IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN:2278-487X, p-ISSN: 2319-7668. Volume 26, Issue 2. Ser. 3 (February. 2024), PP 46-52
www.iosrjournals.org

Analysis Of Factors Influencing The Financial Education Of Brazilian School Students

Rômulo César Reisdorfer Da Silva[1], Claílton Ataídes De Freitas[2], Kalinca Léia Becker[3], Dieison Lenon Casagrande[4], Natali Morgana Cassola[5]
[1](Universidade Federal De Santa Maria)
[2] (Universidade Federal De Santa Maria)
[3] (Universidade Federal De Santa Maria)
[4] (Universidade Federal De Santa Maria)
[5] (Universidade Federal De Santa Maria)

Abstract:
The current financial situation of Brazilians is worrying, given that almost 80% of families are in debt. In order to begin to reverse this scenario, the Federal Government, through the Securities and Exchange Commission, launched the "Financial Education in Schools" program. Based on the situation presented and in order to support and provide subsidies for the program, this article sets out to evaluate factors that influence the learning of financial education among young Brazilians, in order to provide better guidance for the program. It was used data from PISA, an international student assessment program, collected in 2018, covering more than 8,000 students in the country. From a linear regression using the plausible value of financial literacy of the individuals as the dependent variable, which represents the probable score of the students in this question, it was observed that male individuals and those of higher socioeconomic status obtained better results. In addition, it was observed that having specific classes at school on the subject, having access to books at home, liking to compete, earning money in some way and making autonomous decisions about how to spend gave students better financial literacy results. Based on this, in order to reduce inequalities and provide support to the most vulnerable population with the least knowledge about finance, we suggest actions aimed at women and individuals of low socioeconomic status, mainly focused on specific financial literacy classes, which have been shown to be more effective than complementary classes in another subject or interventions outside of school.
***Key Word**: Financial literacy; PISA; Indebtedness.*

Date of Submission: 30-01-2024 Date of Acceptance: 10-02-2024

I. Introduction

The current financial situation of Brazilians is extremely worrying. According to the National Survey of Consumer Indebtedness and Default conducted in November 2021 by the National Confederation of Trade in Goods, Services and Tourism, 75.6% of Brazilian families are in debt, the highest percentage in almost 12 years (CNC, 2021).

The low level of financial education among the Brazilian population doesn't just affect those in deficit. According to the CNDL/SPC Brasil survey (2020), savings are still the most popular investment, preferred by 62% of investors, even though they are one of the worst investments available, unable to even maintain purchasing power because they often yield less than inflation. More alarming than this figure is the fact that 27% of the population chooses to keep their money at home, without getting any return on it.

In order to begin to reverse this situation, in August 2021 the Federal Government (2021, p.1) reported that it "launched, through the Ministry of Education (MEC) in partnership with the Securities and Exchange Commission (CVM), the Financial Education in Schools Program". Also according to the Federal Government, teachers who are already in the workforce will be trained to teach this new subject.

Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019) conducted a study evaluating factors that influence the learning of financial education of school students from 13 OECD countries and 5 partner countries: Colombia, Croatia, Latvia, Russia and Shanghai-China. In order to contribute to the understanding of this subject in Brazil and to assist in the process of introducing financial education teaching in schools, this study aims to evaluate the factors that affect Brazilian students' learning of financial education, comparing the results obtained in both studies.

In view of the topicality of the subject, the issues raised by the article by Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019) and the introduction of financial education in Brazilian schools, the following question arises: is it possible to evaluate the factors that influence the learning of financial education by Brazilian students?

In order to answer the problem raised, the following general objective was established: to evaluate the factors that influence the financial education of Brazilian school students. In order to achieve the general objective and its complementation, the following specific objectives were established: to survey the factors that influence the learning of financial education among Brazilians; to evaluate the significance and intensity of each of the factors; to compare the results with the results obtained by Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019).

The study is justified in view of the alarming situation of indebtedness of Brazilian families, which urges the need to educate the population financially. In addition, given the topical nature of the subject and its recent introduction in Brazilian schools, it is important to study the subject in greater depth in order to provide information to help shape the way in which this content is taken to students in Brazilian schools.

This study uses data from the PISA survey carried out in 2018. This time window was chosen because it is the most recent survey published by PISA and because it is the same as the one used in the article by Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019), thus improving the comparison.

According to Cordero, Gil-Izquierdo, and Pedraja-Chaparro (2019), offering financial education has a significant impact on improving students' ability to make financial decisions. In addition, in his econometric research, it was possible to observe that: private institutions and NGOs tend to better prepare their students to deal with financial problems than schools, and within these, private schools obtain better grades; men get better results; immigrants have much lower grades; The amount of books in the home is a highly influential factor, both positively and negatively.

In addition to verifying the influencing factors, no difference was observed between teaching financial education alongside other subjects, such as financial mathematics, or teaching it through a specific subject. This contradicts some other authors, such as Opletalová (2015), who questions the effectiveness of financial education programs that are treated as accessories to other subjects and are not properly standardized and conducted.

According to the study in Brazilian schools conducted by Bruhn et al. (2016), financial education programs in secondary schools can improve both knowledge and behavior, in addition to influencing financial choices and preferences. The results of their research showed that financial education in schools can help reduce anomalies in intertemporal choices and directly affect students' preferences. In addition, financial education can be understood as a life skill needed to make better choices, identify opportunities and plan for the future. The authors also highlight the extremely important role of educating parents to reinforce their involvement in their children's education and generate valuable dynamic learning in the family.

Frisancho (2019) also conducted a study on the financial education program in schools introduced in Peru. In this study, it was observed that in addition to the program having a very significant impact on students' financial skills, no negative effects were observed from the program, given that the result of the program was linear for all participants, regardless of gender, criteria of patience and self-control, prior knowledge of the subject, parental education and whether the student works or not. Thus, it was observed that the program developed in Peru did not increase inequalities and generated positive effects on its target audience. In this study it was possible to observe that the level of income did not have a significant impact on the gain in financial education, however, having a computer or access to the internet could be a factor that increases the gains from this program.

From an early age, we begin to deal with and understand various money-related situations. In order to make the most of your money, it is important to know how best to use it. Financial education can bring a number of benefits, making it possible to balance personal finances, preparing individuals for unforeseen financial situations, among others (BCB, 2013).

"The object of personal finance is to study and analyze the conditions for financing the acquisition of goods and services necessary to satisfy individual needs and desires" (PIRES, 2007, p. 12). For Cerbasi (2015), the aim of organizing one's personal financial life is to have greater control over one's money, more awareness in one's choices and more efficiency in the use of one's income.

"A family's current financial situation (good or bad) is the result of planning (or lack of it) and decisions made throughout life. Some families think they were 'unlucky' and ended up in debt instead of accumulating wealth" (HOJI, 2010, p.23). The question therefore arises as to whether bad luck or a lack of financial planning is exclusively to blame. Illness and misfortune do not choose people based on their assets, so everyone is susceptible to "bad luck" and it is up to individuals to implement a plan to get out of this situation (HOJI, 2010).

"The basic premise or hypothesis that underpins most modern economic and financial theory is based on the rationality of economic agents" (MOSCA, 2009, p. 4). According to Mosca (2009), with this premise all economic agents are one hundred percent rational, using all forms of information available in the best possible way, thus making optimal decisions. However, when observing the decisions and behaviors made by economic agents in practice, there is little evidence of this total rationality, in fact there is limited rationality, which originates from a series of behavioral tendencies that are mostly unconscious and innate. "There are several reports of investor and market behavior that are not very rational in the finance literature" (MACEDO JR, KOLINSKY and MORAIS, 2011, p. 272).

"By recognizing that individuals are not identical, nor is information perfect, behavioral finance seeks to overcome the shortcomings of the usual theoretical hypotheses of modern finance and highlight the behavior of the agents that make up the market" (ANACHE and LAURENCEL, 2013, p.88).

The idea that a better understanding of aspects of financial education leads people to make better financial decisions has expanded this field of research. This is especially important in current times where access to complex financial products is easy, and getting a loan without even checking the rates is easy (Aprea et al., 2016).

According to a study conducted by Opletalová (2015) in primary and secondary schools in the Czech Republic, people do not have enough information and financial education because they mismanage their finances and take on reckless debt. From this, catastrophic results can arise, such as foreclosures and bankruptcy. The author suggests the financial education of new generations as a means of mitigating these effects on the population in the future, as well as suggesting a standardization of the material and the way in which financial education is approached in schools, as in many cases it is still treated as a subject that is merely complementary to other subjects and approached differently according to each educational institution.

The design of an effective intervention in the field of financial education must come after an understanding of the population's current levels of financial education. This understanding encompasses several factors that are seen as key to the topic, such as knowledge about personal finance, investments, loans, necessary skills such as mathematics, motivation, confidence in applying knowledge, among others (BONGINI et al., 2018).

In their study on the factors that influence students' knowledge of financial education, Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019) identified that: men obtained better grades; the amount of books at home was a relevant factor in learning; the socioeconomic status index had a strong impact on grades; the availability of some form of financial education class improved students' grades; parental education had no significant effect; teaching financial education in a specific subject made no difference compared to incorporating it in another subject.

Frisancho (2019) conducted a study with primary collection in schools in Peru based on an experiment to introduce financial education in schools. Through this, he observed that: gender does not influence the learning of financial education; working made students have slightly lower grades; patience and self-control are not relevant personal characteristics for learning this subject; parental education is not a factor that influences learning; there are indications that socioeconomic status has an impact on learning, driven mainly by the presence of a computer and internet at home; he concluded that knowledge from this experiment was homogeneous and did not create disparities between students.

Clancy, Grinstein-Weiss and Schreiner (2001) evaluated the impact that different hours of financial education had on the propensity to make deposits in order to save money and the frequency with which these deposits occurred. The results of this study suggest that within 0 to 12 hours of studying financial education courses, there is a strong positive and increasing effect on the propensity to make deposits in order to save. After 12 hours, the effects leveled off and no significant differences in the propensity to save could be identified.

II. Material And Methods

This study used data from PISA, an international student assessment program conducted in 2018. The "financial literacy" section of PISA was used, which brings together general student data such as gender and parents' schooling with specific data on this topic, such as questions about whether the student has had financial education classes and whether they have used books on this topic (OECD, 2020).

The dependent variable will be the students' Plausible Value for Financial Literacy (PVFL). This value is a way of representing each student's likely financial literacy score based on their answers. There are 10 plausible values for each student in the database, and the average was calculated in order to obtain just one dependent variable. The covariates are described in Table 1.

Table 1: Description of model variables.

Dependent Variable	**Description**
PVFL	Valor Plausível para Alfabetização Financeira
Covariadas	**Descrição**
Male	Dummy variable (DV): Value 1 if male, 0 otherwise
Mother has higher education	VD: Value 1 if mother has higher education, 0 otherwise
More than 11 books at home	VD: Value 1 if you have more books at home, 0 otherwise
Likes to compete	VD: Value 1 if student tries harder when competing, 0 otherwise
Financial Education (FE) taught	VD: Value 1 if FE was taught at school as an independent subject, 0 otherwise

in school as a specific subject	
FE taught at school as part of another subject	VD: Value 1 if FE was taught at school as part of another subject, 0 otherwise
FE taught outside school	VD: Value 1 if FE was taught outside school, 0 otherwise
Used specific FE books	VD: Value 1 if you have used FE books in the last 12 months, 0 otherwise
Talk to your parents about expenses	VD: Value 1 if you talk to your parents about your spending, 0 otherwise
Earn money	VD: Value 1 if you earn money from part-time work or vacations, 0 otherwise
Decide where to spend	VD: Value 1 if you decide yourself where to spend your money, 0 otherwise
Parental education in years	Number of years of parental education measured in years
ESCS Index	Average socioeconomic status index

Source: PISA (2020).

The microdata for the aforementioned variables were extracted and processed using IBM® SPSS® Statistics version 25.

According to Wooldridge (2019), multiple linear regression allows inferences to be made about how several factors simultaneously affect a dependent variable. "The multiple regression model is still the most widely used instrument of empirical analysis in economics and other social sciences" (p.70).

The following multiple linear regression model was therefore defined for this study.

$$PVFL_i = \beta_0 + \sum_{i=1}^{i} \beta_k X_k + \varepsilon$$

Where:

PVFLi is the plausible value for financial literacy

β_0 is the intercept

$\sum_{i=1}^{i} \beta_k X_k$ is the sum of the covariates

ε is the error term

In order to check whether the covariates are statistically significant, the t-test is used. Here, the coefficient found in the covariate is divided by its standard deviation, as follows:

$$t\beta\hat{}j = \beta\hat{}j / sd(B\hat{}j)$$

Where:

$t\beta\hat{}j$ is the t-test value of the estimated covariate βj

$\beta\hat{}j$ is the coefficient of the estimated covariate βj

$sd(B\hat{}j)$ is the standard deviation of the estimated covariate βj

From this test, it is possible to stipulate two hypotheses

$$H_0: Bj = 0$$
$$H_1: Bj \neq 0$$

The null hypothesis H_0 indicates that the covariate has no effect on the independent variable. The alternative hypothesis H_1 indicates that the covariate has an influence on the outcome of the dependent variable, whether positive or negative (Wooldridge, 2019).

Tests were also carried out to ensure that the model was homoscedastic. Homoscedasticity means that the error variance is the same for all combinations of results from the explanatory variables. Finally, the normality of the data is tested, where the population error must be independent of the explanatory variables (Wooldridge, 2019).

III. Result

The multiple linear regression using the variables in table 1 produced the following results, shown in table 2:

Table 2: Coefficients of the covariates.

Covariate	**Coefficient (Standard Deviation)**
Male	10.131*** (2.179)
Mother has higher education	-5.196*** (1.005)
More than 11 books at home	8.329*** (1.040)
Likes to compete	10.226*** (1.194)
Financial Education (FE) taught in school as a specific subject	30.947*** (2.784)
FE taught at school as part of another subject	6.153**

	(2.669)
FE taught outside school	-3.977 (2.254)
Used specific FE books	-2.624 (1.759)
Talk to your parents about expenses	4.706*** (1.004)
Earn money	21.418*** (2.473)
Decide where to spend	12.381*** (1.230)
Parental education in years	-5.840*** (0.487)
ESCS Index	35.921*** (1.798)

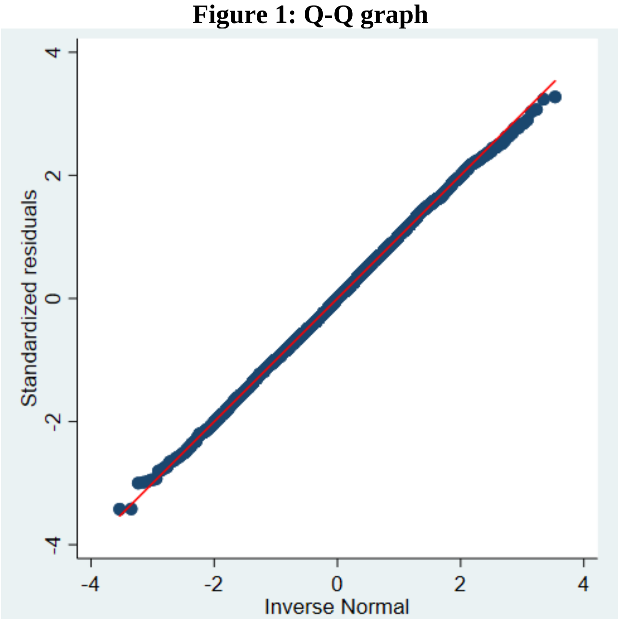
*** Sinigifcative at 1% Source: Author
** Significative at 5%

From the multiple linear regression it is possible to infer that: men score approximately 10 points higher than women; students who like to compete get better grades; teaching financial education in schools is an extremely relevant factor, and students who had financial education classes as a specific subject at school scored approximately 31 points higher than those who didn't; earning money and deciding where to spend it are also relevant factors for a good grade; parental education had a negative result on the grade; the socioeconomic status index was the main factor impacting on the grade.

In addition, some factors were not statistically significant, namely: financial education taught outside of school; use of specific financial education books. Financial education taught as part of another subject was less significant than the other factors, being significant at 5%.

The model was run in normal form and also using robust statistics. No changes in the significance of the parameters were identified in the robust form, so there is no evidence of heteroscedasticity. Normality was tested by generating the model's studentized residuals, using the Q-Q graph shown in figure 1.

Figure 1: Q-Q graph



Source: Author

Figure 1 shows that normality is maintained and no skewness is observed.

IV. Discussion

In their study, Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019) found that men scored approximately 8 points higher than women. The results obtained in the present study were very similar to this one, indicating that men have better results in this assessment. Parental education did not show a significant result in the seminal study, while in this one it was significant and slightly negative. This can be explained by the poor financial education of adults in Brazil, as presented in the introduction, who, because they don't have a solid knowledge of the subject, are also unable to teach their children properly.

The way in which financial education is taught to students drastically changes the results. In this study, the best results were obtained by teaching financial education as a specific subject. Teaching it as part of another subject helps the results, although much less than specifically. On the other hand, financial education taught outside of school was not statistically significant. In the study by Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019), only the existence of financial education showed a statistically significant and positive result, and the way in which it is taught to students does not matter. The results are different, but show that Brazil may have some particularities and benefit differently from some interventions.

Compared to Cordero, Gil-Izquierdo and Pedraja-Chaparro (2019), the amount of books in the home is a factor that positively influences the outcome in both studies. The ESCS index also has a strong positive impact in both studies, which leads us to believe that socioeconomic status and assets may be a factor in heterogeneous gains from financial education programs. On the other hand, Frisancho (2019) did not find heterogeneous results in the absorption of financial education content due to the influence of income and assets, and only indicated that the presence of a computer and internet at home could cause some difference.

This study showed that earning money by working and being responsible for deciding where to spend it leads to better results in terms of financial literacy. This is a relatively logical conclusion, as we value money more when we earn it through our own efforts. On the other hand, this result contrasts with that of Frisancho (2019), who found that working can lead students to get worse grades, probably because of the time they devote to work rather than studying.

This study assessed other variables that were not present in previous studies. The use of specific financial education books did not show a significant result, indicating that it is not such an important factor for good performance in this subject. We also tried to assess whether students who like to compete had better results, and we found that they did. Encouraging competition and teaching financial education can be achieved by using board games in the classroom, such as Renda Passiva, which was introduced in public schools by the Sumo Educacional project in the city of Santa Maria - RS. The positive results of using games in the classroom were supported by a study of Finnish schools conducted by Silinskas, Ahonen and Wilska in 2021.

V. Conclusion

The aim of this study was to verify the factors that influence the learning of financial education among Brazilians and how these aspects compare with students from other regions of the world.

It was possible to see that there are factors in common, such as the fact that men get better results, the amount of books in the house is an influential factor and that teaching financial education somehow reflects better results. The socioeconomic status index converged with the results of one study, but diverged with the results of another.

It was also observed that parental education had a result that conflicted with logic, as it was expected to improve the students' grades. The explanation for this result could be the low level of financial education among Brazilian adults.

For future studies, we suggest using the 2018 PISA database to make a comparison with the 2021 database, which should be released at the end of 2023. From this, it is possible to assess the impact of incorporating financial education into the common national curriculum for primary and secondary school students, which took place in 2018, by carrying out a study using the differences-in-differences methodology. In this way, Brazil can be compared with other countries and the results of this intervention can be observed.

References

[1]. Anache, M. C. A.; Laurencel, L. C. Finanças Comportamentais: Uma Avaliação Crítica Da Moderna Teoria De Finanças. Revista Cade – Contabilidade, Administração, Direito, Economia, V. 12, N. 1, Rio De Janeiro, 2013.

[2]. Aprea, C.; Wuttke, E.; Breuer, K.; Koh, N. K.; Daveis, P.; & Greimel-Fuhrmann, B. (2016). International Handbook Of Financial Literacy. Singapore: Springer.

[3]. Banco Central Do Brasil Caderno De Educação Financeira – Gestão De Finanças Pessoais. Brasília: Bcb,2013. 72 P. Disponível Em: < Https://Www.Bcb.Gov.Br/Pre/Pef/Port/Caderno_Cidadania_Financeira.Pdf>. Acesso Em: 11 Jul. 2019.

[4]. Bongini, P.; Iannello, P.; Rinaldi, E. E.; Zenga, M.; Antonietti, A. (2018). The Challenge Of Assessing Financial Literacy:Alternative Data Analysis Methods Within The Italian Context. Empirical Research In Vocational Education And Training, 10(1), 12

[5]. Bruhn, M.; Legovini, A.; Marchetti, R.; Zia, B. The Impact Of High School Financial Education: Evidence From A Large-Scale Evaluation In Brazil. American Economic Journal: Applied Economics, 8(4), 256–295. 2016. Disponível Em: <Https://Www.Aeaweb.Org/Articles?Id=10.1257/App.20150149>. Acesso Em: 11 Dez. 2022

[6]. Cerbasi, G. Como Organizar Sua Vida Financeira. Rio De Janeiro: Sextante, 2015.

[7]. Clancy, M.; Grinstein-Weiss, M.; Schreiner, M. Financial Education And Savings Outcomes In Individual Development Accounts. Center For Social Development: Working Papers 01–2, St. Louis, Maio, 2001. Disponível Em: < Https://Openscholarship.Wustl.Edu/Cgi/Viewcontent.Cgi?Article=1217&Context=Csd_Research >. Acesso Em: 09 Jan. 2022.

[8]. Conheça O Perfil Dos Professores Brasileiros. In: Gov.Br Governo Federal. Brasil, 2021. Disponível Em <Www.Gov.Br/Inep/Pt-Br/Assuntos/Noticias/Institucional/Conheca-O-Perfil-Dos-Professores-Brasileiros>. Acesso Em: 03 Mar. 2022.

[9]. Cordero, J, M.; Gil-Izquierdo, M.; Pedraja-Chaparro, F. Financial Education And Student Financial Literacy: A Cross Countru Analysis Using Pisa 2012 Data. The Social Science Journal. 2019. Disponível Em:

<Https://Www.Tandfonline.Com/Doi/Full/10.1016/J.Soscij.2019.07.011>.
[10]. Frisancho, V. The Impact Of Financial Education For Youth. Economics Of Education Review. 2019. Disponível Em: <Https://Www.Sciencedirect.Com/Science/Article/Abs/Pii/S0272775718306514>. Acesso Em: 15 Nov. 2022.
[11]. Hoji, M. Finanças Da Família. São Paulo: Cia. Dos Livros, 2010.
[12]. Inadimplência Aumenta Pela Primeira Vez Em Oitro Meses. In: Pesquisa Cnc Endividamento E Inadimplência Do Consumidor. Brasil, 2021. Disponível Em: <Https://Portal-Bucket.Azureedge.Net/Wp-Content/2021/11/Analise_Peic_Nov_2021.Pdf>. Acesso Em: 08 Jan. 2022.
[13]. Macedo Jr, J. S.; Kolinsky, R.; Morais, J. C. J. De. Finanças Comportamentais: Como O Desejo, O Poder, O Dinheiro E As Pessoas Influenciam Nossas Decisões. São Paulo: Atlas, 2011.
[14]. Mosca, A. Finanças Comportamentais: Gerencie Suas Emoções E Alcance Sucesso Nos Investimentos. Rio De Janeiro: Elsevier, 2009.
[15]. Oecd (2020). Pisa 2018 Results (Volume Iv): Are Students Smart About Money?, Pisa, Oecd Publishing, Paris,Https://Doi.Org/10.1787/48ebd1ba-En. Disponível Em: <Https://Www.Oecd.Org/Education/Pisa-2018-Results-Volume-Iv-48ebd1ba-En.Htm>. Acesso Em 20 Dez. 2022
[16]. Opletalová, A. Financial Education And Financial Literacy In The Czech Education System. Procedia - Social And Behavioral Sciences. Olomouc, República Tcheca. V.171, P.1176-1184. Jan. 2015. Disponível Em: <Https://Www.Sciencedirect.Com/Science/Article/Pii/S1877042815002591>. Acesso Em: 10 Jan. 2022.
[17]. Pires, V. Finanças Pessoais Fundamentos E Dicas. Piracicaba: Editora Equilíbrio, 2007.
[18]. Poupança Ainda É O Investimento Mais Utilizado Pelos Brasileiros, Mostra Spc Brasil. In: Cndl/Spc Brasil. Brasil, 2020. Diponível Em: <Https://Www.Spcbrasil.Org.Br/Uploads/St_Imprensa/Release_Educacao_Financeirainvestimentos.Pdf>. Acesso Em: 04 Jan. 2022.
[19]. Silinskas, G.; Ahonen, A. K.; Wilska, T. Financial Literacy Among Finnish Adolescents In Pisa 2018: The Role Of Financial Learning And Dispositional Factors. Large-Sacle Assessments In Education. Finlândia, 2021. Disponível Em: <Https://Largescaleassessmentsineducation.Springeropen.Com/Counter/Pdf/10.1186/S40536-021-00118-0.Pdf>. Acesso Em: 09. Dez. 2022.
[20]. Wooldridge, J. M. Introdução À Econometria: Uma Abordagem Moderna. São Paulo, Sp: Cengage Learning, 2019.