

Ensuring the issuance of investment-attractive corporate bonds

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Abstract. Despite the fact that the scientific literature pays considerable attention to ensuring the investment attractiveness of national corporate bond markets based on macro-environmental factors, as well as individual companies – based on micro-environmental factors, the issue of optimizing the characteristics of corporate bonds in the prospectus remains insufficiently disclosed. However, coupon rate, price and maturity are the basic indicators that investors take into account when deciding to purchase corporate bonds, so they need more detailed research. approach to ensuring the issuance of investment-attractive corporate bonds, based on the use of indicators of companies with the highest level of demand on the stock market to build a matrix of coupon rate, price and maturity of corporate bond, the use of which allows to establish the optimal ratio between these characteristics. Enterprises issue corporate bonds to attract additional financial resources in their activities, so they are interested in ensuring the investment attractiveness of these securities. The investment attractiveness of corporate bonds depends on their own characteristics, as well as on micro- and macro-environmental factors. The most affordable way to ensure the investment attractiveness of corporate bonds is to establish the optimal characteristics of bonds in the prospectus. The companies whose corporate bonds are in the highest demand on the stock market have the optimal ratio between coupon rate, price and maturity. Determining the trend of ensuring a balance between these indicators of leading companies allows us to establish a model of decision-making by investors in a particular market of corporate bonds.

1 Introduction

The formation and development of the national corporate bond market depends on many factors, but the main one is the desire of domestic and foreign investors to invest in debt instruments of the country. This desire depends on the investment attractiveness of the market, issuers and, in fact, corporate bonds.

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Kulyk A. and Koretska O. note that the concept of "investment attractiveness" refers to three groups of factors, namely: "investment attractiveness based on financial analysis; investment attractiveness based on investing money in securities; investment attractiveness based on the psychological aspect". Based on this, the authors propose the following interpretation of the concept: "a relative concept that reflects the opinion of a particular group of investors regarding the ratio of risk, profitability and cost of financial resources in a country, region or industry" [1].

Therefore, in the case of corporate bonds, investment attractiveness relates to environmental factors, factors of the internal environment of the issuing company and factors specific to corporate bonds. The external environment covers organizational and economic mechanisms of formation and regulation of the corporate bond market [2]. Factors of the microenvironment are a set of characteristics of management and financial and economic activities of the enterprise, prospects for its development and opportunities to attract investment resources. The financial and economic factors of increasing the investment attractiveness of the enterprise include: increasing the efficiency of use of fixed assets at the enterprise; increasing the efficiency of working capital; improvement of liquidity, financial stability, solvency of the enterprise; improving the management of enterprise profits; implementation of marketing measures; increasing the efficiency of tariff policy; implementation of prices monitoring for raw materials and components; quality management [3].

Many researchers have studied the investment attractiveness of national corporate bond markets: J. K. Ringui, Y. Baranova, G. Douglas, and L. Silvestri – the UK, Mangan and Milosavljevic (2017) – Australia. L. Dovgan and D. Samkova conduct research on macroeconomic factors (economic and political) that affect the competitiveness of the national market of corporate bonds of Ukraine [4-10]. The R. Jelili study "The Global Foreign Direct Invest Country Attractiveness Index" [11] is quite representative, which allows to analyse the investment attractiveness of each country by the following parameters: macroeconomic stability; structure and development of the financial market; institutional environment; business environment; market access and its potential; human and natural resources; cost components; logistics efficiency; telecommunications and ICT; agglomeration effect; technological environment and differentiation. Scientific researches of V. Khrapkina, H. Matukova, and O. Korovina (2019), O. Ilyash (2020), V. Dzenis, O. Dzenis and O. Shestakova (2020), V. Dzynis, O. Dzenis and O. Shestakova (2017) are devoted to the study of the investment attractiveness of enterprises and the factors of its provision [12-14]. However, this level does not allow to identify factors of different investment attractiveness for different issues of corporate bonds of an enterprise or between similar enterprises in the main results. Regarding the investment attractiveness of corporate bonds, Belous I. examines the issue from the standpoint of their risk [15]. In addition, some factors are studied by the following scientists: N. Boldyreva (2020), N. Dass and M. Massa (2014), C. Calomiris, M. Larrain, S. Schmukler and T. Williams (2019) [16-18].

This suggests that the problem of issuing investment-attractive corporate bonds on the basis of determining the optimal characteristics remains insufficiently studied, which led to the choice of this research topic.

The aim of the study is to substantiate the theoretical provisions and provide practical recommendations for ensuring the issuance of investment-attractive corporate bonds.

2 Materials and methods

Within the framework of scientific research, a set of general and specific methods at the empirical and theoretical levels was used to achieve the objective and test the hypotheses put forward in the research paper, such as: method of correlation analysis; external

benchmarking techniques; method of multifactor regression analysis; method of graphic interpretation; methods of systematization, grouping and logical generalization for systematization of information, drawing conclusions and making scientific proposals of the research paper.

To determine the impact of coupon rate, maturity and price of corporate bonds on the quantity of bonds sold and the amount of capital raised, a correlation analysis was performed. The technique of external benchmarking was used to identify patterns of establishing a balance between coupon rate, maturity and price of corporate bonds to ensure the issuance of investment-attractive securities [19]. The functional dependence between coupon rate, maturity and price of the corporate bonds is determined on the basis of a multifactor regression model. The method of graphical interpretation is used to build a matrix of coupon rate, price and maturity of corporate bonds, which allows to clearly display the results of the study. The empirical basis of the study is the data of the National Commission on Securities and Stock Market of Ukraine [20] and the Agency for Infrastructure Development of the Stock Market of Ukraine [21].

The data cover 415 exchange contracts of 10 corporate bond issuers in 2019, which had the greatest demand on the stock market of Ukraine during this period, namely: TASKOMBANK JSC, PJSC "MANDARIN PLAZA", PJSC Pharmaceutical Company "Darnytsia", LLC "CORP Food Center", LLC "Lavina Shopping and Entertainment Center", JSC "ALPHA-BANK", Investbud Garant LLC, NOVA POSTA LLC, ULFINANCE LLC, and PISKIV GLASSWARE PLANT LLC. These companies operate in various sectors of the economy, but their corporate bonds are ordinary, i.e. unsecured, which reveals the reasons for the formation of high demand for these companies.

3 Results

Corporate bonds have many advantages and disadvantages that are exacerbated or suppressed depending on the type of bond. Nevertheless, this debt instrument is one of the most important elements in the structure of external sources of business financing. The results of the study of theoretical approaches to the advantages and disadvantages of corporate bonds for both companies and investors allow us to identify both the common advantages of the subjects of property relations, and diametrically opposed (Table 1).

Table 1. Advantages and disadvantages of corporate bonds *

Advantages for the issuer		Disadvantages for the issuer
An increase in the market value of bonds leads to an increase in their value to issuers and a decrease in their value to owners. The bondholder does not participate in the management of the enterprise. Bond transactions are not subject to VAT and income tax, but passive income of bondholders is taxed.	An alternative to the banking sector, which allows to attract financial resources and to invest even in times of crisis. Diversifications of types of corporate bonds that allow to take into account the needs and interests of a wide range of issuers and investors. Opportunity to invest in foreign companies and attract financial resources of foreign investors.	Priority of liabilities to bondholders over shareholders. Availability of information on the issuer's business activities, its credit rating, the level of risk of bonds. The decrease in the issuer's income does not reduce the level of payments to bondholders.
Disadvantages for the investor	Advantages for the investor	

The investment attractiveness of corporate bonds is formed on the basis of macro-environment, micro-environment factors and specific characteristics of the corporate bonds themselves.

In the process of investing in bonds, it is necessary to pay attention to a number of key characteristics, namely: (1) maturity, (2) terms of early redemption, (3) credit quality, (4) coupon rate and (5) price. They allow the investor to estimate the real value of specific debt obligations and decide to what extent this type of investment meets its investment objectives.

Maturity refers to a predetermined date in the future by which the face value of a corporate bond must be returned to the investor. Bond maturities are usually between one year and 30 years.

The terms of early redemption apply to callable corporate bonds or puttable corporate bonds. Callable bonds provide the issuer with the right to early redemption for certain events, and puttable bonds – give their owner the right to demand from the issuer a refund of their principal amount plus all accrued interest for certain events. Before buying corporate bonds, the investor should find out whether the terms of the sale include early redemption clauses and, if so, make sure that he will receive income calculated on the first possible early redemption date, and not just income on the redemption date. Corporate bonds sold with an early redemption clause typically yield higher annual returns to offset the risk associated with early withdrawal.

Corporate bonds can have a variety of credit quality. When issuing corporate bonds, the issuer is obliged to provide detailed information about its financial position and solvency. This information is contained in the prospectus, but it is difficult to conclude whether the company will be able to pay regular interest payments 5, 10, 20 or 30 years after the issue. Rating agencies come to the rescue, giving many corporate bonds a credit rating during their issuance and then tracking them throughout the "life cycle".

Corporate bonds bring investors interest income, which can be fixed, "floating" or paid after maturity. For most debt obligations, the coupon rate is set at the same level until maturity and is calculated as a percentage of the nominal value of the security (fixed rate).

The price of a corporate bond is based on a large number of variables, including interest rates, supply and demand, credit quality, maturity and tax status. Corporate bonds of new issues are usually sold at face value or close to this level. The prices of corporate bonds traded on the secondary market fluctuate in response to changes in interest rates. If the price of the bond exceeds the face value, it is said that the bond is sold at a premium; if the price is lower than the face value, they say that the bond is sold at a discount.

The purpose of issuing corporate bonds by enterprises is to attract financial resources from external sources. That is why issuers need to determine the optimal ratio between the characteristics of corporate bonds.

Another indicator that is taken into account by investors in the decision-making process for the purchase of certain corporate bonds is the yield, which depends on the above factors. Many scientists pay attention to identifying factors shaping yield-to-maturity [26-28] and yield spreads [29, 30]. Instead of focusing on the yield of corporate bonds, we offer to focus on demand.

In this study, investment attractiveness is understood as a set of characteristics of corporate bonds that allow to attract the maximum amount of financial resources from their sale in the activities of the issuing company. Characteristics of corporate bonds are laid down in the issue prospectus and are formed depending on the needs of the enterprise and its capabilities. It is important to identify the reasons for the higher demand for corporate bonds of certain issuers on the stock market, so we will conduct a study of ten companies that in 2019 had the highest demand on the stock market of Ukraine (Fig. 1).

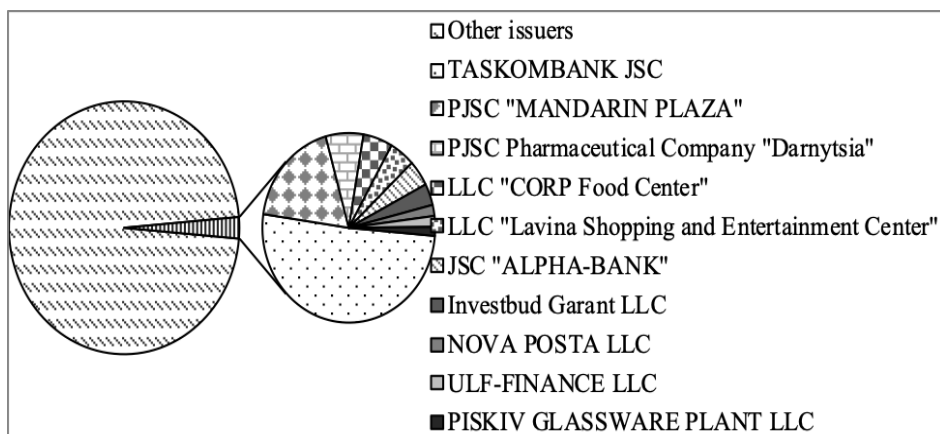


Fig. 1. Shares of enterprises with the highest demand in the stock market of Ukraine in 2019 [20]

According to the NSSMCU report for 2019, the bonds of JSC TASKOMBANK were the most in demand on the stock market (trading volume amounted to UAH 4,243.13 million, i.e. 1.39% of the total trading volume), PJSC MANDARIN PLAZA (UAH 1,529.79 million, i.e. 0.5%), PJSC Pharmaceutical Firm "Darnytsia" (UAH 587.23 million, 0.19%), LLC "CORP Food Center" (UAH 458.00 million, 0.15%), LLC "Lavina Shopping and Entertainment Center" (UAH 397.29 million, 0.13%), JSC "ALPHA-BANK" (UAH 368.87 million, 0.12%), Investbud Garant LLC (UAH 306 million, 0.1%), LLC NOVA POSHTA (UAH 156.33 million, 0.05%), ULF-FINANCE LLC (UAH 153.77 million, 0.05%) and PISKIV GLASSWARE PLANT LLC (UAH 127 million, 0.04%) %).

Characteristics of corporate bonds, between which it is advisable to establish a balance before the issue, we consider price, coupon rate and maturity. Price was chosen as one of the indicators, because investors always pay attention to the price of financial instruments (Vo, 2021). Maturity and coupon rate are chosen, because such important indicators as yield-to-maturity and yield spreads depend on them.

Descriptive statistics on exchange contracts of these enterprises in 2019 are provided in Table 2.

Table 2. Descriptive statistics on stock exchange contracts

	Quantity of corporate bonds sold	The amount of borrowed capital, mln UAH	The price of corporate bonds, UAH	Coupon rate of corporate bonds, %	Maturity, days
Mean	369959	21,01	1007,76	12,25	1372
Median	3615	3,70	1022,80	11,00	1188
Maximum	61111111	606,59	1499,53	30,00	6946
Minimum	3	0,003	0,90	0,00	116
Number of observations	415	415	415	415	415

To determine the relationship between the indicators of Table 2, a correlation analysis was performed, which revealed the following:

– There is a significant inverse relationship between the price and the quantity of corporate bonds sold (correlation coefficient is -0.58);

- There is a slight inverse relationship between the price and the amount of borrowed capital (correlation coefficient is -0.08);
- There is a moderate inverse relationship between the coupon rate and the quantity of bonds sold (correlation coefficient is -0.29);
- There is a slight inverse relationship between the coupon rate and the amount of borrowed capital (correlation coefficient is -0.08);
- There is a moderate direct proportional relationship between maturity and the quantity of bonds sold (correlation coefficient is 0.19);
- There is an average direct proportional relationship between maturity and the amount of borrowed capital (correlation coefficient is 0.41).

The next step in identifying the optimal level of these characteristics of corporate bonds is the use of trend research techniques, which belongs to external benchmarking, for enterprises with the most attractive corporate bonds on the internal market. We decided not just to find the optimal level of price, coupon rate and maturity of their bonds, but to determine the optimal ratio between them based on the construction of a multifactor regression model (1).

$$r=0,013203*P - 0,000778*d \tag{1}$$

где: r – Coupon rate of corporate bonds of the issuer in accordance with the exchange contract;

P – the price of the issuer's corporate bonds at which the exchange contract was concluded;
 d – the number of days before the maturity of the sold corporate bonds at the time of concluding the exchange contract.

The coefficient of determination of the model is very high ($R^2=0,96$), and $F_{stat}>F$ at a degree of freedom of 1%. The coefficient at P is 62 times higher than the statistical error, and at d – 6 times higher, which indicates the statistical significance of the factors.

The generalized form of the results of regression analysis should be presented in matrix form to ensure ease of determining the required level of coupon rate in accordance with the expected market price and the desired maturity of corporate bonds. Based on the indicators of equality (1), we construct a matrix that indicates the regularity of setting the coupon rate for corporate bonds with different maturity and market price (Fig. 2). This matrix allows to determine the investment attractive coupon rate for companies that have similar indicators of financial and economic activity as the surveyed companies.

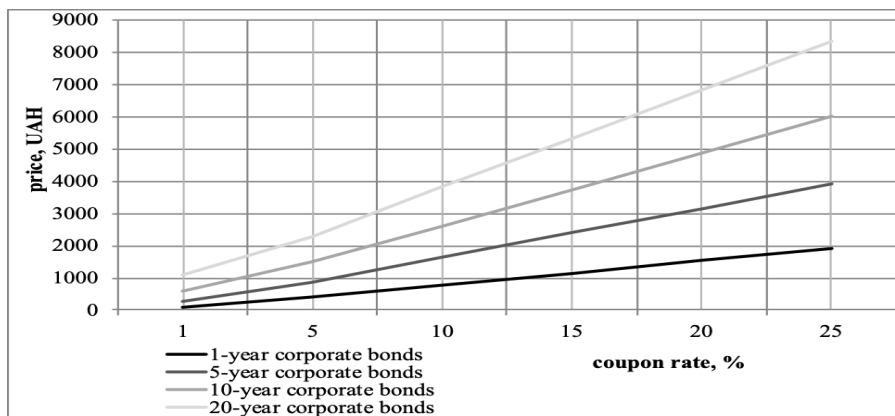


Fig. 2. Matrix of coupon rate, price and maturity of corporate bonds

Therefore, before forming a bond prospectus, companies must identify issuers that have similar features of economic activity and have the highest demand on the stock exchange.

Data on the company's transactions on the stock exchange serve as a basis for building a functional relationship between coupon rate, maturity and the price of corporate bonds to form a matrix. With the help of the matrix, the company will be able to determine the appropriate maturity of the bond issue and their coupon rate to ensure the desired level of funding through this financial instrument.

4 Discussions

- Effect of coupon rate on investment attractiveness

The results of the correlation analysis indicate that the higher the coupon rate, the less quantity of corporate bonds will be purchased and the smaller the amount of borrowed funds will be attracted to the enterprise. This contradicts the conclusion of Kim J., Kim D., and Jung H. [29], who argue that the coupon rate increases non-callable yield spreads, and hence the investment attractiveness of corporate bonds. However, the negative interdependence can be explained by investors' distrust of inflated coupon rates in the Ukrainian market, which is accompanied by high risk, especially given that the surveyed corporate bonds are unsecured.

- Effect of maturity on investment attractiveness

Maturity has a positive effect on the investment attractiveness of corporate bonds. This conclusion contradicts the results of a study by Gomariz and Ballesta [31], who argue that the greater the maturity of corporate bonds, the lower their investment efficiency. Cortina, Tatiana and Sergio [32] are also in favor of short-term corporate bonds, pointing out that such influence is inherent in developing countries. However, the results obtained coincide with the findings of N. Simu (2017) [33], Sintami and Marsoem [27]. We believe that the clarification of this conclusion requires additional study of the impact of macro-environmental factors that determine the reason for the preference of investors in favor of short-term or long-term financial instruments.

- Effect of price on investment attractiveness

Given that the demand for corporate bonds was chosen as the basis for investment attractiveness, it was found that the higher the price, the smaller the amount of borrowed funds. This conclusion corresponds to the law of demand [34].

- The optimal ratio between coupon rate, maturity and price

Equation (1) allows to state that the coupon rate has a directly proportional dependence on the bond price and an inversely proportional dependence on the maturity. Optimization of the coupon rate in accordance with the maturity of corporate bonds is as follows: increasing the term by 6 months should affect the reduction of the coupon rate by 0.14%. The higher the price of bonds, the higher the interest rate investors seek. The optimal ratio is at which the interest rate on the price of UAH 1,000 per corporate bond is 13.2%. Given that such studies of the investment attractiveness of corporate bonds have not been found in the scientific literature, the result is a significant contribution to determining the model of investor behavior in a particular market of corporate bonds. Establishing the optimal ratio between the characteristics of corporate bonds gives issuers the opportunity to attract more debt to ensure the activities and development.

5 Conclusions

The characteristics of corporate bonds that are included in the issue prospectus are important determinants of ensuring their investment attractiveness. Modern enterprises need not just to identify the most optimal level of these characteristics, but to achieve a balance between them. Each corporate bond market is characterized by its own set of

investors, which is characterized by one or another model of decision-making on the purchase of debt instruments. Research of the most successful issuers on raising funds on the basis of this financial instrument allows to identify this model.

An approach to managing the investment attractiveness of corporate bonds is proposed, which involves the selection of issuing companies whose corporate bonds are most in demand on the stock market, collecting data on their stock contracts and conducting a regression analysis, which establishes a balance between price, maturity and coupon rate. The obtained data are used to build a matrix of coupon rate, price and maturity of corporate bonds, the use of which allows to set the most attractive coupon rate for this type of corporate bonds.

As a result of the study, it was found that in the corporate bond market of Ukraine, investment attractiveness is negatively affected by price and coupon rate, and positively by maturity. Ensuring the issuance of attractive corporate bonds involves balancing these three characteristics, namely: an increase in the maturity of 6 months should affect the reduction of interest rates by 0.14%, and an increase in price for every 100 UAH should be accompanied by an increase in coupon rate by 1.3%.

References

1. A. M. Kulyk, O. V. Koretska, Visnyk NTU «KhPI», **15(1291)**, 7 (2018)
2. O. M. Halytskyi, Ukrainskyi zhurnal prykladnoi ekonomiky, 1(5), 6 (2016)
3. N. V. Gavrylova, Naukovi pratsi Kirovohrads'koho natsionalnoho tekhnichnoho universytetu **20**, 324 (2011)
4. G. Abuselidze, A. Slobodianyuk, Lecture Notes in Networks and Systems **206**, 24 (Springer, 2021)
5. J. K. Ringui, *A survey of factors determining development of corporate bonds market* (2012)http://erepository.uonbi.ac.ke/bitstream/handle/11295/13301/Ringui_A%20survey%20of%20factors%20determining%20development%20of%20corporate%20bonds%20market%20in%20Kenya.pdf?sequence=3
6. Y. Baranova, G. Douglas, L. Silvestri, *Simulating stress in the UK corporate bond market: investor behaviour and asset fire-sales.* (2019) <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2019/simulating-stress-in-the-uk-corporate-bond-market-investor-behaviour-and-asset-fire-sales.pdf>
7. J. Mangan, F. Milosavljevic, *The Australian Corporate Bond Market* (2017). <http://www.elri.com.au/wp-content/uploads/The-Australian-Corporate-Bond-Market-Discussion-Paper.pdf>
8. G. Abuselidze, Journal of Applied Economic Sciences, **13(7)**, 1929 (2018)
9. A. Slobodianyuk, G. Abuselidze, E3S Web of Conferences **234**, 00084 (2021).
10. L. P. Dovhan, D. M. Samkova, Investytsii: praktyka ta dosvid **17**, 12 (2009)
11. R. B. Jelili, *The Global Foreign Direct Invest Country Attractiveness Index.* (2020). <http://www.fdiattractiveness.com/ranking-2020/>
12. V. Khrapkina, H. Matukova, O. Korovina, Revista ESPACIOS **40(16)**, 1 (2019)
13. O. Ilyash, Bulletin of Geography **47(47)**, 95-113 (2020)
14. V. O. Dzenis, O. O. Dzenis, O. A. Shestakova, Market Infrastructure **5**, 9-10 (2017)
15. I. V. Bilous, Formuvannia rynkovykh vidnosyn v Ukraini, 91-95 (2008)
16. N. B. Boldyreva, Journal of Risk and Financial Management **13(4)**, 72 (2020)
17. N. Dass, M. Massa, The Review of Financial Studies **27(7)**, 2219 (2014)

18. C. W. Calomiris, M. Larrain, S. L. Schmukler, T. Williams, *Search for yield in large international corporate bonds: Investor behavior and firm responses*. (Massachusetts: National Bureau of Economic Research, 2019)
19. K. Mertins, G. E. Siebert, S. Kempf, *Benchmarking: Praxis in deutschen Unternehmen* (Verlag: Springer, 2013)
20. NCSSMU. Richnyi zvit Natsionalnoi komisii z tsinnykh paperiv ta fondovoho rynku za 2019, (2019). <https://www.nssmc.gov.ua/document/?id=10666647>
21. Stock Market Infrastructure Development Agency of Ukraine (Smida), <https://smida.gov.ua>
22. International Capital Market Association. Economic importance of the corporate bond markets, <https://www.icmagroup.org/assets/documents/Media/Brochures/2013/Corporate-Bond-Markets-March-2013.pdf>
23. K. Jackowicz, *Post-Communist Economies* **29(1)**, 1 (2017).
24. O. A. Batalova, *Naukovi pratsi Natsionalnoho universytetu kharchovykh tekhnolohii* **49**, (2013) <http://dspace.nuft.edu.ua/bitstream/123456789/7953/1/corpor.pdf>
25. G. Abuselidze, L. Beridze, *Proceedings of the 4th International Conference on European Integration (ICEI)*, 29 (2018)
26. A. Weniasti, B. S. Marsoem, *International Journal of Innovative Science and Research Technology* **4(8)**, 286 (2019)
27. A. A. Sintami, B. S. Marsoem, *International Journal of Innovative Science and Research Technology* **5(7)**, 1443 (2020)
28. A. Latif, B. S. Marsoem, *International Journal of Innovative Science and Research Technology* **4(10)**, 33 (2019)
29. J. M. Kim, D. H. Kim, H. Jung, *The North American Journal of Economics and Finance* **53**, 101210 (2020)
30. N. Apergis, *The Quarterly Review of Economics and Finance* **72**, 34 (2019)
31. M. F. C. Gomariz, J. P. S. Ballesta, *Journal of Banking and Finance* **40**, 494 (2014)
32. J. J. Cortina, T. Didier, S. L. Schmukler, *The World Economy* **41(12)**, 3288 (2018)
33. N. Simu, *Business and Economic Horizons* **13(5)**, 619(2017)
34. W. Nicholson, C. M. Snyder, *Microeconomic Theory: Basic Principles and Extensions* (Mason, OH: South-Western, 2012)