Vasylieva, T., Jurgilewicz, O., Poliakh, S., Tvaronavičienė, M., & Hydzik P. (2020). Problems of measuring country's financial security. *Journal of International Studies, 13*(2), 329-346. doi:10.14254/2071-8330.2020/13-2/22

Journal of International Studies

Scientific Papers

Problems of measuring country's financial security

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Abstract. The aim is to define the key issues ensuring financial security of a country. The studies proposes a technique to calculate a country's quality management index for a financial as a weighted average of the country's overall compliance with key international standards, rules and principles in the sector. The study uses statistical information from the Consultative Group to Assist the Poor, the World Bank Database and the Organization for Economic Co-operation and

Received:
June, 2019
1st Revision:
February, 2020
Accepted:
May, 2020

Development, to study financial security of the population in 142 countries with different levels of economic development. 47 variables, grouped into 10 aggregates, were included in the study: Disclosure of information upon opening a deposit account, Disclosure of information upon opening a credit account, Disclosure of general information, Periodic disclosure upon opening deposit accounts, Periodic disclosure Monitoring, Enforcing, Fair treatment, Recourses, Standards for complaints resolution. Analysis of the results show that the levels of financial security in the studied countries have a wide variation from the minimum to the maximum values. We see that among the countries with high levels of economic development, the leaders are Italy, Canada and Puerto Rico. Transition economies include Venezuela, Argentina and Mexico; among developing countries, we can mention Armenia, Azerbaijan and Uzbekistan.

DOI: 10.14254/2071-8330.2020/13-2/22

Keywords: financial involvement, financial security, financial market, financial service, financial institute.

JEL Classification: G00, G28, G30

1. INTRODUCTION

General issues related to the definition of the conceptual framework for financial security began to be discussed at the edge between the XXth and XXIst centuries, particularly during the period when common European financial and economic space was emerging. As a result, a number of regulatory documents have been developed by international organizations to set out the main provisions for regulating consumer rights at the financial services market in general and in the banking system as one of the key sectors in the financial market in particular. Most of contemporary scientists around the world during their study of the core indicators of the banking sector consumer protection, consider ten basic principles developed by the Financial Markets Committee of the Organization for Economic Co-operation and Development (in collaboration with the Financial Stability Board (FSB)) commissioned by the Ministers of Finance and the central banks of the G20 countries. These principles provide definitions for the role of internal and external financial institutions, openness and transparency of financial information, responsible business behaviour of financial service providers and authorized agents, protection of consumer assets and consumer personal information against fraud and abuse.

However, these provisions are of a recommendatory nature and do not provide an opportunity to obtain a comprehensive assessment of the country's financial security. The lack of a universal methodology of measuring the country's financial security actualizes this research. Thus, the aim of the article is defining the key issues ensuring financial security of a country. In the context of this goal, the study should test the main hypothesis regarding the presence of a direct relationship between countries 'economic development level and the level of financial security. The article consists of three main parts. The first part analyzes the existing research on a particular topic. The concept of financial security is considered differently by different groups of researchers which, on the one hand, are thinking financial security is a complex category that is formed under the influence of economic, social and financial determinants, and on the other - the public administration level and involves the use of the concept of a new public management. The second part of the article deals with the selection and use of methods for determining the integrated index of financial security. In the third part, a model is built and a hypothesis is tested regarding the presence of a link between financial security and the level of economic development of the country.

2. LITERATURE REVIEW

"Good Practices for Financial Consumer Protection" was one of the most well-known projects prepared by World Bank specialists headed by Susan L. Roultge, Senior Specialist for Private Sector in 2012. These "practices" form instruction on how to organize the level of financial security as effectively as possible. The work consists of three parts. The first part presents a detailed analysis of existing international measures aimed at improving the process to protect the financial environment. The second part gives a list of 39 common practices that should ensure the effective functioning of the country's financial security system.

A number of scholars have considered the key economic, social and financial determinants in their work that form the basis for a secure financial environment: (Kuzmenko & Kyrkach, 2014), Petrushenko et al., 2014, 2018), (Dave, 2017a, b), (Bilan et al., 2018, 2019a), (Buriak et al., 2015), (Buriak et al, 2019), (Gavurova et al., 2017), (Grybaitė and Stankevičienė, 2018), (Kwilinski et al., 2019), (Li and Ouyang, 2019), (Kostyuchenko et al., 2018), (Njegovanović, 2019), (Pitoňáková, 2019), (Simionescu et al., 2019), (Vasilyeva et al., 2016), (Yakubu et al., 2019), (Jurgilewicz, 2019), (Aqil et al.).

A significant step in creating favourable conditions for regulating a financially secure environment in the European space was the development of the Markets in Financial Instruments Directive (MiFID) in 2004 by Financial Services Authority (FSA), the activity of which was subsequently extended to the European Union countries in 2007. This Directive is the successor to the earlier Investment Services Directive (ISD) since May 1993, which became obsolete due to the establishment of European Union as a powerful player in the international financial sector and complicating the process to control stakeholders' activity presented therein. However, in the future, the first MiFID has been amended and supplemented by some points, and as a result, there is an active version - MiFID II.

The main objective to create the Directive, starting with its first version of MiFID, was to ensure the effective functioning of the single European financial market, based on the principles of fairness, transparency and efficiency.

The key provisions of this Directive include:

- expanding the international activity of investment companies by opening their branches in different European countries;
- formation of an extended range of investment products and services that require authorization;
- introduction of enhanced control over the financial recommendations of brokerage companies and the disclosure of key information regarding investment products;
- the necessity to maximize information on the services and possible market risks of all entities in the European financial market.

In addition, it should be noted that the MiFID II Directive also affects non-member countries of the European Union. In particular, increasing the market transparency level for all asset classes will enable non-European Union organizations to focus their activities on the European market; if the head office of the company is in a non-European Union country, and its main activity is in the European market, it implies compliance with the best management practices.

In the works of (Alshubiri, 2019), (Khan et al, 2017,2018), (Bilan et al, 2019b), (Derevyanko et al, 2019), (Natocheeva et al, 2019), (Piontek, 2019), (Ramazanova et al, 2019), (Straßberger & Sysoyeva, 2016), (Logan & Esmanov, 2017), (Morscher et al., 2017), (Boiko et al, 2019), (Plastun et al., 2018) the country's financial security is considered at the public administration level and involves the use of the concept of a new public management. The synchronization of business cycles and financial cycles is one of the leading topics in modern economic studies. Identifying these cycles enables us to investigate the specific nature of a country's financial environment, taking into account its weaknesses: (Bilan et al, 2019b, 2019c), (Brychko & Olejarz, 2019), (Belas et al., 2019), (Korcsmáros & Šimova, 2018), (Levchenko et al., 2019), (Pansuwong, 2020), (Vasilyeva et al., 2019, 2020), (Shvindina, 2019), (Ch & Semenog, 2017), (Vasylyeva et al., 2014). There are much attention into the usage of mathematical instruments for computing the level of financial determinants (Kostel et al., 2017), (Louis, 2017), (Sukhonos & Makarenko, 2017), (Yelnikova, 2014), (Brychko, 2013), (Lieonov et al., 2019).

In their work, researchers pay much attention to the specific features of ensuring a high level of financial security for a particular country or region, taking into account their economic and geopolitical situation: Slovakia (Martin & Zimková, 2018) (Korcsmaros et al., 2018, 2019), Latin America (Cortés-Sánchez & Rivera, 2019), Indonesia (Evana et al., 2019), Central and Eastern Europe (GrenÄ et al., 2019), Ukraine (Horská et al, 2019), (Shkvarchuk & Slav'yuk, 2019), (Bojarko et al., 2012), the USA (Kasztelnik and Brown, 2019), (Kasztelnik and Gaines, 2019), EU countries (Kiseľáková et al., 2019), Sudan (Abdalla and Ahmed, 2018), post-Soviet countries Ouro (Naghshpour, 2019), (Grenčíková et al., 2019), Russia (Pilipenko et al., 2019), Lithuania (Remeikienė et al., 2019), Kosovo (Shkodra, 2019).

Financial security of the country as a dynamic phenomenon, determined by such factors as financial literacy of the population, the level of the shadow economy development, the activities of insurance, banking and other financial companies, the stock market is reflected in the following works: (Boyko & Roienko, 2014), (Horsch, 2018), (Leonov et al., 2014, 2019), (Lyeonov & Liuta, 2016), (Lyeonov et al., 2019), (Sebestova et al., 2018), (Shapovalova et al., 2019), (Stefko et al., 2019), (Tsvetkova et al., 2019), (Vasileva& Lasukova, 2013), (Sheng et al., 2019), (Yakymova & Kuz, 2019), (Ch & Semenog, 2017), (Djalilov, et al., 2015), (Li & Ouyang, 2019).

3. METHODOLOGY

The study used statistical information from the Consultative Group to Assist the Poor, (CGAP), the World Bank Database (Financial Access 2010, Global Findex, G20 - Financial Involvement Indicators) and the Organization for Economic Co-operation and Development, related to the study of financial security of the population in 142 countries with different levels of economic development. The study comprised the main aspects of the financial security system: the sphere of the existing legal framework; supervisory and executive powers; regression mechanisms. The information in this database was used to assess the financial security of the world.

The methodology underlying the evaluation was proposed in V. Sandararayan's (Yossifov et al., 2003) work during the interregional analysis of the level of the financial system transparency in different countries. Then, this technique was actively used by various researchers to solve various problems in the sectors of the economy. The essence of this method is to calculate the country's quality management index for the financial or any other market as a weighted average of the country's full compliance with key international standards, rules and principles in the given segment.

The Regulatory Governance Quality Index (*RGI*) for the separate country will be shown in the following way:

$$\mathrm{RGI} = \frac{1}{\mathrm{n}}\left(\sum SCORE_j\right)$$
$$j = [1, n]$$
,

where n – number of standards, used to get the index;

j – concrete set of standards;

SCORE – an assessment of compliance with each standard, using a weighting scheme.

$$SCORE_j = \lfloor 0 \cdot nc_j + 0{,}33 \cdot pc_j + 0{,}66 \cdot bc_j + fc_j \rfloor \cdot 100,$$

where for each standard, the degree of compliance by its country is determined as follows:
1 = *nc* (noncompliance) – number of noncompliance provisions;
2 = *pc* (partial compliance) – number of partial compliance provisions;
3 = *bc* (broad compliance) – number of broad compliance provisions;
4 = *fc* (full compliance) – number of full compliance provisions;
9 = not applicable/not answered – no data available.

According to the demonstrated technique in the research, only significant evaluations are taken into account (for example, items, for which no data are available for the country, are not included in the list used in the assessment).

In our case, the country's financial security (QP) level will be calculated as follows:

$$\text{QP} = \frac{1}{10}\left(\sum SCORE_{10}\right)$$

SCORE consists of ten indicators, which in turn include the following indices (Table 1).

An example of input indices, which are used to define the level of financial security of countries is presented in Table 2.

4. EMPIRICAL RESULTS AND DISCUSSION

The adhering degree of each indicator *SCORE* is defined by the following way (Table 3).

The country's level of financial security was assessed based on the calculation of SCORE for every country and then a complex indicator was calculated. The calculation results for the studied countries are presented in the following figures (Figs. 1a, 1b, 1c).

Having analyzed the obtained level of financial security in the studied countries, we can see that Italy (864), Canada (797) and Puerto Rico (797) are leaders among the countries with a high level of economic development. Transition economies include Venezuela (831), Hungary (764), Argentina (763); among developing countries, there are Armenia (831), Azerbaijan (763) and Uzbekistan (730).

Thus, the highest level of financial security is observed in Italy, Armenia, Venezuela, Canada and Puerto Rico. Three of the five leading countries belong to developed countries, one to transition economies and one to developing countries. However, the nominal following of the calculated index does not mean that the consumers' interests in the financial services market in these countries are fully protected since its calculation is based only on financial security indicators. In our further studies, we will focus more on improving the proposed method to determine the country's financial security level by expanding the list of input indicators taking into account the internal aspects of the internal system functioning in the country.

The success of the financial sector development directly depends on the number of satisfied consumers involved. The reason for the financial instability of the country is the unwillingness of the population to accept the whole flow of financial information, which flows into life and constantly takes new forms. Financial policy, as a set of measures aimed at redistributing available resources in the financial system, must also ensure affordability, financial literacy, financial integrity and stability, which will certainly be the basis for protecting the interests of consumers in the financial services market. All of the above qualitative financial policy objectives require special attention from the regulator as they do not have a clear quantitative expression that could be compared with the reference value and draw conclusions about compliance / noncompliance with the set standards. However, many scientific studies have shown that affordability or, in other words, the level of financial involvement of the population has a direct positive relationship with financial stability, and this relationship is not one-sided.

However, nominal compliance with the calculated index QP does not mean that the interests of consumers in the financial services market in these countries are fully protected. Because its calculation is based only on financial security indicators. As mentioned above, financial security is a complex category. Therefore, in further research, we propose to adjust the QP index to the value of two criterias:

– readiness of consumers to be both active participants in the financial services market and to take a number of measures aimed at ensuring their rights, which is identified through the level of financial education of the adult population (readiness to be protected - RP);

– the actual involvement of the population in the financial services market is expressed through a group of indicators that characterize it (inclusion to the protection scheme - IP).

Thus, taking into account these criteria, we will be able to amend the QP index and prove the relationship between financial security and the level of economic development in the country.

5. CONCLUSION

According to the stated aim of the work, key problems to ensure the financial security of the country were identified. They are: to introduce the enhanced control over the financial recommendations of brokerage companies and the key information disclosure about financial products and services; the necessity to maximize information about services and the possible market risks of all financial market entities; to form a wide range of investment products and services that require authorization.

The study proposes a methodology for calculating a country's quality management index for a financial or any other market, as a weighted average of the country's overall compliance with key international standards, rules and principles in the segment. The study used statistical information from the Consultative Group to Assist the Poor, (CGAP), the World Bank Database (Financial Access 2010, Global Findex, G20 - Financial Involvement Indicators) and the Organization for Economic Co-operation and Development, related to the study of financial security of the population in 142 countries with different levels of economic development. A total of 47 variables, grouped into 10 aggregates, were included in the study: Monitoring, Enforcing, Fair treatment, Recourses, Standards for complaints resolution, Disclosure of information upon opening deposit, Disclosure of information upon opening credit, Disclosure of general information, Periodic disclosure upon opening deposit, Periodic disclosure upon opening credit. The analysis of the results showed that the obtained level of financial security in the studied countries has a wide variation from the minimum to the maximum value. We see that among the countries with a high level of economic development, the leaders are Italy, Canada and Puerto Rico. Transition economies include Venezuela, Argentina and Mexico; among developing countries, there are Armenia, Azerbaijan and Uzbekistan. Thus, in view of the analysis of the results obtained by all countries, the countries' economic development level does not play a key role in determining the maximum level of financial security, which indicates the presence of other determinants that need to be verified in future studies.

ACKNOWLEDGEMENT

The survey was supported by the Ministry of Education and Science of Ukraine and performed the results of the projects 0118U003569 and 0120U102001.

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ANNEXES

Table 1

Input variables

№	Name of variable	Sense of variable	Legend
1	Monitoring	– Mystery/ incognito shopping; – Interviews focus groups and consumer research; – Requires FIs to report statistics on the number of complaints; – Operates call-centre to receive complaints; – Monitors providers' advertisements, websites, etc.; – On-site inspection and investigation of FIs	SCORE1
2	Enforcing	– Issues warnings to financial institutions; – Requires providers to refund excess charges; – Requires providers to withdraw misleading advertisements; – Imposes fines and penalties; – Issues public notice of violations; – Withdraws the offending provider's license to operate	SCORE2
3	Fair treatment	– Deceptive advertising; – Unfair or high-pressure selling practices; – Abusive collection practices; – Unauthorized use of client data or breach of client confidential; – No fair treatment provisions	SCORE3
4	Recourses	– Certainly with financial ombudsman; – Certainly with general ombudsman; – Certainly, mediation service	SCORE4
5	Standards for complaints resolution	– Procedures and processes; – Timeliness of response; – Accessibility	SCORE5
6	Disclosure of information upon opening deposit	– Annual percentage yield and interest rate; – Method of compounding; – Minimum balance requirement; – Fees and penalties; – Early withdrawal penalties	SCORE6
7	Disclosure of information upon opening credit	– Annual percentage rate using a standard formula; – Fees; – Computation method (avg. balance, interest); – Required insurance	SCORE7
8	Disclosure of general information	Plain language requirement; Local language requirement; Prescribed, standardized disclosure format; Recourse rights and processes	SCORE8
9	Periodic disclosure upon opening deposit	– Annual percentage yield calculation; – Amount of interest earned; – Fees imposed; – Account balance	SCORE9
10	Periodic disclosure upon opening credit	– All account transactions during the current period; – Annual percentage rate; – Interest charged for the period; – Fees charged for the period; – Minimum amount due; – Date due; – Outstanding balance	SCORE10

Table 2

Input indices

	Monitoring (6)						Enforcing (6)						Fair treatment (5)				
	Mystery/ incognito shopping	Interviews, focus groups and consumer research	Require FIs to report statistics on the number of complaints	Operates call centre to receive complaints	Monitors providers' advertisements, websites, etc.	On-site inspection and investigation of FIs	Issue warnings to financial institutions	Require providers to refund excess charges	Require providers to withdraw misleading advertisements	Impose fines and penalties	Issue public notice of violations	Withdraw the offending provider's license to operate	Deceptive advertising	Unfair or high-pressure selling practices	Abusive collection practices	Unauthorized use of client data or breach of client confidentiality	No fair treatment provisions
Afghanistan			1,00			1,00	1,00	1,00	1,00	1,00							1,00
Albania					1,00	1,00	1,00		1,00	1,00		1,00	1,00	1,00	1,00	1,00	
Algeria						1,00	1,00	1,00		1,00		1,00	1,00	1,00		1,00	
Anguilla													1,00			1,00	
Antigua and Barbuda													1,00			1,00	
Argentina		1,00			1,00	1,00	1,00		1,00	1,00			1,00	1,00	1,00	1,00	
Armenia				1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
Australia	1,00	1,00		1,00	1,00	1,00							1,00	1,00			
Austria				1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
Azerbaijan		1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00	
Bangladesh																	1,00
Belarus													1,00				
Belgium		1,00		1,00	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
Benin						1,00										1,00	
Bolivia		1,00	1,00	1,00	1,00					1,00			1,00		1,00		
Bosnia and Herzegovina																	1,00
Botswana					1,00	1,00	1,00	1,00	1,00	1,00			1,00			1,00	
Brazil			1,00	1,00		1,00	1,00			1,00		1,00	1,00	1,00	1,00	1,00	
Bulgaria													1,00	1,00	1,00	1,00	

Country	Recourses (3)			Standards for complaints resolution (3)			Disclosure of information upon opening deposit (5)				
	Yes, with the financial ombudsman	Yes, with the general ombudsman	Yes, mediation service	Procedures and processes	Timeliness of response	Accessibility	Annual percentage yield and interest rate	Method of compounding	Minimum balance requirement	Fees and penalties	Early withdrawal penalties
			1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Afghanistan		1,00	1,00	1,00		1,00	1,00		1,00	1,00	1,00
Albania					1,00	1,00	1,00	1,00	1,00	1,00	1,00
Algeria											
Anguilla											
Antigua and Barbuda		1,00		1,00		1,00	1,00	1,00	1,00	1,00	1,00
Argentina	1,00			1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Armenia	1,00			1,00	1,00						
Australia	1,00	1,00		1,00			1,00	1,00		1,00	1,00
Austria		1,00			1,00	1,00	1,00	1,00	1,00	1,00	1,00
Azerbaijan											
Bangladesh							1,00				
Belarus			1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00
Belgium											
Benin		1,00		1,00	1,00	1,00	1,00			1,00	
Bolivia											
Bosnia and Herzegovina	1,00			1,00	1,00	1,00	1,00	1,00			
Botswana	1,00	1,00		1,00	1,00	1,00				1,00	
Brazil	1,00			1,00	1,00	1,00	1,00	1,00	1,00		1,00

Country	Disclosure of information upon opening credit (4)				Disclosure of general information (4)				Periodic disclosure upon opening deposit (4)			
	Annual percentage rate using a standard formula	Fees	Computation method (avg. balance, interest)	Required insurance	Plain language requirement	Local language requirement	Prescribed, standardized disclosure format	Recourse rights and processes	Annual percentage yield calculation	Amount of interest earned	Fees imposed	Account balance
Afghanistan					1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Albania	1,00	1,00	1,00		1,00	1,00	1,00		1,00	1,00	1,00	1,00
Algeria	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00
Anguilla												
Antigua and Barbuda												
Argentina	1,00	1,00	1,00	1,00	1,00	1,00			1,00	1,00	1,00	1,00
Armenia	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Australia												
Austria	1,00	1,00	1,00	1,00	1,00	1,00						
Azerbaijan	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00
Bangladesh												
Belarus	1,00								1,00	1,00		1,00
Belgium	1,00	1,00			1,00	1,00	1,00					
Benin					1,00		1,00				1,00	1,00
Bolivia	1,00		1,00			1,00		1,00				1,00
Bosnia and Herzegovina												
Botswana	1,00	1,00		1,00	1,00		1,00					
Brazil	1,00	1,00			1,00	1,00		1,00	1,00		1,00	
Bulgaria	1,00	1,00	1,00	1,00	1,00	1,00		1,00				

Country	Periodic disclosure upon opening credit (7)						
	All account transactions during the current period	Annual percentage rate	Interest charged for the period	Fees charged for the period	Minimum amount due	Date due	Outstanding balance
Afghanistan	1,00	1,00	1,00	1,00			
Albania		1,00	1,00	1,00	1,00	1,00	1,00
Algeria	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Anguilla							
Antigua and Barbuda							
Argentina	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Armenia	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Australia							
Austria							
Azerbaijan	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Bangladesh							
Belarus		1,00	1,00		1,00	1,00	1,00
Belgium	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Benin	1,00			1,00			1,00
Bolivia		1,00			1,00	1,00	1,00
Bosnia and Herzegovina							
Botswana							
Brazil		1,00		1,00			
Bulgaria	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Table 3

Description of the adhering degree of $SCORE_1 – SCORE_{10}$

Monitoring	
Pc	1 – 2
Bc	3 – 5
Fc	6
Enforcing	
Pc	1 – 2
Bc	3 – 5
Fc	6
Fair treatment	
Pc	1 – 2
Bc	3 – 4
Fc	5
Recourses	
Pc	1
Bc	2
Fc	3
Standards for complaints resolution	
Pc	1
Bc	2
Fc	3
Disclosure of information upon opening deposit	
Pc	1 – 2
Bc	3 – 4
Fc	5
Disclosure of information upon opening credit	
Pc	1
Bc	2 – 3
Fc	4
Disclosure of general information	
Pc	1
Bc	2 – 3
Fc	4
Periodic disclosure upon opening deposit	
Pc	1
Bc	2 – 3
Fc	4
Periodic disclosure upon opening credit	
Pc	1 – 2
Bc	3 – 6
Fc	7

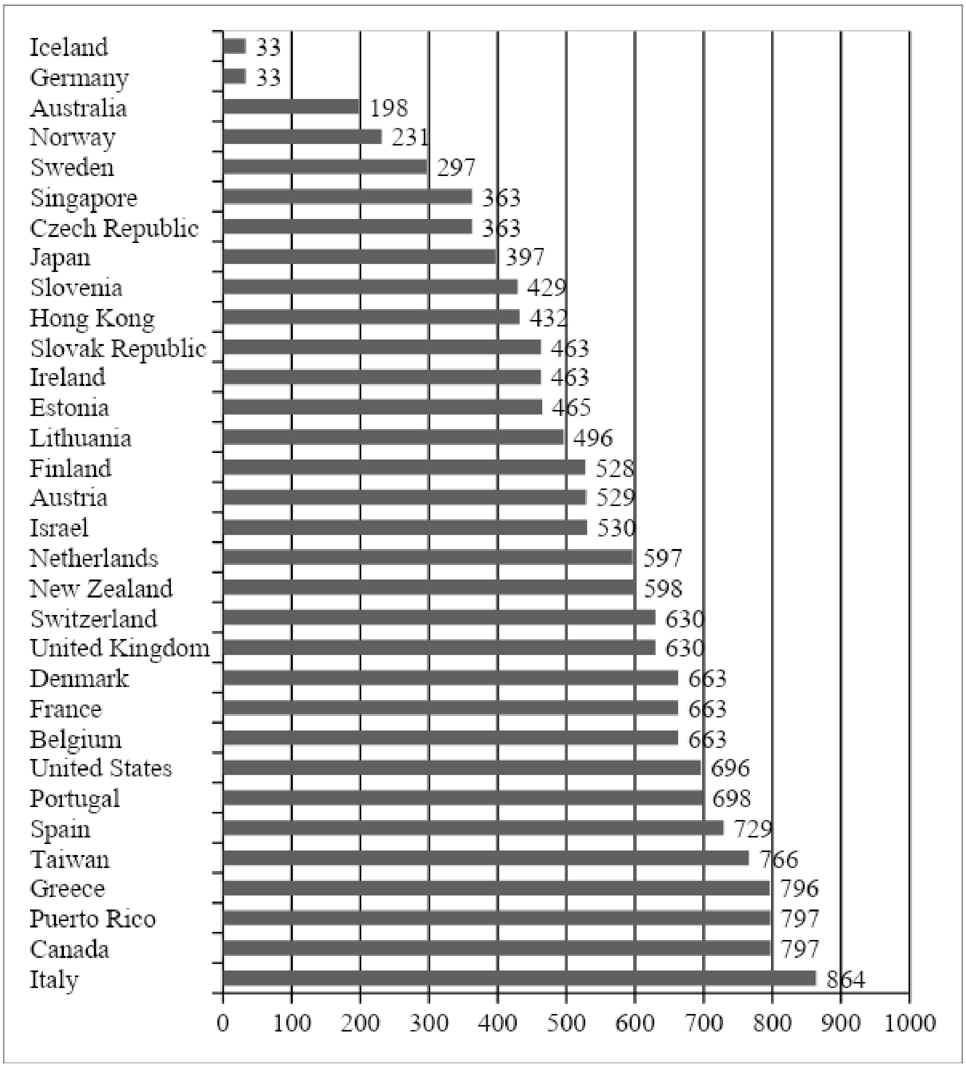

Fig 1a. The obtained results of the financial security level for countries with high economic development

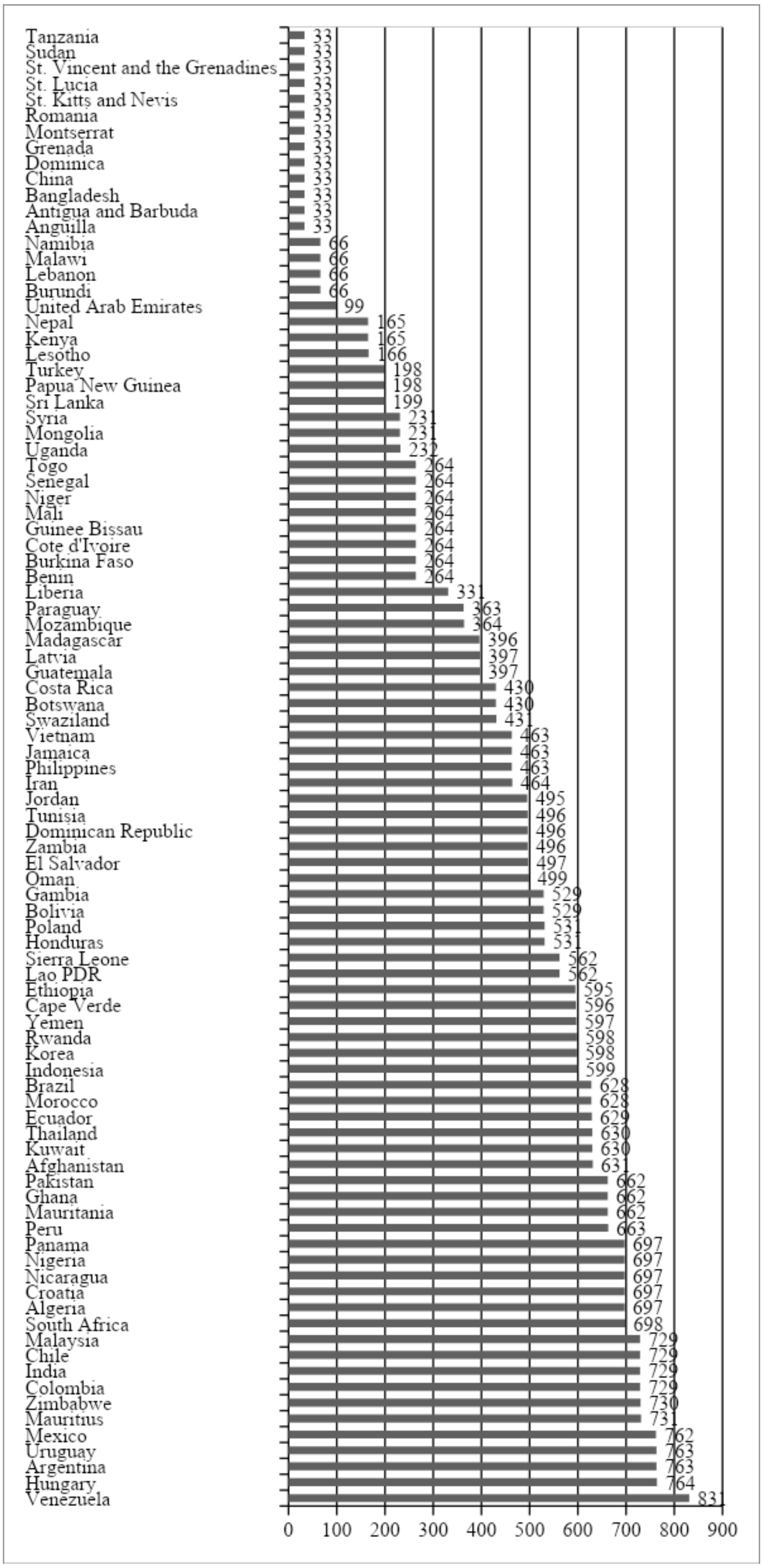

Fig 1b. The obtained results of the country's financial security level for EIT countries

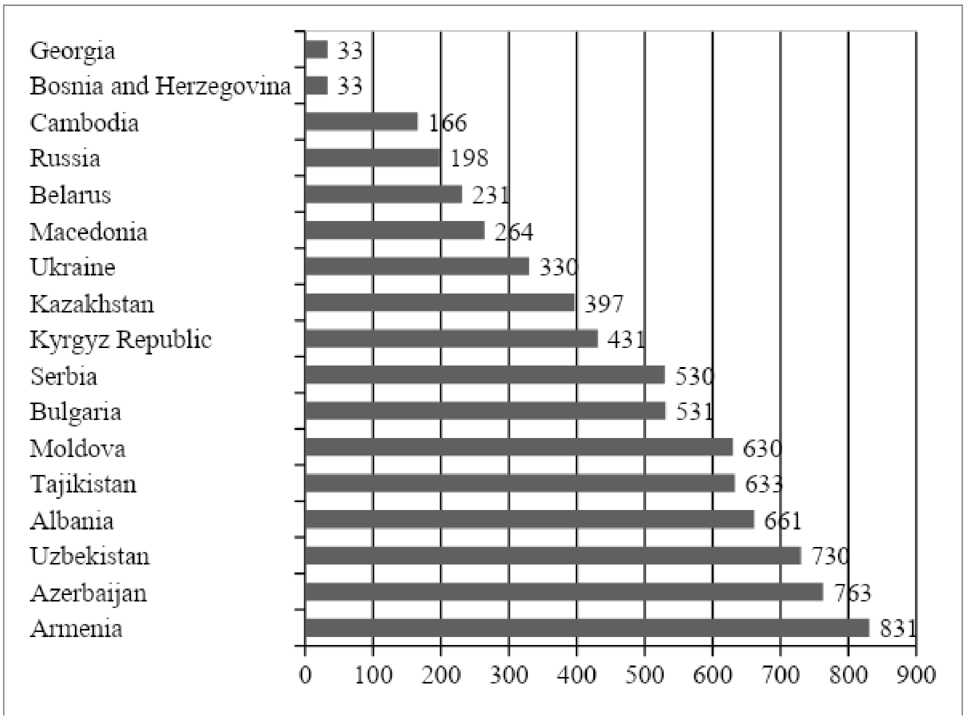

Fig 1c. The obtained results of the financial security level for developing countries