competitiveness, Strategy for the Development of the SMEs sector in the period 2012-2020 and other national strategies and programs. Accordingly, the public administration reports and speeches of their leaders are often marked by measures aimed at improving the business climate, which is accompanied by a positive evaluation of activities by the Government. For example, at a meeting with the representatives – development partners and business community, Prime Minister of the Republic of Moldova Pavel Filip presenting on 02/05/2018 the work of the government indicated that already several actions have been taken, including the reduction of the number of institutions with control functions from 58 to 18, reduction of the number of permissive acts by about 60%, simplification of the reporting procedures [8].

Nevertheless, according to the results of international rankings and surveys of entrepreneurs, held with the participation of the authors, the business environment in the country has not improved significantly.

Republic of Moldova's position in international rankings. The research carried out in recent years by well-known international institutions and rating agencies, first of all, World Bank (Doing Business) and World Economic Forum (The Global Competitiveness Report) provide an opportunity to compare the business climate in a number of countries, including Moldova. These ratings do not only present the trends in changes of the situation in a particular country, but also demonstrate the rhythm of these changes in comparison with other countries.

Moldova in Doing business – 2018. In the World Bank rating – Doing Business 2018, Moldova remained on the same position as the previous year. Thus, in the Doing Business 2018 ranking, Moldova ranks 44th out of 190 countries. Rating is based on 10 key indicators (Table 2).

Position and evolution of "Doing business" indicators for the Republic of Moldova

Indicators	Position (of 190 countries)		Modification 2018/2017	DTF		Modification DTF 2018/2017
	2017	2018		2017	2018	
Position of the Republic of Moldova	44	44	..	72,80	73,00	+0,20
1. Starting a business	44	23	+21	91,96	93,76	+1,80
2. Dealing with construction permits	165	165	..	51,77	51,98	+0,21
3. Getting electricity	73	80	-7	74,60	74,65	+0,05
4. Registering property	21	20	+1	82,57	82,60	+0,03
5. Getting credit	32	42	-10	70,00	70,00	..
6. Protecting minority investors	42	33	+9	66,67	66,67	..
7. Paying taxes	31	32	-1	84,62	84,55	-0,07
8. Trading across borders	34	35	-1	92,32	92,32	..
9. Enforcing contracts	62	62	..	60,87	60,87	..
10. Resolving insolvency	60	65	-5	52,61	52,56	-0,05
Number of countries	*190*	*190*				

Source: The Doing business reports 2017, 2018 [17; 18].
Note: "+" indicates an improvement of the situation; "-" shows a worsening;

     The lowest positions in the ranking Moldova registered in the "obtaining building permits" indicator (165th position), which did not change its position as compared to the previous year and "access to electricity" (80th place), marking a worsening with 7 positions. The most significant worsening was marked by the "getting credit" indicator (10 positions). However, some indicators have improved their position in the ranking. Improvement of the position in the ranking was marked only by three indicators: the „business registration" indicator (+21 positions), the indicator "protection of minority investors" (+9 positions) and the "property registration" (+1 position).

     The report also uses the indicator „Distance to Frontier" score (DTF), which is based on a scale of reference used from 0% (if the weakest performance is observed) and up to 100% (for compliance with the best worldwide available procedures).

     Moldova recorded a total score of 73.00 points for the DTF indicator in 2018, reflecting a slight improvement of +0.20 points over the previous year.

     Moldova in the Global Competitiveness Report. According to the Global Competitiveness Report (2017-2018), Moldova has ranked 89th position of the 137 countries that participated in the study. In comparison with the Report 2016-2017, Moldova's ranking increased by 11 positions. Global Competitiveness Index has 12 indicators – factors determining the level of competitiveness (Table 3).

Position and evolution of the Republic of Moldova in the Global Competitiveness Index

Indicators	2016-2017	2017-2018	Modification 2017-2018/2016-2017
Global Competitiveness Index	**100**	**89**	↑+*11*
Subindex A: Basic requirements			
Institutions	128	119	↑+*9*
Infrastructure	86	88	↓-*2*
Macroeconomic environment	100	81	↑+*19*
Health and primary education	95	97	↓-*2*
Subindex B: Efficiency enhancers			
Higher education and training	91	83	↑+*8*
Goods market efficiency	107	97	↑+*10*
Labor market efficiency	91	94	↓-*3*
Financial market development	129	124	↑+*5*
Tehnological readiness	58	53	↑+*5*

Indicators	2016-2017	2017-2018	Modification 2017-2018/2016-2017
Market size	124	120	↑+4
Subindex C: Innovation and sophistication factors			
Business sophistication	127	120	↑+7
Innovation	133	128	↑+5
Number of countries	***138***	***137***	

Source: The Global Competitiveness Reports 2016-2017; 2017-2018 [15; 16].

Taking into account the different levels of countries development, the importance of these factors on the level of competitiveness is not identical in all countries. Depending on the factors' contribution to the competitiveness, the Report identifies three stages of countries, namely: competitiveness determined by factors (i) production, (ii) efficiency and (iii) innovation. In this standing, Moldova is at stage I, namely competitiveness due to factors of production (unqualified or low qualified labor; predominant use of natural resources). At the same time, maintaining competitiveness at this stage of development requires, first, a well-functioning of public and private institutions (pillar 1). In this context, has to be noted the unfavorable position of the country in these indicators. Institutions indicator gives an unfavorable position for several areas of critical importance to business development: property rights (126th), judicial independence (position 132nd), favoritism in decisions of government officials (123rd), the efficiency of legal framework in settling disputes (126th).

It is important to underline that the improvement with 11 positions of our country in the ranking in 2017-2018 as compared to the previous year must be analyzed in the context of a considerable descent (worsening of the situation) with 16 positions of the Republic of Moldova in the previous period: 2016-2017 compared to 2015-2016. Thus, if it is to compare how the position of the Republic of Moldova in 2017-2018 has evolved compared to 2015-2016, then we notice a 5-point worsening.

In the Global Competitiveness Report 2017-2018, better places Moldova has obtained at the pillars:
➢ Technological readiness (53th place),
➢ Higher education and training (83rd place),
➢ Macroeconomic situation (81st place).

As in the previous years, in the period of 2017-2018, the lowest ranking positions, the Republic of Moldova occupies at the following indicators:
➢ Innovations (128th place),
➢ Development of the financial market (124th place),
➢ Institutions (119th place),
➢ Business sophistication (120th place) and
➢ Market size (120th place).

In the period 2017-2018 compared to the previous period (2016-2017), the Republic of Moldova registered positive changes on most of the pillars:
➢ Institutions (an improvement of 9 positions);
➢ Macroeconomic situation (an improvement of 19 positions) - this change being driven by the improved position on Gross National Savings, % GDP (+13 positions); Inflation annual, % change (+20 positions); General Government Debt, % GDP (+13 positions); Country Credit Rating 0-100) (Best) (+4 positions);
➢ Higher education and training (an improvement of 8 positions);
➢ The efficiency of the goods market (an improvement of 10 positions);
➢ Development of the financial market (an improvement of 5 positions);
➢ Technological readiness (an improvement of 5 positions);
➢ Market size (+4 positions);
➢ Business sophistication (+7 positions);
➢ Innovations (+5 positions).

It should be noted, however, that against the background of worsening of the position in the ranking of most of these pillars from the previous period (2016-2017 compared to 2015-2016), the improvements in this year's ranking (2017-2018) are rather a "return" of the positions of previous years (2015- 2016).

In this period (2017-2018) negative changes compared to the previous period, marked 3 pillars: Infrastructure (a descending of 2 positions), Health and Primary Education (a descending of 2 positions), Labor Market Efficiency (a descending of 3 positions).

Evaluation of public policies by entrepreneurs. Since government policy support for SMEs is designed to improve business conditions, then when evaluating the policies it is advisable to take into account the opinion of entrepreneurs. The authors of this paper have participated in the organization of surveys and interviews with Moldovan entrepreneurs in recent years. In particular, they set goals to identify and analyze business problems:

- ➢ caused by access to resources
- ➢ defined by the impact of regulatory management and control bodies
- ➢ related to the business environment – in the broadest sense.

All questionnaires and guides for interviews were developed by the authors.

SMEs problems caused by access to resources. A significant part of barriers that entrepreneurs face on a daily basis, are the problems associated with the resources, their presence / absence, quantitative and qualitative characteristics, as well as easy access of SMEs to them.

Specifying the problems of Moldovan SMEs, due to the resources, the entrepreneurs, as a rule, put on the first two places: access to financing and problems with staff.

Unmet SMEs need in financial resources consistently ranked first among business problems in all polls conducted in the country since 1997. In different periods, the difficulty of access to sources of financing was indicated by 70 to 95% of entrepreneurs (if the respondents had the opportunity to mark all the problems). Specifying the reasons for difficult access to financial resources, entrepreneurs most often noted a high percentage of the loan and the significant expense for its processing; the difficulty of obtaining credit procedures; fear of credit default risk and lack of collateral, inadequate credit assessment.

The main mentioned reason is the high percentage of the loan and the liquid collateral requirement due to the high risk of default. This, in turn, is connected not only with professional and business qualification of personnel, but also to the instability of the economic and political situation. At the same time, unrealized SMEs need in financial resources is largely due to lack of interest of commercial banks in dealing with small clients.

The problem of lack of financial institutions focused on small businesses is exacerbated by a low level of income of Moldovan citizens.

The second most important problem of the Moldovan SMEs is associated with the staff. The importance of this problem has been increasing in recent years. The growth of the importance of staffing problems reflects primarily the negative processes in the labor market of Moldova, demonstrating a decrease of skilled workers.

According to entrepreneurs and experts, the complexity of the staffing is caused by the outflow of skilled workers and professionals, and generally the most active people of the country, as in Moldova, they cannot be offered jobs with appropriate working conditions and wages. Another reason that contributes to the difficulty of recruiting can be the lack of infrastructure institutions operating in the labor market. However, many Moldovan businesses, especially smaller ones, are mainly using informal sources for staff search and recruitment (family, friends, and former colleagues) without addressing to the employment centers and recruitment agencies. This greatly limits the ability of SMEs.

Lately, the staff problem, according to representatives of business, gets only worse. While in previous years, entrepreneurs have complained in the first place of the lack of highly skilled workers (and it could be already increased in the enterprise under the guidance of qualified colleagues), at the moment there is a lack of workers in certain professions, especially qualified workers.

Separate groups of entrepreneurs in varying degrees encounter these barriers, and the specifics of their problems should be taken into account in the SME support policies. Below are the results of the surveys of individual groups of entrepreneurs who are underrepresented in business. In particular, we are talking about entrepreneurs – women, young (graduates of vocational education) and persons with disabilities. The research was carried out in 2016-2017 with the participation of authors in the framework of the projects organized by ODIMM, CEDA and institutional project of National Institute for Economic Research (NIER) [3; 5; 13].

Comparing the problems of access to resources of various groups of entrepreneurs, the following was revealed (Table 4):

Types of resources, which significantly limits the business development*, %

Type of resources	Women	Persons with disabilities
Financial resources	83.3	100.0
Human resources	56.6	35.1
Equipment, technologies	53.5	18.9
Real estate	51.0	32.4
Information	46.1	57.1
Raw material, materials	38.5	32.4

* Respondents had the opportunity to give multiple answers.
Source: [5; 13].

> ➢ Entrepreneurs with disabilities are relatively more likely to need financial resources and information. A higher need for finance can be explained by the very low level of involvement of persons with disabilities in labor activity, especially business, and in general, their weak visibility in society, which can cause more mistrust towards them by potential lenders / investors. Such a perception of persons with disabilities is common in the society. The relatively higher need of entrepreneurs with disabilities in information is probably related to the many barriers in their lives that physically restrict their access to state institutions;

> ➢ Women entrepreneurs relatively more often have referred to restrictions related to the human resources, equipment / technology and real estate. The revealed differences can be explained by the fact that entrepreneurs with disabilities are relatively more likely to own a smaller business and are engaged in services sector.

Assessing the impact on the business of regulatory influences of the state, female respondents indicated the insignificant impact of the registration procedure of enterprises: only 7.3% of respondents noted that the registration of a business, to a large extent, had a negative impact on the development of their enterprises. At the same time, all 100% of interviewed entrepreneurs with disabilities pointed to the significant complexity of the process of enterprises registration. It can be concluded that in this case it is not the complexity of the business registration process itself, but, in general, the barriers in life and activities of persons with disabilities that limit their access to state institutions (the absence of elevators, etc.).

Problems of SMEs development related to the business environment. The competitiveness of companies significantly depends on external conditions, ie the business environment. Under the business environment we mean a set of legal, economic, scientific, technological, natural-geographic, socio-cultural, political and other conditions influencing the activity of entrepreneurs, but that are beyond their control. Environment can stimulate or, conversely, discourage entrepreneurial activity, so it is important its monitoring in the development of business policies.

The results of a study conducted by the World Bank in 2017 "The Cost of Regulating Entrepreneurial Activity" showed that only about 20% of entrepreneurs believe that the business environment in the country has improved; 23% – that the situation has worsened; 57% of respondents state that no changes occurred [12].

Separate groups of entrepreneurs differently assess the business environment and its change. When assessing the changes in the business environment in 2016 and the first half of 2017, the most negative perception of the business climate was noted by entrepreneurs with disabilities: 89.2% of respondents felt that the business environment had deteriorated and only 2.7% – that it had improved [5]. Among women entrepreneurs, the proportion of people who pointed to the deterioration of the business climate is much lower, but almost half of respondents noted this – 47.7%, while 13.2% of respondents considered that the conditions for business development improved [13]. These data are presented in Table 5.

**The opinion of entrepreneurs (women and persons with disabilities)
about the trends in the business environment, 2016-2017, % ***

Groups of entrepreneurs	Tendencies in changing of the business environment,% *		
	Improvement	Worsening	No changes
Women	13.1	47.7	39.2
Persons with disabilities	2.7	89.2	8.1

Source: [5; 13]. * % entrepreneurs that assessed the problem

The given data mean that the policy of supporting small and medium-sized businesses in the Republic of Moldova needs further improvement, including in strengthening the differentiated support of various groups of entrepreneurs.

Main conclusions

➢ Nowadays, the state policy for SMEs development in the Republic of Moldova is implemented in many areas and with a wide range of techniques – improvement of legislation, implementation of targeted programs and development of institutions that support SMEs.

➢ Analysis of the SMEs public support system and its development in the Republic of Moldova has revealed its advantages and disadvantages. The main pros and cons of modern SMEs development policy are presented below:

Policy advantages:

- A legal framework that regulates the basic aspects of entrepreneurship has been developed;
- A policy for SMEs, which is implemented through the adoption of national strategies, programs and plans for their implementation has been adopted at the national level;
- The main objectives of the SMEs support policy are implemented within the framework of state institutions, primarily in the Ministry of Economy and Infrastructure, local administration bodies and ODIMM;
- Various methods and directions of SMEs development, that are effectively used in countries with a market economy have been tested and implemented;
- Measures are taken to improve public policy, so that it should be tangible at the enterprise level: first of all, a number of regulatory procedures related to registration, licensing, accounting and reporting, and business closure have been simplified; the number of controlling bodies has been significantly reduced.
- Pro-European vector continues to develop, allowing Moldova to receive advice and financial support from the EU, where SMEs are considered as one of the key factors for economic development, as well as to participate in the Eastern Partnership program.

Policy weaknesses:

- Fiscal nature of most of the measures implemented in the process of regulation of entrepreneurial activity;
- A weak coordination of the activities of state institutions involved in the business regulation;
- Transfer of the state support for business priorities widely used in developed countries in completely different conditions without sufficient regard for national specificities;
- Pre-emptive regulation of SMEs at the national level;
- The system of differentiated support for different groups of enterprises is poorly developed in the SMEs policy;
- Existence of an unattractive image of the country as a poor, characterized by political and economic instability, with a high corruption component, which is not conducive to attract investment in the business, especially foreign investment;
- Proposed and implemented support measures are rarely discussed with entrepreneurs; the dialogue that takes place, as a rule, is formal and not resultative.

When substantiating and developing the SMEs support policies the Ministry of Economy and Infrastructure analyzes the situation in the SMEs sector, however many barriers continue to be extremely important for the business. Furthermore, a relative majority of entrepreneurs over the years indicates deterioration in the business environment conditions, herewith the opinions of certain groups of entrepreneurs vary significantly. This means that the government's economic policy pays not enough attention to the problems of different groups of the SMEs sector, leading a mismatch between policies and the actual situation.

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UTILIZING INTELLECTUAL CAPITAL ON COMPANY PERFORMANCE IMPROVEMENT (A CASE STUDY IN HOSPITALITY, RESTAURANT AND TOURISM SUB SECTOR COMPANIES LISTED IN IDX)

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Nowadays, business condition could not rely only on physical assets, yet managing intellectual capital as intangible asset is important to improve financial performance and win the market competition. Due to that reason, this study aims to show the significant effect of the intellectual capital indicators, namely HCE, SCE, RCE, and CEE on the financial performance of companies that are proxy by Net Profit Margin (NPM) and Return on Equity (ROE). The observed subjects in this study are hospitality, restaurant and tourism companies, with the observation period from 2010 until 2014. Secondary data from annual financial statements of sample companies that are published in Indonesia Stock Exchange or company's official website have been chosen as the research data, while the data collection has been done by the method of literature and documentation. After applying the purposive judgement sampling, eleven eligible companies have been selected as samples.

This study used descriptive statistics test, classic assumption test and the significance test with panel data regression which were analyzed with the help of Eviews 8.0. The result showed that the indicators of the intellectual capital have a significant influence on NPM and ROE simultaneously. NPM is affected by the HCE and RCE, whereas both ROA and ROE were affected significantly by SCE and CEE.

Keyword: Intellectual capital, HCE, SCE, RCE, CEE, NPM, ROA, ROE.

În prezent, condiţiile de afaceri nu s-ar putea baza doar pe activele fizice, însă gestionarea capitalului intelectual ca activ necorporal este importantă pentru îmbunătăţirea performanţei financiare şi câştigarea concurenţei pe piaţă. Din acest motiv, acest studiu îşi propune să demonstreze efectul semnificativ al indicatorilor de capital intelectual, respectiv HCE, SCE, RCE şi CEE asupra performanţei financiare a companiilor, reprezentate prin marja de profit net (NPM) şi rentabilitatea capitalului propriu (ROE). Obiectele observate în acest studiu sunt companii care îşi desfăşoară activitatea în domeniul activităţii hoteliere, restaurantelor şi turismului. Perioada de observaţie cuprinde anii 2010-2014. În calitate de date de cercetare au fost alese datele secundare din situaţiile financiare anuale ale societăţilor-eşantioane, publicate în Bursa de Valori din Indonezia sau pe site-ul oficial al companiei, în timp ce colectarea datelor a fost realizată prin metoda literaturii şi a documentaţiei. După aplicarea eşantionării raţionale intenţionate, unsprezece companii eligibile au fost selectate ca obiecte de cercetare.

Acest studiu a folosit testul statistic descriptiv, testul de presupunere clasic şi testul de semnificaţie cu regresia datelor din panou, care au fost analizate cu ajutorul Eviews 8.0. Rezultatul a arătat că, în acelaşi timp, indicatorii capitalului intelectual au o influenţă semnificativă asupra NPM şi ROE. NPM este afectat de HCE şi RCE, în timp ce ROA şi ROE au fost afectate semnificativ de SCE şi CEE.

Cuvinte-cheie: capital intelectual, HCE, SCE, RCE, CEE, NPM, ROA, ROE.

В настоящее время, бизнес может не только опираться на физические активы, но и управлять интеллектуальным капиталом, поскольку нематериальные активы важны для улучшения его финансовых показателей и рыночной конкурентоспособности. Данное исследование направлено на то, чтобы показать влияние значимости показателей интеллектуального капитала, а именно HCE, SCE, RCE и CEE на финансовые показатели компаний, которые представлены

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посредством чистой прибыли (NPM) и рентабельности собственного капитала (ROE). Объектами данного исследования являются компании, относящиеся к ресторанному бизнесу, туристической и гостиничной деятельности. Анализируемый период: 2010-2014 гг. Были отобраны вторичные данные из годовой финансовой отчетности выборочных компаний, которые опубликованы на Индонезийской фондовой бирже, а также данные размещенные на официальном сайте компаний. Сбор данных осуществлялся на основе анализа литературы и документации. После применения целенаправленной пробной выборки, в качестве объектов исследования были отобраны одиннадцать компаний.

В исследовании использовался тест описательной статистики, классический тест допустимости и тест значимости для обработки данных панельной выборки регрессии, которая была проанализирована по итогам обработки с помощью Eviews 8.0. Полученные результаты демонстрируют, что показатели интеллектуального капитала одновременно оказывают значительное влияние на NPM и ROE. NPM находится под влиянием HCE и RCE, тогда как ROA и ROE под всущественным влиянием SCE и CEE.

Ключевые слова: интеллектуальный капитал, HCE, SCE, RCE, CEE, NPM, ROA, ROE.

Introduction

Towards the end of 2015, all the countries which are members of ASEAN, had prepared to face ASEAN Economic Community (AEC). Through AEC, the entire resource of goods, services, labor and a source of investment funds will be integrated in the ASEAN free market. That's why AEC offers a big chance for anyone in every ASEAN countries who is ready to compete and develope their business. This is really a golden opportunity for Indonesian companies to enlarge the business and prove their power and existance in ASEAN.

Indonesia has to be brave, ready and confident in order to maximize business sector that according to predictions, will be successful through AEC, mainly in terms of service, logistic, health and tourism sectors. Therefore, we have to manage th four sector by ourselves, because both our natural and human resources are considered to be sufficient to meet the needs of that four sectors.

As sectors that are expected to grow when the MEA takes place, sub-sectors of the hospitality, restaurant and tourism must be able to present financial statements that interpret the company's performance in order to improve competitiveness. Companies can use the analysis of financial performance as a benchmark of productivity, for example the profitability ratio.

High profitability level which is shown through the financial statements means the company has to implement policies effectively and efficiently and also create high profits on their assets. The higher the profitability level of the company is, its chance to expand and prove the competitiveness of enterprises is growing. If the company can convey that information, then the sub-sectors such as hospitality, restaurant and tourism will get power to attract foreign investors during AEC.

Services sector that sell expertise and treatment must implement knowledge management to operate, so it can increase the value added and create a multiplier effect on any investment by the company, such as employee training costs. In addition, as a part of the service sector, sub-sector of the hospitality, restaurant and tourism also have a lot of intangible assets compared to other business sectors.

Intangible assets factors become increasingly important related of the Resource-Based Theory, which states that the company will excel in the competition and get a better financial performance than others by having important and strategic asset either tangible or intangible, subsequently control and their efficient use. This further supports the assessment of intangible assets which are generally attached to the company.

Management of intellectual capital should be done as efficiently as possible. Therefore, there are several ways to measure performance efficiency of intellectual capital within the company, in both, monetary and non-monetary ways.

This study attempted to measure the effect of intellectual capital in monetary values, by analyzing intellectual capital efficiency that is proxy by M-VAIC on the financial performance of hospitality, restaurant and tourism sub sectors. This study will use M-VAIC, which is one of the alternative methods of measuring intellectual capital which had been used in the research of Ulum. M-VAIC is basically similar with the calculation of VAIC^{TM} method, which has been introduced by Pulic. The M-VAIC

components are composed of the company's resources, namely physical capital through Capital Employed Efficiency (CEE), human capital through Human Capital Efficiency (HCE), and structural capital through Structural Capital Efficiency (SCE), plus indicators of relational capital through Relational Capital Efficiency (RCE) [15].

Theoretical review

1. Intangible Asset

According to IAS 38, Intangible assets are defined as non-monetary asset without physical substance [8]. At paragraph eight of PSAK 19, there is stated that the intangible asset is an identifiable non-monetary asset without physical form. PSAK 19 also explains that there are three fundamental characteristics of intangible assets, namely identifiable, control, and future economic benefit [3].

2. Intellectual Capital

The simplest form of intellectual capital can be expressed as the value of knowledge within an organization or business knowledge that is listed in the form of intangible assets, employee knowledge, skills, and experience in the business [9].

Intellectual capital is defined as capital based on science that can create value for the company in achieving and maintaining a competitive advantage of a company [22].

The intellectual capital is a combination of the labour quality with structural capital, that are corporate structure, systems, work culture, technology, professional expertise, customer relationships, experience, and age of the organization [11].

Intellectual capital measurement of monetary value. Here are six popular methods to measure intellectual capital of monetary value [19]:

A. The EVA and MVA Model by Bontis *et al.* (1999)
B. The Market-to-Book Value Model
C. Tobin's q Method by Luthy (1998)
D. Pulic's VAIC ™ Model by Ante Pulic (1998, 2000)
E. Calculated Intangible Value by Dzinkowski (2000)
F. The Knowledge Capital Earnings Model by Lev and Feng (2001)

3. Value added Intellectual Coefficient (VAIC™)

The VAIC™ is the most promising instrument for measuring performance of company's intellectual capital in the 90s. This approach is relatively easy and it is possible to do because it was built by financial statement accounts, such as accounts in balance sheet and income statement. VAIC™ based on figures derived from market and it is objective to be counted, either numeric outputs, inputs, value added, physical assets, and intellectual potential. This makes intellectual capital can be calculated appropriately and can be the basis of a new measurement system because it is easy to follow [15].

The measurement with VAIC™ method uses company's financial statement data in calculating the coefficient of efficiency of three capital types that are Human Capital (HC), Structural Capital (SC) and Capital Employed (CE). Although using accounting data, measuring process only focus on resource efficiency to create value for the company, not on costs [14].

4. Modified Value added Intellectual Coefficient (M-VAIC)

The use of VAIC™ has managed to overcome some problems that are related to intellectual capital ability to obtain data on financial statements, but does not rule out the possibility that there are some aspects that still have not been revealed in the analysis of intellectual capital impact [21].

Although the measurement of intellectual capital M-VAIC method in Indonesia is the first held by him, adding Relational Capital Efficiency (RCE) as the third component in the VAIC™ method believed to further increase the strength of this method in measuring and predicting performance of intellectual capital. M-VAIC can also be applied in many sectors, not only banks [20].

M-VAIC method assessed complements VAIC™ and proven methods may be used to measure the efficiency of intellectual capital by adding customer / relational capital as a new component in it. In terms of the VAIC™ development, this method is relatively easy and very possible to implement, due to is the fact that it is constructed with accounting data. Data for measurement model of M-VAIC can be obtained either directly or indirectly from financial statements.

Here are some explanations of the four M-VAIC indicators:

A. Human Capital Efficiency (HCE):

HCE value is obtained by dividing value added to value of human capital. HCE shows how much value added can be generated by the funds that are spent on labour. HCE value measures amounts of money that are generated by each of the human capital that is invested. It can also be the success of HC in value creation indicator.

B. Structural Capital Efficiency (SCE):

Structural capital is not an independent criterion as employed capital and human capital in the process of value creation. Value of structural capital is the result of reducing value added by structural capital value.

Structural Capital Efficiency is obtained by dividing the value of structural capital with the value added. SCE shows the contribution of structural capital in value creation. SCE value measures the amount of structural capital required to produce the rupiah value added and is an indicator for structural capital's success in value creation.

C. Relational Capital Efficiency (RCE):

RCE value is obtained by dividing the value of relational capital on value added. RCE illustrates the efficiency of investment in relational aspects. This ratio measures the number of relational capital required to produce one rupiah of value added and is an indicator of relational capital's success in value creation.

D. Capital Efficiency (CEE):

This indicator is an indicators for the value added created by one unit of physical capital, not the intangible assets such as other indicators. CEE value is obtained by dividing value added to the value of capital employed. CEE measures the amounts of money that is generated by each of the physical capital invested and is an indicator of physical capital's success in value creation.

5. Resource – based Theory

Intellectual Capital is one of the company's assets that is considered capable to increase company's value added when it is processed and utilized efficiently. This is in accordance with the opinion of Resouced – based Theory, according to which a company which owns and manages certain qualitative resources will be able to compete and win the market. It shows that intellectual capital as an asset is very unique and different for each company.

The Father of Modern Resources – based Theory stated that the competitive advantage of each company is different due to heterogeneity of companies. Resources – based Theory also explained a real and comprehensive framework that the company can get more value than other companies when it has VIRN (Valuable, Rare, imperfectly imitable, Non-constitutable) assets [1].

Resource – based Theory becomes an explanation about the efficiency of a sustainable company performance [2]. Resource – based theory is a very appropriate source of theories to explain the research on intellectual capital monetarily. This theory suggests that the company is able to direct a good and long-term performance plan if it has the key resources to improve the quality and make the company be a superior of the competition [20].

6. Stakeholder Theory

Besides Resource – based Theory, assessment of intellectual capital in monetary terms can be associated with the stakeholder theory. This theory considers that the stakeholders are one of the most important in the company. Stakeholder Theory explains that every policy in company that is material should be reported and made by considering the stakeholders condition.

Concept of stakeholder approach is a fundamental reference for the development of Stakeholder Theory. With the approach of stakeholder concept, hopefully the company will be more sensitive to business environment and can meet the demands expected by environment, namely stakeholders [7].

Stakeholder Theory is the literature basis on the changing habits of narrow viewpoint that business is only a tool in maximizing profits for capital's owner. Furthermore, the Stakeholder Theory has evolved to address the problem in understanding and managing business in the world of 21st century, both the problem of value creation and trade [7].

7. Knowledge – based Business

In the midst of this globalization era, companies generally use a Knowledge – based Business as a business operations basis. The base of business is no longer limited to physical capital, but also to knowledge-based capitals in order to increase the value added of company.

The father of Knowledge – based Business argued that companies with knowledge basis should have a leader who provides a solution, employees who work with high ethic, and company's owner that dared to

sacrifice short-term profits for the sake of a better value added in the long run. Knowledge – based Business also must have a wise and open-minded leader as well as employees who are creative and not afraid to fail. Companies that apply Knowledge – based Business will become superior competitors without a dictator commands, cumbersome bureaucracy, and various structures also hinder the enterprise system [10].

8. Analysis of Financial Performance

To determine the financial performance of a company, we can also carry out the analysis of financial statements which are published by the company. Through this analysis, we can understand the company's financial condition, the company's ability to generate profits, the company's ability to pay debts, and many more.

The analysis of financial ratios is classified into five types [12], namely:

A. Profitability Ratio

This ratio describes the company's ability to relatively generate profits. Relative in this definition is meaning that profit is not only measured by its amount, because sometimes a great profit is not showing actual profitability. Profitability benchmarks are revenue, funding and capital.

B. Liquidity Ratio

This ratio aims to determine the company's ability to pay short-term liabilities.

C. Activity Ratio

This ratio describes the company's performance in managing inventory and receivable accounts.

D. Ratios Efficiency and Effectiveness of Data Usage and Costs

Another name of this ratio is the ratio of costs on sales revenue. This ratio can show the efficiency and cost effectiveness of the use of funds.

E. Solvency Ratio

This ratio is intended to reflect the company's ability in paying long-term liabilities.

Profitability ratio was compiled by this ratios below [13]:

A. Net Profit Margin (NPM)

NPM = Net profit / Sales

Increasing of NPM value indicates that the company is capable to generate net profit higher than its sales activity.

B. Return on Asset (ROA)

ROA = Net profit / Total Assets

ROA measures the company's ability in generating net income derived from investment activities.

C. Return on Equity (ROE)

ROE = Net profit / Total Equities

ROE is used to measure the success of company in generating profits for shareholders, so that ROE is considered as a representation of the shareholder or the company's value.

9. Perceptions

From these studies, the first hypothesis in this research can be formulated and it is the following:

1. Relationship of each independent variable partially on NPM

H_{0a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously do not affect the NPM.

H_{1a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously affect the NPM.

H_{0b}: Variable of Human Capital Efficiency (HCE) partially has no effect on NPM.

H_{1b}: Variable of Human Capital Efficiency (HCE) partially affects NPM.

H_{0c}: Variable of Structural Capital Efficiency (HCE) partially has no effect on NPM.

H_{1c}: Variable of Structural Capital Efficiency (HCE) partially affects NPM.

H_{0d}: Variable of Relational Capital Efficiency (HCE) partially has no effect on NPM.

H_{1d}: Variable of Relational Capital Efficiency (HCE) partially affects NPM.

H_{0e}: Variable of Capital Employed Efficiency (HCE) partially has no effect on NPM.

H_{1e}: Variable of Capital Employed Efficiency (HCE) partially affects NPM.

2. Relationship of each independent variable partially on ROA

H_{0a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously do not affect the ROA.

H_{1a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously affect the ROA.

H_{0b}: Variable of Human Capital Efficiency (HCE) partially has no effect on ROA.

H_{1b}: Variable of Human Capital Efficiency (HCE) partially affects ROA.

H_{0c}: Variable of Structural Capital Efficiency (HCE) partially has no effect on ROA.

H_{1c}: Variable of Structural Capital Efficiency (HCE) partially affects ROA.

H_{0d}: Variable of Relational Capital Efficiency (HCE) partially has no effect on ROA.

H_{1d}: Variable of Relational Capital Efficiency (HCE) partially affects ROA.

H_{0e}: Variable of Capital Employed Efficiency (HCE) partially has no effect on ROA.

H_{1e}: Variable of Capital Employed Efficiency (HCE) partially affects ROA.

3. Relationship of each independent variable partially on ROE

H_{0a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously do not affect the ROE.

H_{1a}: Variable of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE) simultaneously affect the ROE.

H_{0b}: Variable of Human Capital Efficiency (HCE) partially has no effect on ROE.

H_{1b}: Variable of Human Capital Efficiency (HCE) partially affects ROE.

H_{0c}: Variable of Structural Capital Efficiency (HCE) partially has no effect on ROE.

H_{1c}: Variable of Structural Capital Efficiency (HCE) partially affects ROE.

H_{0d}: Variabl of Relational Capital Efficiency (HCE) partially has no effect on ROE.

H_{1d}: Variable of Relational Capital Efficiency (HCE) partially affects ROE.

H_{0e}: Variable of Capital Employed Efficiency (HCE) partially has no effect on ROE.

H_{1e}: Variable of Capital Employed Efficiency (HCE) partially affects ROE.

Research method

This study is classified as a quantitative descriptive research that represents a research to help researchers in revealing influence degree between variables. This study makes the hospitality, restaurants and tourism subsector that are listed in Indonesia Stock Exchange (IDX) as an object under study. In this study, processed data is a secondary data from Financial statements of the hospitality, restaurants and tourism subsectors in Indonesia that are already opened for public. These data between 2010 – 2014 has been chosen for analysis. Data were obtained from Indonesia Stock Exchange website and the company's official website.

Sample determination that will be examined in this study is done by purposive judgment sampling method with six qualifications. One of qualification in purposive sampling in this study is previous research [17], which describes that a company with a negative value added means the company has no more value for stakeholders, so it is contrary to VAIC^{TM} theory that aimed to determine value added in the company; therefore, it should be eliminated. Based on that purposive sampling, there are only eleven of 21 companies in the subsector of hospitality, restaurants and tourism which are worthy of being part of the study samples.

This study aimed to analyze the influence of intellectual capital efficiency on financial performance with M-VAIC method. M-VAIC is a modified monetary measurement from VAIC^{TM} method, which has been popularized by Pulic [15]. Here are the M-VAIC indicators which are used as independent variables in this study:

$$\text{HCE} = \frac{VA}{HC}$$

VA = output – input = operating profit + employee cost + depreciation + amortization

A. $\text{SCE} = \frac{SC}{VA}$

SC = VA – HC

B. $\text{RCE} = \frac{RC}{VA}$

RC = marketing cost

C. $\text{CEE} = \frac{VA}{CE}$

In this study, there are three dependent variables as a proxy of the company's financial performance, namely:

A. $\text{NPM} = \frac{Net\ Profit}{Sales}$

B. $\quad ROA = \dfrac{Net\ Profit}{Total\ Assets}$

C. $\quad ROE = \dfrac{Net\ Profit}{Total\ Equities}$

Processing panel data regression was performed using the Eviews 8.0 software. In this study, unvaried panel data regression analysis is performed three times. Each dependent variable will have a model of its own equation.

Results

There are three alternative method approaches to process panel data regression, namely Common-Constant Method (OLS Method), Fixed Effect Method (FEM), and Random Effects Method (REM). To determine the most appropriate method to be used in regression, every model has to be tested first.

1. Chow Test

Chow test aims to identify and choose the most appropriate method between fixed effects method or pooled least square method.

In this section, NPM, ROA, ROE models have been tested, while NPM fits to Fixed Effect Method, ROA fits to Fixed Effect Model, and ROE fits to Fixed Effect Model.

2. Haussman Test

Hausman test aimed to make a comparison between Fixed Effects Method and Random Effects Method. This testing is a continuation step of Chow test results that have a probability value Cross-section F < 0.05.

In this section, NPM, ROA, ROE models were tested and NPM fits to Fixed Effect Method, ROA fits to Fixed Effect Model, while ROE fits to Fixed Effect Model. But, special for ROE, after the normality test was done, the data are not normal, so it indicates that the model is not perfectly suitable and changes should be made to the OLS method, then it was changed into it.

3. Lagrange Multiplier (LM) Test

LM Test aimed to compare random effects method with pooled least square method. This testing is a continuation step of Chow test results that have a probability value Cross-section F > 0.05.

In a panel data regression, three violations of the assumptions are very likely to occur. Three violations of the assumptions made up of heterocedasticity, auto-correlation, and multicollinearity.

Normality test is done to ensure that the research data is distributed normally. One of normality test is the test of Jarque – Berra that is an asymptosis test or large sample based on the residue. Jarque Bera test result will show that data distributed normally if the value of chi – square statistic < chi – square table or a probability value Jarque Bera test results > 0.05. The result of normality test for NPM shows that the data for this equation model is normally distributed, so being with ROA and ROE data.

Heteroscedasticity test is done to ensure that data are homogeneous and not violate the BLUE (Best Linear Unbiased Estimated) assumption. One way of determining a model's heteroskedastisitas is by apply the White test (residual test). If the probability value of residue test results or Prob (F-statistic) > 0,05, then data is homogeneous. The White test results can be seen from value of Prob (F-statistic). The result of the test shows that the research data is homogeneous for NPM, ROA and ROE equation model.

Autocorrelation test is done to ensure that there is no correlation between observations. Autocorrelation test can be done by testing the value of Durbin – Watson of research model. In this study, the Durbin-Watson value for NPM equation is 2.51. These results are at 4-du < 2.51 < 4-d, so there are no autocorrelation conclusions in the NPM equation model and the research can be proceed. The DW score for ROA is at dl < 1,615026 < du, so there are no autocorrelation conclusions in the ROA equation model and the research can be proceed. The DW value of ROE equation model are at dl < 1.68 < du that means there are no autocorrelation conclusions in the ROE equation model and the research can be proceed.

Multicollinearity test is done to ensure that there is no autocorrelation between variables in the research model. A high multicollinearity in model makes research parameter become unreliable. The test results of multicollinearity of NPM as the dependent variable in this study showed no autocorrelation between HCE and SCE indicator with a value of 0.950666 relationship. HCE and SCE relationship likely due to HC and SC is a variable that together makes up a value added so that the relationship between the two variables is very high up approaching one. One of two mutually correlated variables (which has a lower degree of correlation relationship) must be removed from the model to fulfil the assumption of multi-collinearity. In this study, for NPM model, SCE variable is eliminated, while for ROA and ROE, HCE variable is eliminated.

Table 1

Summary of Research Result

	NPM (*Net Profit Margin*)							
Independent Variable	T – Test			F – Test			Hypotheses Result	Signification Result
(X)	Probability of T-Test		5% Sig.	Probability of F-Test		5% Sig.		
Simultaneous (M-VAIC)				0,0000	<	0,05	H_0 rejected	Significant
HCE	0,0000	<	0,05	-	-	-	H_0 rejected	Significant
RCE	0,0088	<	0,05	-	-	-	H_0 rejected	Significant
CEE	0,2235	>	0,05	-	-	-	H_0 accepted	Insignificant
Variable	ROA (*Return on Asset*)							
Independent	T – Test			F – Test			Hypotheses Result	Signification Result
(X)	Probability of T-Test		Hypotheses Result	Probability of T-Test		5% Sig.		
Simultaneous (M-VAIC)				0,0000	<	0,05	H_0 rejected	Significant
SCE	0,0036	<	0,05	-	-	-	H_0 rejected	Significant
RCE	0,1819	>	0,05	-	-	-	H_0 accepted	Insignificant
CEE	0,0000	<	0,05	-	-	-	H_0 rejected	Significant
Independent	ROE (*Return on Equity*)							
Variable	T – Test			F – Test			Hypotheses Result	Signification Result
(X)	Probability of T-Test		5% Sig.	Probability of T-Test		5% Sig.		
Simultaneous (M-VAIC)				0,000	<	0,05	H_0 rejected	Significant
SCE	0,0283	<	0,05	-	-	-	H_0 rejected	Significant
RCE	0,4269	>	0,05	-	-	-	H_0 accepted	Insignificant
CEE	0,0000	<	0,05	-	-	-	H_0 rejected	Significant

Source: Summary from Eviews 8.0 output, 2016.

Based on Table 1 with a significance level of 5%, the test results simultaneously indicate:

1. Relationship of M-VAIC indicators against NPM

Simultaneously, M-VAIC indicators have a significant effect on NPM. Indicators of M-VAIC simultaneously can explain NPM about 99% and the rest is influenced by other factors outside the model testing.

Partially, HCE and RCE known to significantly affect the NPM, while the CEE does not significantly affect the model with signification level of 5% on 55 samples tested.

2. Relationship of M-VAIC indicators against ROA

Simultaneously, M-VAIC indicators have a significant effect on ROA. Indicators of M-VAIC simultaneously can explain ROA with about 93.6% and the rest is influenced by other factors outside the model testing.

Partially, SCE and CEE known to significantly affect the ROA, while the RCE does not significantly affect the model with signification level of 5% on 55 samples tested.

3. Relationship of M-VAIC indicators against ROE

Simultaneously, M-VAIC indicators have a significant effect on ROE. Indicators of M-VAIC simultaneously can explain ROE with about 96.2% and the rest is influenced by other factors outside the model testing.

Partially, SCE and CEE are known to significantly affect the ROE, while the RCE does not significantly affect the model with signification level of 5% on 55 samples tested.

Discussion

The test of intellectual capital's effect partially on NPM shows that only HCE and RCE directly affect the NPM models. This means that CEE has not had a significant impact on NPM models tested on a sample of eleven companies for five years. In other words, increase of CEE has no effect in improving NPM. If the company wants to increase NPM, then the appropriate intellectual capital ratio that has to be enlarged is

HCE or it should focus in managing HCE. The company can add investment in human capital and relational capital to be utilized optimally and efficiently, in order to increase the value of NPM.

Partially, M-VAIC indicators that significantly influence the ROA are SCE and CEE, while RCE does not have a significant effect on the model tested. This may be due to the limited sample size or the observation period which is not long enough, but it doesn't mean that RCE will have a significant impact if the period of observation is extended and study sample is enlarged. In this model, the addition of RCE has no effect on the increase in ROA. Companies can increase the value of SCE and CEE if they pursue for a higher ROA. Additional investments in structural capital and physical assets (capital employed) accompanied by effective asset management can increase the ROA.

In tune with test results of ROA, only SCE and CEE are able to influence the improvement of ROE significantly. Significance test results showed that the RCE does not have a significant effect on ROE in the model tested. This means the addition of RCE has no effect in improving ROE. If the company is working to increase ROE, it is more appropriate to increase value of SCE and RCE by adding structural investment capital and physical assets (capital employed) efficiently.

The majority of results of significance testing of M-VAIC indicator against financial performance which is proxied by NPM, ROA and ROE are in accordance with previous studies. CEE could affect ROA and ROE significantly, also SCE could affect NPM, ROA, and ROE significantly [5]. CEE and SCE partially significant effect on ROA and ROE [6]. SCE has a significant effect on ROE, which is also evident from the results of previous research [23]. Both HCE and SCE partially could affects ROA and ROE significantly according to previous research [16].

In addition to compatibility with previous studies, there was one previous study that is not suitable with the present study, which stated that the RCE has a significant effect on ROA and ROE [4]. Results of research conducted by the author show the opposite result, meaning that the RCE has not been able to influence the ROA and ROE significantly. It can be caused by a limited number of samples, namely eleven companies in a fairly short period of observation of only five years. It does not rule out the possibility that RCE will have a significant impact when the sample is propagated by extend the study period or expand the sector of observation.

There is also a contra result about CEE's effect on NPM that previous result has proven that CEE could affect NPM in a significant way, but this study hasn't reached that condition. The same is with the RCE condition, due to, perhaps, the limited number of samples. It may be significant if the study period is extended or the sector of observation is expanded [5].

Results of this study have proven that intellectual capital either simultaneously, or partially can significantly influence the company's financial performance which is proxied by NPM, ROA, and ROE. Companies that have high-performance intellectual capital are able to generate better profitability and efficiency. This is consistent with the grand theory that is used as the basis of research, namely the Resource-based Theory and Stakeholder Theory.

The father of Resources – based Theory first defined that different assets of each company and the ability of its management who will show the diversity of performance among companies, so it takes VIRN (Valueable, Rare, imperfectly imitable, Non-constitutable) asset for win the market [1]. Related opinion about Resource – based Theory also defined that an organization requires two main things, namely the advantages of resources (intangible assets and tangible assets) and the ability to manage resources to be able to compete in the business [18].

This research shows that companies with good intellectual capital efficiency as PNSE, PJAA, INPP and PTSP could get a higher profitability ratio than other companies tested. The company that successfully manages intellectual capital that is special and unique, efficiently uses it in proper operational activities, in order to boost the company's profitability improvement. On the other hand, HOME and BAYU got the lowest profitability. Both companies are also known to have a small value of intellectual capital efficiency. This proves Resource – based Theory that the company will be difficult to compete in the era of Knowledge – based Business without optimizing the intellectual assets owned.

This study is also in accordance with Stakeholder Theory that every material decision made by companies should consider the stakeholders condition and the result has to be reported to them, because they deserve it. Companies must pay attention to stakeholders in the preparation of strategic management. Not only that, companies that have committed to report their activities to stakeholders are largely aimed at

maintaining the balance and sustainability in the creation of value for all stakeholders, ie shareholders, employees, government and society.

Stakeholder theory is a reference that can help companies to be more sensitive and caring to the stakeholders, so that the company can see the required demand and improve quality in business competition and company is not limited to the pursuit of profit targets by this theory [7]. Furthermore, the stakeholder theory is capable of explaining the relationship between the companies, stakeholders and profits. The greater transparency for stakeholders is, in terms of demand and performance of reporting, they tend to react more positively to the company. At the same time, companies need a good image in the eyes of stakeholders as an effort to improve performance and profit.

Through stakeholder theory, the company is required to be more open and consider the interests of stakeholders in making business decisions. Companies should no longer ignore the stakeholders in the modern business era, as their concern, either directly, or indirectly affects stakeholders. If the local community and government feel aggrieved, they will react negatively to the company. Consumers and suppliers are also entitled to get good performance report, so that they know the company well and are loyal to the company. Investors areone of the most important stakeholders in terms of funding, so that the company must consider their situation in any business decision.

Management of intellectual capital that is well proven can significantly increase the profitability of company. This shows that the company has taken the appropriate business policies without ignoring interests of stakeholders. Good condition of profitability as a result of intellectual capital utilization also showed maturity and readiness of the company in the face of competition in the era of Knowledge based - Business, so that stakeholders can feel confident about the performance of the company.

Through this research, it also known that the most dominant asset that can impact to profitability ratios are structural capital and capital employed (physical assets). From all three dependent variables tested, the most suitable equation belongs to NPM with the highest value of Goodness of Fit amounted 99%. In this study, NPM equation becomes the most appropriate equation.

The test results simultaneously and partially on the whole company of the samples showed that companies in the sub-sectors of hospitality, restaurant and tourism have been managing intellectual capital owned efficiently and engaged their efforts in improving the company's financial performance. In the other words, companies fromn sub-sectors of hospitality, restaurant and tourism have run knowledge-based business in the modern era. It's just that there are still companies that have not managed in an optimum way the intellectual capital, so the maximum profitability is not yet achieved. With this result, the expected sub-sectors of hospitality, restaurant and tourism can continue to be consistent and evolve with maximizing intellectual capital in the ASEAN Economic Community (AEC), which began in the end of 2015.

Conclusion, limitation and recommendation

Result of this study represent a correlation with significant effect from intellectual capital efficiency (M-VAIC) to financial performance (profitability ratio) in companies from the sub-sector of hospitality, restaurants and tourism. It shows that M-VAIC could affect NPM simultaneously with 99%, affects ROA simultaneously with 93.6%, and affects ROE simultaneously with 96.2%.

Other conclusions of this research are that the effects of M-VAIC on profitability ratios are partial. For NPM correlations at 5% significance level, HCE and RCE successfully affect the NPM partially, while CEE is not yet capable to affect NPM significantly. With 5% of significance level, SCE and CEE successfully affect the ROA partially, while RCE is not yet capable to affect ROA significantly. Similar with ROA correlation, SCE and CEE successfully affect the ROE partially, while RCE is not yet capable to affect ROE significantly.

Based on that result, we know that if companies from the sub-sector of hospitality, restaurants and tourism are going to increase their profitability ratio to improve their performance, they should improve the M-VAIC ratios as implementation of intellectual capital efficiency. For more specific, if they want to increase their NPM, they have to push the HCE and RCE scores. When their focus is ROA, they can increase the SCE and CEE scores. If they want to improve their ROE, they can increase the SCE and CEE scores.

There are several limitations of this research: 1. Data used is only for a five year period, 2. The study was only done for the sub-sector of hospitality, restaurants and tourism, so these results are less generalizable to cases from other sectors, 3. This study focuses only on the analysis of the value of intellectual capital in monetary terms without assessing the influence of non-monetary values, such as the level of disclosure and its impact for the company.

Further, research is expected to complement the existing shortcomings in this research, as follows: 1. to include analysis of intellectual capital in non-monetary values as a comparison, 2. to add dependent variable of other financial performance ratios, not only profitability ratios, 3. to apply much longer study period to produce a better analysis, 4. to develop samples by enlarging the observed sector, so that the obtained results can be generalized as a concept.

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STATE POLICIES FOR SUPPORTING THE ENTREPRENEURS AS WOMEN AND YOUNG PEOPLE FROM SOCIAL-VULNERABLE GROUPS

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Under the conditions of the business environment currently existing in the Republic of Moldova, which, in certain aspects, requires essential improvements, the creation of conditions and opportunities for all persons, who wish to start a business, for their successful work activities and entrepreneurship, remains an imperious task. The need for special support from the state in order to initiate and develop a successful business is most felt by the socially vulnerable categories of population. Therefore, the main purpose of this article is to analyze relevant national policy documents for supporting women and young people, part of the socially vulnerable category, as entrepreneurs. The information base of the investigation constituted, mainly, the statistical data of the NBS and the consulted bibliographic sources. The main used research methods were: studying the written and electronic sources on the subject; monograph; quantitative and qualitative methods; analysis and synthesis; statistics; table; dynamic strings. The most relevant results are the following: a) characteristic of the national state policy of supporting women and young people as entrepreneurs or self-employed; b) correct defining of the content and correlation of the main notions established by the NBS, which are used in the research process; c) determining the evolution of the number, structure (2012 and 2016) and dynamics (2016/2012) of young entrepreneurs according to their professional status, levels of education and gender.

Keywords: SMEs, socially vulnerable persons, young entrepreneurs, young self-employed workers, state support policies, NPEEY, development of female entrepreneurship in the Republic of Moldova.

În condiţiile mediului de afaceri constituit actualmente în Republica Moldova, care, sub anumite aspecte, necesită îmbunătăţiri esenţiale, crearea pentru toate persoanele, ce doresc să-şi iniţieze o afacere, a condiţiilor şi oportunităţilor pentru desfăşurarea cu succes de către aceştia a activităţilor de muncă şi antreprenoriale, rămâne a fi o sarcină imperioasă. Nevoia de un sprijin special din partea statului pentru a iniţia şi desfăşura o afacere reuşită este resimţită cel mai mult de către categoriile social-vulnerabile ale populaţiei. De aceea, scopul principal al prezentului articol este analiza unor documente relevante de politici de stat naţionale în vederea susţinerii femeilor şi tinerilor, din categoria persoanelor social-vulnerabile, în calitate de antreprenori. Baza informativă a investigaţiei a constituit-o,cu preponderenţă, datele statistice respective ale BNS şi sursele bibliografice consultate. Metodele principale de cercetare utilizate au fost: studierea surselor scrise şi electronice la temă; monografică; cantitativă şi calitativă; analiza şi sinteza; statistică; tabelară; şirurile dinamice. Cele mai relevante rezultate obţinute sunt: a) caracteristica politicii de stat naţionale de susţinere a femeilor şi tinerilor în calitate de antreprenori sau lucrători pe cont propriu; b) definirea corectă a conţinutului şi corelării principalelor noţiuni stabilite de BNS, cu care se operează în procesul cercetării; c)determinarea evoluţiei numărului, structurii (anii 2012 şi 2016) şi dinamicii (2016/2012) antreprenorilor tineri după statutul lor profesional, nivelele de instruire şi sexe.

Cuvinte-cheie: IMM, persoane social-vulnerabile, tineri antreprenori, tineri lucrători pe cont propriu, politici de stat de susţinere, PNAET, dezvoltarea antreprenoriatului feminin în Republica Moldova.

В условиях создавшейся в настоящее время в Республике Молдова бизнес-среды, которая, в некоторых отношениях, требует существенных улучшений, создания для всех лиц, которые хотят открыть собственный бизнес, условий и возможностей для успешного осуществления ими трудовой и предпринимательской деятельности, остаётся первостепенной задачей. В необходимости особой поддержки со стороны государства, чтобы начать и осуществить успешный бизнес, больше всех нуждаются наиболее социально уязвимые категории населения.

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Поэтому, основной целью данной статьи является анализ некоторых важных документов государственной политики, направленных на поддержку женщин и молодых людей в качестве предпринимателей из социально уязвимых категорий лиц. Информационную базу исследования составили, главным образом, соответствующие статистические данные НБС и использованные библиографические источники. Основными методами исследования были: изучение письменных и электронных источников по теме; монографический; количественные и качественные; анализ и синтез; статистические; таблицы; динамические ряды. Наиболее значимыми результатами являются: а) характеристика государственной национальной политики по поддержке женщин и молодых людей в качестве предпринимателей или самозанятых; б) правильное определение содержания и соотношения основных понятий, определяемых НБС и используемых в процессе исследования; в) определение количества, структуры (в 2012 г. и 2016 г.) и динамики (2016/2012 гг.) молодых предпринимателей в зависимости от их статуса занятости, уровней образования и пола.

Ключевые слова: МСП, социально уязвимые лица, молодые предприниматели, молодые самозанятые работники, государственная политика поддержки, НПЭПМ, развитие женского предпринимательства в Республике Молдова.

Introduction

Analysis of the national state policies to support women, young entrepreneurs and self-employed workers as socially vulnerable categories of the population has shown that *policy documents* in the Republic of Moldova are actual and are being implemented, which offer certain facilities, support and protection of the categories of persons called, in particular, *in the field of their employment* and the fulfilment of their employment obligations. There are also some *legal rules, measures, modalities, methods, etc.* to support self-employed entrepreneurs and workers from socially vulnerable categories, but they are *very few, insufficient and dispersed* through various policy actions, which sometimes only tangentially relate to the *overall problem* of creating legal, financial, advisory support etc., in order to support and encourage the initiation and practice of entrepreneurial activity by the targeted social-vulnerable categories.

Regarding the **degree of approach in the scientific literature** of the subject of this article, we regret to note the insufficiency of scientific studies, which would address the issue *as a whole* and which would *explicitly* investigate *the socially vulnerable categories of the population* and, in particular, the *case of the SMEs sector*, for which the NBS *has not elaborated the necessary statistical data base, yet.*

Basic content of the article. Therefore, due to the fact that in the process of quantitative and qualitative research of the problems related to the topic of this article, *we will use the official data of the NBS*, so, implicitly and naturally, we will also operate with the respective notions in the sense of the definitions given by the NBS. Otherwise, the content, logic and results (including those obtained as a result of the quantitative analysis) of the investigation will be distorted. For this reason, in some cases that will be specified, *we have argued and formulated **our own** respective definitions*, which do not coincide with those formulated in the NBS methodologies. The NBS defines the respective terms as follows [1].

According to the *professional status*, people are classified according to the ICSE-93 international classification. *Professional status is* the situation hold by a person depending on the way of obtaining income through the activity performed, namely: employees; *non-employed: employers, self-employed workers, unpaid family helpers, members of cooperatives.*

Employer is the person who carries out his / her occupation in his / her own unit (enterprise, agency, studio, shop, office, farm, etc.) for which one or more permanent employees are employed.

A self-employed person is a person who carries out his / her activity in his / her own unit or in an individual business without employing any permanent employee (but may have temporary employees), being helped or not by unpaid family members. *Independent entrepreneurs* (vendors, meditators, private taxi drivers, etc.), *freelancers* (ambulance artists, plastic artists, lawyers), *occasional day-workers, individual farmers* are included in this status.

So, *the self-employed may have temporary employees*. But here, NBS does not define this notion. Therefore it is unclear: the temporary employee is employed in an informal or contractual manner, on the basis of the employee's work record. As a consequence, *in the first case, the worker* is remunerated informally, by payment agreed by the parties, and in *the latter case – the worker* is employed and remunerated as a temporary employee, in compliance with the legislation in force.

A member of a cooperative is considered the person who worked (rightly will be "is working" – the author's note) as a member of a cooperative, where each member has equal rights to decision making, solving production / sales problems, etc.

Since the definitions of *"employer"* and *"self-employed"* also *include the notion of "employee"*, we also need to present the definition given by the NBS: an *employee* is considered to be a person working on a contract basis in an economic or social unit – regardless its ownership form – or for individual persons (whether under a contract or an agreement) for a remuneration in the form of a wage (whether in cash or in kind, in the form of a commission, etc.). By convention, militaries in term were registered with this status.

Similarly, since the definition of the *"unpaid family worker"* used by the NBS includes the category of *"self-employed"*, we also present the NBS definition of the *"unpaid family worker"*, who is the person who carries out his / her family economic unit run by a family member or relative, for whom he / she does not receive remuneration in the form of salary or payment in kind. *The household (farm)* is considered to be such a unit. If several people from a household work in their own rural household, one of them – usually the head of the household – is considered *a self-employed worker and the others – unpaid family workers.*

Starting from the definitions of the types of professional status examined **as a result of our own investigations**, *we have to specify and conclude the following.*

As a person with a professional status of *"employer"*, in the sense accepted by the NBS, owns an economic unit (i.e. according to art. 4, item 1 of the Law on Entrepreneurship and Enterprises, he is the holder of the respective patrimony or, in other words, an entrepreneur) and employs *permanent employees,* who contribute to the employer's earning (or loss) (even if the employer does not formally have a salary), we must surely note that the *employer* carries out entrepreneurial activity, thus being *an entrepreneur*. And here we have to mention: it does not matter if *he / she is just the owner or the business manager*. *Hence the conclusion*: since the employer carries out entrepreneurial activity, then according to art. 3, point 1 of the Law on Entrepreneurship and Enterprises that stipulates that "the organizational-legal form of the entrepreneurial activity is the enterprise", this entrepreneurial activity must be registered and practiced under one of the organizational-legal forms provided by Article 13 of the same law.

The definition of the notion of *"cooperative member"* of the NBS is too lapid and, therefore, vague, imprecise, also. From this definition formulated in accordance with ICSE-93 international classification and used in this context by the NBS, it is not possible to delineate clearly the *"cooperative"* category of the *"production cooperative"* and *"business cooperative"* categories mentioned in Articles 13 and 18 of the Law on Entrepreneurship and Enterprises. For the purposes of this law, both types of cooperatives are organizational and legal forms of entrepreneurial activity, from which it follows implicitly that *the members of these cooperatives are also entrepreneurs*. Therefore, *it is right the fact that the NBS equalled* the employer and the cooperative members, since both categories of people carry out entrepreneurial activity. By virtue of this fact, we in the present paper summed up both categories under the generic *"employers"*.

According to Articles 2 and 3 of the Law on rural households (farmer) in force, the *rural household* is an individual enterprise and only it can carry out individual entrepreneurial activity in agriculture and has the legal status of a natural person. *If this is taken into account*, in the Republic of Moldova, in our opinion, *the rural household (farm)*, with some relativity, can also be called a *family economic unit.*

The definition of NBS of the *self-employed* would be acceptable if the phrase in the definition – "Self-employed worker may have *temporary employees*" – would be modified as follows: "Self-employed workers may have paid temporary workers." Otherwise, the term *"employees"* implicitly implies the use of temporary employees who, according to the legislation, are actors of entrepreneurial activity. And, according to art.55 of the Labour Code of the Republic of Moldova, the individual labour contract can be concluded for a *fixed term*, **only** for the purpose of carrying out *temporary* works, thus being established the respective cases (see points a) - n) of art. 55). That is, persons employed in order to carry out certain *temporary work are temporary workers*. It follows that *self-employed status*, in the strict sense of the definition, *must exclude the use of the work of any paid employee type*. By *only* taking this into account, the employer and the self-employed will be called, conventionally, as *"entrepreneurs"*.

In the Republic of Moldova it is now extremely important and necessary to support *through respective legislative and normative acts and various practical policy measures* all self-employed entrepreneurs and workers from the socially vulnerable categories of the population and, first of all, **women, young people, elderly people and people with disabilities**, the first two categories being addressed in our present study.

Government Decision No.685 of September 13, 2012 adopted the **Small and Medium Enterprise Sector Development Strategy 2012-2020** [2], [3].

One of *the reasons for adopting this Strategy* was the need to implement the 10 "Small Business Act" principles for Europe. The European Commission, in order to reflect the latest economic developments and align the "Small Business Act" with the priorities of the Europe 2020 Strategy and continuously improve the business environment for SMEs, has proposed the adoption of new actions in several areas, but actions of none of the areas outlined in the Strategy *do not directly and expressly target the target group of entrepreneurs - self-employed workers from the socially vulnerable categories of the population.*

It is true that in the *SWOT analysis of the SMEs sector of Strategy* there are some special points that can be attributed to the categories of persons from *the socially vulnerable categories* of SMEs entrepreneurs. Thus, the continuing reform of the educational system in the field of entrepreneurship and vocational training is mentioned as an *opportunity*; as a weak point – low level of entrepreneurial culture and professional training; as threats – the significant migration among **young people** and the lack of inflow of **young professionals** specialized in entrepreneurial activities and the poor participation of entrepreneurs in *entrepreneurship education* programs (the latter being mostly conditioned by the low level of education of the respective persons from all social- vulnerable categories of SMEs entrepreneurs).

As mentioned in the Strategy, responsibility for education and entrepreneurship training policies is shared by several institutions: the Ministry of Education, Culture and Research is responsible for *entrepreneurial development in the education system*; The Ministry of Economy and Infrastructure has developed and implemented *programs for young entrepreneurs* and employees; The National Employment Agency (NEA) organizes trainings, which include some *forms of entrepreneurial study*.

Certain priority directions for the SMEs sector, out of the 8 identified in the Strategy, contain some measures included in the *Action Plans for the implementation of the Strategy*, measures that (some directly, others – indirectly) concern certain aspects of the present study.

In the elaboration and implementation of the Strategy, as well as of the two respective Action Plans, related to the issue of the present study, a multitude of ministries, agencies and institutions participated as a responsible authority, the main part of activities belonging to the Ministry of Economy and Infrastructure, the Organization for Small and Medium Enterprises Sector Development (OSMESD), NIER of the ASM, the National Employment Agency (NEAM), the former Ministry of Youth and Sports, NBS, the Agency for Innovation and Technology Transfer (AITT), etc.

The Action Plan on the Implementation of the Small and Medium Enterprises Sector Development Strategy for 2012-2014 [4] contains certain measures to support female entrepreneurship and young entrepreneurs from the Republic of Moldova.

It should be emphasized that this Action Plan **does not include measures aimed at supporting elderly or disabled entrepreneurs**.

Following the implementation of the Action Plan on the Implementation of the Small and Medium Enterprise Sector Development Strategy for 2012-2014, the Action Plan on the Implementation of the Small and Medium Enterprise Sector Development Strategy for the years 2015-2017 [5] was developed and implemented [5] that, as a whole, presents a continuity of the previous Plan, but it also contains many actions, including new ones, which also concern the issue of the present study.

The Action Plan on the Implementation of the Implementation of the Small and Medium Enterprise Sector Development Strategy for the years 2015-2017 contains the **7th Priority**: **"Development of Female Entrepreneurship in the Republic of Moldova"** as a special priority, which foresees important actions, including new ones, and 3 objectives.

The three objectives are:

I. 1st objective. Facilitating women entrepreneurs' access to education and information resources.

II. 2nd objective. *Promotion of entrepreneurial spirit among women.*

III. 3rd objective. *Facilitating women entrepreneurs' access to financial resources.*

In regard to the *main measures*, including the new ones, of *support* of **female entrepreneurship and young entrepreneurs from the Republic of Moldova** *from SMEs*, they are set out in the Action Plan on the implementation of the Small and Medium Enterprise Sector Development Strategy for the years 2015-2017.

An important normative act for initiating work and supporting **women entrepreneurs** is the **"Women in Business" pilot program** (Government Decision No. 1064 of 16.09.2016) [6], [7].

The document highlights the *need* to create equal opportunities for *women* from the Republic of Moldova, *encouraging* them to get involved in business development and management.

The *aim of the Program* is to provide financial and non-financial support by providing investment grants and services relevant to business development by women. The program is geared to achieving *5 specific objectives.*

The program is intended for women who plan to start or expand their businesses, especially in rural areas, and will provide support for women entrepreneurs at *3 different stages of business development:* willing to launch a business; newly created businesses and administered by women; growing companies founded and managed by women. *The program has three core components*. *Support* provided by the Program is offered by providing services for the *long-term development* of businesses run by women. The *eligible areas* cover planned businesses, founded and managed by women, citizens of the Republic of Moldova, from all sectors of the economy. *A priority* in the Program is given in the case of 5 businesses created and managed by women: innovative, from rural areas (including non-agricultural), etc.

The main directions and challenges in promoting female entrepreneurship in Moldova, which have been *identified and specified in this document*, **are the following**:

1) involvement of state institutions in the development of legislation and economic policy documents aimed at *creating equal conditions for the development of female entrepreneurship* and the elaboration of the policy framework focused on this target group;

2) *encouraging women's economic independence* as a condition for the continued development of female entrepreneurship *by* providing financial support to women in business, creating a fund system and women's access to all kinds of resources;

3) *conducting training and counselling courses for women* in order to develop entrepreneurial skills, application of new technologies, work with the Internet and increase the qualification of women entrepreneurs, with the help of governmental and non-governmental organizations;

4) development of entrepreneurial networks and the network of business women associations and their partnership with other state and private institutions;

5) development of a systematic statistical information collection system on female entrepreneurship.

At the same time, the improvement of the existing mechanisms through which small and medium enterprises benefit from information, financial and logistic support will be pursued.

In many countries, female entrepreneurship has become increasingly convincing and has become a reality in the economic environment. For example, in the society and the entrepreneurial environment in *Romania, many women have launched business and are developing or at least trying to ensure their survival*. Successful business is top priority. Rarely female entrepreneurship is found at the *family level*. There are *associative structures focusing on women's entrepreneurship*: Employer of Business Women of Small and Medium Private Enterprises in Bucharest, Women's Entrepreneurs Association of Romania (Timisoara), etc. Also, the following structures are functioning, such as the "Female Entrepreneurship" Training Project, developed by the Bucharest Chamber of Commerce and Industry, the Association for the Development of Female Entrepreneurship (ADFE) and the ESSEC International Business School in Europe. It is a project addressed to women who want to start or develop a business: students, entrepreneurs (women who are either leading or having a business) or simply women who want to change their lives by starting a business [8].

In Romania, in December 2013, *the Bucharest office of the International Business & Professional Women International (BPW) Organization*, one of the most influential support networks through expertise and advice for female entrepreneurs, was inaugurated. BPW was founded in 1930 and currently has more than 30,000 members from 95 countries. BPW Bucharest brings together female entrepreneurs from Romania who have developed their own businesses over the past 20 years, have recently launched start-ups or are leading companies in Romania. The main objective of BPW is to encourage and develop the business sense of women at international level and to provide the framework for equal treatment. Accession to BPW offers a unique opportunity to learn from the experience of others and to make their own businesses known in many other countries [9].

The National Program of Economic Empowerment of Youth (NPEEY) [10] presents one of the main support programs of the SMEs sector, funded by the state and / or by the international development partners. The program is implemented with the participation of OSMESD and is intended for young people who want to launch or expand their own business in rural areas and / or develop a business in the field of agriculture, production or provision of services. The duration of the Program ranged from 2008 to 2017.

NPEEY was a program for young people aged 18-35 who wanted:
- to develop entrepreneurial skills;

- to launch or expand their own business in rural areas (with the exception of Chisinau and Balti);

- to develop their own existing business in rural areas, by providing new job places.

In addition to these, we will also point out that eligible activities for financing were also investments for existing or recently created **micro-enterprises** and procurement of equipment and production equipment.

NPEEY included 3 *Components*: a) Free entrepreneurial training and consultancy; b) Financing (including preferential credits and grants); c) Post-funding monitoring.

Within the *NPEEY*, the IInd Component ("Financing of rural investment projects by granting repayable commercial loans with grant share"), priority has been given to beneficiaries whose projects had to develop production activities in the rural sector or to contribute to increased exports and / or substitution of imports.

In order to access the NPEEY credit, it had to be address to 7 established partner commercial banks that examined the credit application and assessed the business financing project [11].

NPEEY has been extended by the Government for 2017. Young entrepreneurs could also benefit from state training and funding in 2017 in order to implement business ideas.

For the year 2017, the allocation of more than 20 million MDL was provided, which allowed co-financing of approximately 170 businesses developed by young people. The age limit for potential program beneficiaries was raised from 30 to 35 years.

NPEEY has succeeded in asserting itself as an effective model for supporting the involvement of young people in the development of new business in the Republic of Moldova. Thanks to the investments made, over 2413 new jobs have been created.

If the results of the NPEEY implementation in 2017 will be totally good and encouraging, the Program needs to be extended for at least 2018 [12].

Unfortunately, both Action Plans for the implementation of the Small and Medium Enterprise Sector Development Strategy (for 2012-2014 and 2015-2017) do not include any actions that would constitute policy elements supporting *two other social-vulnerable categories* of population that is already practicing or would like to do entrepreneurial activity (including on its own) – *people with disabilities and the elderly*.

We would like to analyze and quantify the behaviour of *young entrepreneurs as a category of socially vulnerable people in the years 2012-2016*[13].

Since *official statistics do not provide separate quantitative data on the four socially vulnerable categories of entrepreneurs employed in the SMEs sector*, including **young people**, we are required to use the *NBS data for this category as a whole*, that is to say, for this category occupied in total in the national economy.

In 2016, 101.7 thousand self-employed young people (aged 15-34 years) were operating in the Republic of Moldova, of which 64.5 thousand were men (63%) and 37.2 (37%) thousand – women, and about a thousand young employers, including 900 men and 100 women, that is, 102.5 thousand people, of which 65.4 thousand (64%) men and 37.3 thousand (36%) women. The share of young people self-employed was 99.1%, and young employers - 0.9% (Table 1).

Table 1

**Structure and dynamics of young employed entrepreneurs in 2012-2016
(professional status, age groups and gender); %**

Professional status of youth	Age group of youth	Structure in 2012			Structure in 2016			2016/2012, %		
		Both genders	Men	Women	Both genders	Men	Women	Both genders	Men	Women
Total - Self-employed,	**15-34 years**	98,9	98,7	99,3	99,1	98,6	99,7	120,8	118,3	125,7
Including:	**15-24 years**	26,4	28,6	22,1	21,1	21,7	19,8	96,4	89,9	112,1
	25-34 years	72,6	70,1	77,2	78,0	76,9	79,9	129,7	130,0	129,6
Total – Employers,	**15-34 years**	1,1	1,3	0,7	0,9	1,4	0,3	100	128,6	50
including:	**15-24 years**	..	..	..	0,2	0,3	..	..	..	..
	25-34 years	1,1	1,3	0,7	0,9	1,4	0,3	100	128,6	50
Total – young entrepreneurs		-	-	-	-	-	-	**120,6**	**118,5**	**125,2**

Source: Developed by author, based on NBS data.

This article was developed on the basis of investigations made by the author in the applied institutional project from 2017, period when the needed statistical data for 2017 were not yet published by the NBS. Therefore, the NBS data for the year 2016 is used in the article.

In 2016, compared to 2012, there is a 2.7 times decrease in the share of young women in the total number of employers, the lack in 2016 among employers of women aged 15-24 years and the reduction of two times of the number of female employers of 25-34 years old and in the total number of employers. As positive phenomena, it is necessary to appreciate the increase by 20.6% of the total number of young entrepreneurs, as well as self-employed women workers by 25.7% and by 25.2% - the total of young women entrepreneurs.

In order to characterize the *evolution of the number of young self-employed entrepreneurs, employed in the years 2012-2016, by age groups, levels of education and gender*, 2 age groups (15-24 years old and 25-34 years old) and 6 levels of education (high, secondary, professional secondary, high school / general, gymnasium and primary or non-school) are delimited.

The number of these workers in the 15-24 years group in 2012 amounted to a total of 22.4 thousand persons, including men - 15.8 thousand and women - 6.6 thousand, and in 2016 their number decreased, respectively, up to 21.6 thousand, 14.2 thousand, and women increased to 7.4 thousand people.

The number of these young people aged 25-34 years, during 2012-2016 increased in total from 61.7 thousand to 80.0 thousand persons, including men – from 38.7 thousand to 50.3, and women – from 23.0 thousand to 29.8 thousand workers.

The described statistical picture makes us conclude that age and life experience as entrepreneur is a very important factor for a successful business and for a more massive and rising involvement of *young self-employed workers* in this type of entrepreneurship.

Table 2

Structure and dynamics of young self-employed people in 2012, 2016 (age, education level, gender); %

Age group		Structure in 2012			Structure in 2016			2016/2012, %		
		Both genders	Men	Women	Both genders	Men	Women	Both genders	Men	Women
15-24 years	**Education level - total**	**100**	**100**	**100**	**100**	**100**	**100**	**96,4**	**89,9**	**112,1**
	High	5,5	4,5	8,9	3,4	2,3	8,9	90,0	116,7	66,7
	Secondary	6,8	7,3	7,1	2,1	2,3	7,1	127,3	75,0	400,0
	Professional secondary	22,1	22,3	19,6	18,1	18,1	19,6	91,8	83,8	100,0
	High school, general	13,2	11,7	17,9	13,9	13	17,9	112,8	112,5	113,3
	Gymnasium	48,9	50,8	42,9	59,5	61,6	42,9	96,2	90,8	106,5
	Primary or non-school	3,4	3,4	3,6	2,5	2,8	3,6	33,3	28,6	50,0
25-34 years	**Education level - total**	**100**	**100**	**100**	**100**	**100**	**100**	**129,7**	**130,0**	**129,6**
	High	6,3	7	5,1	9,5	8,8	11	162,5	180,8	140,9
	Secondary	5,4	6,5	3,2	5,5	6,9	3	129,4	140,0	125,0
	Professional secondary	22,1	24,8	17,1	19,6	22,3	14,8	112,4	107,5	121,6
	High school, general	22,1	21,3	23,5	21,9	21	23,6	110,9	100,0	128,1
	Gymnasium	42,9	38,8	50,2	42,6	39,8	47,1	142,3	151,0	131,1
	Primary or non-school	1,3	1,8	0,5	1	1,3	0,4	133,3	150,0	100,0

Source: Developed by author, based on NBS data.

In 2016, compared to 2012, *contradictory mutations* (Table 2) occurred in the structure of self-employed youth, both in age groups, by level of education, by total and by gender.

In the reference period, in the 15-24 age group, the share of young people of both sexes and of men with *higher education* dropped from 5.5% and 4.5% to 3.4% and 2.3%, as well as of those with *specialized secondary education* – from 6.8% and 7.3%, to 2.1% and 2.3%, respectively, which is very considerable. The share of male young people with *gymnasium* education *increased* from 48.9% to 61.6% and the share of both genders and men with primary / non-school education dropped from 3.4% to 2.5% and 2.8%, respectively. As a *negative phenomenon*, *the stagnation of the share of women* with specialized secondary education and primary / non-school (and not the reduction in the last case) has to be appreciated.

In the same reference period, the proportion of self-employed youth (male and female) with *higher education* (women - more than 2 times) and *specialized secondary education* (men - insignificant) *increased* in the age group 25-34 years. The share of both genders as a whole, as well as, separately, of men and women with *primary / non-school education has decreased*. In the years 2012 and 2016, the *quality of structure* of 25-34 year-old youth self-employed with *higher education and primary / non-school* is better than in the 15-24 age group.

In the years 2016/2012, in the group of 15-24 years, *dynamics of the education level per total* was positive only for women (112.1%) and for those with higher education – only for men (116.7%). It is worth mentioning the *4 times increase* in the number of women with *specialized secondary education and the reduction of about 1/2-2/3* of youth with *primary / non-non-school education*.

In the years 2016/2012, the 25-34 years age group experienced *a great qualitative leap in the dynamics of the youth education levels*. *Dynamics* of the number of young people self-employed at the first 5 levels of education was positive in all cases by gender and varied between 100% and 180.8%. This statistical picture leads us to the conclusion that with the passage of time, successful entrepreneurship of self-employed young people requires higher levels of education that they provide. The share and dynamics of youth with *primary / non-non-school education* remain to be reduced (the latter still being positive and high – 100% -150%).

The evolution of the number of young employers employed in the years 2012-2016, by age groups, levels of training and gender (in thousands of persons) was characterized by the *following*.

It should be stressed that in the years 2012-2016, *just 200 young male employers aged between 15 and 24 years* with high school / general secondary education were active in the last year, and in the rest of the years they were *totally absent*. The young employers, with the mentioned exception, were aged 25-34 years.

For comparison, about 900 young patrons in the 25-34 age group (including 700 – men and 200 women) were registered in 2012, and in 1000, 900, and 100 persons respectively. In the reference years, there were no young patrons with primary / no school education, which is fully explainable. But it is alarming that in 2016, there were only 100 women between 25-34 years of age (with gymnasium studies), while in 2014 and 2015 there were 300 and 600 young female patrons.

Conclusions

1) In the Republic of Moldova, nowadays, a complex legislative and normative framework is not yet created, able to form the basis for the formation of the national state support policy for entrepreneurs and self-employed workers from 4 socially vulnerable categories of the population: *women, young people, elderly people and people with disabilities*, two of whom are targeted in this study (*women and young people*).

2) The status of self-employed worker, in the strict sense of the definition, should exclude the use of the work of any paid employee. The self-employed worker may only have *paid temporary **workers***. This is very important to define and delineate correctly the status of the employer and that of the self-employed worker.

3) By the Government Decision no. 1064 of 16.09.2016 on the approval of the "Women in Business" Pilot Program, an important part of the normative and legal framework was developed in order to create equal opportunities for Moldovan women, encouraging them to get involved in the creation, management and business development, providing non-financial and financial support by providing the necessary investment and service grants.

4) A good support for young people who want to start and develop a business in rural areas was the National Program of Economic Empowerment of Youth (NPEEY), which was valid for 2008-2017. NPEEY provided free entrepreneurship training and consultancy, funding and post-funding monitoring.

5) Multiple actions to support young entrepreneurs and women entrepreneurs have been carried out in accordance with the Action Plans for the implementation of the Small and Medium Enterprise Sector Development Strategy for 2012-2014 and 2015-2017.

6) There are no policy papers to support the initiation, management and development of entrepreneurial activity that would target two socially vulnerable categories – people with disabilities and the elderly.

7) In both Action Plans for the implementation of the SMEs development strategy (for the years 2012-2014 and 2015-2017), there are not included any actions that would constitute policy elements of supporting *two socially vulnerable categories* of the population that already practice or would like to

practice entrepreneurial activity (including self-employment) – *people with disabilities and the elderly*.

8) *Official statistics do not elaborate statistical indicators* that would characterize the entrepreneurial activity of women, young people, the elderly and disabled people in the SMEs, as socially vulnerable categories of the population.

Recommendations

1) In the Republic of Moldova, *legislative and normative policy documents* need to be elaborated and adopted in order to ensure the creation, regulation and support of entrepreneurial activity in the SMEs sector of the socially vulnerable categories of the population: women, young people, the elderly and the disabled people. These documents should set out the privileges, facilities and opportunities for each category of socially vulnerable people appointed at all stages of a business.

2) *Official statistics should develop* and publish a special statistical database that reflects the main statistical indicators of entrepreneurs from the socially vulnerable categories of the population (primarily women, young people, the elderly and people with disabilities) that activate in the SMEs sector.

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FINANCIAL SECURITY OF A SMALL OPEN ECONOMY
IN CONDITIONS OF GLOBALIZATION

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In the conditions of the globalization of economies the issue of financial stability, which is a condition for the economic security of the state, has acquired a special significance and is a very actual problem. The aim of the article is to determine the importance of the role of financial stability for maintaining the economic security and economic growth and to validate the role of the Safety Network Institution in maintaining stability. The article is a continuation and summary of the previous research in regard to the stability of the financial system and functioning of the Safety Network. The methodology of this research included source analysis of scientific literature and business reports as well as analysis of macro and micro economic data regarding the functioning of markets and financial systems. The obtained results highlight the importance of the institutional structure of the Safety Network, adequate regulation and effective supervision as key factors for maintaining financial stability which is a condition for long term financial security.

Keywords: *financial security, economic security, national security, globalisation, safety network.*

În condiţiile globalizării economiilor, problema stabilităţii financiare care este o condiţie pentru securitatea economică a statului, a dobândit o semnificaţie deosebită şi este o problemă foarte actuală. Scopul articolului este de a determina importanţa rolului stabilităţii financiare pentru menţinerea securităţii economice şi a creşterii economice şi de a valida rolul Instituţiei Reţelei de Siguranţă în menţinerea stabilităţii. Cercetarea prezentă este o continuare şi un rezumat al cercetărilor anterioare cu privire la stabilitatea sistemului financiar şi funcţionarea reţelei de siguranţă. Metodologia acestei cercetări a inclus analiza literaturii de specialitate şi a rapoartelor de afaceri, precum şi analiza datelor macro şi microeconomice privind funcţionarea pieţelor şi a sistemelor financiare. Rezultatele obţinute evidenţiază importanţa structurii instituţionale a reţelei de siguranţă, reglementarea adecvată şi supravegherea eficientă ca factori cheie pentru menţinerea stabilităţii financiare, care este o condiţie pentru securitatea financiară pe termen lung.

Cuvinte-cheie*: securitate financiară, securitate economică, securitate naţională, globalizare, reţea de siguranţă.*

В условиях глобализации экономик вопрос финансовой стабильности, являющейся условием экономической безопасности государства, приобрел особое значение. Целью статьи является определение важности роли финансовой стабильности для поддержания экономической безопасности и экономического роста, а также обоснование роли института безопасности сети в поддержании стабильности. Статья является продолжением и кратким изложением предыдущих исследований, касающихся стабильности финансовой системы и функционирования Сети безопасности. Методология этого исследования включала исходный анализ научной литературы и бизнес-отчетов, а также анализ макро- и микроэкономических данных, касающихся функционирования рынков и финансовых систем. Полученные результаты подчеркивают важность институциональной структуры Сети безопасности, адекватного регулирования и эффективного надзора как ключевых факторов для поддержания финансовой стабильности, что является условием для долгосрочной финансовой безопасности.

Ключевые слова*: финансовая безопасность, экономическая безопасность, национальная безопасность, глобализация, сеть безопасности.*

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Introduction

The issue of broadly understood national security has always been very important for the functioning of a state. Along with the development of statehood, economy and geopolitical relations, the issue of security also evolved. Currently, the economic reality is largely shaped by the globalization process. In conditions of unification of economies, as well as the entire financial systems, the issue of financial stability, which is a condition for the economic security of the state, has acquired a special significance.

The aim of the article is to determine the importance of the role of financial stability for maintaining economic security and economic growth and to validate the role of the Safety Network Institution in maintaining stability.

The article consists of 4 main chapters. The first defines the importance of security for the functioning of a state. The second highlights the importance of financial stability for maintaining economic growth. The third chapter focuses on the process of globalization that is a major factor shaping today's economic reality. In the fourth chapter the aim is to underline to role of Safety Network in maintaining financial stability in the conditions of globalisation.

The scope of national security as the highest value for a modern society

The term security according to the Oxford Dictionary is defined as "the state of being free from danger or threat" [36]. This definition can be understood as a situation where a particular subject in the face of various difficulties, problems, perturbations, weaknesses and challenges does not feel threatened, and therefore feels safe [4, p.9-20]. The application of this term is currently very broad and may refer to the safety of individuals, social groups and whole societies, business entities, the financial sector, ecology, energy, economics, the state, etc.

Historically, the concept of security of a state, increasingly referred as national security, was mainly related to the ability to defend against military aggressors. The closer to the present, the economic dimension of national security becomes more and more important [25, p.3-10]. The definition of state security can vary depending on its framework and purpose, as the category of the security of state is a very complex and multidimensional phenomenon. In this context national security [11, p.27]:

- is a superior value among other national (state) goals, and at the same time determines the success in their implementation,
    - concerns goals that include values (and as a consequence, needs, interests):
        o life (key) – values decisive for the stability of the state, national prosperity and development, its national identity and a sense of certainty (security of survival),
        o important – values that have no direct impact on the fate of the state and the nation as a whole, historically, situatively, objectively and subjectively variable, the implementation of which affects the safe national existence and development of the state,
        o other (secondary) values that from the point of view of national existence and development of the state do not have much influence on them,
    - defines the level of freedom in achieving these goals,
- as a process includes: various treatments in the area of international and internal relations as well as protective and defence projects (in the broad sense), aimed at creating favorable conditions for the functioning of the state on the international and internal arena and countering the challenges and fears of national security,
- is to ensure the security of the state as a political institution (sovereignty, integrity, inviolability of borders),
- is the protection of society, its goods and the environment in the face of threats that limit its functioning in a restrictive way or are compatible with national values subject to special protection,
    - concerns the opposition to the challenges and threats of values, goals and national interests,
- it concerns ensuring favourable conditions for the implementation of national goals – national development (material and cultural) in a world filled with fierce competition and rivalry, including on the political, economic, cultural and military background.

National security is the most important value and national need. It is the goal of the state, individuals and social groups, and at the same time the process involving various means, guaranteeing a lasting, disruptive existence and state development. This includes defence of the state as a political institution and protection of individuals and society as a whole, their goods and the environment, against threats that significantly limit its functioning or harm property that is subject to special protection [11].

Financial stability as a mandatory condition for growth

Economic security, which is part of total welfare of the nation, can be defined as a state of mind or sense of well-being by which an individual is relatively certain that he or she can satisfy basic needs and wants, both present and future [24]. Another view regarding the economic security defines it as the state of development of the national economic system, which ensures high efficiency of its operation – through the proper use of internal development factors and the ability to effectively resist the external pressure, which may lead to developmental disorders [27]. Another definition highlights that economic security relates to a state of uninterrupted functioning of economy, that is, maintaining basic development indicators and ensuring a comparative balance with the economies of other countries [16].

A secure economic environment is arguably a key factor for promoting private investment and economic growth [23]. The main pillars of economic security consist of [26]:

- international competitiveness of the economy – long-term ability of the national economy to cope with international competition,
- the ability to self-development and progress – the ability of the economic system to create the right amount and quality of technological innovations, providing foundations for modern production, a system for improving the qualifications of employees and creating a favourable climate for investment,
- economic sovereignty (independence) – such a state of development of the national economic system and international economic ties, which ensures the ability to effectively resist external pressure that may lead to developmental disorders.

Financial security of the state is immanently related to the general national security of the state. It is a concept narrower to the concept economic security, although interrelated. It can be defined as a whole range of legal regulations and self-regulation aimed at ensuring financial stability and protecting the interests of market participants using financial intermediaries, as well as all institutions responsible for controlling compliance with these regulations and self-regulation [8].

The areas of considerations within the scope of financial security include:

- external financial security:
  - ✓ changes in the balance of payments,
  - ✓ foreign debt,
  - ✓ official reserve assets,
- internal financial security:
  - ✓ security of the financial system,
  - ✓ security of the banking system security,
  - ✓ security of financial markets,
  - ✓ the appropriate level of indebtedness of entities (cash and credit security),
  - ✓ public finance safety.

In another view financial security can be defined as a set of institutional solutions and legal regulations aimed at protecting the financial system from destabilization [34]. This definition focuses on the condition of stability of the financial system as a factor of its security. The concept of financial security is very much related to the financial stability of the state. In a sense, state security is a broader concept than stability. The main difference is that the category of security, over the category of stability, includes the continuous trust (credibility) of its clients and the smooth operation of infrastructure such as technology platforms, the payment system and the regulatory and supervisory framework [22]. Definitions of the stability of the financial system have a common feature – they indicate that in case of shocks the financial system will be able to fulfil the functions assigned to it [9].

To summarize, as mentioned earlier, maintaining national security is a condition for building economic growth. Since the loss of financial stability has a negative impact on the financial security of the state, and this is part of economic security and further contributes to national security, the maintenance of financial stability positively affects both, broadly understood security as well as economic growth.

The issues of security as well as financial stability are closely related to the stability of the state's financial system. Maintaining the stability of the financial system is particularly important nowadays, in the conditions of openness of economies, financial markets and dynamically progressing globalization.

Globalization as a factor shaping economic development

The current shape of the world economy is to a large extent the result of progressive globalization [21]. This process has gained particular importance in recent years, strongly affecting the structure of the

economy, its particular sectors, the dynamics of development and business processes. Globalization can be understood as a process of economic merger of economies, consolidation of economic structures and interdependencies of phenomena that take place over the perspective of the national economy and lead to integration of domestic markets with the world market [17] and its unification [20]. There are also qualitative changes understood broadly as systemic restructuring towards the economic consolidation of the world [29]. The main features of globalization are [6]:

- creation of a global financial market,
- institutionalization of international trade,
- the so-called. McDonaldization of society, or in some areas limiting, not increasing freedom[i1],
- increase of flows in the category of foreign direct investments [3],
- dominance over the global economy by multinational corporations,
- geographical disruption of the value-added chain on a global scale,
- creation of a knowledge-based economy,
- creation of the intellectual services sector,
- redefinition of the importance of the state.

In the conditions of openness and integration, global interdependence is expressed by the fact that events and trends in a particular field are not isolated but result in a chain of processes that induce further consequences in many other areas [12, p.344]. These processes sometimes develop in parallel in many areas and within many countries, then they are completely strengthened in another dimension of financial relations [14].

The globalization process brings various opportunities and threats, but the latter are particularly important in conditions of bad economic situation, in particular during the crisis. They mainly result from the lack of barriers for the flow of goods and services, and the openness of economies in times of economic turmoil. This does not mean, however, that despite the lack of the possibility of isolation of the economy from the global economy, states do not have internal resilience to crisis phenomena. This resistance is determined by individual institutional, market and socio-cultural conditions [13, p.248-251]. There is also no doubt that the level of resistance to crisis phenomena is a derivative of the competitiveness of the economy, innovation of individual industries and the development of enterprises [33].

Ultimately, the resistance of an economy affects the functioning of the financial system, which is a kind of safety buffer for capital-related crisis phenomena, as well as for the real economy. It's condition is interdependent with the financial system's condition and is associated with the crisis spreading through non-financial and trade related channels [15].

As mentioned, globalization is a process that affects today's reality in a very high degree. In such dynamic conditions maintaining financial stability is key and becomes a very big challenge. It is important to analyse the factors affecting stability and institutional methods of maintaining the stability.

Challenges for maintaining financial stability in the conditions of globalization

In regards to the stability of the financial system, it is said that today's regulation cause tomorrows crisis. Stability of the financial sector is primarily determined by the regulation and maintained by the supervision authority. In general, it is the Institution of Safety Network that manages the stability of the financial system and prevents a crisis. This institution consists of:

- Regulatory Authority,
- Central Bank,
- Supervision Authority,
- Deposit Guarantee Fund,
- Macroprudential Authority,
- Resolution Authority.

The functioning of the Safety Network can be divided into 3 main spheres: maintenance of stability and prevention of crisis, management of crisis (once it occurs) and information and education activities. The below table Shows detailed functions of each of the Safety Network entity with the functions it performs.

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[1] *In other words, social behavior is imposed by mass media and marketing activities of corporations on a global scale.*

Table 2

The classification of the Safety Network Institution functions

Stages of activity	Functions	Regu-lator	Central Bank	Super-visor	Deposit Guarantee Fund	Macroprudential Authority	Reso-lution
1. Maintenance of stability and prevention of crisis	Regulation	X	X	X	X		
	Control and supervision			X			
	Sanctions			X			
	Security of the payment system		X				
	Macroprudential analysis					X	
	Threat monitoring system			X	X	X	
	Organised liquidation				X		X
	Coordination of the functioning of the Safety Network					X	
2. Management of crisis	Control and supervision	X		X	X		
	Sanctions			X			
	Security of the payment system		X				
	Extraordinary regulations	X		X			
	Macroprudential analysis					X	
	Threat monitoring system			X	X	X	
	Organised liquidation				X		X
	Coordination of the functioning of the Safety Network					X	
	Last-resort lender		X		X		
	Public finance support	X					
	Payment of deposit guarantees				X		
3. Information and education	System of public information	X	X	X			
	Education		X	X			

Source: Authors concept based on P. Masiukiewicz, Ryzyko dużych banków – perspektywa Polski, CeDeWu.pl, Warszawa 2012, p. 119.

Of particular importance for the rapid stabilization of the financial system during period of destabilisation is the efficient activity of the Safety Network [30]:
- the actions of central banks must be taken quickly and decisively,
- the Safety Network institutions should cooperate with each other,
- there must be a clear division of competences and tasks between individual Safety Network institutions, and the role of the central bank must be clearly defined.

It is impossible to fully immunize the financial system against market risk, but the revision of several key aspects of the sector's operation will certainly have a positive impact on its stability in the event of potential destabilisation:
- maximizing banking sectors security [10],
  - establishing an optimal guarantee system for bank deposits [5, p.25-27],
  - maintaining a safe level of prudent liquidity of the banking system [7, p.57-85],
  - minimizing moral hazard for bankers in especially working for large financial players that in case of problems are too big to fail, and can count on state support [2, p. 194-200],
  - efficient and continuous banking supervision and effective precautionary macro regulations,
  - maintaining a balance between innovation and stability [35],
- increasing the transparency of the banking system,
  - increasing the transparency of the government's fiscal policy,
  - cooperation between financial sector institutions in the area of building stability,
  - international coordination of activities to improve transparency,

- abandoning the protectionist policy of states, which may have destabilizing effects in the long term [31],
- revision of quantitative easing policies run by major central banks.

Transformation across the financial services system brings a number of risks which could affect system stability. These new systemic risks are driven in part by the altered dynamics many market participants are experiencing, such as increased market fragmentation, regulatory changes causing an uneven playing field, and increasing pressure from declining margins [35, p.10]. The creation of regulatory and legal conditions that would guarantee the system's development with efficient risk management is strategically important for establishing long-term stability of the sector within the conditions of dynamic globalisation.

Conclusions

Maintaining financial stability is crucial for building conditions allowing economic growth. Furthermore, the loss of stability may affect the security of a nation. Thus, the issues of security as well as financial stability are closely related to the stability of the state's financial system.

Sustaining financial stability is challenging especially during a time of economic crisis under the conditions of globalizing economies. It is important to build the internal resilience of the financial system to external destabilising processes. It is the role of the institution of Safety Network to shape a stable financial system and manage its stability. The most important, general factors for the functioning of the Safety Network in regards to maintaining stability would be:

- institutional structure of the Safety Network that would allow optimal arrangement of responsibilities and functions of its institutions,
- adequate regulation that would promote growth and on the other hand preserve against crisis,
- effective maintenance of stability:
  - ✓ monitoring *ex ante*, including macroprudential analysis – avoidance of destabilisation,
  - ✓ adequate and effective response *ex post* – reaction once destabilisation occurs.

It is said that globalization is a result of the triumph of capitalism over other regimes world-wide [18]. However, it has often been noticed that its progress leads to the replacement of the old state power which was exercised by national elites with the new dictatorships of international finance and corporations [28, p.219]. In such reality to role of the state and its institutions becomes even more challenging in managing financial stability and maintaining economic security of a nation.

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COMPUTABLE GENERAL EQUILIBRIUM MODEL
FOR THE REPUBLIC OF MOLDOVA

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This article is devoted to the construction of a small Computable General Equilibrium model for the Republic of Moldova using Social Accounting Matrix build on the statistical data, 2015 as the base year. The model 1-2-3 formed a base for constructing Computable General Equilibrium Model. Using data from SAM, Lagrange method, optimization techniques, the model has been adjusted to the real situation from the Republic of Moldova. It means that all coefficients of the behavioral functions have been determined. Then, the obtained model has been applied to assess the economic evolution of Moldova based on diverse exogenous scenarios. Actuality of this research consists in elaborating new techniques – SAM (for the first time in the Republic of Moldova) for economic analysis and simulation calculus using the General Equilibrium Model.

Keywords: Social Accounting Matrix, Computable General Equilibrium Model, 1-2-3 model, Lagrange method, optimization methods, simulation calculus.

Acest articol este consacrat construirii unui model mic de Calcul de Echilibru General folosind Matricea de Calcul Social pentru Republica Moldova elaborată în baza datelor statistice ale anului de bază, anul 2015. Modelul de tip 1-2-3 a stat la baza construirii Modelului de Calcul de Echilibru General. Pornind de la datele Matricei de Calcul Social, folosind metoda multiplicatorilor Lagrange, tehnicile de optimizare, modelul a fost calibrat pentru situaţia reală din Republica Moldova. Ceea ce înseamnă că s-au calculat toţi parametrii funcţiilor comportamentale implicate în model. Apoi modelul obţinut s-a aplicat la evaluarea evoluţiei economice a Republicii Moldova în baza diverselor scenarii exogene. Actualitatea acestei cercetări constă în construirea (pentru prima dată) în Republica Moldova a unui instrumentar nou pentru efectuarea analizei economice şi în baza ei calculelor de simulare cu ajutorul Modelului de Calcul de Echilibru General.

Cuvinte-cheie: Matricea de Calcul Social, Modelul de Calcul de Echilibru General, Modelul 1-2-3, metoda multiplicatorilor Lagrange, metode de optimizare, calcule de simulare.

В настоящей статье была построена небольшая Вычислительная Модель Общего Равновесия, используя Матрицу Социальных Расчетов для Республики Молдова, разработанную на основе статистических данных базового 2015 года. Модель типа 1-2-3 составляет основу конструирования Вычислительной Модели Общего Равновесия. Отталкиваясь от данных Матрицы Социальных Расчетов, используя метод множителей Лагранжа, оптимизационные техники, была произведена калибровка модели, основываясь на реальной экономической ситуации Республики Молдова. Это означает, что были рассчитаны все параметры поведенческих функций, составляющих модель. Далее, окончательная модель была использована для оценки экономического развития республики Молдова, используя различные экзогенные сценарии. Актуальность настоящего исследования заключается в том, что, впервые в Республике Молдова, была построена Матрица Социальных Расчетов, на основе которой была разработана Вычислительная Модель Общего Равновесия и проведены сценарные расчеты.

Ключевые слова: Матрица Социальных Расчетов, Вычислительная Модель Общего Равновесия, Модель 1-2-3, метод множителей Лагранжа, методы оптимизации, сценарные расчеты.

Introduction

The main goal of this article is the construction of a small Computable General Equilibrium model for the Republic of Moldova. The static version of the model is examined. Economy as a hole is assumed to be perfectly competitive, meaning zero profit is earned in the economy. Small country assumption ensures

that Moldova is a price taker on the world market, so that Moldova's import and export decisions do not affect international prices. The model belongs to the 1-2-3 class of CGE models. The basic model refers to one country with two producing sectors and three goods. No factor markets are considered. The two commodities that the country produces are an export good E, which is sold to foreigners and is not demanded domestically, and a domestic good D, which is only sold domestically. The third good is an import M, which is not produced domestically. There is one consumer who receives all income. Our country is small in world markets, so facing fixed world prices for exports and imports.

This assumption facilitates the tractability of results, and makes the model flexible enough to incorporate features specific to the Republic of Moldova's economy. Such a model was studied earlier in [1-2]. Present version of the model is calibrated dealing with construction of the Social Accounting Matrix for the base year, 2015 year, using National Accounts data elaborated by National Bureau of Statistics [3].

Scientific approach

Scientific approach is based on the general equilibrium modern theory. Debreu [4], Arrow and Hahn [5] formalized the concept and rigorously proved the existence of equilibrium in the economy where agents make independent decisions. In the competitive Arrow-Debreu equilibrium, demand and supply decisions depend only on the relative prices.

The economy is characterized by private ownership, consumers own the resources and receive all revenues from production. However, it is possible to construct a GE model in a way that equilibrium would be achieved even without the model satisfying the Walras's Law [6]. Another important concept introduced by Walras was the excess demand function, the difference between total demand and the sum of total resources and total supply, at a given price.

The mathematical problem of proving the existence of equilibrium reduces to finding a set of prices P, which would make corresponding excess demand zero for every commodity. The problem was solved by the joint effort of Arrow and Debreu [7] with the help of Brouwer's and Kakutani [8] fixed point theorems.

Shoven and Whalley [9-10] proved the existence of the general equilibrium solution in the presence of ad valorem producer and consumer taxes. It contributed for the development of empirical applications of the GE theory. Shoven [10] includes taxes and government into the Arrow-Debreu framework. The difference from the classic Arrow-Debreu GE model is that now consumer demands and incomes depend not only on prices, but on demand and supply decisions of other consumers and producers in the economy.

The computational general equilibrium model of international trade is also demonstrated by Shoven and Whalley [11], which provides an alternative proof of existence of a competitive equilibrium with international markets with tariffs. Later research has been concentrated on the issues of stability and uniqueness of the competitive equilibrium as well on implications of dynamics [12-15].

The purpose and scientific basis of the research

Main objective of this research is referred to construction of the Calculated General Equilibrium Model for the Republic of Moldova based on the elaboration of the Social Accounting Matrix, studied in [16-17]. Using statistical data for year 2015, as the base year, the Social Accounting Matrix for the Republic of Moldova was created. This matrix was used to calibrate behavioral parameters for the Calculated General Equilibrium Model. After model calibrating diverse scenarios were realized and analyzed. Theoretical background of this research is based on the optimization methods, Lagrange method, solution of the non linear system of equations, application of the Solver procedure for its solution. Four sectors model was examined: the private sector represented by households, public sector represented by the government, production sector represented by the firms and foreign sector represented by rest of the world. Macro version of the Calculated General Equilibrium Model elaborated in [18] has been studied and adopted to the economic realities of the Republic of Moldova and the same notation has been used.

1. Private Sector (Households)

Private sector income is constituted by:

$$Y = PkKS + Pl(LS - Unemp) + GHtrf + R \cdot WHtrf + CPI \cdot HHtrf, \qquad \text{here} \qquad (1)$$

KS and LS are the total capital and labor supplies, $Unemp$ is the level of unemployment, $GHtrf$ represent transfers of unemployment benefits, $WHtrf$ and $HHtrf$ are remittances and inter-household transfers accordingly, and Pk and Pl are capital rental rate and nominal wage.

From its income a household pays income tax $ty \cdot Y$ and social contribution $HGtrf$ to the

government and inter-household transfers $HHtrf$. It also transfers a part of its income to the rest of the world $HWtrf$. In the case when all capital in the model is assumed to be owned by the households, this variable represents transfers, such as the return on foreign owned capital, income from foreign labor and other transfers abroad. A fixed share of the remaining income is saved according to (2).

$$Sh = mps \cdot (Y - ty \cdot Y - R \cdot HWtrf - CPI \cdot HGtrf - CPI \cdot HHtrf) \qquad (2)$$

Here, mps is a parameter of marginal propensity to save. Real social contribution $GHtrf$ is fixed, while nominal value changes in respect to inflation. Transfers to the rest of the world are expressed in foreign currency so multiplied by the nominal exchange rate R .

So, the net income or household's budget available for consumption B is defined as

$$B = Y - ty \cdot Y - Sh - R \cdot HWtrf - CPI \cdot HGtrf - CPI \cdot HHtrf \qquad (3)$$

The last remaining element of a household's spending is the final consumption. The Stone-Geary household utility function will be examined

$$U(C) = (C - \mu)^{\alpha h} . \qquad (4)$$

Here μ is in the subsistence consumption level, which a household has to obtain before any other consumption. All remaining income is spent on consumption above that level, according to budget share. The subsistence level can determine how much consumption is determined by demand or supply. Larger (smaller) shares make demand less (more) responsive to variations in price or income.

Thus, a household solves the problem of maximizing Stone-Geary utility function (4) by choosing consumption level C subject to budget constraint (6):

$$\max_{C} U(C), \qquad (5)$$

$$\text{subject to} \quad B = (1 + tc)PC \cdot , \text{ where } C > \mu \geq 0, \qquad (6)$$

tc is the tax on final consumption.

Applying Lagrange method, from the first order conditions, the solution to this problem Linear Expenditure System (LES) determines household's consumption demand

$$C = \mu + \frac{\alpha h (B - (1 + tc) \cdot P \mu)}{(1 + tc) P} \qquad (7)$$

In order to calibrate parameters αh and μ : Frisch parameter φ (expenditure elasticity of the marginal utility of expenditure); and household's income elasticity of demand for commodities $elasH$ have to be selected from outside.

2. Public Sector (Government)

It is assumed that a government maximizes Cobb-Douglas utility function subject to budget constraints. Government collects all taxes and social contributions, pays unemployment benefits, and saves a fixed amount of its revenues. Equation (8) defines the total government income as the sum of revenues from indirect taxes on final consumption tc , capital tax tk , taxes on intermediate consumption tic import tariffs tm and export duties te , also revenues from personal income tax ty ,social contributions $GHtrf$ and transfers from abroad $WHtrf$.

$$CB = (tc \cdot PC + tk \cdot Pk \cdot K + tic \cdot P \cdot Xt) + (tm \cdot R \cdot Pmw + te \cdot R \cdot Pe \cdot E) + y \cdot Y + CPI \cdot HGtrf + \\ + R \cdot WGtrf \qquad (8)$$

Equation (9) states that unemployment benefits, paid by the government, are a fraction hub , of the nominal wage: $GHtrf = hub \cdot Pl \cdot Unemp \qquad (9)$

The government's final demand G is assumed to be endogenous, where saving Sg is exogenous. Consequently, the government's demand for commodities derived from maximizing the Cobb-Douglas utility function (10) subject to budget constraints (11):

$$\max_{G} G^{\alpha g} \qquad (10)$$

$$\text{Subject to } CB - GHtrf - CPI \cdot Sg - R \cdot GWtrf = PG \qquad (11)$$

The left-hand side of equation (11) represents the government's expenditure budget including the service

of foreign debt $GWtrf$. From the first order conditions, using Lagrange multipliers method, the government's

demand for commodities is obtained $G = \dfrac{\alpha g \left(GB - GHtrf - CPI \cdot Sg - R \cdot GWtrf\right)}{P}$ (12)

The conventional way to implement government behavior in CGE models would be to assume fixed real expenditure, allowing the nominal expenditure to vary with inflation and savings to balance the government budget (negative savings meaning budget deficit, positive budget surplus).

3. Production Sector (Firm)

There is one aggregate firm which observes prices and makes output decisions in order to maximize profit subject to technology constraints. This firm produces only one commodity using capital, labor and intermediates as inputs. Capital and Labor are combined into composite Value added goods using the CES function and Intermediates are supposed to be given.

Formally, aggregate firm chooses capital and labor by minimizing the total cost of production, TC:

$$TC = (1 + tk)Pk \cdot K + Pl \cdot L + (1 + tic) \cdot P \cdot Xt. \tag{13}$$

Subject to technological constraint $Xt = \alpha f \left(\gamma fk \cdot K^{(\sigma fk - 1)/fk} + (1 - \gamma fl)L_1^{(\sigma fl - 1)/\sigma fl}\right)^{\frac{\sigma f}{\sigma f - 1}}$,   (14)

$\sigma fl, \sigma fk$ are the elasticity of substitution between labor and capital, αf is the efficiency parameter

and $\gamma fk, \gamma fl$ are the share parameters such as $\gamma fk + \gamma f = 1$. Xt is total domestic output. Using Lagrange multipliers method, from the first order conditions firms' labor and capital demand equations are given as:

$$L = \left(\frac{1 - \gamma fl}{Pl}\right)^{\sigma fl_i}\left(\frac{X_t}{\alpha fl}\right)\left(\gamma fl^{\sigma fl}\left[(1 + tk)Pk\right]^{1-\sigma fl} + (1 - \gamma fl)^{\sigma fl} Pl^{1-\sigma fl}\right)^{\frac{\sigma fl}{1-\sigma fl}} \tag{15}$$

$$K = \left(\frac{\gamma fk}{(1 + tk)Pk}\right)^{\sigma fk}\left(\frac{Xt}{\alpha fk}\right)\left(\gamma fk^{\sigma fk}\left[(1 + tk)Pk\right]^{1-\sigma fk} + (1 - \gamma fk)^{\sigma fk} Pl^{1-\sigma fk}\right)^{\frac{\sigma fk}{1-\sigma fk}} \tag{16}$$

In such a way, the aggregate firm chooses the production factors to produce a unit of its output in the most cost-effective way; however, it has not been known how much output this aggregate firm should produce. It is supposed that firm chooses its output level in order to maximize total profit. Because the perfectly competitive economy and constant returns to scale production function are considered, income is equal to zero, hence firm's zero profit condition equation (17) is used for output:

$$Pt \cdot Xt = (1 + tk) \cdot Pk \cdot K + Pl \cdot L + (1 + tic) \cdot P \cdot Xt. \tag{17}$$

4. Savings-Investments

The model is savings driven in the sense that aggregate investment is the sum of sartorial savings components. Equation (18) depicts total savings in the economy as the sum of private savings Sh defined by the fixed savings rate, government savings Sg and foreign savings Sf are determined exogenously:

$$S = Sh + CPI \cdot Sg + R \cdot Sf \tag{18}$$

Because the model is static, investment demand is defined as a constant fraction αi of the total savings S and it varies in accordance with commodity price P. In mathematic terms, investment demand is derived

by maximizing the utility function of an auxiliary agent: $\max\limits_{I} \ I^{\alpha i}$ (19)

Subject to savings constraint $S = P \cdot I$ (20)

The solution to this optimization problem will be the investment demand equations:

$I = \dfrac{\alpha i \cdot S}{P}$ (21), parameter αi can be calibrated from the equation (21) using known values of the S, P, I.

Foreign sector (Rest of the world)

The small country assumption implies that world prices are treated as exogenous, in consequence, changes in the Republic of Moldova's import demand or export supply don`t have any impact on the world economy. Therefore, the domestic import and export prices can be represented as follows:

$$Pm = (1 + tm)R \cdot Pmw \tag{22}$$

$$Pe = Pew \cdot R /(1 + te). \tag{23}$$

Where tm and te are import tariffs and export duties; Pe and Pm are prices received by domestic producers for selling their output on the foreign or domestic markets; Pm represents domestic price of imported goods; Pmw and Pew are exogenous world imports and exports prices correspondingly, and R is the nominal exchange rate.

Export and import followed the treatment adopted in many CGE models. Farmington's assumption [12] ensures that imports and domestically produced goods are not perfect substitutes meaning that not all products can be produced domestically. The aggregate firm chooses between selling output on the domestic market or exporting it depending on the relative prices and transformation elastic ties. Such treatment allows exporting and importing the same good simultaneously.

Total domestic output Xt of a representative firm is either sold on the domestic market Xd or exported E. The transformation takes place within CET (constant elasticity of transformation) function; therefore the optimal combination of exports and domestic sales of an aggregate good depends only on the relative (domestic to foreign) price of that good. To determine export and domestic production, the firm solve the following problem: Maximize *total revenue-TR*

$$TR = Pe \cdot E + Pd \cdot Xd \tag{24}$$

Subject to the constant elasticity of transformation technology

$$Xt = ae \left(\gamma e \cdot M^{\frac{\sigma e - 1}{\sigma e}} + (1 - \gamma e) Xd^{\frac{\sigma e - 1}{\sigma e}} \right)^{\frac{\sigma e - 1}{\sigma e}} \tag{25}$$

Where ae, γe and σe are transformation efficiency parameters, CET distribution parameter and transformation elasticity.

Applying Lagrange multipliers method, the solution to this problem of domestic and export sales of domestic output will be obtained:

$$Xd = \left(\frac{1 - \gamma e}{Pd} \right)^{\sigma e} \left(\frac{Xt}{ae} \right) \left(\gamma e^{\sigma e} Pe^{1 - \sigma e} + (1 - \gamma e)^{\sigma e} Pd^{1 - \sigma e} \right)^{\frac{\sigma e}{1 - \sigma e}} \tag{26}$$

$$E = \left(\frac{\gamma e}{Pe} \right)^{\sigma e_i} \left(\frac{Xt}{ae} \right) \left(\gamma e^{\sigma e} Pe^{1 - \sigma e} + (1 - \gamma e)^{\sigma e} Pd^{1 - \sigma e} \right)^{\frac{\sigma e}{1 - \sigma e}} \tag{27}$$

Since there is zero profit condition, from which directly follows:

$$Pt \cdot Xt = Pe \cdot E + Pd \cdot Xd \tag{28}$$

Imports are combined with domestic output in the CES function to produce composite commodity X. The optimal mixture depends only on the relative prices. Demand for imports and locally produced goods, derived from minimizing the total cost subject to CES technology constraint, thus the following optimization problem:

Minimize *total cost - TC*

$$TC = Pm \cdot M + Pd \cdot Xd \tag{29}$$

$$\text{Subject to } X = am \left(\gamma m \cdot M^{\frac{\sigma m - 1}{\sigma m}} + (1 - \gamma m) \cdot Xd^{\frac{\sigma m - 1}{\sigma m}} \right)^{\frac{\sigma m - 1}{\sigma m}}. \tag{30}$$

am, γm and σm are respectively, substitution efficiency parameter, CES distribution parameter and elasticity of substitution between imported and local goods.

Again, using Lagrange multipliers method, from the first order conditions the demands for import and domestic goods are obtained:

$$Xd = \left(\frac{1 - \gamma m}{Pd} \right)^{\sigma e} \left(\frac{Xt}{\alpha m} \right) \left(\gamma m^{\sigma m} \cdot Pe^{1 - \sigma m} + (1 - \gamma m)^{\sigma m} \cdot Pd^{1 - \sigma m} \right)^{\frac{\sigma m}{1 - \sigma m}} \tag{31}$$

$$M = \left(\frac{\gamma m}{Pm} \right)^{\sigma e} \left(\frac{X}{am} \right) \left(\gamma m^{\sigma m} \cdot Pe^{1 - \sigma m} + (1 - \gamma m)^{\sigma m} \cdot Pd^{1 - \sigma m} \right)^{\frac{\sigma m}{1 - \sigma m}} \tag{32}$$

The price P of composite commodity X is defined using zero profit condition:

$$P \cdot X = Pm \cdot M + Pd \cdot Xd$$

(33)

Several parameters have to be imposed from outside the model, which will allow calibrating the rest. Specifically, assuming the negative (positive) values for the substitution elasticity σe (σm) ae and γe, (am and γm) can be derived by solving systems of two nonlinear equations, values of the variables M, X, Xd, Xt, Pd, Pe will be selected from the SAM. The CES (CET) functions are well behaved, namely if the elasticity of substitution is negative the function will be concave and if positive it will be convex. This property ensures that first order conditions for revenue maximization (cost minimization) produce the desired maximum (minimum) solution.

The balance of payment equilibrium condition (34) finishes the description of the foreign sector. With Being fixed Sf and $HWtrf$, equilibrium is achieved through the exchange rate variations, which adjust the levels of export and import via the change of its relative prices [19].

$$Pmw \cdot M + HWtrf - GWtrf = Pew \cdot E + Sf + WGtrf + WHtrf$$

(34)

Production factors (Labor and Capital)

In the basic CGEM specification, total capital stock and labor supply are fixed exogenously, and factor markets clear according to equation (35).

$$LS = L + Unemp \quad , \quad KS = K \, .$$

(35)

Commodities` market clearing, CPI and balanced model

The last macroeconomic closure corresponds to commodities' market clearing equilibrium conditions. Equation (36) states that total domestic supply (including imported goods) must equal total demand.

$$X = Xt + G + C + I$$

(36)

The consumer price index CPI is Laspeyres and is defined as:

$$CPI = \frac{\left(1 + tc^{t}\right) \cdot P^{t} \cdot C^{0}}{\left(1 + tc^{0}\right) \cdot P^{0} \cdot C^{0}}, \; t = 0,1$$

(37)

Equation (37) concludes the description of the small CGE model for the Republic of Moldova. The algebraic form of the model is a system of nonlinear equations, solution to which determined the equilibrium state. For such a system to have a unique solution, the number of independent variables should be equal to the number of independent equations. Carefully counting all variables and equations results in:

$NE = 15 + 11$ - Number of equations

$NV = 15 + 21$ - Number of variables

Considering ten variables ($GHtrfo$, $HWtrf$, $HGtrf$, $HHtrf$, $WHtrf$, $GWtrf$, Sf, Sg, KS, LS) at their initial level, there is $NV = NE = 26$. The heterogeneity of some of these variables has already been discussed; others had to be made exogenous in real terms to balance the model, however nominally they can change. Furthermore, since the model satisfies Walras's law there is only $15 + 10$ independent equations. By dropping one of the equilibrium conditions from the model (in this case it is the labor market clearing condition (35), and fixing nominal wage Pl at its initial level (thus making it to be the numeraire) we again have the number of variables equal to the number of equations.

Constant Elasticity of Substitution Function (Example of calibration)

In this calibration all calculations are done assuming taxes to be zero. This simplification by no means changes the nature of equations and in order to include tax on production factors, one would simply need to replace Pl, Pk to $(1 + tl)Pl$, $(1 + tk)Pk$. There is one aggregated firm in the economy and it produces one aggregated commodity. Thus, for the representative firm, which faces CES production technology, demand for factors of production (Ls, K), can be derived in the following way.

$$\min_{L_s, K} \; TC = Pl \cdot Ls + Pk \cdot K$$

Subject to $Xt = af \left(\gamma fl \cdot Ls^{-\rho} + \gamma fk \cdot K^{-\rho}\right)^{-\frac{1}{\rho}}$,

TC is total cost of production, af is the efficiency parameter, Ls, K and Pl, Pk represent demand

and price for labor and capital production factors, γfl, γfk are the share parameter such as $\gamma fl + \lambda fk = 1$, and $\rho = \dfrac{1 - \sigma f}{\sigma f}$ where σf is the elasticity of substitution. This optimization problem will have the

following Lagrangian: $L = Pl \cdot Ls + Pk \cdot K_k - \lambda \left(af \left(\gamma fl \cdot Ls^{-\rho} + \gamma fl \cdot K^{-\rho} \right)^{-\frac{1}{\rho}} - Xt \right)$

Taking the first order conditions and making it equal to zero we get:

$$\frac{\partial L}{\partial Ls} = Pl - \lambda \cdot af \cdot \gamma fl \cdot Ls^{-(1+\rho)} \left(\left(\gamma fl \cdot Ls^{-\rho} + \gamma fk \cdot K^{-\rho} \right) \right)^{-\left(1+\frac{1}{\rho}\right)} = 0$$

$$\frac{\partial L}{\partial K} = Pk - \lambda \cdot af \cdot \gamma fk \cdot K^{-(1+\rho)} \left(\left(\gamma fl \cdot L^{-\rho} + \gamma fk \cdot K^{-\rho} \right) \right)^{-\left(1+\frac{1}{\rho}\right)} = 0$$

$$\frac{\partial L}{\partial \lambda} = af \left(\gamma fl \cdot Ls^{-\rho} + \gamma fk \cdot K^{-\rho} \right)^{\frac{1}{\rho}} - Xt = 0$$

Dividing first order conditions for Ls by the first order conditions for K is obtained the following expression :

$$\frac{\partial L / \partial Ls}{\partial L / \partial K} = - \frac{Pl_k}{Pk_s} + \frac{\gamma fl}{\gamma fk} \left(\frac{Ls}{K} \right)^{-(1+\rho)} = 0$$

From what follows $Ls = K \left(\dfrac{Pl}{Pk} \cdot \dfrac{\gamma fk}{\gamma fl} \right)^{1/(-(1+\rho))}$

Now substitute Ls into expression for Xt to get

$$Xt = af \cdot K \left(\frac{\gamma fk}{Pk} \right)^{\frac{1}{-(1+\rho)}} \left(\gamma fl^{1/(1+\rho)} \cdot Pl^{\rho/(1+\rho)} + \gamma fk^{1/(1+\rho)} \cdot Pk^{\rho/(1+\rho)} \right)^{-\frac{1}{\rho}}$$

and after some rearrangements, the aggregate firm's demand for production factors are:

$$Ls = \left(\frac{\gamma fl}{Pl} \right)^{1/(1+\rho)} \left(\frac{Xt}{afl} \right) \left(\gamma fl^{1/(1+\rho)} \cdot Pl^{\rho/(1+\rho)} + \gamma fk^{1/(1+\rho)} \cdot Pk^{\rho/(1+\rho)} \right)^{\frac{1}{\rho}}$$

$$K = \left(\frac{\gamma fk}{Pk} \right)^{1/(1+\rho)} \left(\frac{Xt}{afk} \right) \left(\gamma fl^{1/(1+\rho)} \cdot Pl^{\rho/(1+\rho)} + \gamma fk^{1/(1+\rho)} \cdot Pk^{\rho/(1+\rho)} \right)^{\frac{1}{\rho}}$$

Calibration

Assuming substitution elasticity σf is given from outside of the model, then af, γfk, γfl can be calculated.

$$\frac{\gamma fl}{\gamma fk} = \frac{Pl}{Pk} \left(\frac{Fl}{Fk} \right)^{1+\rho}$$

From $\gamma fl + \gamma fk = 1$ we can find $\gamma fk = 1 - \gamma fl$ and substitute it into previous equality

$$\frac{\gamma f_l}{1 - \gamma fl} = \frac{Pl}{Pk} \left(\frac{L}{K} \right)^{1+\rho} \quad , \qquad \gamma fk = \frac{1}{1 + \dfrac{Pl}{Pk} \left(\dfrac{K}{L} \right)^{1+\rho}} \text{ and } \gamma fl = 1 - \gamma fk$$

Once we have σf and γf_k, remembering that $\rho = \dfrac{1 - \sigma f}{\sigma f}$ af can be derived from the following equation:

$$af = Xt \left(\sum_{k=1}^{m} \gamma f_k F_k^{-\rho} \right)^{\frac{1}{\rho}}$$ Solving optimization problem for base year given Xt, Ls, K , parameters afl, afk have been determined. The same procedure can be applied to obtain the rest of parameters.

1. Variables and Parameters of the model

Nominal variables

CPI	–	Consumer price index	B	–	Household income spent on consumption
P	–	Price of composite commodities	GB	–	Government total budget
Pt	–	Produce price	Y	–	Household total income
Pd	–	Price of domestic output on the local market	R	–	Exchange rate
Pk	–	Price of capital	S	–	Total savings
Pl	–	Price of labor	Sh	–	Household savings
Pe	–	Price of export	GHtrf	–	Transfers from government to household
Pm	–	Price of import		–	
Pew	–	World price of export (exogenous)		–	
Pmw	–	World price of import (exogenous		–	

Auxiliary variables

U – Household`utility; TC – Total cost; TR – Total revenue

Parameters

μ	–	Household minimum consumption	afl	–	Firm CES efficiency parameter (labor)
αh	–	Power parameter in the household S-G utility function	afk	–	Firm CES efficiency parameter (capital)
αg	–	Power parameter in the government C-D utility function	am	–	Armington CES efficiency parameter
αi	–	Power parameter in the investment C-D utility function	ae		CET efficiency parameter
mps	–	Household marginal propensity to save	tc	–	Tax rate on final consumption
I	–	Investment demand	tk	–	Tax rate on capital
γfl	–	Firm CES distribution parameter (labour)	ty	–	Tax rate on household income
γfk	–	Firm CES distribution parameter (capital)	tm	–	Tax rate on import
γe	–	CET distribution parameter	te	–	Export duty rate
γm	–	Armington CES distribution parameter	ti	–	Tax rate on intermediate consumption

Results of own research

To solve the Calculated General Equilibrium Model presented earlier it is necessary to give values for all exogenous variables of the model, to determine some calculated parameters, to calibrate all coefficients for behavioral functions obtained throw optimization problems solving.

Table 1

Exogenous parameters

hub	ρ	σf	σm	Σe	elasH	Φ
0,187	-0,1	1,1	3,0	-2,0	1,0	-1,1

Table 2

Calculated parameters, year 2015

tc	tk	ty	Tm	Te	ti	mps	infl	ω	R	P
0,1589	0,1928	0,3047	0,01307	0,00131	0,01219	0,8502	0,096	4,5	1,0	0,099

Table 3

Calibrated parameters, year 2015

ae	am	γe	γm	afl	afk	γfl	γfk	μ	αh	αg	Ai
1,99607	2,06427	0,750101	0,489141	6,21	13,97	0,3407	0,6593	47490966	6,043	1,05	0,9999

It`s necessary to remark that all calculus parameters from table 3 have been recalculated according to

the available information. SA matrices have been elaborated for years 2014, 2015, 2016. In the lack of data for year 2017, it was not possible to elaborate SA matrices. All needed data for year 2017 were obtained based on the existing statistical data for this year.

For years 2015-2016 exogenous variables were selected from SAM, coefficients of behavioral functions have been calibrated using SAM data and after that SOLVER application was applied to solve the model. Results of this calculus one can see in the Table 4. One can see that for year 2015 base year values and calculated values are the same. As for year 2017 there is a lack of data, macroeconomic indicators have been calculated using available information for this year, parameters, exogenous variables and some macroeconomic indicators were calculated on the base of known growth rate for Gross Domestic Product, then model coefficients were calibrated and model solved using SOLVER application. It is very hard to find equilibrium solution for year 2017 but after equilibrating initial data good solution has been obtained. For the future simulation calculus with changing taxes and subsidies policy can be effectuated. The purposes of this research deal with finding equilibrium solution and compare it with that known.

Table 4

Calculus results

Base year	Variables	2015	2016	2017	2018
0,10	CPI	0,10	1,10	1,096	1,10
1,000	P	1,000	1,099	1,099	1,099
0,8919	Pt	1,0000	1,3653	1,332723	1,3653
0,7429	Pd	0,7429	0,7429	0,742875	0,7429
1,1929	Pk	1,1929	1,1929	1,19286	1,1929
1,1097	Pl	1,1097	1,1097	1,109715	1,1097
0,9987	Pe	0,9974	0,9987	0,99869	0,9987
1,0131	Pm	1,0131	1,0131	1,013067	1,0131
109731921	B	109731921	71659468	77913625	72287084
41703652	GB	42587805,1	45394395,6	48681862	55607710
128639293	Y	128639293	112267405	120245209	128483861
27801811	S	27801811	30822387	32302952	42718034
15256337	Sh	15256337	20835210	22315775	23844750
12340517	GHtrf	12340517	352147	352147,4	352147
109731921	C	109731921	116547021	126718787	157681824
23095704	G	23095704	23391634	25587217	35052039
27801808	I	27801808	30506038	31971407	42279592
242862568	Xt	242862568	281180797	338415315	385464470
261552683	Xd	190400052	222332462	273486072	310334213
352081887	X	280929256	318385942	377432813	435315606
52462516	E	52462516	58848335	64929243	75130257
90529204	M	90529204	96053480	103946741	1249811393
52148008	L	52148008	56679888	60689328	60689328
27132075	K	27132075	30506038	34474402	42713054
81252459	Ls	666662217	58563029	62572469	62572469
27123075	BP	8791625	6042286	7854638	18688276

Conclusions. Small General Equilibrium Calculated model was adapted to the economic realities of the Republic of Moldova. Private, Public, Manufacture and Foreign sectors are examined. Optimization problems were formulated for all sectors. It discussed all aspects of building a CGE model such as the fundamental assumptions, the derivation of model equations, the estimation of parameters and model balancing. Using Lagrange multiplier method behavioral functions have been obtained. Social Accounting Matrices for years 2014-2016 were elaborated. Because of the nature of the SAM, the sums of columns are equal to the sums of lines, a lot of simulations can be done, and policy change can be evaluated. It is necessary to mark that SAM can be constructed with at least one year lag and, in consequence, economy evolution for the future can be effectuated on the previous year economy data. So, all parameters and functions must be carefully prepared. In order to effectuate simulations using presented General Equilibrium Calculated Model four sets of data are need: constant parameters which are find from scientific literature;

exogenous variables determined for the time period in examination; calibrated parameter for behavioral functions used in this study; and policy variables, part of the exogenous variables, such as tax rates, rates of the subsidies, social assistance rates, social contributions rates etc. For year 2017 exogenous and policy variables were obtained, behavioral coefficients have been calculated and model was solved using Solver tool. It is recommended to be very cautiously preparing all needed data for calculus; it will determine quality of results. Calculus effectuated for years 2015-2016 confirm that all data in SAM matrix were equilibrated. On their basis behavioral functions were calibrated. Calculus demonstrates that calibrated coefficients of these functions are very sensible to changes in statistical data and in consequence the equilibrium solutions of the examined model are hard to obtain. However, such a model can be used for simulation calculus changing tariff rates, rate of the subsidies and some exogenous variables. For the future it will be interesting to formulate multi-sector model involving intermediates goods and Input-Output matrix.

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CLASSIFICATION OF THE COMPETITIVENESS' FACTORS AND NEW APPROACHES TO ASSESSING THE COMPETITIVENESS

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The vector of development of Moldovan economy, as well as the world economy, is unstable. In order not to be exposed to external shocks, it is necessary to ensure sustainable growth of the national economy. Only an economy that offers competitive products can achieve this goal. The object of the research is represented by the factors influencing the competitiveness of a product, and the main goals are the structuring of competitiveness factors and the development of new approaches in assessing competitive advantages. The following empirical and theoretical methods hjave been used in the study: observation and data collection, the method of scientific abstractions, comparative analysis, regression analysis, economic and mathematical modelling. In this article, the author has developed and applied two new ways to assess competitiveness. The study showed that the Moldovan economy is based on the production of primitive goods, while in order to achieve stable economic growth it is necessary to redirect its resources to the production of high-tech products and products with high added value.

Keywords: *competitiveness of goods, competitive advantage, competitive disadvantage, price, quality, psychological factors.*

Vectorul dezvoltării economiei moldoveneşti, precum şi economiei mondiale, este instabil. Pentru a nu fi expuşi şocurilor externe, este necesar de asigurat o creştere durabilă a economiei naţionale. Numai o economie care oferă produse competitive poate atinge acest scop. Obiectul de cercetare reprezintă factorii competitivităţii bunurilor, iar scopurile principale sunt structurarea factorilor şi elaborarea noilor abordări de evaluare a avantajelor competitive. Următoarele metode empirice şi teoretice au fost utilizate în studiu: observaţia şi colectarea datelor, metoda abstracţiei ştiinţifice, analiza comparativă, analiza regresiei, modelarea economico-matematică. În acest articol, autorul a elaborat şi a aplicat două abordări noi de evaluare a competitivităţii. Studiul a arătat că economia Moldovei se bazează pe producerea bunurilor primitive, în timp ce pentru a obţine o creştere economică stabilă este necesară redirecţionarea resurselor către fabricarea produselor high-tech şi bunurilor cu valoare adăugată înaltă.

Cuvinte-cheie: *competitivitatea bunurilor, avantaj competitiv, dezavantaj competitiv, preţ, calitatea, factori psihologici.*

Вектор развития молдавской экономики, как и мировой экономики, нестабилен. Чтобы не подвергаться внешним шокам, необходимо обеспечить устойчивый рост национальной экономики. Только экономика, которая предлагает конкурентоспособные продукты, может достичь эту цель. Объектом исследования являются факторы влияния на конкурентоспособность товара, а основные цели – структурирование факторов конкурентоспособности и разработка новых подходов в оценке конкурентных преимуществ. В процессе исследования были использованы следующие эмпирические и теоретические методы: наблюдение и сбор данных, метод научных абстракций, сравнительный анализ, регрессионный анализ, экономико-математическое моделирование. В данной статье автор разработал и применил новые два способа оценки конкурентоспособности. Исследование показало, что молдавская экономика основывается на производстве примитивных товаров, в то время как для достижения стабильного экономического роста необходимо перенаправить свои ресурсы на производство наукоёмкой продукции и продукции с высокой добавленной стоимостью.

Ключевые слова: *конкурентоспособность товара, конкурентное преимущество, конкурентные недостатки, цена, качество, психологические факторы.*

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Introduction

The Republic of Moldova is an open, agrarian, vulnerable small economy, which is influenced by large open economies. The development of the Moldovan economy depends on the remittances, on the trade policy and geopolitics of neighbouring states. The domestic capital market is not attractive to foreign investments, and the banking system has not recovered yet after the theft of the billion. The degree of credibility in the domestic banking system is very low, both from residents and non-residents. The main task that Moldova is facing is to develop strategies that would ensure sustainable economic growth.

In the current period, as a result of the signing of the Association Agreement between the Republic of Moldova and the European Union (2014), there is a reorientation of the flows of goods to the European markets. But in these markets the requirements for goods are high and they are oversaturated, so it is very difficult for Moldovan products to compete with European goods not only in foreign markets, but also in the domestic market. Therefore, Moldova should implement measures that would increase the competitiveness of goods and the competitiveness of the national economy.

Since the requirements for the goods to be imported by the European Union (EU) countries and the countries of the Eurasian Economic Union (EAEU) are different, *it is necessary to examine factors of the competitiveness of goods* in order to correctly assess a competitive advantage of domestic goods and elaborate an effective strategy to promote exports to that market in which our products are more competitive.

The scientific approach of the topic in the literature

In the scientific literature, there is no clear distinction between criteria, factors and indicators of product competitiveness. Although these concepts are different in their essence, some economists consider the separately taken competitiveness factor at the same time as both a factor and the main evaluation criterion, as an indicator.

I. Lifits confuses a criterion with a factor, the economist considers that one of the criteria of the competitiveness of the good is the quality, and the factor corresponding to this criterion is a reputation of a business [8, pp. 35]. In our opinion, the quality is a factor of competitiveness, but a manufacturer's reputation is a component of group of factor: marketing elements (Figure 1).

Also, many economists, like M. Porter [3; 4], M. Zavialova [6], R. Emadakov [7], examine the factors of competitiveness of goods and by classifying these factors, aim to identify those factors that ultimately affect the competitiveness of the enterprise, but not the merchandise. As proof that the confusion of the competitiveness of the good with the competitiveness of the business is inadmissible, can serve the fact that there are two sides that interact in assessing these indicators: consumers and producers. If merchandise is competitive in opinion of the manufacturer, this does not mean that the buyer's view is identical. In the oligopolistic and monopolistic market, the manufacturer may assume that a particular product has comparative advantages, but in the mind of the buyer the good is not competitive.

Any business uses a price to maximise its profitability, to set back rivals from incoming on the market, or to grow its market share. Establishment of competitive pricing is on the agenda of any businessman. The price is the first factor which influences a consumer's decision. The lower the price is, ceteris paribus, the more preferable this product is for the buyer.

M. Zavialova in article „The basis of competitiveness of enterprise products" claims that the factors of competitiveness of the good are: „price, quality, cost of consumption, quality of service and marketing activities to promote products on the market" [6, pp. 87]. Neither the mentioned scientist nor other scholars are studying psychological factors as factors of product competitiveness. In our opinion, it is wrong to neglect the fifth pillar (Figure 1).

The classification proposed by the author differs from those found in the literature. It contains a new group of factors of competitiveness of goods: psychological factors. For example, the term of commodity patriotism couldn't be found in any compartment of economic sciences, because it is a new term. This one is different from the term of brand loyalty and the buyer's loyalty to a particular bidder, since the latter two are being studied in the context of maximizing the enterprise's profit and increasing the competitiveness of the business, but not in the context of raising the product competitiveness.

Figure 1. Factors of the competitiveness of goods
Source: Elaborated by the author.

In author's opinion, the commodity patriotism indicates the degree of preference of citizens to buy domestic and not foreign goods. The model of commodity patriotism is given in Figure 2.

Figure 2. Model of commodity patriotism
Source: Elaborated by the author.

Commodity patriotism like all other factor of influence leads to growth the goods' competitiveness and GDP.

Analyse the competitiveness of Moldovan commodity goods

The foreign trade of the Republic of Moldova in the last eight years has evolved unevenly. The author carried out the comparative analysis of the growth rate of export and import until and after Association (Figure 3). The average export growth rate in 2010-2013 is 17.71 percentage points higher than the average export growth rate since the signing of the Association Agreement. The dynamics of the import is analogous to that of the export.

Figure 3. Export and import growth rate of the Republic of Moldova
Source: Elaborated by the author on the basis of data from the National Bureau of Statistics of the Republic of Moldova (http://www.statistica.md) [11].

The reorientation of the flow of goods on the European market has not yielded any immediate positive results, as domestic goods do not meet the requirements of this market. In order to improve the created situation, it is necessary to increase the competitiveness of Moldovan goods. In order to determine the gaps we will analyze the competitiveness of the commodity groups, and then we will analyze the competitiveness of the goods of a particular group.

The most utilize indicator in assessing competitiveness is the export index of revealed comparative advantage BRCA, elaborated by Bela Balassa. „It is defined as the ratio of exports of one product in country's exports to its share in total world commodity exports" [1, pp. 9]. But we will use the following

formula (1) to minimize the impact of structural changes in the global market on the results of the calculations [2, pp. 137]:

$$IACSE_i = \left[\frac{(X_i)/(X_i + M_i)}{\sum_{i=1}^{n}(X_i)/\sum_{i=1}^{n}(X_i + M_i)} - 1 \right] \div \left[\frac{(X_i)/(X_i + M_i)}{\sum_{i=1}^{n}(X_i)/\sum_{i=1}^{n}(X_i + M_i)} + 1 \right] \quad (1)$$

where: $IACSE_i$ – the index of the symmetric comparative advantage of the section (group of goods) *i* on the foreign market;

X_i – volume of export of the section (commodity group) *i*;

M_i – volume of import of the section (commodity group) *i*.

Figure 4 shows the main commodity sections ordered according to the symmetric comparative advantage. During the period 2013-2017, the number of section with advantage decreased from eight to six (out of 21). Therefore, in the last year, the most commodity groups have a disadvantage.

**Figure 4. The index of the symmetric comparative advantage
by sections according nomenclature of goods, Republic of Moldova**
Source: Authors' calculations using UN Comtrade data (https://comtrade.un.org) [12].

In 2017, section II „Vegetable products" had the highest comparative advantage, followed by the sections: III „Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes", XX „Miscellaneous manufactured articles", IV „Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes", and the biggest comparative disadvantages had the sections: XXI „Works of art, collectors' pieces and antiques", V „Mineral products", IX „Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork".

Section XII „Footwear, headgear, umbrellas, walking sticks, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair" drop from 3rd place to 6th place during the analyzed period; its advantage decrease from 25.35% to 13.24% due to the loss of shoe sales markets and the increase of imports by 29.5% in 2017 versus 2013.

Although section XI „Textiles and textile articles" up from 7th place to 5th; it still achieved a lower advantage in 2017 compared to 2013; and sections VIII „Raw hides and skins, leather, furskins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)" and XVIII „Optical, photographic, cinematographic, measuring, checking, precision,

medical or surgical instruments and apparatus; musical instruments; parts and accessories thereof" passed from zone with advantages to zone with comparative disadvantages.

In order to identify the causes of the decrease of the competitiveness of some goods, it is need to analyze this indicator in correlation with two factors: price and quality. The author has developed two new approaches to evaluate comparative advantages.

A new approach to assessing the price competitiveness of goods

Export is the demand of the external sector for the domestic good and can be represented as a function dependent on two factors: the export price and the price for the substitute good (import price):

$$ex\_good = c + a \times good\_p\_x + b \times good\_p\_m \tag{2}$$

where: ex_good – the export volume of the good;

$good\_p\_x$ – the export price;

$good\_p\_m$ – the import price.

The author proposes the following formula to calculate the relative competitive advantage by price $(RCAP)$:

$$RCAP_i = \frac{a_i}{b_i} \tag{3}$$

where: a_i – the export price regression coefficient (the mean change in export of good i for one unit of change in the export price); b_i – the import price regression coefficient (the mean change in export of good i for one unit of change in the import price).

A country detects relative competitive advantage by price in merchandise for which this indicator by modulus is higher than 1. The author applied this methodology for a set of goods and presented the results of the estimation of the regression equations in Table 1, and the relative competitive advantage by price in the division of goods in Figure 5.

Table 1

Exports of some goods for January – July of 2014 and 2018

Code	Goods	The regression equation	R-squared
0202	Meat of bovine animals, frozen	$ex\_meat = 6.804 - 1.927 \times meat\_p\_x + 0.272 \times meat\_p\_m$	0.985
0405	Butter and other fats and oils derived from milk	$ex\_butter = 3.8 + 0.319 \times butter\_p\_x - 1.078 \times butter\_p\_m$	0.782
0409	Natural honey	$ex\_honey = 12.88 - 2.828 \times honey\_p\_x - 0.261 \times honey\_p\_m$	0.764
0802	Other nuts, fresh or dried, whether or not shelled or peeled	$ex\_nuts = 19.32 - 1.07 \times nuts\_p\_x + 0.978 \times nuts\_p\_m$	0.809
0808	Apples, pears and quinces, fresh	$ex\_apple = 0.37 - 3.034 \times apple\_p\_x + 0.65 \times apple\_p\_m$	0.911
1001	Wheat and meslin	$ex\_wheat = 2.71 + 1.676 \times wheat\_p\_x - 4.512 \times wheat\_p\_m$	0.985
1005	Maize (corn)	$ex\_corn = 1.05 - 7.217 \times corn\_p\_x + 0.148 \times corn\_p\_m$	0.971
1704	Sugar confectionery	$ex\_conf = -1.6 - 1.102 \times conf\_p\_x + 2.626 \times conf\_p\_m$	0.870
1905	Bread, pastry, cakes, biscuits and other bakers' wares	$ex\_cake = 8.99 + 0.399 \times cake\_p\_x + 1.137 \times cake\_p\_m$	0.991
2002	Tomatoes prepared or preserved	$ex\_tomat = 10.3 - 12.321 \times tomat\_p\_x + 0.143 \times tomat\_p\_m$	0.786
2009	Fruit juices and vegetable juices	$ex\_juice = 27.9 + 5.6 \times juice\_p\_x + 7.0 \times juice\_p\_m$	0,745
2106	Food preparations not elsewhere specified	$ex\_food = 1.64 - 0.025 \times food\_p\_x - 0.257 \times food\_p\_m$	0.911

Source: Authors' calculations.

From the set of goods analyzed, there are only a few goods which have reached competitiveness by price, such as, for example, maize (corn), natural honey, apples, pears and quinces, fresh. Consequently, price-competitive goods are primary product, but not the goods of the manufacturing industry.

Figure 5. The relative competitive advantage by price for some goods, Republic of Moldova
Source: Authors' calculations using own methodology.

Wheat and meslin have a competitive disadvantage by price because the market for these goods is monopolized. Farmers with small households have to sell their production to other firms that specialize in exporting grain. They sell their production at a price that is about ½ of the export price. As a result, farmers hardly reimburse their expenses, and exporters get overpriced. This situation caused the wheat and meslin to have a relative competitive disadvantage by price.

A new approach to assessing the competitiveness of goods by quality

The functions of export and import of analogue goods differ by the coefficient of price elasticity. This difference lies at the basis of the elaboration of the relative competitive advantage by quality. The consumer when deciding to buy the domestic or imported goods is guided by the quality/price criterion. Suppose both import and export prices increased by 1%, as a result export volume increased by 4% and import by 2%. Therefore, the exported goods are relatively more competitive than the imported one.

Summarizing the above, the author suggests the following formula to calculate the relative competitive advantage by quality $(RCAQ)$:

$$RCAQ = \frac{\Delta X \%}{\Delta P_x \%} \div \frac{\Delta M \%}{\Delta P_m \%} \tag{4}$$

where: X – the export volume of the good;

M – the import volume of the good;

P_x – the export price;

P_m – the import price.

A country reveals relative competitive advantage by quality in commodity for which this indicator by modulus is higher than 1. The author applied this methodology for some merchandise and presented the results of the calculation in Figure 6.
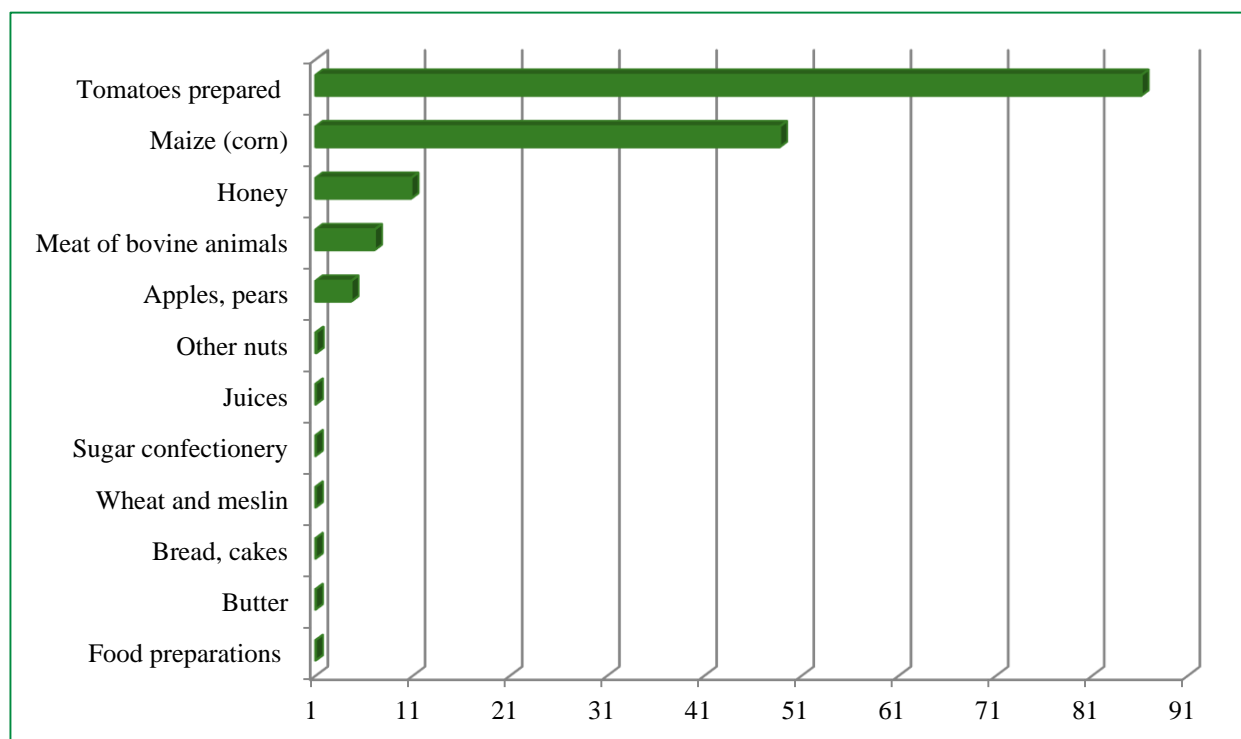
Figure 6. The relative competitive advantage by quality for some goods, Republic of Moldova
Source: Authors' calculations using own methodology.

Only four from the set of analyzed goods are competitive by price and by quality: apples, pears and quinces, fresh; maize (corn); meat of bovine animals; tomatoes prepared or preserved. The first three merchandises are primary products, but the last is agricultural-based manufacture. If a country's economy relies on the competitiveness of primary goods, but not goods with a high added value, it will lead to economic stagnation (Figure 6).

There is a summarize of the results of calculating competitiveness by price and by quality in table 2; and also we can find the technological sophistication of the product in this table.

Table 2

The analysis of the competitiveness of some Moldovan agri-food goods by price, by quality and technological sophistication

Code	Goods	*RCAP* advantage (+) / disadvantage (−)	*RCAQ* advantage (+) / disadvantage (−)	Technological Sophistication
0202	Meat of bovine animals, frozen	+	+	Primary products
0405	Butter and other fats and oils derived from milk	−	−	Primary products
0409	Natural honey	+	−	Primary products
0802	Other nuts, fresh or dried, whether or not shelled or peeled	+	−	Primary products
0808	Apples, pears and quinces, fresh	+	+	Primary products
1001	Wheat and meslin	−	−	Primary products
1005	Maize (corn)	+	+	Primary products
1704	Sugar confectionery	−	−	Agricultural-based manufactures
1905	Bread, pastry, cakes, biscuits and other bakers' wares	−	+	Agricultural-based manufactures
2002	Tomatoes prepared or preserved	+	+	Agricultural-based manufactures
2009	Fruit juices and vegetable juices	−	−	Agricultural-based manufactures
2106	Food preparations not elsewhere specified	−	−	Agricultural-based manufactures

Source: Elaborated by the author.

In the Republic of Moldova, the technological lag is growing and, accordingly, the competitive potential of many types of manufactured industrial products is falling. The processing industry is dominated by the processing of agricultural raw materials. The export and import analysis on the main types of production showed that the higher the degree of processing is, the lower competitiveness of Moldovan goods is, because Moldova does not possess new techniques and advanced technologies.
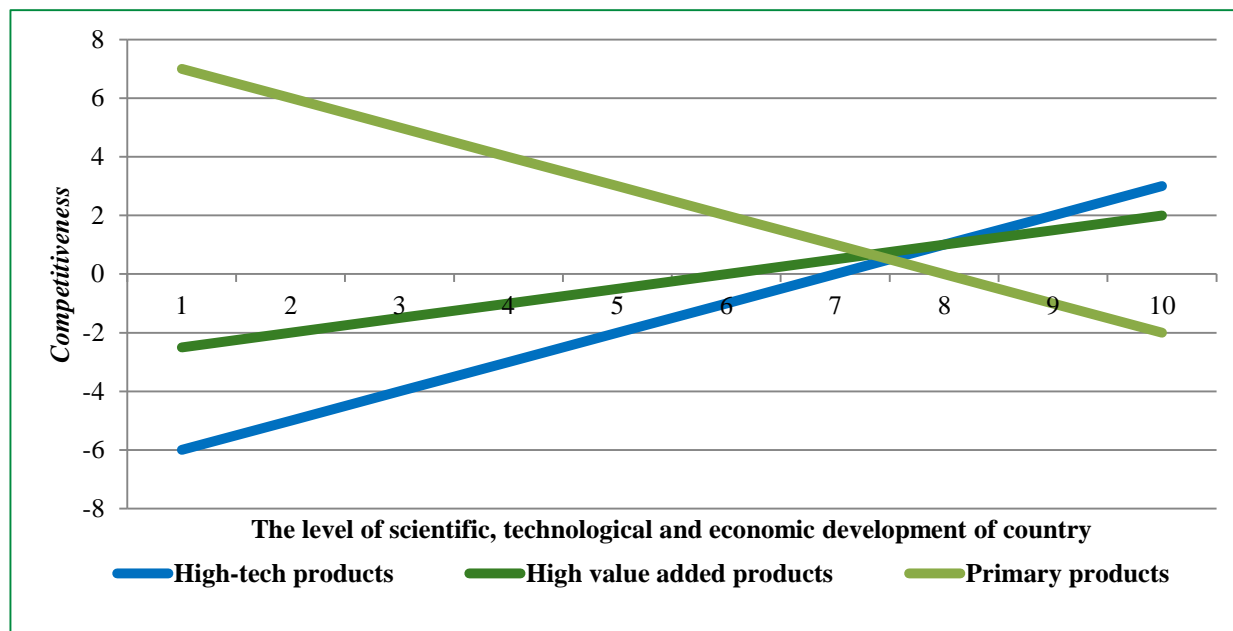

Figure 7. The correlation between competitiveness and the level of scientific, technological and economic development of country

Source: [9, pp. 13].

Our country needs to restructure industry for lead to high level of economic development and welfare. To achieve these goals, it is necessary to redirect all of its resources to the production of high value-added goods and high-tech products, since these products will ensure the achievement of a high level of competitiveness (Figure 7).

Conclusions

Moldova should restructure its national economy, exports and imports, and when choosing the direction of specialization, it is necessary to use the principle of comparative advantages and take into account the structure of its production factors. The state needs to pay attention to the development of those branches of industry that have comparative advantages; it is necessary to redistribute production resources from branches that are considered disadvantaged, in branches with relative advantages.

The economic growth of highly developed countries is not based on extensive factors, but on intensive ones, on the introduction of progressive technology and the improvement of the quality of labour resources. Achieving a consistently high level of competitiveness of the national economy is also based on intensive factors.

On the basis of the researches we can conclude that it is necessary to develop production of the following goods: high-tech products, high value added products, as well as high-technology manufactures.

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SOCIOLOGY

FERTILITY DYNAMICS IN SWEDEN, SPAIN, THE CZECH REPUBLIC AND UKRAINE: A COHORTE PERSPECTIVE

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The present study aims to explore the dynamics of the cohort fertility in Sweden, Spain, the Czech Republic and Ukraine. The postponement and recuperation of fertility are analysed in order to find the differences within this process and how it is reflected in complete cohort fertility rate. The study is based on the Human Fertility Database that provides high quality, comparable and detailed data for comparative analysis of the fertility postponement and recuperation process of childbearing. The benchmark model proposed by Sobotka, Zeman, Lesthaeghe and Frejka has been used as the main tool. The results show that the diversity of complete cohort fertility rates of the 1970s cohort of women is determined by the different level of recuperation of the postponed births. Sweden and the Czech Republic, which experience the stronger recuperation of the postponed births, have a complete cohort fertility higher than in countries with weaker Recuperation Index (Spain and Ukraine). The lower fertility levels of the early 1970s cohorts compared to 1960 cohort was driven by the diverse recuperation attainment according to birth orders. The low fertility in Ukraine was influenced by the reduced recuperation especially of the second birth, while in Spain the low fertility is also driven by the increase in childlessness. Due to the policies that encourage gender equality and availability of high-quality childcare provision, Sweden has a high recuperation of second and third birth. The limited recuperation of the postponed births in Spain is a result of the persistence of double burden for women and of the rigid labour market. A successful transition to the market economy and accessibility of childcare provision allowed the Czech Republic to have a recovery of second birth higher than Ukraine.

Keywords: cohort fertility, postponement, recuperation, birth order, Sweden, Spain, Czech Republic, Ukraine.

Prezentul studiu are scopul de a explora dinamica fertilităţii pe cohorte în Suedia, Spania, Republica Cehă şi Ucraina. Amânarea şi recuperarea fertilităţii sunt analizate din perspectiva identificării diferenţelor în cadrul acestui proces şi impactului asupra descendenţei finale a cohortei. Studiul este bazat pe Human Fertility Database care oferă date de înaltă calitate, comparabile şi detaliate pentru analiza procesului de amânare şi recuperare a naşterilor. Ca instrument principal a fost utilizat modelul de referinţă propus de Sobotka, Zeman, Lesthaeghe şi Frejka. Rezultatele arată că divergenţele în descendenţa finală a cohortelor feminine născute în anii 1970 sunt determinate de diferenţele în recuperarea naşterilor amânate. Suedia şi Republica Cehă, pentru care este specific un grad mai înalt de recuperare a naşterilor amânate, se evidenţiază printr-o descendenţă finală a cohortelor mai înaltă decât în ţările cu un indice de recuperare mai slab (Spania şi Ucraina). Descendenţa finală mai scăzută a cohortelor din anii 1970, comparativ cu cohorta din 1960, este determinată şi de gradul variat de recuperare în funcţie de rangul naşterilor. Fertilitatea scăzută în Ucraina a fost influenţată de reducerea recuperării, în special a celei de-a doua naşteri, în timp ce în Spania această este determinată şi de creşterea numărului de femei care către sfârşitul perioadei reproductive nu au născut nici un copil. Datorită politicilor care încurajează egalitatea de gen şi disponibilitatea serviciilor de îngrijire a copiilor de înaltă calitate, Suedia are o recuperare ridicată a naşterilor de rangul doi şi trei. Recuperarea scăzută a naşterilor amânate în Spania este rezultatul persistenţei sarcinii duble pentru femeile născute în anii 1970 şi a pieţei forţei de muncă rigide. O tranziţie reuşită către economia de piaţă şi accesibilitatea serviciilor de îngrijire a copilului a permis Republicii Cehe să aibă o recuperare mai mare a naşterilor de rangul doi, decât în Ucraina.

Cuvinte-cheie: fertilitate pe cohorte, amânare, recuperare, rangul naşterilor, Suedia, Spania, Republica Cehă, Ucraina.

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В статье представлены результаты сравнительного исследования динамики рождаемости через призму поколений в Швеции, Испании, Чехии и Украине. Различия в откладывании и восстановлении рождаемости рассматриваются с точки зрения их влияния на итоговый уровень рождаемости когорты. Исследование основано на данных Human Fertility Database, обеспечивающей высококачественные, сопоставимые и подробные данные для анализа процесса отсрочки и реализации отложенных деторождений. В качестве основного инструмента была использована эталонная модель, предложенная Соботкой, Земаном, Лестегом и Фрейкой. Результаты исследования показывают, что различия в уровне рождаемости женских когорт 1970-х годов рождения определяются разным уровень восстановления отсроченных деторождений. В Швеции и Чешской Республике, отличающихся более высоким уровнем реализации отсроченных деторождений, итоговая рождаемость когорты выше, чем в странах с более низким индексом восстановления (Испания и Украина). Более низкие уровни итоговой рождаемости когорт 1970-х годов рождения, по сравнению с когортой 1960-х годов, обусловлены различным уровнем реализации отсроченных рождений в зависимости от порядка рождений. Низкая рождаемость в Украине определяется снижением реализации отложенных деторождений, особенно вторых, в то время как в Испании низкая рождаемость также обусловлена ростом бездетности. Благодаря политике, поощряющей гендерное равенство и доступности высококачественных услуг по уходу за детьми, в Швеции наблюдается относительно высокий уровень реализации отложенных рождений второго и третьего порядка. Более низкий уровень восстановления отсроченных деторождений в Испании является результатом сохраняющегося двойного бремени для женщин и жестких условий на рынке труда. По сравнению с Украиной успешный переход к рыночной экономике и доступность услуг по уходу за детьми позволили Чешской Республике достичь более высокого уровня реализации отложенных деторождений.

Ключевые слова: рождаемость когорт, отсрочка, восстановление, порядок рождения, Швеция, Испания, Чехия, Украина.

JEL Classification: J10, J13, J19.
UDC: 614.3

Introduction

By the early 21st century, the fertility transition from high to low fertility, from large to small families, has been occurring in most populations around the world, but the biggest changes were recorded on the European continent. Western European countries are among the first, which recorded significant changes in fertility dynamics (the decrease in the average number of childbirth per woman and the increase of maternal age at first birth). So far, many countries, especially from the northern Europe, have completed the process of fertility transition, which is confirmed by the proximity of period fertility rates and completed cohort fertility rates, while in other countries, especially in Eastern Europe, the fertility transition process is still underway.The complex understanding of the fertility dynamics is critical for proper and efficient policy measures for countries with low fertility in order to manage their economic, social and demographic challenges and, to enable families to fulfil their reproductive rights.

The previous studies regarding fertility levels and trends in Europe at the very beginning of the 21st century draw attention to the diversity of low fertility across European regions, and no signs of convergence between them [6, 17, 19, 5, 16, 15]. The early childbearing pattern was replaced by a late one across all European countries, but with a different onset of postponing [12, 20, 18]. The delay in childbearing occurred in the Western and Northern countries at the end of 1960s and starting with the 1990s – in the Central and Eastern Europe [6]. Postponed births were eventually recuperated, but diversity persisted even in the non-socialist country group: in Northern and some Western countries births were recuperated, resulting in almost replacement quantum fertility levels, whereas in Southern and German speaking countries recuperation has been significantly smaller [6].

The postponement of fertility as well as the drivers of the fertility delay were widely documented [12, 18, 17]. Among the main factors leading to the delay in marriage and childbearing are the increasing participation in the tertiary education [12], diffusion of modern contraceptive, increase in divorce rate, rising aspirations for self-realisation and higher living standards, the transformation in partnership explained in the Second Demographic Transition (SDT) framework [14]. The factors of the recuperation at later ages by the cohorts of women remain quite limited, due to the family policies [20, 3, 1, 10, 15], attaining gender

equality [16, 17, 18] and the acceptance of fertility outside the marriage [20], as well as labour and housing market conditions [8].

This study is focused on the analysis of cohort fertility that can be a proper point of departure in order to explain diverse social and economic mechanisms that influence fertility levels. While the cohort analysis in European countries was well documented in previous researches, the detailed analysis by birth order has remained scarce [22].

For comparative purpose, regions with different fertility, history pathways were selected. We choose Sweden because this country is one of forerunner of the Second Demographic Transition [13], presents a "Nordic fertility regime" [2] and has had a pattern of high recuperation and stable fertility close to two births per woman [20].

The Southern region is one of the cases of very low fertility rates in developed countries related to the new female reproductive behaviour and Spain is the country with such a fertility regime [8]. In addition, the available data from Human Fertility Database was more detailed for this country.

The Czech Republic was found as a "model case of postponement transition among post-communist societies of Europe" [19, p. 447] characterized by the rapid transformation to a late childbearing pattern followed by a consistent recuperation at older ages.

Ukraine is the case study of very low fertility in Eastern Europe that experience many features of SDT [17] and has similar pattern with former Soviet countries (Moldova, Belarus and Russian Federation) [9].

The late childbearing pattern has been adopted in Sweden and Spain, while in the Czech Republic and Ukraine the late fertility timing is on the way to be installed. The extent to which delayed births were recovered differs between selected countries and determines the current cohort fertility levels.

The main objectives of this study are:
- To compare the cohort fertility levels and trends by birth order in four countries with diverse fertility levels;
- To compare the dynamics in fertility timing of the selected cohorts in Sweden, Spain, the Czech Republic and Ukraine;
- To determine and compare the degree of recuperation of the postponed births in the selected cohorts in Sweden, Spain, the Czech Republic and Ukraine;
- To analyse and compare the postponement and recuperation process of the most recent cohort by birth order among the selected countries.

Data and methods of the research. The present study is based on data provided by Human Fertility Database [11], that provides high quality, comparable and detailed data making possible the analysis of the fertility postponement and recuperation process of childbearing. The cohort approach is the only way in order to analyse which portion of postponed births was recuperated and which one was never realized [20, 18].

The Complete Cohort Fertility Rates (CCFR) were analysed for the cohort of woman at age of 40, while the proportion of births that occur after, are yet small and have little impact on the overall fertility level. The advantage of using CCFR until the age of forty (CCFR (40)) consists in possibility to analyse nine cohorts of women.

In order to explain the differences in recuperation attainment between cohorts and countries, we use the methods proposed by Sobotka, Zeman, Lesthaeghe and Frejka [20]. In the benchmark model, postponement and recuperation can be measured by age for any cohort of interest, which is compared with an older reference cohort – the benchmark cohort. In this study, we use as benchmark the 1960 cohort for all four selected countries. Although the postponement transition occurs in those countries at different times, the 1960 cohort still has comparable young motherhood timing in all four countries compared with the early 1970s cohorts. The three components of postponement transition (the recuperation index, the postponement component and the initial fertility level) as the explanatory framework of cohort fertility diversity between countries were detailed theorized in the same work. We explore it applying on the selected countries with diverse fertility timing and cohort levels.

The result of research

The data shows that the complete cohort fertility decreased from one generation to another and the women born in the late of 1960 and the early 1970 had a bellow replacement fertility level in all four selected countries. However, the degree of cohort fertility decline is different and in some countries, a very low CCFR is recorded. The CCFR (40) of the youngest cohort born in 1973 ranges from 1.32 in Ukraine and 1.49 and in Spain to a relatively higher level of 1.88 and 1.78 children per woman in Sweden and the Czech Republic, respectively (*Fig.1*).

It is known that the new fertility behaviour has been observed in Sweden between cohorts of women and diffused to other countries in 1940 [14]. At the same time, Sweden is the country with the most stable

cohort trend. Among 27 cohorts of women, beginning with the 1939 the CCFR remained at the level of 2.0 children per woman. The cohorts of the second half of the 1960s brought a decline in fertility to 1.9 children per woman that remained unchanged in the subsequent 10 cohorts, and is likely to remain quite stable. In addition, during the period of fertility transition, the CCFR never fell to a very low level (the demographic literature determined that a completed cohort fertility level of 1.75 children per woman is a threshold below which cohort fertility becomes "very low" [22]).

Although in Spain the decrease in fertility occurred from quite high values, 2.6 children per woman for the cohorts born in 1935-1939, the following dynamics has a sudden and continuous decline. Women cohorts born in 1953 and later, have CCFR less than 2 children per woman and those born in 1959 and later have a very low CCFR – less than 1.75 (Fig.1).

CCFR in the Czech Republic and Ukraine, as in other ex-socialist countries started to decline with women born around 1960. This was apparently engendered by the collapse of the state socialist systems and the onset of the transition to democracy and market economy.

The middle 1940s cohorts of women in Ukraine already had a level above replacement threshold: 1.8 children per woman, which remained quite stable for the subsequent two decades (*Fig.1*). The decrease above 1.8 began from the 1963 cohort that unregistered a level of 1.72 children per woman.

The cohort fertility level at the age 40 in the Czech Republic registered a stable level among women born during 1935-1963, that was around 2.1 children per woman. As in Ukraine, the 1963 cohort of women had a decline of fertility that continued in the subsequent cohorts. The decline, though, was not as prominent as in Spain and Ukraine, and the complete fertility of the 1960s cohorts in the Czech Republic did not fall below 1.9 children per woman.
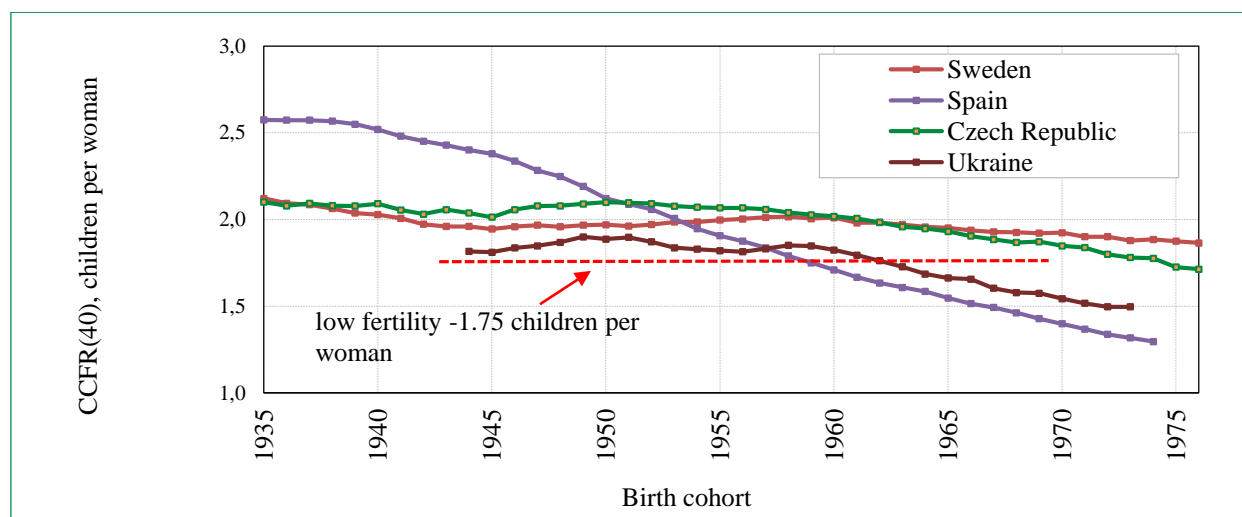

Figure 1. Completed Cohort Fertility Rates, selected countries, birth cohorts 1935-1975
Source: Human Fertility Database.

In all four countries, the age patterns of childbearing have been changing from one generation to the next one. The delay of the first birth began in Spain among the middle 1950s cohorts of women and ten cohorts earlier in Sweden [20]. For the youngest generation in these countries, the average age of the mother at the first birth is close to the 30 years old, only the growth rate was different *(Fig.2)*. In Sweden, increasing in the mother`s age at the first birth has grown smoothly from generation to generation. The average age of women at the first birth of the cohort born in 1974 is 28.3, having increased by 4 years compared with the generation 1955. Available data for Spain show an increase in MAFB from 25.8 in the 1960 cohort to 29.6 and 29.8 in the 1973 and 1974 cohorts respectively. The increase of average age at first birth in Spain of the 1973 cohort compared with the 1970 cohort was +0.85 years. The MAFB of the 1955 cohort in Sweden was 25.1 and 28.2 in the 1973 cohort (+0.78 years).

In the Czech Republic and Ukraine situation is different, the young childbearing pattern is observed in both countries. The increase of MAFB in the Czech Republic is prominent, beginning with the 1969 cohorts of women. The average age at first birth of the 1973 cohort of woman in the Czech Republic was 24.3, an increase by 1.2 years compared with the 1970 cohort. In Ukraine, an increase in average age at first

birth is also noted, but at a smaller extent. The average age at first birth of the 1973 cohort was 22.5, an increase by +0.27 years compared with the 1970 cohort.
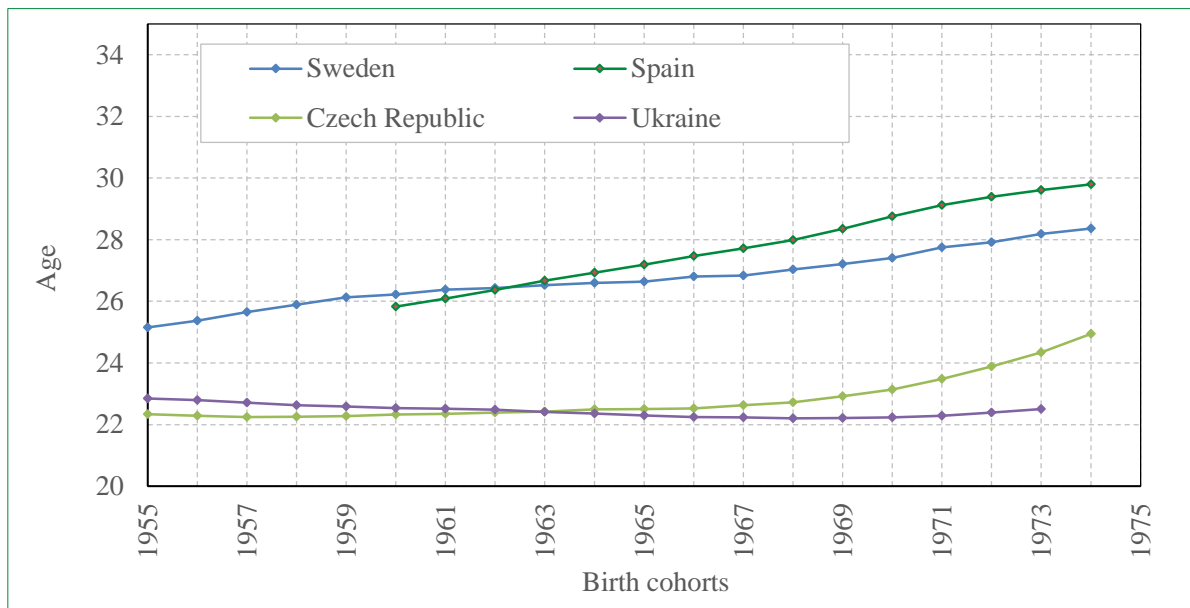

Figure 2. Mean age of woman at first birth, selected countries, birth cohorts 1955-1974
Source: Human Fertility Database.

The shift of the first birth to higher ages no longer occurred among the 1970s cohorts in Spain and in Sweden, and a late childbearing pattern has been installed in these countries (*Fig. 3, panel A, B*). The later fertility timing of the 1960-1970 cohorts is explained by the increasing youth enrolment in tertiary education and by the increase of women labour force participation [12], as well as the changes in values, attitudes and beliefs of youth.

The fertility postponement transition began in the East and Central Europe in the 1990s, but the early 1970s cohorts of women have adopted differently the new fertility calendar in the Czech Republic and in Ukraine [19, 16], (*Fig. 3 panel C, D*). The age pattern of childbearing of the early 1970s cohorts in the Czech Republic is characterized by a marked propensity of first birth postponing [7], while in Ukraine those cohorts still experience an early fertility pattern [12, 16].

In the Czech Republic, the spread of modern contraception after 1990s and the rising demand for tertiary education influence the late 1960s and the early 1970s cohorts to adopt the western characteristic of family and childbearing behaviour [19].

A. *Sweden*

B. *Spain*

C.   *The Czech Republic*   D.   *Ukraine*

Figure 3. Changes in age specific cohort fertility rates, the 1940, 1950, 1960, 1965, 1970, 1973 cohorts of women, selected countries
Source: Author's computation, Human Fertility Database.

The fertility transition that occurs through the postponement of births to older ages, as well as their subsequent recuperation, had a distinct feature in the studied countries. Only 38% of postponed births were recuperated at the age of 40 among the 1973 cohort of women in Spain, while the Recuperation Index in Sweden was 64% (*Fig. 4, panel A, B*). The two welfare states differ in generosity of the family policies, the level of the gender equality attainment both in public and private spheres, the labour market environment that determine the work-family life conciliation, etc.
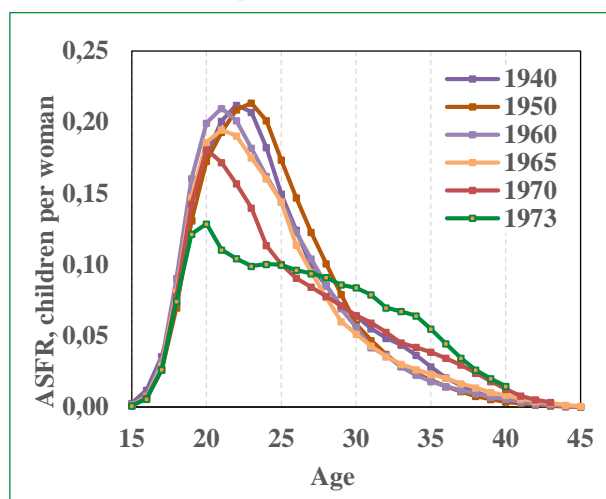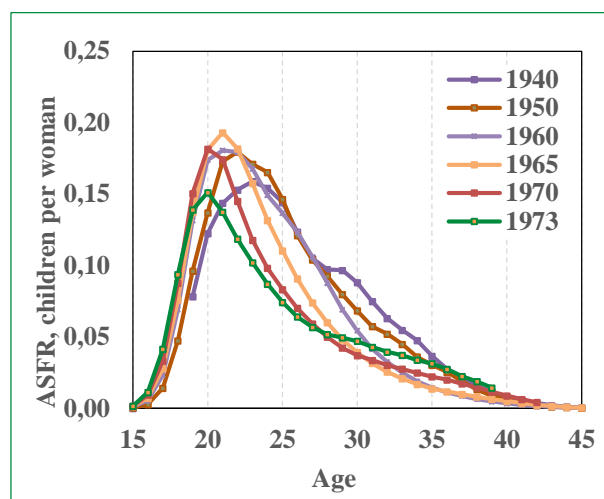
The level of postponed births did not necessarily determine the degree of recuperation. The 1973 cohorts in the Czech Republic show a higher level of postponement than Ukraine. At the same time, the recuperation was also higher than in Ukraine (57% versus 24% (*Fig. 4, panel C, D*).

The weak recuperation of the postponed births in Ukraine, as in other former Soviet countries among the 1970s cohorts is explained by the persistent economic uncertainty, social anomie and the continuous double burden of the woman within families. The weak possibility to conciliate the work and family is reinforced by the poor childcare services and the traditional gender roles within families.

Sweden can be considered a model case of social policies and gender equity in parenting that seem to determine the relative high level of birth recuperation after age of 30s among the 1960s and 1970s cohorts of women. The full recuperation of the postponed birth among the 1973 cohorts compared with the 1960 cohort was attained by no country.

A.   *Sweden*   B.   *Spain*

C.   The Czech Republic   **D.   Ukraine**

**Figure 4. Cumulated differences between cohorts of women born 1965, 1970, 1973
compared to the reference cohort 1960, selected countries, children per woman**
Source: Author's computation, Human Fertility Database.

     Additionally, it should be added that the 1973 cohort experience in their youth not only the economic challenges of the 1990s, but also the globalization process. In their 30s, the age of recuperation of postponed childbearing, they had experienced the unprecedented increase in housing price followed by the 2008 economic crisis. The evidence from Spain showed that the labour and housing market deregulation might limit the childbearing decision [3]. Hence, we presume that the economic context lived by the 1973 cohort in their 30s could also influence the recuperation attainment of the postponed births in analysed countries, although more evidences are required.

     Spain, the Czech Republic, and Ukraine were compared with Sweden, as a model case of high cohort fertility and strong tendency for recuperation. The CCFR (40) of the 1973 cohort of women registered a level of 1.88 children per woman in Sweden. The absolute difference in complete fertility of the 1973 cohort of women between Spain, the Czech Republic and Ukraine compared with Sweden was decomposed in three components of the postponement transition (Fig. 5).

**Figura 5. The absolute contribution of the three components of the postponement transition
to the differences in CCFR (40) between Sweden and selected countries, the 1973 cohort**
Source: Author's computation, Human Fertility Database.

The diversity in 1973 cohort fertility among the selected countries was influenced by the degree of recuperation of the postponed births, by the initial fertility level and by the level of postponement. A smaller CCFR (40) of the 1973 cohort of women in Spain compared to Sweden is determined by all three components of the postponement transition to almost the same extent. As the postponement transition occurred slowly in Ukraine, the difference in fertility level compared to the 1973 cohort in Sweden was influenced at lesser extent by the postponement component but, rather by the smaller level of initial fertility of the benchmark cohort and by the limited recuperation attainment.

A more detailed picture on the postponement recuperation process of the 1973 cohort provides the benchmark analysis by birth order. The decomposition of postponement and recuperation process by birth order 1, 2, 3+ of the 1973 cohort compared to the 1960 cohort is illustrated in the figure 6.

Postponed first births of women born in 1973 in Sweden were almost fully recuperated (99%) and a high proportion of the delayed first births were recuperated in Spain (60%) and the Czech Republic (80%).

Sweden still shows a high propensity to recuperate the second child (88%), but fertility recovery at 3+ births is limited. The overall modest Recuperation Index of the 1973 cohort of women in Spain is the result of the scarce recuperation at second and especially the 3+-birth order.

Figure 6. Cumulated differences by birth order between cohorts of women born 1973 compared to the reference cohort of 1960, selected countries, children per woman
Source: Author's computation, Human Fertility Database

In Sweden, Spain, and the Czech Republic, the Recuperation Index decreased in step with the birth order increase. The recuperation component of the 1973 cohort in Ukraine followed a different pattern, as the postponement began with the second child, and, as the early childbearing pattern at first birth is still maintained in the region (Fig. 6).

Another phenomenon contributing to reduction of CCFR is the increase in the proportion of women who did not give birth during the reproduction period. The largest increase in the proportion of childlessness women is recorded in Spain. In ten consecutive cohorts, this indicator increased from 10.4% to 18.4%. In Sweden is noticed a stabilization of the situation. The proportion of women who did not give birth to any child dropped from 13.8% among women born in 1961 to 12.2% among those born in 1970. Although in the Czech Republic and Ukraine there has also been an increase in the proportion of childlessness women, however, this indicator remains much lower than in Sweden and Spain (Fig. 7).

Figure 7. Proportion of childlessness women born in 1961-1979 years
Source: Human Fertility Database.

Family policies became a relatively usual attribute of the contemporary European society, as a response to fertility decline in the second half of the 20th century. The incentives for fertility have developed from being pro natalist and intrusive to social welfare policies aimed at providing a minimum level of social security, education and childcare provision, gender equity and balanced work and family life.

Family policies in Sweden are not directly aimed to boost the childbearing, but rather to encourage woman's participation on the labour market, to improve gender equality and work-private life conciliation [1]. Overall, it includes a set of facilities mostly started in the 1974 and made the social and family policies in Sweden one of the most genero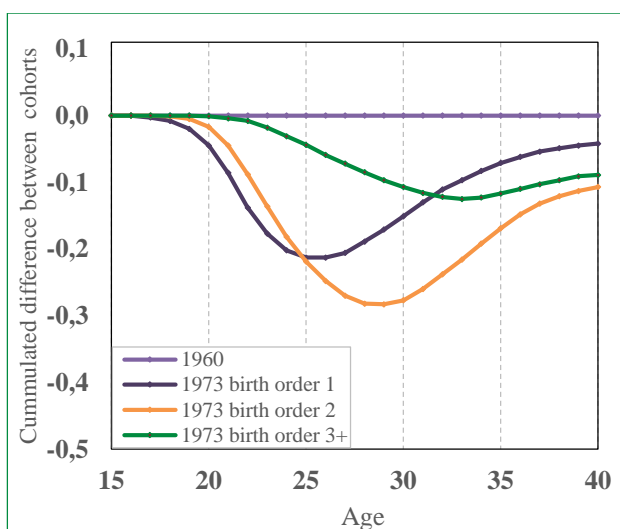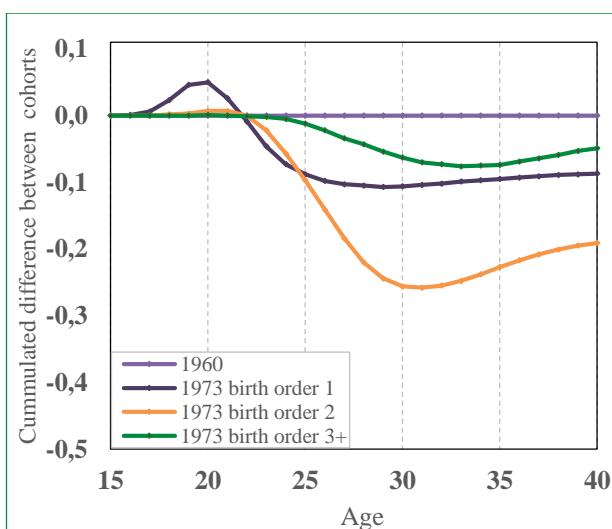us in Europe: the parental leave with a benefit of 80% of earned income; facilities, when there are no more than 30 months between children ("Speed premium"); the ten benefit days awarded to the father in connection with each childbirth ("Daddy days"); time for sick-child leave (up to 120 paid days per year per child); cash child benefit and house-rent support in case of need; all-day day-care and all-day schools provision [10]. Thus, those measures were reflected in the complete fertility level and number of children in families in Sweden, that remained stable for many generations [8, 1], *(Fig. 1)*. Combination of employment and parenthood is also promoted through the significant provision of high-quality public childcare in Sweden. This is also considered to be as a guarantee of equality regarding the provision of care and education and the redistribution of resources between children among social classes and ethnic origin [15].

The generous income transfers in Spain during the Franco dictatorship (1936-1975) aimed at keeping women at home, caring for their families, as well as at raising birth rates [5]. Given the transition to democracy, social policy has been changed prioritizing sufficient allowances and protection for the

unemployed. The proportion of social protection expenditures for families and children in GDP still were one of the lowest in the European Union [8]. The maternity leave has increased successively up to 16 weeks in 1989 and expanded to 18 weeks in 2007, in the case of children with disabilities [5]. Since 2007, the employees have also been entitled to cut back their working hours from 1/8 to 1/2 with a proportional cut in their salaries to take care for children under the age of eight after. The introduction in 2003 of an allowance of up to 1.200 euros yearly for children under the age of three is only granted to mothers who work and pay a social security tax, but not to those who are on leave or have a non-paid job [5]. The care for children under age three, was very low (13.5%) and takes place primarily in informal contexts (family or baby – sitters). Hence, the low cohort fertility rates, as well as the prominent childbearing delay and increase in childlessness in Spain is the result of the limited social support. The family policies in Spain mirrored the employment relationship while successful improvement in work and family balance remains scarce in the region.

The policy measures during the socialist era in the Czech Republic had a pro natalist and interventionist character [19]. By the 1970s, families with children in Czechoslovakia received one of the most generous social benefits available behind the Iron Curtain [4]. Having children greatly contributed to the access to an apartment rental, entitled parents to significant allowances and payments, and made women eligible for earlier retirement. Thus, the country had one of the lowest proportion of childless women in the region [19, 4] and cohort fertility remained quite stable among the 1940-1955 cohorts of women. Family policy measures after 1989 became less focused on the number of family members and mostly based on social welfare policies aimed at reducing income inequality, preventing poverty and providing a minimum level of social security. Since 1990, all mothers were able to receive paid maternal leave regardless of the number of children. Since 1995, paid parental leave was further extended until the child's fourth birthday, making the paid post-natal period in the Czech Republic one of the longest in Europe [19]. During maternity leave (28 weeks), women receive 69% of their previous salary with a possibility of unlimited additional part-time income allowed since 2004. Day-care enrolment rates of children aged 3-5 have remained high since 1990, reaching 88% in 2005, while the public provision of nurseries has practically collapsed due to a combination of extended parental leave [19]; however, two-year old children are frequently admitted to day-care facilities. Thus, due to those incentives, despite the prominent fertility postponement after 1990s, the early 1970s cohorts of woman in the Czech Republic registered a high level of fertility recuperation.

After Ukraine gained independence in 1991, the Ukrainian government began to finance its own social protection programs, but the proportion dedicated for family programs was minimal. Child assistance has increased substantially since 2005. It was introduced a one-time payment of $677 following the birth of a child, and $1023 to be paid throughout the course of the next year. Additionally, during three years after the birth of a child, women could receive maternity payments based on household income, but not less than $18 per month [16]. The access of the payment benefit is also important (one-time payment following the birth of a child and during three years after the birth of a child) those benefits however were limited [16]. Some regions experienced budget deficit, thus the payments could be delayed. Moreover, the application process was limited to a six-month period when mothers had to collect many documents and to deal with inefficient bureaucracy. The payments also do little to address larger socio-economic problems, such as low living standards, insufficient wages, or expensive housing [16]. Thus, although the Ukraine's family policy appears to be generous in terms of payment and maternal leave, the irregularities of payment, insufficient support throughout the period of childrearing, the neglect of childcare facilities and poor accessible housing reduce the policy's effectiveness.

Family policies in the analysed countries differ with respect to their magnitude, the attainment in work and family life balance, gender equity and the ability of the state to systematically and into a well-organized way improve them. The Swedish family policies can be considered a model case of policies supporting childbearing due to its social orientation, effective organization and generosity that seem to be effective on both the well-being of families and its member's number.

Conclusions

The results of the research show that the diversity of fertility levels of the 1970s cohort of women is determined by the diversity in recuperation of the postponed births. Countries such as Sweden and the Czech Republic, which experience the stronger recuperation of the postponed births, have a final cohort fertility higher than in countries with weaker Recuperation Index, such as Spain and Ukraine. In addition, the study revealed that the low fertility levels of the early 1970s cohorts compared to 1960 cohort in the four analysed

countries were driven by the diverse recuperation attainment according to birth orders. The low fertility in Ukraine was influenced by the reduced recuperation especially of the second birth, while in Spain the low cohort fertility is also driven by the increase in childlessness. The stronger recuperation of the second birth explains the relative higher cohort fertility levels in Sweden.

The comparative approach has allowed identifying some factors that have influenced different levels of birth recuperation. Due to the policies that encourage gender equality and availability of high-quality childcare provision, Sweden has a high recuperation of second and third birth. The limited recuperation of the postponed births in Spain is a result of the persistence of double burden for women born in the 1970s and of the rigid labour market. A successful transition to the market economy and accessibility of childcare provision allowed the Czech Republic to have a higher recovery of second birth than other ex-socialist states such as Ukraine. In the later, the early fertility regime is still being maintained among women born in the early 1970s, while the low recuperation of second births is the result of insufficient childcare provision, the deteriorated intergenerational support, a continues double burden for working mom and weak accessibility of housing.

The future fertility trends in Spain, the Czech Republic and Ukraine will be conditioned by the social reaction to the continuous decrease in fertility among young women cohort. The economic and social stability presents the main factors that will influence the reproductive behaviour of the younger generations.

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BENEFITS FOR ADULT EDUCATION AND LEARNING IN SUSTAINABLE DEVELOPMENT

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The aim of the presented paper is to indicate the role of education with regard to the concept of active ageing as a phenomenon which is stimulating and determining sustainable development. The presented deliberations are mainly of theoretical character, extended with literature of the subject and statistical studies. The main conclusion coming from the paper is the conviction that systemic and long-term education is an opportunity and guarantee of active ageing, it favours the social inclusion of an individual and conditions the implementation of sustainable development.

Keywords: adult education, ageing, development, lifelong learning, participation.

Scopul lucrării constă în descrierea rolului educaţiei în cadrul conceptului de îmbătrânire activă ca fenomen care stimulează şi determină dezvoltarea durabilă. Deliberările prezentate sunt, în principal, de natură teoretică, bazate pe analiza literaturii de specialitate şi datelor statistice. Concluzia principală a studiului se rezumă la faptul că educaţia sistemică şi pe termen lung este o oportunitate şi garanţie pentru îmbătrânirea activă, favorizează incluziunea socială a unui individ şi creează condiţii pentru dezvoltarea durabilă.

Cuvinte-cheie: educaţia adulţilor, îmbătrânire, dezvoltare, învăţarea pe tot parcursul vieţii, participare.

Цель работы состоит в анализе роли образования в рамках концепции активного старения, а также как фактора, стимулирующего и определяющего устойчивое развитие. Представленные результаты носят в основном теоретический характер, основаны на анализе литературы и статистических данных. Главный вывод исследования состоит в том, что системное и долгосрочное образование является возможностью и гарантией для активного старения, способствует социальной интеграции индивида и созданию условий для реализации устойчивого развития.

Ключевые слова: образование взрослых, старение, развитие, непрерывное обучение, участие.

Introduction

Traditionally formed values, life, social and professional experience are the foundation of human life. In the postmodern world, however, we experience so many changes that they force us to undertake intensive update of our own identity, which may lead to uncertainty, anxiety, insecurity or doubt. Such new experiences can be particularly difficult to an elderly person who faces challenges he or she has never faced before. The patterns of ageing and experiencing old age differ from those fixed in our awareness, which may make experiencing one's own old age extremely difficult. On the one hand, the average life expectancy is increasing, as a result of which the period of experiencing old age is increasing in a natural way. On the other hand, acquired lifelong experiences will generate the quality of ageing thus contributing to sustainable development.

I define education as a complex process which should prepare an individual and society to the ageing process. It is not only the matter of being aware of changes taking place in life but also being able to adapt to such changes ensuring the longest possible independence and self-reliance to oneself. Therefore, education is an inherent part of active ageing, and its role in individual stages of human lifecycle is becoming

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more and more important. In the concept of active ageing learning is perceived as a lifelong and continuous process comprising all areas of human life. In such a dimension education is implemented in the formal, informal and non-formal system. Each of those systems aims at teaching so that it could be possible to live together and participate in social life, to know how to participate in this life and derive as many benefits from it for oneself and for society as possible.

Education for old age and in old age - the update of knowledge, qualifications and skills

It is assumed that education can facilitate seniors' adaptation to social, cultural or economic changes which accompany contemporary societies. It is important for it to start at an early period of life, owing to which "meeting old age" will be less acute. Special significance of education should be assigned to middle age, when the first signs of the ageing of the body appear. It is usually the time of reconciliation with the fact that children are gradually leaving home and becoming independent, and the time of care for ageing parents. Thus, a necessity appears to accept conflicting trends arising from biological, physical, mental or economic changes [1].

Therefore, youth and old age, activity and passivity, integration and isolation can occur simultaneously, and the acceptance of these trends will be the sign of wisdom and maturity towards the experienced changes. In middle age we should consolidate and develop competences acquired previously, and acquire new ones which will enable to keep balance between the past, the present and the future, which will be the testimony of the implementation of specific developmental tasks [14].

Taking the above into consideration, we can assume that preparation to old age will consist in maintaining life activity as long as it is possible due to health reasons with the simultaneous maintenance of previous interests and discovering new areas within family and social contacts. Such activities may serve the limitation of the social isolation of seniors and primarily their loneliness, but this requires high awareness of one's own needs and habits, as well as the ability to adapt to changing conditions [10].

Education, as a system of learning and acquiring competences, has such varied areas of influence that it can be implemented both in educational institutions and outside them, for example in the family or social environment [11]. Elderly people use mostly informal and non-formal forms of education, implemented outside the institutional education system. Thus, in the process of seniors' education a lot of importance is attached to practical activities which are often implemented during conversations and social meetings, where the exchange of information is the source of knowledge and keeping in touch influences the perception of the world surrounding us. This learning affects better understanding of the world and oneself [16], which translates into a better quality of living.

The civilisation progress and the dynamic social development impose permanent learning on an individual, which is defined as a lifelong process of acquiring knowledge, qualifications and skills. This form of education, along with formal and informal education, plays a special role in the process of the preparation to old age, and its advantage is a lot of freedom in the choice of tools and methods responsible for a change in the perception of old age and the role of an elderly person in society [6].

A characteristic feature of the elderly population is high variety in terms of the level of education, family or economic situation, because of which their educational needs will be also varied. It is also related to life experience they have acquired all their life, to habits and expectations towards the approaching or just experienced old age. In the period of late adulthood and early old age there is the reduction of opportunities to extend one's competences, because of which the sense of rejection, isolation and uselessness may intensify [21]. Therefore, it is very important to create an educational offer for seniors, which would consider their resources and individual needs. Thus, it indicates the necessity to design educational activities for the elderly that would take into consideration changes taking place in their lives [17].

The elderly, through the participation in education, more and more often find not only intellectual and cultural entertainment but also mental training which is the path to permanent development and maintaining self-reliance and independence as long as possible [5]. Therefore, the concept of lifelong learning, according to which education is an open and never ending process, is becoming more and more important [13]. In such an approach, it is implemented through all aforementioned forms of education which are undertaken throughout one's life in order to broaden one's knowledge, develop skills and competences in the individual and social context. Via lifelong learning an individual has an opportunity to become the source of competitiveness not only on the labour market but also in the sphere of social and family life. Thus, promoting the lifelong learning concept serves to support active and productive ageing.

Contributing to the continuous development of an individual, lifelong learning meets the assumptions of sustainable development, which aims at self-improvement of an individual, the prevention of social exclusion and an increase in the value of human capital [3]. Ultimately, it translates into economic growth and the improvement of the quality of living of citizens. Therefore, we can assume that by raising educational awareness and expenditure on education it is possible to create innovative economy guaranteeing the responsible development of future generations.

Active ageing in the context of sustainable development

The problem of undertaking activity by elderly people inscribes into the concept of successful ageing, which defines three basic criteria authorising to claim that this is the type of ageing we have to do with. The most important determinants are considered to be low level of disability, high level of independent physical and mental functioning, as well as active participation in life [6]. According to the adopted concept, it means the use of all available human resources for the optimal preparation to the ageing process. Ageing is a natural process and valuable experience for the vast majority of people. The way of going through old age will depend on external and internal factors complementing each other. In terms of internal determinants, a significant role will be played by in-born psychological predispositions, responsible for the state of will and mind, as well as individual qualities of an individual. External factors always depend on an individual's living environment, including, among others, place of residence, housing conditions, professional and family situation, social position, accessibility to medical services and their quality [8].

In accordance with the sustainable development concept, also the EU, referring to the problems of ageing, is developing the promotion of active ageing which is defined as a tool of prevention against population ageing by influencing individuals and making them aware of the necessity to prepare to long individual old age. The preparation involves job, health, education, social activity or securing proper level of life [19]. The main assumption of the promoted concept of active ageing is the belief in the necessity of the longest possible maintenance of social utility of an individual, which refers to all areas of an individual's area of activity with the exclusion of housework, care and assistance to family members and friends [20].

In the context of active ageing, attention is paid to human life as a process in which an individual should properly prepare to old age. Any forms of activity condition meeting human needs, fulfilling specific social functions, functioning in a group and in society. Lack of activity in this case may bring about the loss of the acceptance of the environment up to isolation and social exclusion, and, in consequence, loneliness [18]. Therefore, the theory of activity remains naturally the opposition to the withdrawal theory according to which with age elderly people give up previous forms of activity. The condition of successful and satisfying old age may lie in long-term implementation of all kinds of activity which will translate into seniors' quality of life and their self-assessment. All possible forms of activity may be regarded as a very important psychological and physical need in any age, and lack of patterns of spending free time actively is a consequence of common and passive lifestyle [7].

Acquiring patterns of active ageing is conditioned by adequate traits of an individual, which will play important cognitive functions in everyday life. Among them there are: courage, optimism, honesty, hope, insight, ability to engage and struggle against difficulties. They will be responsible for increasing the well-being of an individual, even when accompanied by the worsening health or occurring unfavourable changes in an individual's life. Positive ageing being a pillar of active ageing is a specific state of mind and specific strategy of activity [12]. Experiencing old age and shaping this process actively require internal discipline and individual work consisting in the use of motivation and possessed resources to accept age-related changes. It also seems purposeful to adjust choices of a specific lifestyle to physical and mental abilities of a person so that it could be possible to experience satisfaction from the quality of one's own life. Moreover, the ability to notice positive aspects of own life by keeping distance to difficulties being the consequence of the ageing body is also significant. Also the technique of adaptation to changing conditionings and the ability to make use of various forms of support in the situation when independence becomes limited is also necessary [8].

In the course of research works, the concept of active ageing spread to all aspects of human life and began to be identified with social productivity expressed as abilities of people to live productively in society and in economy, during the whole ageing process, thus contributing to sustainable development. In such an approach the elderly should have the ability to make choices as for spending their free time or the dynamics of professional and social activity. On the other hand, when choices are limited by health, architectonic, urban barriers, maladjustment of the workplace, then systemic solutions eliminating such limitations should work. Such an approach becomes an inseparable part of the multidimensional concept of active ageing created by

the World Health Organisation, which draws special attention to the necessity to optimise complex activities influencing the improvement of the quality of seniors' life. Therefore, there is an indication to health, participation and safety, owing to which people should learn all their life, retire gradually and in later age, maintain activity taken on previously. Good physical condition and high fitness is supposed to serve this goal, which will enable to perform family functions, pursue life passions and creative activities, do sport and tourism, participate in the life of local community, develop voluntary work [9].

In addition to the concept itself, the World Health Organisation defined the most important determinants of active ageing, of which it regarded gender and cultural conditionings as the most significant. The pattern of ageing will be defined by norms, values and customs which operate in the family environment and local community with the simultaneous social acceptance for individual stages in human life, and most of all the last stage, related to old age and ageing. The other important factor responsible for ageing is considered to be gender which sets male and female roles in this process. Women are more often endangered with poverty and social exclusion in the old age stage, as a result of greater involvement in the household. It is often related to the necessity of providing care to other family members, including children, grandchildren, dependent or disabled relatives. On the other hand, men are more frequently exposed to diseases and occupational risks, as well as bad health being the consequence of using stimulants or the lack of proper preventive medicine [9].

Therefore, active ageing is a multidimensional process for which detailed activities aiming at the raise in the quality of life of the elderly are responsible, and this will translate into the reduction of public spending related to retirement benefits, health and care provision services.

Ultimately, also the reduction of burdening with seniors should be expected. In order to achieve such benefits, active ageing should consider all activities activating seniors, and its main task should be the prevention of social exclusion of this group. It means the necessity of education until old age, which should be acquired in each stage of human life, and education in old age, which will facilitate overcoming difficulties arising from the ageing of the body. We learn activity all our life so that in the last stage of life active ageing could be the consequence of active participation.

Educational activity of elderly people in Poland and in the European countries

Seniors in Poland are characterised by low educational participation measured with the participation in formal and informal education. Educational activity of seniors is characterised by a significant level of diversity in terms of gender, place of residence and education. Unfortunately, also age significantly affects the level of participation in education, the older people are, the less frequently they take part in raising competences. Among people above 50 in 2011 more than 67% did not participate in any form of education. Informal education, most popular among seniors, dropped from 24.5% in the group of 50-54 year olds to 15.6% in the group of 65-69 year olds. A dynamic decline is also observed in the case of non-formal education which in the case of the population of people aged 65-69 was only 2.8%, and among people aged 50-54 the percentage was 17.9% [2].

Table 1

Adults (aged 25-64) participating in education and training in Poland in the years 2012-2016, %

	2012	2013	2014	2015	2016
Poland	4,5	4,3	4,0	3,5	3,7
Female	5,1	4,9	3,6	3,3	4,0
Male	3,8	3,8	4,3	3,8	3,4

Source: GUS 2017, Kapitał ludzki w Polsce w latach 2012-2016, p. 150.

Low educational participation of the elderly in Poland is the consequence of passiveness of the involvement in the life-long learning process. The analysis of the scale of participation in education of people aged 25-64 shows that the participation rate in this age group in any form of education has been decreasing since 2012. Higher educational activity is presented by women but over the recent years, unfortunately, also in this group the percentage of participants in forms of education and learning has gone down. For comparison, the percentage of adult Europeans (EU-28) taking part in education and learning in 2016 was 10.8% and it was by 1.7% more than in 2011.

The European countries in which the participation rate in life-long education has exceeded 20% include Switzerland, Denmark, Finland, Sweden and Island. On the other extreme, in addition to Poland, there are Romania, Bulgaria, Slovakia, Croatia and Greece [4] [Eurostat, 2017].

Figure 1. Participation of people aged 25-64 in education and learning in Europe, in 2016
Source: Own compilation based on: Eurostat 2017, Adult learning statistics, Lifelong learning, 2011 and 2016, http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Lifelong_ learning,_2011_and_2016_(¹)_(%25_of_the_population_aged_25_to_64_participating_in_education_and _training)_YB17.png [15.12.2017].

We reach similar conclusions using the data of *Labour Force Survey*, conducted by Eurostat in 2015, which analyses participation in education or learning of people aged 15-74. In Poland the participation level of the elderly aged 55-74 in education and learning is among the lowest in the EU countries and is as low

as 0.6% in comparison with the average of 4.8% in the studied countries and 22.0% in Denmark – the country being the leader of the studied activity. Such low educational activity of seniors in Poland is a permanent phenomenon and in the last decade the participation level never exceeded 1%. What is also surprising is high discrepancy between the participation level in education and learning of people at the threshold of adulthood, aged 15-19, and elderly people, aged 55-74. In Poland, educational activity of young people is the highest among the EU countries and makes up 92.5%. With 0.6% of activity of seniors we are on the last position, with the highest difference in the participation levels of the youngest and the oldest age groups included in the study[1].

Conclusions

The participation of elderly people in educational projects is one of the areas of the active ageing concept. Regardless of deficits which occur in the human lifecycle, we can prepare to old age and ageing. However, we should learn positive and active ageing before we grow old, and in fact it would be the best to be able to learn all our life. Yet, to do this, adequate education is needed which will be addressed to individuals and the whole society. Taking into consideration ageing people, education in old age will facilitate their "adaptation" to changes undergoing in their lives, in the personal, health and social spheres. This area of the impact of education will also involve taking new social roles and preparing to individual old age. The confrontation of acquired competences with the future stage of life should enable partial maintenance of the possessed areas of activity and discovering totally new ones.

Due to very low participation in lifelong learning in Poland, the development of education in the active ageing process requires numerous systemic actions. First of all, a group of participants should be defined, which would consider elderly people, teenagers, entrepreneurs and employers, social and educational institutions. An important task is also striving for the growth of the awareness that the development of education in the lifelong learning process will be one of the determinants of the quality of life. A proper educational offer is needed for that, adjusted to the needs and abilities of each group of participants. Only then can such long-term and systemic actions contribute to the development and reinforcement of specific educational culture which will strengthen its position in the active ageing concept. Today, the population ageing process is posing new tasks to the education system, especially the lifelong one, and it is expected that the development of this system will contribute to better experiencing old age and preparation to it.

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MORTALITY FROM EXTERNAL CAUSES OF DEATH IN THE REPUBLIC OF MOLDOVA

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The Republic of Moldova is among the countries with a high mortality from external causes of death, for males being 2.6 times higher than in the Western European countries and 1.5 times higher for females. The purpose of the study is to analyse trends in mortality from external causes of death and to estimate its contribution to the change of life expectancy at birth between 2000-2014 years. The study is based on the Human Cause-of-Death Database and on the residence population data. The results of the research show that mortality due to external causes of death stagnates for both sexes in 2000-2014 years. A higher level of mortality due to external causes of death is specific for men. External causes of death account for 20% of total increase in life expectancy at birth for 2000-2014 period in case of males, for females the impact of external causes is just over 9%. Mortality due to external causes of death is characterized by a much younger structure compared to general mortality. In case of males over 80% of the total deaths for the 15-19 age group are due to external causes of death. The increase of the share of deaths due to external causes is observed in the 20-24 and 25-29 age group. For males, the main five subgroups of external causes are suicide and self-inflicted injuries, other accidents and late effects of accidents, transport accidents, other accidental breathing threats, accidental poisoning with other substances. For females, there are other causes: other accidents and late effects of accidents, other accidental breathing threats, suicide and self-inflicted injuries, transport accidents, assault. Males mortality for different subgroups from external causes of death is four times higher than that observed for females.

Keywords: external causes of death, structure, discrepancies, contribution.

Republica Moldova se situează printre ţările cu un nivel înalt al mortalităţii prin cauze externe de deces, pentru bărbaţi aceasta fiind mai înaltă de 2,6 ori decât în ţările Europei de Vest, iar pentru femei de 1,5 ori. Scopul studiului a constituit analiza tendinţelor mortalităţii prin cauze externe de deces şi estimarea contribuţiei acesteia la formarea diferenţei în speranţa de viaţă la naştere între anii 2000-2014. Studiul se bazează pe datele din Human Cause-of-Death Database şi datele cu privire la populaţia rezidentă. Rezultatele cercetării demonstrează că mortalitatea prin cauze externe de deces în perioada 2000-2014 stagnează, iar în grupele de vârstă 20-24 şi 25-29 ani este înregistrată o creştere a ponderii deceselor prin cauze externe. Un nivel mai înalt al mortalităţii prin cauze externe de deces este specific pentru bărbaţi. Cauzele externe de deces explică 20% din creşterea totală a speranţei de viaţă la naştere pentru bărbaţi şi puţin peste 9% pentru femei. Mortalitatea prin cauze externe de deces este caracterizată de o structură mult mai tânără comparativ cu mortalitatea generală. Pentru bărbaţi peste 80% din decesele înregistrate în grupul de vârstă 15-19 ani revin deceselor prin cauze externe, principalele cinci subgrupuri ale cauzelor externe de deces fiind: suicidul şi autovătămări intenţionate, alte accidente şi efecte întârziate ale accidentelor, accidente de transport, alte accidente afectând respiraţia, otrăvirea accidentală prin şi la expunerea la alte substanţe. Pentru femei se evidenţiază alte cauze principale: alte accidente şi efecte întârziate ale accidentelor, alte accidente afectând respiraţia, suicidul şi autovătămări intenţionate, accidente de transport, agresiune. Mortalitatea bărbaţilor pentru diferite subgrupuri ale cauzele externe de deces este de patru ori mai mare decât cea observată în cazul femeilor.

Cuvinte-cheie: cauze externe de deces, structură, discrepanţe, contribuţie.

Республика Молдова входит в число стран с высоким уровнем смертности от внешних причин, который по сравнению со странами Западной Европы в 2,6 раза выше для мужчин и в

1,5 раза – для женщин. Целью данного исследования является анализ тенденций смертности от внешних причин смерти и оценка ее вклада в изменение ожидаемой продолжительности жизни при рождении в 2000-2014 гг. Исследование основано на данных Human Cause-of-Death Database и данных о наличном населении. Результаты исследования показывают, что за 2000-2014 гг. уровень смертности от внешних причин изменился незначительно, а в возрастных группах 20-24 и 25-29 лет наблюдается некоторое увеличение доли смертей от внешних причин. Внешние причины смерти составляют 20% от общего повышения ожидаемой продолжительности жизни при рождении для мужчин и чуть более 9% для женщин за 2000-2014 гг. Смертность от внешних причин характеризуется гораздо более молодой структурой по сравнению с общей смертностью, среди мужчин более 80% всех смертей в возрастной группе 15-19 лет обусловлены внешними причинами смерти. Для мужчин основные пять подгрупп внешних причин составляют самоубийства и преднамеренное самоповреждение, транспортные несчастные случаи, другие несчастные случаи и отсроченные последствия несчастных случаев, другие несчастные случаи с угрозой дыханию, случайное отравление и воздействие другими веществами. Для женщин основные подгруппы причин составляют: другие несчастные случаи и отсроченные последствия несчастных случаев, другие несчастные случаи с угрозой дыханию, самоубийства и преднамеренное самоповреждение, транспортные несчастные случаи, нападения. Смертность мужчин в подгруппах внешних причин смерти в четыре раза выше, чем у женщин.

Ключевые слова: внешние причины смерти, структура, различия, вклад.

Introduction

According to WHO data, mortality from external causes of death is in the 10 top leading causes of death across all countries. Mortality from external causes of death in the European Union countries is the fourth leading cause of death in the total population of EU 28. About 60% of all deaths in the 20-24 age group are from external causes of death. There are regional variations of up to four times between mortality rates from external causes of death among countries in the region [16]. The main cause is the suicide followed by other accidents, unintended falls and transport accidents.

At the same time, there are substantial discrepancies between the Eastern and Western European countries mortality patterns, which lies not only in the level of mortality rates but also in the probability of the newborn death, due to a particular cause. Thus, the specificity of the mortality pattern in the Eastern Europe differs from that in the Western Europe by the excessive mortality from external causes, especially in the case of males [12].

The issue of death from external causes of death is more important in low and middle-income countries [17]. This is largely determined by the high costs involved in reducing it. At the same time, reducing mortality from external causes is expressly stipulated in the Sustainable Development Goals promoted by the member countries of the UN [11].

The Republic of Moldova is among the countries with a high mortality from external causes of death, being 2.6 times higher for males than in the Western European countries and 1.5 times higher for females [9]. The leading cause is suicide, followed by accidental falls, drowning and exposure to electricity or fire and third – transport accidents. Moreover, the mortality from external causes of death, in the context of premature mortality, is the most important cause of death among males in the Republic of Moldova [7].

External causes of death include a heterogeneous collection of events including the three major categories – suicide, homicide, and accidental death. These causes of death represent a significant proportion of potentially preventable mortality and an important source for increasing life expectancy at birth. Reducing the number of deaths of children and adolescents is a priority of the health policy of many countries [4].

External causes of death such as accidents and violence, include environmental events, circumstances and conditions as the cause of injury, poisoning, and other adverse effects [3]. Deaths from external causes are not caused by certain diseases, but rather by some external factors that physically influence the human body through mechanical, chemical, thermal and radiation afflictions that go beyond the physiological defence threshold of the body or by depriving it of some vital elements [15]. Thus, the quality of

infrastructure, the political and economic situation, the environment, the professional activities of the population, but also other factors, play a special role in the mortality intensity from these causes. Respectively higher income countries have lower rates of mortality due to external causes than lower and middle-income countries.

Socio-economic factors have the greatest impact on external causes of death. They have the ability to determine the appearance or strength of exogenous or endogenous factors, aggravating or neutralizing their impact.

Due to unstable general socio-economic situation, healthy practices – disease prophylaxis, periodic medical consultation, a healthy diet and a physical activity – are neglected that lead to poor health behaviour. Therefore, even the health is at the top of population values, the culture of healthy behaviour is still not a priority. Socio-economic factors in this respect have strong links with behavioural factors, the links being valid in both directions. At a time when people with low living standards cannot meet their basic needs health is not seen as a goal itself, but as an instrument by which a better living standard can be achieved, or certain goods can be acquired.

Another important factor that generates discrepancies in mortality from external causes of death is sex. Thus, for males there is a higher level of mortality from external causes of death. This is due to certain aspects of the male's professional and recreational activity, which usually present a higher risk than for females. In addition, males have a more irresponsible attitude towards their own health. Thus, even if males assess their own health at a higher level than females, healthy practices are still not a priority for them, self-care being considered a feminisation of male behaviour [17].

The previous studies realized for Eastern Europe countries demonstrated that the most affected age group of deaths from external causes is the working-age population leading to loss of human capital. The comparative analysis demonstrates the different pattern of overall mortality rates observed in Russia compared to other developed countries that provide a firm stance on external causes of death in the top three leading causes of death, but also on the different structural pattern. Sex differences are limited to the mortality rate rather than its structure, with differences being noted only in the first five causes of death – suicides, transport accidents, falls, accidental alcohol poisoning, accidents of unknown character [13, 15]. Mortality from external causes in urban and rural populations strongly correlates with the education level. Educational inequalities have increased throughout the period of socio-economic transition. The greatest educational inequalities were observed in suicide mortality, especially among males [6]. High suicide rates across Eastern Europe have been correlated with the post-Soviet transitional period and the societal changes associated with that transition. Despite a gradual decline in suicide mortality over the past decade, Eastern European countries still have one of the highest suicide rates in the world. It is determined by the sweeping social change and growing economic polarization that has been occurring over the past two decades during transition to a "new society" [5, 10].

The situation regarding the mortality from external causes of death in the Republic of Moldova was analysed by Penina O., Vallin J., Meslé F. [14]. It highlights the periods of growth and mortality reduction by external causes of death for both sexes, pointing to existing discrepancies. Thus, for males, mortality from external causes of death increased from 1965 to the late 1970s, afterwards a stabilization was registered until 1985. The period 1985-1987 is characterized by a sudden reduction followed by another period of sudden growth until 1995. After 1995 until the beginning of the 2000s, mortality rates due to external causes of death in the case of males decreased, but this is followed by an unfavourable period of mortality growth in 2001. Since 1985 females are experiencing lower fluctuations in mortality rates due to external causes of death and has been observed a strong trend of mortality reduction from external causes of death. However, it was eventually followed by a stagnation period. The authors concluded that the increase in mortality from external causes of death is largely determined by the increase of mortality in the age group over 35 years. There was a reduction in mortality from external causes of death in the younger age group.

The mortality by transport accidents was studied by Bargan N. [2]. Thus, the research showed that the most affected age group by this cause of death is 20-39 years. It has also been found that pedestrians are more often victims of transport accidents than drivers are or their passengers.

The aim of this study is to analyse trends in mortality from major external causes of death and to assess the contribution of external causes of death to life expectancy at birth.

This study is focused on the evolution of mortality from external causes since the beginning of that century and is limited to the years 2000-2014. The 2014 is the last available year in the used sources.

Availability and quality of causes of death data

An important problem regarding the statistical data for the Republic of Moldova is the number of exposed to risk population. Because the country has high levels of emigration, there are substantial differences between the de facto and the de jure population numbers. For the correct mortality calculation, including from external causes of death, data on the number and structure of the resident population of the Republic of Moldova estimated by Penina O., Jdanov D. and Grigoriev P. were used. The life tables used in that study were taken also from that source [8].

Data on causes of death were taken from The Human Cause-of-Death Database, which are in accordance with the ICD-10. Data on the distribution of deaths by causes, the age-specific death rates and the standardized death rates from the shortlist and intermediate list were selected. The method of components of Andreev E. was used to perform the decomposition of mortality [1].

Main results

The external causes of death account for about 8% of the total deaths recorded during the year 2014 (Fig. 1) and ranked fourth among other major causes of death. This share is maintained throughout the analysed period 2000-2014. Thus, based on the data on the number of deaths from major causes of death, over the period 2000-2014, there were 53 thousand deaths from external causes for both sexes or 8.4% of total number of deaths. The fact that the share of deaths due to external causes for the whole period coincides with the share recorded for the last analysed year denotes the stagnation of the phenomenon over time. This is also confirmed by the very close share of mortality from external causes of death recorded for the years 2000 and 2014. The attested reduction was insignificant - 0.4% (Fig. 2).
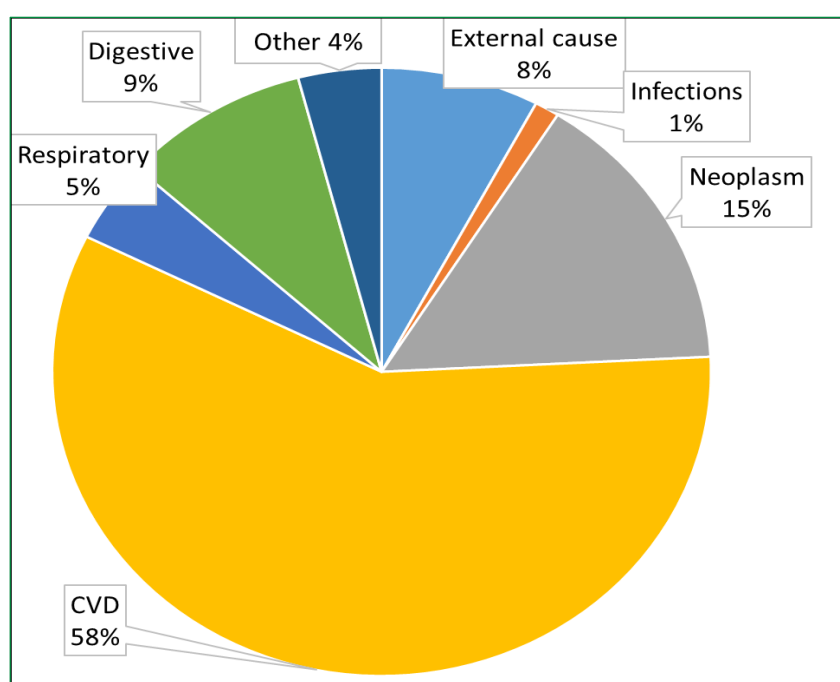

Figure 1. Share of deaths by major causes of death in total number of deaths, both sexes, 2014

Source: The Human Cause-of-Death Database.

The analysis of external causes of death from a sex perspective highlights major gender differences. Thus, mortality from external causes of death is a predominant problem for males. This situation continues over time. The mortality from external causes of death for males in 2000 was the second main cause of death. In 2014 the external causes of death ranked third. This decline was largely determined by the increase in deaths by tumours and less by the reduction in mortality from external causes of death. The share of mortality from external causes of death was reduced by only 0.5%. The reduction for females is also insignificant, but mortality from external causes of death is not a top cause. In addition, the gap between males and females remained the same in the analysed period, representing 8.3-8.4% to the detriment of males (Fig. 2).
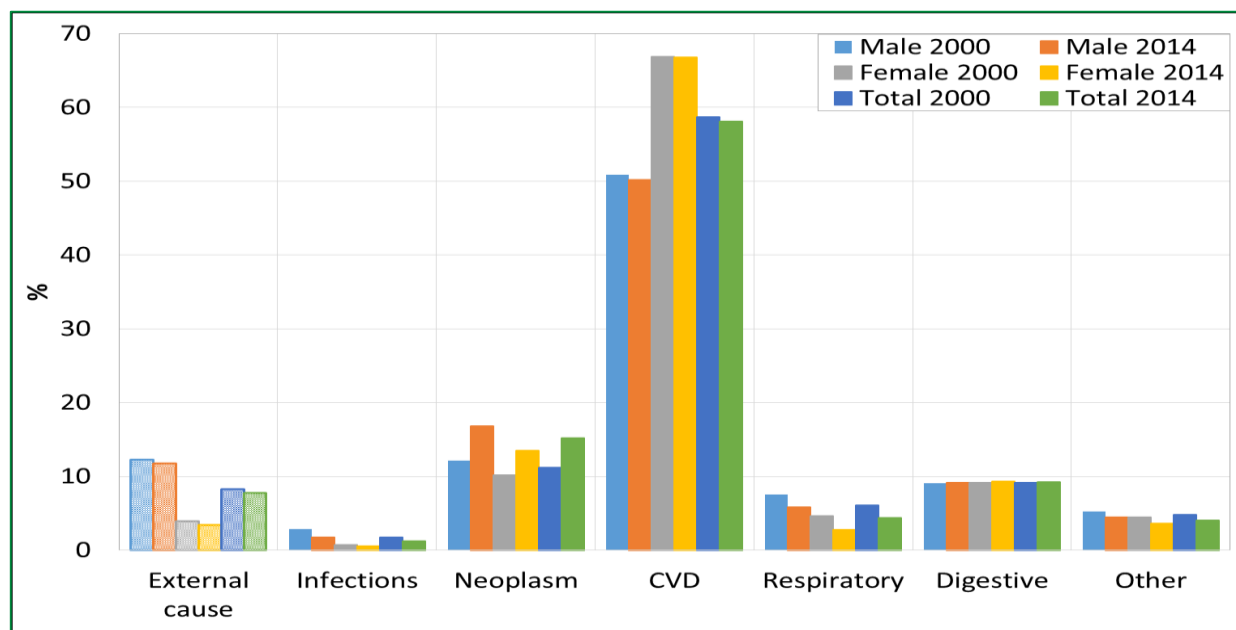
Figure 2. Share of major causes of death by sex, 2000, 2014
Source: The Human Cause-of-Death Database.

The analysis of the evolution of the standardized mortality rate from external causes of death demonstrated the stagnation of the indicator in the period 2000-2014. We have to mention that stagnation was characteristic for both sexes. In addition, SDR for external causes of death for males is four times higher than that for females. Differences between females and males have remained at the same level for the entire analysed period (Fig. 3).

Figure 3. Dynamics of SDR for external causes of death,
by sex and total population, 2000-2014
Source: The Human Cause-of-Death Database.

The contribution of mortality from external causes of death to the difference in life expectancy at birth for 2000-2014 period for males and females has very similar absolute values. The absolute contribution of external causes of death to the difference in life expectancy for the years 2000-2014 was 0.3 years for males, and 0.2 years for females (Table 1).

The analysis of these values in the context of total gains in life expectancy at birth denotes another situation. For males, life expectancy at birth in the period 2000-2014 increased by 1.5 years, while for females the increase was practically double, i.e. 2.6 years. Thus, the contribution of external causes of death for males represents 20% of total changes in life expectancy at birth for the period 2000-2014, while for females slightly over 9%.

Table 1

Total contribution of external causes of death in the formation of differences in life expectancy, by sex, 2000-2014

	Males	Females
e_0 for 2000, years	63.4	71.1
e_0 for 2014, years	64.9	73.7
The difference in e_0 for 2014-2000, years	1.5	2.6
Total contribution of external causes of death in difference of e_0, years	0.3	0.25
The share of the contribution of external causes of death to the difference e_0 (%)	19.9%	9.4%

Source: Author's calculations based on mortality life tables.

Sex differences are observed not only on a general level, on total external causes, but also on a structural level – on the age structure of mortality and on certain subgroups of external causes of death.

The analysis of the mean age at death from external causes and from total causes of death highlights major discrepancies (Table 2). This indicates the relatively young age structure for deaths from external causes compared to overall mortality for both sexes. If for external causes of death are reported older ages, this two indicators will have appropriate values. Analysis in dynamic shows that both indicators increase, but more pronounced growth is attested for mean age at death from external causes. Even if discrepancies remain high, there was a reduction in the variations between the mean age at death from external causes and the mean age at death from all causes of death for both females and males with 3.5 and 3 years respectively. In addition, the age structure of mortality for males is younger than for females. Mean age at death due to external cause of death was 4 years lower for males compared to females in 2000 and the gap increase in 2014 and represent 5.8 years. The tempo of changing age structure of mortality due to external causes of death is different for males and females. For males mean age at death due to external causes increase with 5.5 years, while for females was registered a growth of 6.9 years.

Table 2

Mean age at death from external causes and all causes of death, by sex, 2000 and 2014 years

Year	Males			Females		
	External causes	Total	Difference	External causes	Total	Difference
2000	42.8	61.1	**18.3**	47.2	68.9	**21.7**
2014	48.3	63.6	**15.3**	54.1	72.3	**18.2**
Difference 2014-2000	5.5	2.5	**-3.0**	6.9	3.4	**-3.5**

Source: Author's calculations.

More detailed analyses of age structure of mortality due to external causes of death shows that situation does not change essentially through 2000-2014 period (Fig. 4). Compared to 2000, in 2014 a shift to the right of the maximum contribution group from 20-24 years to the previous age group was observed. Thus, over 80% of the total deaths for the 15-19 age group are due to external causes of death. Also, an increase in the share of deaths from external causes is recorded in the age groups 20-24 and 25-29 years. No changes were observed in the 35+ years mortality pattern. In the case of women, the flat recorded for the age group 5-19 years in 2000 is replaced by an obvious increase for the 10-14 age group in 2014. Similarly, in the 2014 compared to 2000, the proportion of deaths due to external causes of death increases in the 15-19 age group. For the subsequent age groups there were no significant changes. Reducing the share of deaths by external causes after reaching the maximum in the 15-24 age group is explained by an increase in the number of deaths due to other causes of death and not by real reducing of number of deaths from external causes.
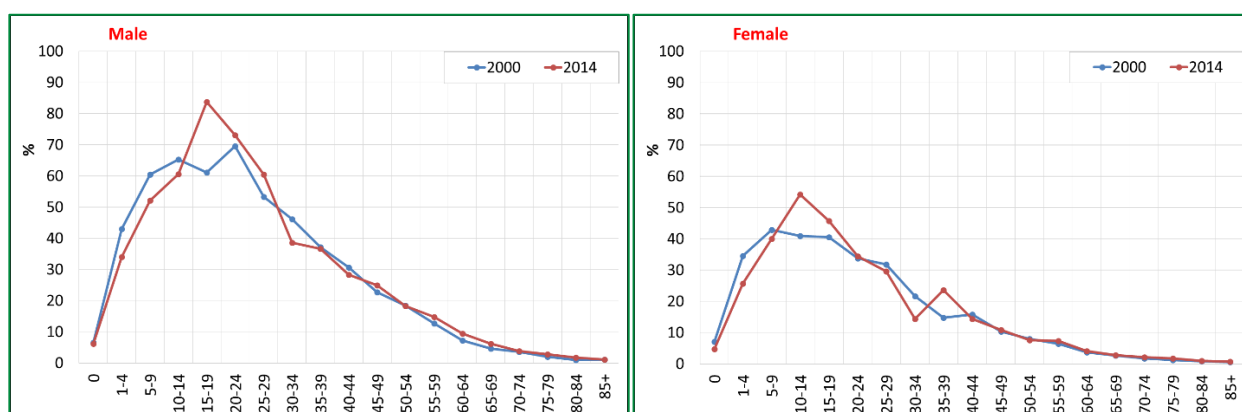
Figure 4. Share of deaths due to external causes from all deaths by age and sex, for years 2000, 2014, %

Source: Author's calculations.

In the case of males, the main five subgroups of external causes are suicide and self-inflicted injuries; other accidents and late effects of accidents; transport accidents; other accidental breathing threats; accidental poisoning with other substances. For females, there are other causes: other accidents and late effects of accidents, other accidental breathing threats, suicide and self-inflicted injuries, transport accidents, attacks.

Table 3

Standardized mortality rates by different external causes of death for Republic of Moldova, 2014

	SDR		Share from total external cause, %	
	Male	Female	Male	Female
Transport accidents	232	50	13.2	11.0
Accidental falls	134	26	5.9	5.1
Accidental drowning and submersion	107	32	5.8	7.0
Accidental exposure to smoke, fire and flames	81	27	3.3	5.3
Accidental poisoning by alcohol	110	29	5.7	6.4
Accidental poisoning by other substance	158	61	6.8	11.3
Other accidental threats to breathing	182	30	8.9	6.7
Suicide and self-inflicted injury	412	59	20.8	12.9
Assault	113	37	5.5	8.2
Event of undetermined intent	138	28	7.2	5.9
Complications of medical and surgical care	2	0	0.0	0.0
Other accidents and late effects of accidents (reminder)	346	98	16.9	20.1
Total	2013	478	100	100

Source: The Human Cause-of-Death Database.

Discrepancies between males and females remain at the same level in the structure of external causes of death. Thus, males mortality for different subgroups from external causes of death is four times higher than for females. Because of the desynchronization in the structure of deaths from external causes noted for males and females, structural differences are attested. Both the differences in the level and structure of mortality from external causes are defined by behavioural particularities and specifics of activities for both sexes.

For males, the most important cause of death in mortality from external causes of death is suicide and self-inflicted injuries. This is responsible for about 20% of all deaths due to external causes of death, for females, this represent only 12.3% of deaths. The gender gap in level of suicide is analysed in many other studies. One of the main factor is the difference in coping with stressful situations and the closeness to social networks. Females are more closely involved in social networks and have a complex approach to solving depressed situations. Thus, there are certain "protective factors", which subsequently determine the

discrepancies in the acceptance and application of suicidal behaviours. In addition, the alcohol abuse is an important cause in driving to suicidal behaviour, which also represent a higher risk for males.

Another cause of death that is crucial for both sexes is other accidents and late effects of accidents. In the case of males, this is slightly over 17% and for females slightly over 20% of total deaths from external causes. We assume that the mortality caused by late effects of accidents is caused by low quality of emergency medicine, as well as by the poor rehabilitation conditions in the post-accident period.

The third most important cause for males is transport accidents, while for females this is the fourth. Males are more likely to be exposed to the risk of death caused by transport accidents due to the predominance of males in road traffic but also by professional and recreational activities. For males, deaths from transport accidents account for 11.5% and for females 10.5% respectively.

In case of accidental poisoning with alcohol, the sex ratio is 2.4, therefore mortality is 2.4 time higher for male than for female. Despite that this is not one of the main causes of external causes of death, it is a major problem. On the one hand, this subgroup is a very narrow, formed by only one cause of death. On the other hand, this cause of death has a direct link to the lifestyle or the risk behaviour and mortality. Mortality from accidental poisoning with alcohol is a consequence of excessive alcohol consumption.

Conclusions

During 2000-2014 period, a mortality stagnation from external causes of death for both sexes is observed and the gender gap was maintained at the same level. Mortality analysis by external causes of death through its contribution to the differences in life expectancy at birth for 2000 and 2014 years has shown a reduction in deaths with a greater impact on males than females. Sex differences are not limited to mortality alone but also to its causal structure.

Reducing the intensity of mortality from external causes is a major challenge for authorities due to the complexity of policy implementation actions, as well as the significant costs needed for implementation. Actions to reduce the intensity of mortality from external causes are long-term prospects and their results are visible in the years after the implementation. The lower resources for decreasing mortality from external causes are allocated, more funds for continuation of this process will be needed. The decrease in the number of traffic accidents will be possible due to considerable investments in the road infrastructure, but also the introduction of new standards of the traffic code, which meets the standardization requirements of the EU Member States.

The late effects of accidents could make a lower contribution to mortality due to modernization of medical equipment, proper medical training, and the development of emergency medicine infrastructure. In case of accidental poisoning by alcohol, the importance of legislative regulations on the preservation and marketing of alcohol (including illicit or unsafe products), and the standardization of the quality of alcohol products.

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