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Yuliia Kovalenko

D.Sc. in Economics, Professor, Head of the Department of Financial Markets and Technologies, State Tax University, Irpin, Ukraine;
 ORCID: [0000-0002-5678-3185](https://orcid.org/0000-0002-5678-3185)

Valentyna Martynenko

D.Sc. in Economics, Professor, Director of the Center for Postgraduate Education and Distance Learning, State Tax University, Irpin, Ukraine;
 ORCID: [0000-0001-9078-8345](https://orcid.org/0000-0001-9078-8345)

Iryna Chunytska

D.Sc. in Economics, Professor of the Department of Financial Markets and Technologies, State Tax University, Irpin, Ukraine;
 ORCID: [0000-0002-9718-1332](https://orcid.org/0000-0002-9718-1332)

Liudmyla Didenko

PhD in Economics, Assistant Professor of the Department of Financial Markets and Technologies, State Tax University, Irpin, Ukraine;
 ORCID: [0000-0003-3535-4266](https://orcid.org/0000-0003-3535-4266)

Ivan Yatsenko

Postgraduate student, Department of Financial Markets and Technologies, State Tax University, Irpin, Ukraine;
 e-mail: yatsenkoivan94@gmail.com
 ORCID: [0000-0003-0897-104X](https://orcid.org/0000-0003-0897-104X)
 (Corresponding author)

Tetiana Shulha

Postgraduate student, Department of Financial Markets and Technologies, State Tax University, Irpin, Ukraine;
 ORCID: [0000-0002-0611-3271](https://orcid.org/0000-0002-0611-3271)

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THE NEWEST SCIENTIFIC AND METHODOLOGICAL APPROACH TO ASSESSING THE OPENNESS OF INVESTMENT FINANCIAL SERVICES MARKETS

ABSTRACT

The scientific article is devoted to the development of a scientific and methodological approach to assessing the level of openness of the investment financial services market. Regarding the basic concept of the scientific article – “openness” - it is proposed to interpret it according to the flow approach, according to which three types of markets should be distinguished - markets with a net outflow of investment resources, markets with a net inflow of investment resources and markets with a balanced movement of investment resources.

It is proposed to evaluate the openness of investment financial services markets by the k-means method, that is, by the cluster analysis approach, the purpose of which is to divide m observations into k clusters, while each observation refers to the cluster closest to its center (centroid). The advantages of the k-means cluster analysis method are as follows: firstly, the possibility of using this method with relatively small amounts of data, since it is not necessary to meet the requirements for the normal distribution of random variables, which are mandatory for classical methods of statistical analysis; secondly, to divide a set containing n objects into k clusters, the number of clusters must be specified in advance.

Approbation of the methodological approach was carried out on the example of various national models of investment financial services markets, namely: on the example of the countries of the European Union and Ukraine.

In general, the markets of investment financial services of post-socialist EU countries (Bulgaria, Estonia, Latvia, Lithuania, Slovakia, Slovenia, Poland, Romania, Hungary, Czech Republic) and Ukraine belong to the group of countries with a low level of market openness, compared to other markets of EU countries.

The article develops a scientific-methodical approach to evaluating the openness of investment financial services markets, which, unlike other approaches, involves: distinguishing between markets with a net inflow of investment resources, markets with a net outflow of investment resources, and markets with a balanced movement of investment resources; distribution of markets using the iterative method of "k-means" cluster analysis into three clusters: 1) markets with a high level of openness; 2) markets with an average level of openness; 3) markets with a low level of openness; determination of the average volumes of portfolio investments in securities issued by non-residents, as well as liabilities for securities in which portfolio investments were made by non-residents, for each cluster.

Keywords: investment financial services market, openness, k-means method, markets with a net outflow of investment resources, markets with a net inflow of investment resources and markets with a balanced movement of investment resources

JEL Classification: D53, G11, G21, G23, O16

INTRODUCTION

The investment financial services market is a hybrid market that is formed within the intersection of segments of the investment market and the market of financial services. On the one hand, it is a segment of the financial services market, in which financial

services are mediated by the movement of investment resources and implemented using investment instruments. At the same time, on the other hand, it is a segment of the investment market in which the transformation of investment resources into investment capital is carried out using financial services (services of financial intermediaries).

The level of development of any market is characterized by the volume of cash turnover. At the same time, when it concerns the financial sector, and especially the investment financial services market, the level of its openness is very important because that's what serves as a determining factor in scaling such a market.

LITERATURE REVIEW

Let us emphasize that insufficient attention has been paid to the issue of the openness of the investment financial services market as a component of the financial and investment markets in the national scientific literature. At the same time, foreign researchers, studying the openness of financial markets, characterize this concept using the term "financial openness" [1, 2, 3].

C. Vithessonthi [4], O. Oyovwi [5], G. De Nicolò [6] equate financial openness with financial market liberalization. B. McLean [7] believes that financial openness is the absence of barriers to the free movement of capital, while M. Kose [8] emphasizes the absence of legal restrictions on the inflow and outflow of capital. In our opinion, the liberalization of the financial market is a concept distinct from financial openness, because liberalization is a process of softening the rules of regulation and control of the financial market, while financial openness is the result of such changes.

M.D. Chinn and H. Ito [9] define financial openness as the openness of the national capital account. This approach characterizes the concept of financial openness from positions of public finances. S. Coulibaly [10] disagrees with this point of view and believes that financial openness should be measured based on the assessment of cross-border flows of private capital only.

T. Serdaroglu [11] interprets financial openness as the volume of financial transactions carried out by financial intermediaries of a certain country on world financial markets. In our opinion, this approach to the interpretation of financial openness significantly complicates its assessment, taking into account the daily volumes and geographic scope of financial transactions of each country.

B. H. Baltagi [12] recognizes financial openness as one of the indicators of the economy, which is characterized by the amount of foreign financial assets and liabilities of the country. We agree with the scientist and believe that this approach can be used to characterize the openness of the investment financial services market because as a result of providing an investment financial service, its consumer either has an investment financial asset or an investment financial liability. In that connection, by the openness of the investment financial services market, we propose to understand the characteristics of the market, which is determined by the ratio of the volumes of portfolio investments of residents of a certain country in securities issued by non-residents, as well as the obligations of residents for securities in which non-residents made portfolio investments, with similar indicators of investment financial services markets of other countries.

When studying financial openness, scientists also note both its positive and negative effects on the state of financial markets. Thus, M. Varamesh [13] is convinced that financial openness improves the liquidity of the financial market. This leads to a reduction in the financial risk premium and lowers the cost of investment capital. Also, financial openness contributes to the mobilization of domestic investments, allows the attraction of additional foreign investments, and the improvement of the efficiency of the use of investment resources.

T. Serdaroglu [11] substantiates that financial openness increases the depth of financial markets due to the increase in the availability of investment resources. Also, financial openness promotes the inflow of investment capital, and the arrival of foreign financial intermediaries to the domestic financial market improves the quality of financial services, promotes the transfer of financial technologies and the introduction of financial innovations.

A. Demirgüç-Kunt and R. Levine [14] note that financial openness stimulates more active monitoring of investments, collection of information about investment opportunities, accumulation and mobilization of savings, and securities trading.

M.D. Chinn and H. Ito [9] note that financial openness contributes to the development of the financial market only after reaching a certain threshold level of development of institutional support for the functioning of such a market. This statement is especially true for emerging markets. L. Varela [15] also believes that in order to get benefits from financial openness, it is necessary to achieve a certain level of development of the institutional infrastructure of the financial market — to ensure high-quality financial regulation, protection of investors' rights, etc. Therefore, according to the scientist, the benefits of financial openness can be assessed only in the long term.

From M.W. Alrayes' [16] point of view, financial openness is a logical result of the development of the financial market: as the financial market develops and becomes more mature, there is a need to open the market to foreign capital and integrate with international financial markets.

T. Assefa [17] draws the attention of the scientific community to the fact that financial openness can cause a negative impact on the financial market — as a result of attracting large-scale short-term capital, a situation of its sudden withdrawal may arise, which can cause financial instability and the development of a financial crisis. Therefore, according to the scientist, it is important to establish effective control and regulation of the cross-border movement of investment capital. In view of all the above, we consider it important to carry out scientific developments in the field of methodology for assessing the level of openness of the investment financial services market in order to prevent possible threats, including financial stability.

AIMS AND OBJECTIVES

The purpose of the article is to develop a methodological approach to assessing the level of openness of the investment financial services market.

METHODS

It is worth noting that the classic methodology of managing investment resources is the portfolio theory, the features of which are described by Yu. Kovalenko [18]. Another approach that is very actively used to evaluate the financial system, the financial sector and its segments is the institutional approach, the content of which is described in works [19, 20].

In our opinion, for a more complete disclosure of the financial and economic consequences of the openness of the investment financial services market, three types of markets should be distinguished – markets with a net outflow of investment resources, markets with a net inflow of investment resources, and markets with a balanced movement of investment resources.

In our opinion, it is expedient to test the methodical approach on the example of various national models of the investment financial services market. We implement this on the example of the European Union countries and Ukraine. We propose to use the method of cluster analysis, the methodological features of which are disclosed in [21]. In particular, we will apply the k-means method. It is a method of cluster analysis, the purpose of which is to divide m observations into k clusters while each observation belongs to the cluster closest to its center (centroid). We will use the Euclidean distance as a measure of proximity. The advantages of the k-means cluster analysis method are as follows:

- firstly, the possibility of using this method with relatively small amounts of data, since it is not necessary to fulfill the requirements for the normal distribution of random variables, which are mandatory for classical methods of statistical analysis;
- secondly, to divide a set containing n objects into k clusters, the number of clusters must be specified in advance. That is, the researcher can choose the number of clusters depending on the research tasks.

At the same time, this method is not without drawbacks, in particular: an unreasonable choice of the number of k clusters can lead to incorrect research results.

The content of the scientific and methodical approach to the clustering of investment financial services markets by the level of openness is graphically presented in Figure 1.

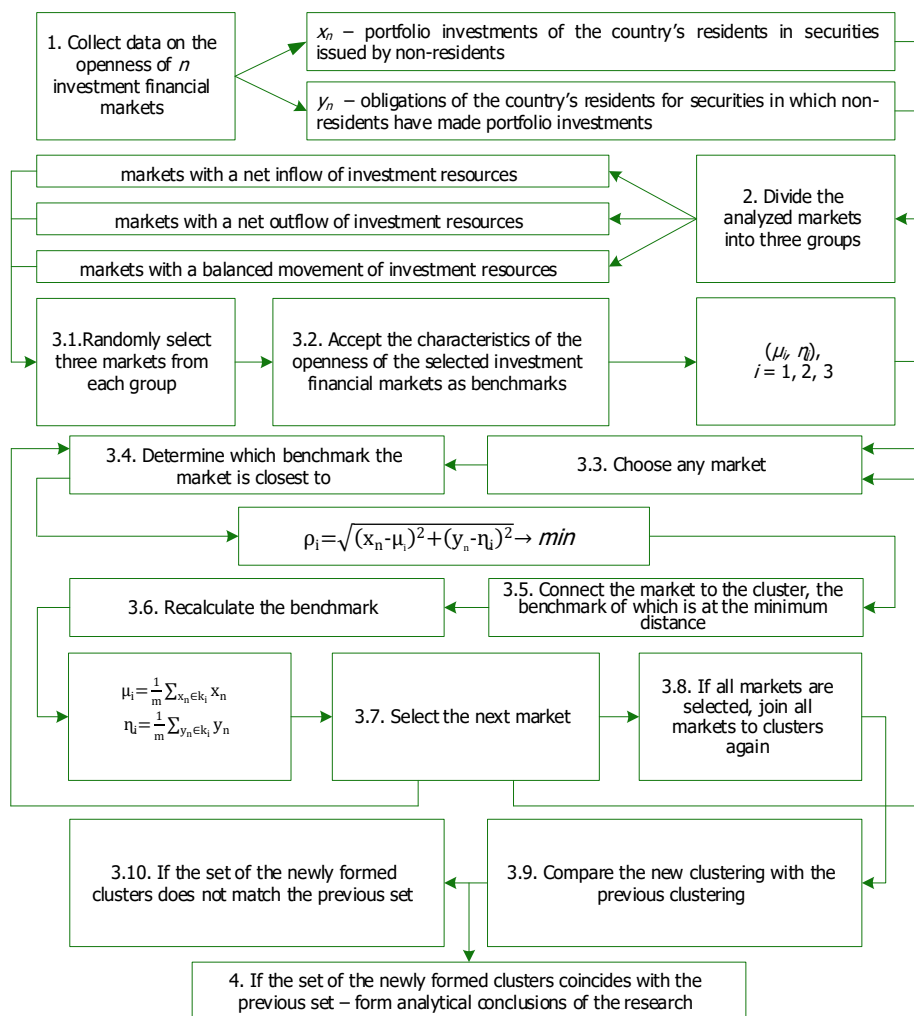


Figure 1. Structural and logical scheme for assessing the openness of the investment financial services market.

RESULTS

Indicators of the openness of investment financial services markets with a net outflow of investment resources (when the volumes of portfolio investments of the country's residents in securities issued by non-residents exceed the volumes of liabilities of the country's residents for securities in which non-residents made portfolio investments) in the EU countries are summarized in Table 1.

Table 1. Indicators of openness of the investment financial services market with a net outflow of investment resources in the EU countries, as of June 2021, millions of USD. (Source: grouped by authors on [22, 23])

Countries whose markets are being studied	Portfolio investments of the country's residents in securities issued by non-residents	Obligations of the country's residents for securities in which non-residents have made portfolio investments
Belgium	1002590	713796
Bulgaria	16720	6680
Greece	208127	45003
Denmark	722963	576916
Estonia	24916	4648
Ireland	4849969	3428161
Italy	2102835	1511293

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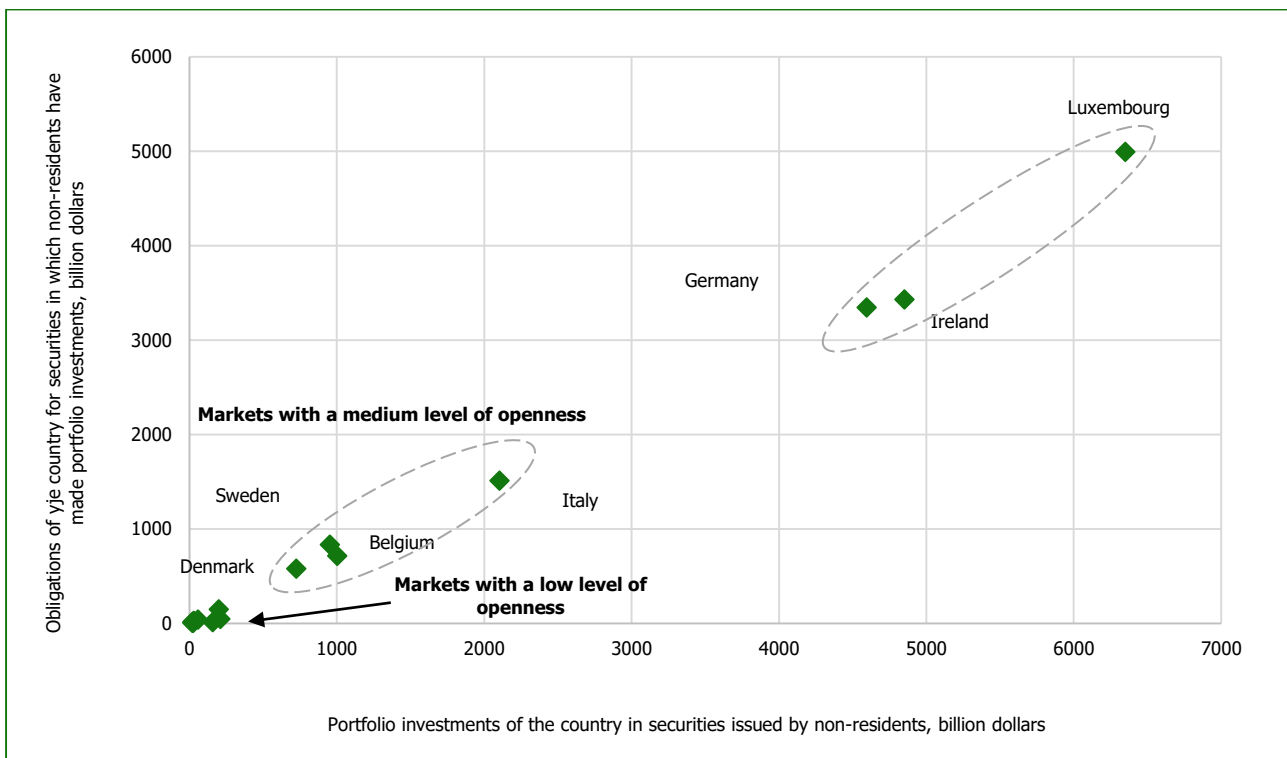
Table 1. (continued)

Countries whose markets are being studied	Portfolio investments of the country's residents in securities issued by non-residents	Obligations of the country's residents for securities in which non-residents have made portfolio investments
Latvia	24183	9340
Lithuania	20158	15614
Luxembourg	6348469	4994651
Malta	155960	13453
Germany	4594650	3345386
Portugal	197471	146916
Slovakia	57633	39406
Slovenia	28823	26028
Sweden	951356	831536

Note that the situation of a net outflow of investment resources from the investment financial services market can arise for various reasons, in particular, as a result of investors' desire to obtain a higher investment profit abroad at an acceptable level of risk, to diversify investment risks, to place investment financial resources in countries with a more favorable investment climate, lower level of taxation, absence of asset expropriation risk, more protected rights of owners of financial assets, availability of financial guarantee mechanisms, etc.

In our opinion, the outflow of investment financial resources from the market should be controlled. That is, if as a result of the outflow of investment financial resources on the market, their deficit arises, accessibility to investment financial services deteriorates, and the cost of capital increases, then the consequences of such openness should be considered negative and it is necessary to introduce restrictions on investment abroad.

The results of the cluster analysis of investment financial services market with a net outflow of investment resources of the EU countries are illustrated in Figure 2.


Figure 2. Clustering of the investment financial services market with a net outflow of investment resources of the EU countries as of June 2021.

The presented results show the following.

The investment financial services market with a high level of openness includes the markets of Ireland, Germany and Luxembourg. The average volume of portfolio investments of the countries' residents in securities issued by non-residents is 5.3 trillion USD, while the average amount of liabilities of the countries' residents for securities in which non-residents have made portfolio investments is 3.9 trillion USD.

The group of the investment financial services market with an average level of openness includes the markets of Denmark, Belgium, Sweden and Italy. The average volume of portfolio investments of the countries' residents in securities issued by non-residents is 1.2 trillion USD, while the average amount of liabilities of the countries' residents for securities in which non-residents have made portfolio investments is 0.9 trillion USD.

Bulgaria, Greece, Estonia, Latvia, Lithuania, Malta, Portugal, Slovakia, Slovenia are characterized by the average volume of portfolio investments of the countries' residents in securities issued by non-residents in the amount of 81.6 billion USD and the average amount of liabilities of the countries' residents for securities in which non-residents have made portfolio investments, in the amount of 34.1 billion USD.

Indicators of the openness of the investment financial services market with a net inflow of investment resources in the EU countries and Ukraine are presented in Table 2.

Table 2. Indicators of the openness of the investment financial services market with a net inflow of investment resources in the EU countries and Ukraine, as of June 2021, millions of USD. (Source: grouped by authors on [22, 23])

Countries whose markets are being studied	Portfolio investments of the country's residents in securities issued by non-residents	Obligations of the country's residents for securities in which non-residents have made portfolio investments
Spain	1068028	1330952
The Netherlands	2480997	2768421
Poland	41431	111825
Romania	9046	54735
Hungary	18427	50777
France	3496001	4193930
Czech Republic	41901	65586
Ukraine	508	26619

In general, the situation of a net inflow of investment resources in the investment financial services market is characterized by a positive impact on the financial and economic state of the country — market liquidity grows, the financial depth of the market increases, financial infrastructure develops, the quality of investment financial services increases, etc. However, in a period of financial instability, the risk of a mass outflow of investment resources from the market increases, which can cause a sharp decrease in the value of financial assets and the development of a financial crisis.

Countries with markets of this type should increase the resilience of the market to financial shocks by stimulating national savings as a source of domestic investment resources, as well as by developing the public financial investment sector.

The results of the cluster analysis of the investment financial services market with a net inflow of investment resources in the EU countries and Ukraine are illustrated in Figure 3.

According to the results, markets with a high level of openness include the markets of the Netherlands and France. The average volume of portfolio investments of the countries' residents in securities issued by non-residents is almost 3.0 trillion USD, while the average amount of liabilities of the countries' residents for securities in which non-residents have made portfolio investments is 3.5 trillion USD.

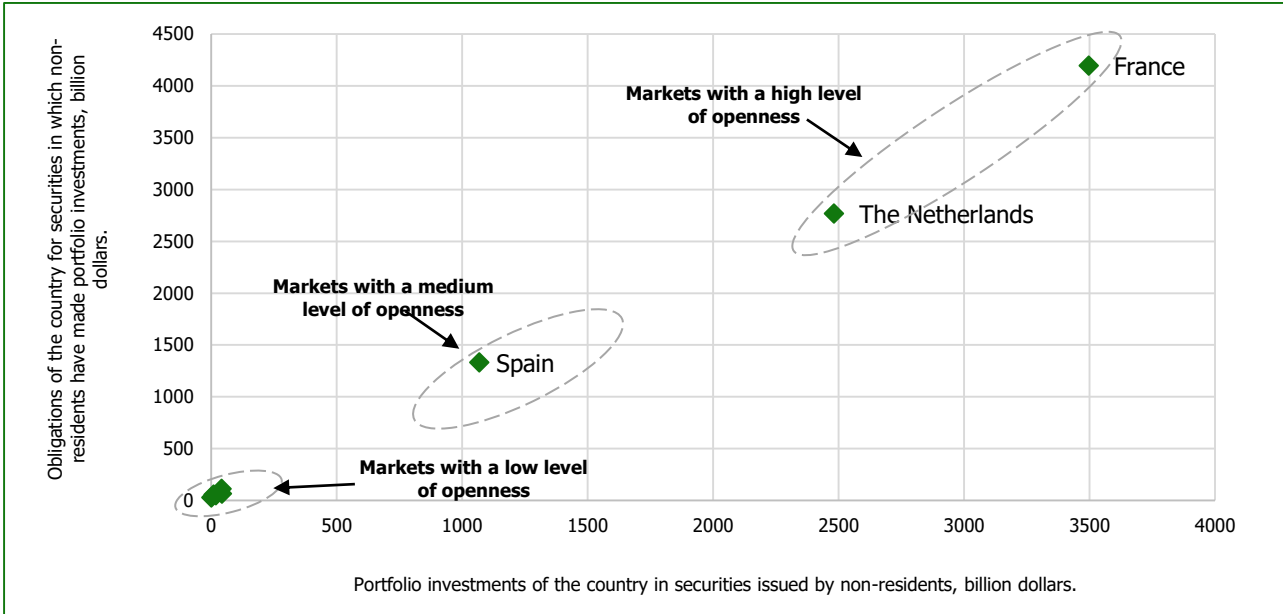


Figure 3. Clustering of the investment financial services market with a net inflow of investment resources in the EU countries and Ukraine, as of June 2021.

The group of markets with an average level of openness includes only one country – Spain. Indicators of openness of the investment financial services market of this country are, respectively, 1.0 trillion USD and 1.3 trillion USD.

Countries such as Poland, Romania, Hungary, the Czech Republic and Ukraine form a group of the investment financial services market with a low level of openness. The average volume of portfolio investments of the countries' residents in securities issued by non-residents is 22.3 million USD, while the average amount of liabilities of the countries' residents for securities in which non-residents have made portfolio investments is 61.9 million USD.

Ukraine, as mentioned above, belongs to the group of investment financial services markets with a net inflow of investment resources and a low level of openness. For comparison, the openness characteristics of its market are, respectively, 0.5 million USD and 26.6 million USD. Therefore, the volume of portfolio investments of Ukrainian residents in securities issued by non-residents is extremely low. This is explained by the fact that the purchase of securities of foreign issuers (portfolio financial investments) is possible only on the condition of obtaining an individual license from the NBU for making investments abroad.

Indicators of the openness of the investment financial services market with the balanced movement of investment resources in the EU countries are presented in Table 3.

Table 3. Indicators of the openness of the investment financial services market with the balanced movement of investment resources in the EU countries, as of June 2021, millions of USD. (Source: grouped by authors on [22, 23])

Countries whose markets are being studied	Portfolio investments of the country's residents in securities issued by non-residents	Obligations of the country's residents for securities in which non-residents have made portfolio investments
Austria	439010	440744
Cyprus	29868	30163
Finland	482221	480830

The investment financial services market with a balanced movement of investment resources, in our opinion, are the most acceptable type of market, when, on the one hand, resident investors can receive benefits from investing abroad, while the situation of shortage of investment resources in the domestic market does not arise, since the outflow of resources is compensated by a corresponding inflow from non-resident investors. At the same time, in the case of a massive outflow of foreign investment resources abroad during a period of financial instability, it will not cause a deep crisis in the domestic market of investment financial services, since part of the domestic investment resources placed abroad will return to the market.

The systematized results of the cluster analysis of markets with a balanced movement of investment resources in the EU countries are presented in Figure 4.

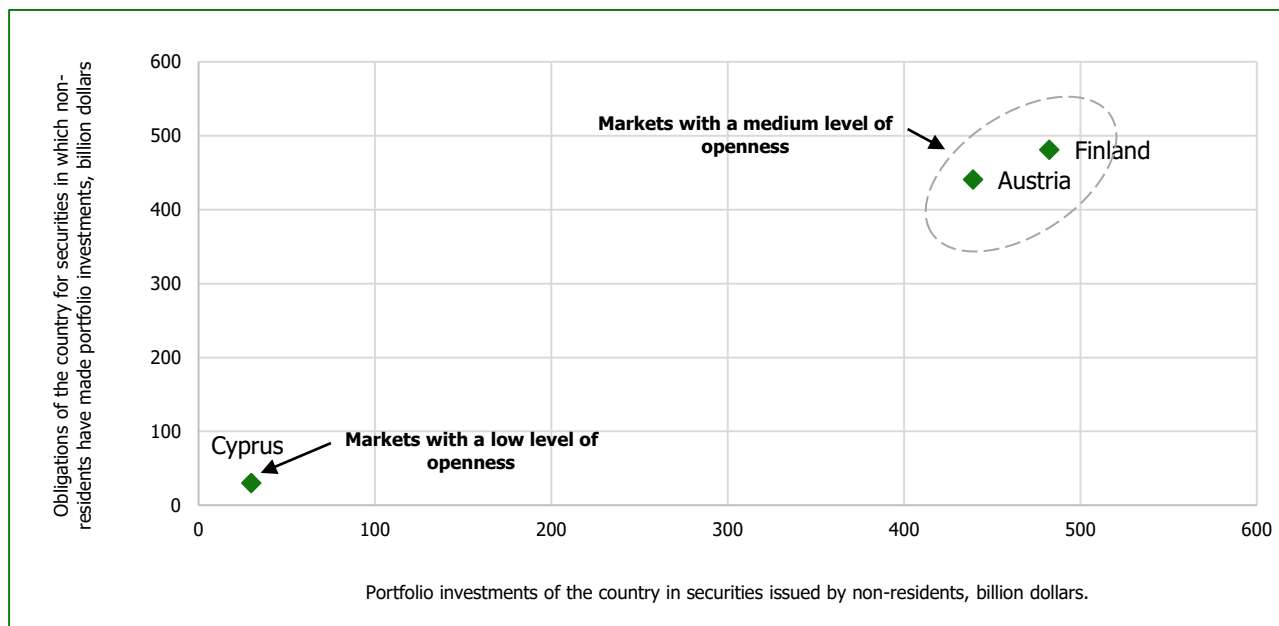


Figure 4. Clustering of the investment financial services market with the balanced movement of investment resources in the EU countries, as of June 2021.

As evidenced by the presented results, this group of markets includes only the investment financial services market with a medium and low level of openness. The markets of Austria and Finland belong to the group of markets with a medium level of openness.

Indicators of both the average volume of portfolio investments of the countries' residents in securities issued by non-residents and the average volume of liabilities of the countries' residents for securities in which non-residents have made portfolio investments amount to 460 billion USD. While in Cyprus, similar indicators reach only 30 billion dollars. Therefore, the investment financial services market of Cyprus belongs to the markets with a low level of openness.

In general, among all the investment financial services markets of the EU countries, regardless of their types, the markets with a high level of openness include Luxembourg, Ireland, Germany and France. Mainly, these are countries who's the investment financial services market is characterized by a net outflow of investment resources (Figure 5).

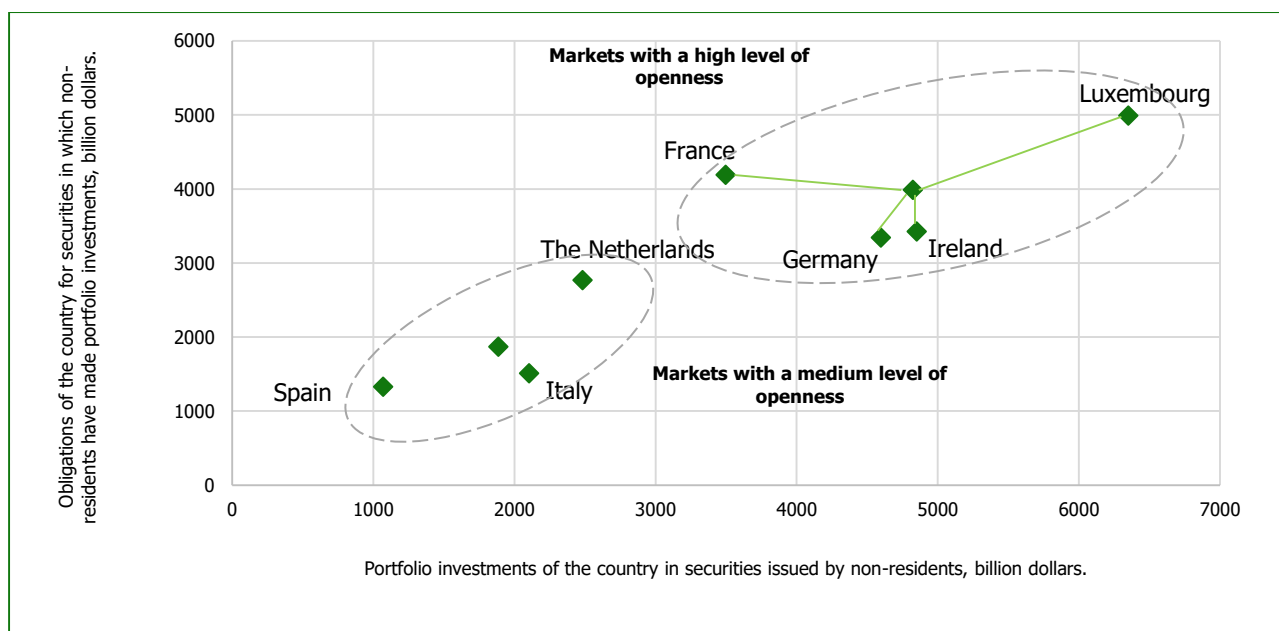


Figure 5. The investment financial services market with high and medium levels of openness in the EU, as of June 1, 2021.

At the same time, the investment financial services market with a medium level of openness includes the Netherlands, Italy and Spain. These are mainly countries whose markets are characterized by a net inflow of investment resources.

The investment financial services market of post-socialist EU countries (Bulgaria, Estonia, Latvia, Lithuania, Slovakia, Slovenia, Poland, Romania, Hungary, Czech Republic) and Ukraine belong to the group of countries with a low level of market openness, compared to other markets of the EU countries.

Countries with the investment financial services market with net outflows and net inflows of investment resources should strive to balance inflows and outflows of investment resources to maintain the financial stability of the market in the long term.

We also note that the division of investment financial services markets by the criterion of openness into markets with a net inflow of investment resources and markets with a net outflow of investment resources is not yet a measure of their efficiency or a positive or negative characteristic of the development of the corresponding segment of the financial market. The latter is largely determined by the impact of financial services investment markets on the development of the economy or its certain characteristics (for example, financial stability, economic security, etc.). The characteristics of the favorable state of investment markets of financial services according to the criterion of openness may change under different conditions of the economic environment. As it follows from the results of the diagnostics, as of mid-2021, Ukraine belongs to the countries with a net inflow of investment resources but was in the group with a low level of openness. At the same time, in the conditions of the beginning of economic recovery, this was clearly a positive sign for Ukraine and one that contributed to its economic development. We are convinced of the sufficient objectivity of the assumptions that by the end of 2022, Ukraine is expected to be in the cluster of countries with a net outflow of investment resources, which is caused by only one factor - the full-scale invasion of Ukraine by an aggressor country. At the same time, we note that, if it were not paradoxical, in this case, the nascent stage of the development of the domestic market of investment financial services and the low level of its openness is a positive aspect given that its collapse objectively is not capable of significantly worsening the conditions of the economic environment.

DISCUSSION

It is worth emphasizing that scientists assess the openness of financial markets using various indicators. Thus, M. Stolbov uses de-jure, de-facto capital account openness and the KOF economic globalization index [24]. D. Menzie developed an index for evaluating financial openness by measuring the extent of capital controls [25]. D. Quinn et al studied 13 de jure and de facto indicators of capital account or financial current account openness. They substantiated that the Investment Freedom Index by the Heritage Foundation is not useful for rigorous economic analysis [26]. W. Alrawabdeh identifies the factors driving investment (security and political stability, incentives and facilities, guarantees, legal environment and stability of legislation, modern infrastructure, stability of the financial and banking system, openness of the country and easy access to global markets) and determines that the most important obstacles to investment were the administrative bureaucracy [27]. Yong, M. & Diandian, Ch. foreign direct investment, measured by the amount of foreign capital in actual utilization, as a percentage of GDP [28] is used as an indicator of financial openness. At the same time, these studies were mainly carried out in the context of assessing the impact of financial openness on financial stability, economic development, investment growth, and public happiness. The scientific task that we set in this work is the development of a methodology for assessing the openness of investment financial services markets in terms of national markets, and the expected result is their ranking by the level of openness. That is why we are convinced of the feasibility of using the flow approach and taking into account the gaps between the incoming and outgoing cash flows of investment resources, as well as their origin (resident and non-resident).

CONCLUSIONS

Thus, a methodical approach to assessing the openness of the investment financial services market has been developed, which, unlike other approaches, involves distinguishing markets with a net inflow of investment resources, markets with a net outflow of investment resources, and markets with a balanced movement of investment resources. The analytical basis of this approach is the iterative method of "k-means" cluster analysis. This made it possible to rank the national markets of investment financial services into three clusters: 1) markets with a high level of openness; 2) markets with a medium level of openness; 3) markets with a low level of openness; determination of the average volumes of portfolio investments in securities issued by non-residents, as well as liabilities for securities in which non-residents have made portfolio investments, for each cluster.

We emphasize that the methodological value of the obtained scientific result lies in the multi-level approach to the ranking of national markets of investment financial services. We are convinced that its application on a pragmatic level will improve the quality of monitoring the development of the studied markets under the influence of various factors (institutional, macroeconomic, financial, social, political, methodological, and others). This is explained by the fact that any influencing factor ultimately affects the amount of relevant cash flows, as well as the economic behavior of direct subjects of investment relations (investors and borrowers). In addition, we have decided to consider the flows of investment resources in terms of residents and non-residents, which is due to the objectively different content of factors that affect their economic behavior.

The application of this approach makes it possible to perform an in-depth comparative analysis of the openness of the investment financial services market of different countries, characterize the level of their openness more accurately, and, thanks to this, to develop more effective measures for the regulation of the investment financial services market.

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Коваленко Ю., Мартиненко В., Чуницька І., Діденко Л., Яценко І., Шульга Т.

НОВІТНІЙ НАУКОВО-МЕТОДИЧНИЙ ПІДХІД ДО ОЦІНКИ ВІДКРИТОСТІ РИНКІВ ІНВЕСТИЦІЙНИХ ФІНАНСОВИХ ПОСЛУГ

Стаття присвячена розвитку науково-методичного підходу до оцінки рівня відкритості ринку інвестиційних фінансових послуг. Стосовно базового поняття наукової статті – «відкритість» – його запропоновано тлумачити за поточним підходом, згідно з яким слід розмежувати три типи ринків: ринки з чистим відтоком інвестиційних ресурсів, ринки з чистим притоком інвестиційних ресурсів та ринки зі збалансованим рухом інвестиційних ресурсів.

Оцінку відкритості ринків інвестиційних фінансових послуг запропоновано здійснювати методом k-середніх, тобто за підходом кластерного аналізу, метою якого є поділ m спостережень на k кластерів, при цьому кожне спостереження відноситься до кластера, до центру (центроїда) якого найближче. Перевагами методу кластерного аналізу k-середніх є такі: по-перше, можливість застосування цього методу при порівняно невеликих обсягах даних, оскільки не потрібно виконувати вимоги до нормального розподілу випадкових величин, які обов'язкові для класичних методів статистичного аналізу; по-друге, для розподілу множини, що містить n об'єктів, на k кластерів, число кластерів повинно бути задано наперед.

Апробацію методичного підходу здійснено на прикладі різних національних моделей ринків інвестиційних фінансових послуг, а саме: на прикладі країн Європейського Союзу та України. Загалом, ринки інвестиційних фінансових послуг постсоціалістичних країн ЄС (Болгарії, Естонії, Латвії, Литви, Словаччини, Словенії, Польщі, Румунії, Угорщини, Чехії) та України належать до групи країн із низьким рівнем відкритості ринку порівняно з іншими ринками країн ЄС.

У статті розвинуто науково-методичний підхід до оцінювання відкритості ринків інвестиційних фінансових послуг, що, на відміну від інших підходів, передбачає: розмежування ринків із чистим притоком інвестиційних ресурсів, ринків із чистим відтоком інвестиційних ресурсів та ринків зі збалансованим рухом інвестиційних ресурсів; розподіл ринків за допомогою ітеративного методу кластерного аналізу «k-середніх» на три кластери: 1) ринки з високим

рівнем відкритості; 2) ринки з середнім рівнем відкритості; 3) ринки з низьким рівнем відкритості; визначення середніх обсягів портфельних інвестицій у цінні папери, емітентами яких є нерезиденти, а також зобов'язань за цінними паперами, у які здійснено портфельні інвестиції нерезидентами, для кожного кластера.

Ключові слова: ринок інвестиційних фінансових послуг, відкритість, метод k-середніх, ринки з чистим відтоком інвестиційних ресурсів, ринки з чистим притоком інвестиційних ресурсів та ринки зі збалансованим рухом інвестиційних ресурсів

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