Determinants of Consumer Confidence Index to Predict the Economy in Indonesia

Benny Budiawan Tjandrasa[1] and Vera Intanie Dewi[2]

Abstract

Psychological factors play an important role in the economy and in predicting the state of the economy. One of the measurement tools of these factors is the consumer confidence index (CCI), which has recently received much attention from both researchers and policymakers. For years, Bank Indonesia has conducted surveys through face-to-face and phone call interviews with several respondents who were used as research samples to control information on economic fundamentals. The purpose of this study is to explore a new variable that is thought to affect the consumer confidence index in Indonesia and explain the influence between variables from the results of secondary data processing. This study used the multivariate regression model and t-test equations with a significance level of 5%. The variables used in this study are the foreign exchange rate, unemployment rate, corruption control index, inflation rate, and consumer confidence index from January 2015 to December 2019 in Indonesia. The results conclude that Indonesia's consumer confidence index is influenced by the inflation rate, the unemployment rate, the exchange rate, and the conditions for controlling corruption. The multivariate regression model generated from this study is a novelty in research on the consumer confidence index. This study also provides an alternative way for Bank Indonesia to evaluate the consumer confidence index, which previously used the face-to-face interview method, and the phone survey turned into using secondary data source. The use of secondary data for the multivariate regression model will accelerate policy making and is more efficient in terms of costs. [3]

***JEL classification**:* E5, E60, G4.

Keywords: consumer confidence index, foreign exchange rate, unemployment rate, corruption control index, inflation rate.

[1] Universitas Kristen Maranatha, Indonesia. benny.tjandrasa@gmail.com.
[2] Universitas Katolik Parahyangan, Indonesia. vera_id@unpar.ac.id
[3] It is the authors' pleasure to thank the Ministry of Finance, Bank Indonesia, and Badan Pusat Statistik of Republic Indonesia, for invaluable contribution to encourage this study and also for sharing the data required for this paper.

INTRODUCTION

The economic condition of a country is an important thing in maintaining political and government stability. Various countries that had experienced economic crises, which led to political and government crises, were Tunisia, Libya, Egypt, and several other countries in the Middle East, an event that is known as the Arab Springs. Today, the economic condition of a country is interdependent with that of other countries. The forms of interdependence can vary, such as dependence on the supply of raw materials, availability of employment, availability of labor, and others. However, in general, foreign direct investment greatly affects the economic development of a country.

As the fourth most populous country in the world, Indonesia attracts many foreign investors because of the huge market in the country. However, a large market alone is certainly not enough if it is not accompanied by the willingness to buy. Willingness to buy is closely related to the level of public confidence in their economic conditions. This is because people on credit make most purchases of durable and high-priced goods through installments. If the inflation rate increases, the interest rate also increases, or the domestic currency exchange rate weakens against the foreign currency. This will greatly affect the psychology of the people in terms of their confidence in paying installment. Raaij (2012) stated that psychological factors play an important role in the economy and predict economic conditions. Many psychological factors can help predict the economic condition of a country. However, this study only focuses on the consumer confidence factor, which has recently received increasing attention from both researchers and policymakers. During the pandemic era in Indonesia, President Joko Widodo of Indonesia has made a public service announcement to maintain its optimism level. This public service announcement is important in maintaining a high level of public confidence. The level of public confidence can be measured in the form of a consumer confidence index (CCI). Several studies have proven that the consumer confidence index can predict stock returns, predict the level of the economy, and is also a good predictor for controlling information in economic fundamentals (Dees & Soares Brinca, 2013). Bank Indonesia has been doing the latter for years with surveys through face-to-face interviews and telephone calls to several respondents who were used as research samples. The questions that are used contain consumer's perception of economic conditions, measured by respondents' confidence in the availability of employment, purchasing durable goods, and income (Sandy, 2020). Higgs et al. (2014) used consumer sentiment index (CMS) as an indicator to measure consumer’s confidence.

In various studies, the consumer confidence index can be placed as a contributing factor to changes in other factors or resulting from changes in other factors. Therefore, to determine the right position of consumer confidence, it is necessary to conduct a literature review.

LITERATURE REVIEW

From literature studies on various journals published in the last 9 years, two types of placement of the consumer confidence index variable are found. The following studies place the consumer confidence index variable as an independent variable that affects other variables:

Chen (2011) found a strong relationship between the level of trust and stock returns. Research by Oduh, Ekeocha, & Chukwuemeka (2012) concluded that Nigeria's consumption is influenced by consumer confidence, income, goods prices, and exchange rate. Narjess (2012)

concluded that the consumer confidence index increases forecasting accuracy in air travel markets in the US and Europe. Research by Dees & Soares Brinca (2013) concluded that the consumer confidence index is a good predictor to control information in economic fundamentals. Kuzmanovic & Sanfey (2013) highlighted the use of the consumer confidence index to predict the economy level. Moreover, Sum (2013) found that the stock market risk premium's response becomes positive immediately after a shock to business and consumer confidence. Utaka (2014) concluded that consumer confidence has a very significant effect on GDP. Møller, Nørholm, & Rangvid (2014) concluded that consumer confidence affects stock returns in European countries. Zhang, Jia, & Chen (2020) concluded that gold-futures returns influence the consumer confidence index. Juhro & Iyke (2020) concluded that the consumer confidence index is a good indicator of Indonesia's consumption expenditure.

Several other studies used the consumer confidence index variable as the dependent variable which is influenced by other variables. A study conducted by Ramalho, Caleiro, & Dionfsio (2011) concluded that the unemployment rate, inflation, exchange rate, and political situation have a very significant effect on the consumer confidence index in Portugal. Hollanders & Vliegenthart (2011) concluded that news greatly affects the consumer confidence index. Barsky & Sims (2012) stated that news is the driving force of the relationship between confidence levels and economic activity. Raaij (2012) concluded that news in the media related to politics and the economy, unemployment, inflation, interest rates, pensions, and health costs affect consumer confidence. Moreover, Casey & Owen (2013) concluded that there is a relationship between news in the media and consumer confidence, which then impacts the economy. Paradiso, Kumar, & Margani (2014) concluded that the consumer confidence index is influenced by inflation. Bruestle & Crain (2015) stated that the consumer confidence index could be further developed by involving the media broadcast ratings and political opinion surveys. Çelik & Deniz (2017) stated that the determinant factors of the consumer confidence index are the inflation rate, interest rates, and depreciation of the domestic currency. The research of Shayaa et al. (2018) concluded that there is a significant relationship between the consumer confidence index and news on social media. Alberto, María, & Hernández-Montes (2019) stated that the consumer confidence index is influenced by news and political events. Ghosh (2020) found that, in the long run, changes in unemployment, fluctuations in the stock market, and variations in interest rates shape consumer spending behavior at the household level in Brazil.

When examined more deeply, the results of the two groups' research are related. People gain a high level of confidence due to the inflation rate, the unemployment rate, exchange rate, political conditions they have experienced, or various news consumption. These experiences form a perception of future conditions, which will then affect people's confidence level. People’s confidence level is reflected in the consumer confidence index, which will then influence consumption interest and investment in the future.

From several studies that place the consumer confidence index variable as the dependent variable, it can be seen that the inflation rate, exchange rate, and unemployment variables are independent variables that are often studied. These variables can be converted into measurements used as survey materials by Bank Indonesia. So far, Bank Indonesia has conducted surveys by asking consumers' perceptions of economic conditions as measured by respondents' level of confidence in purchasing durable goods, availability of employment, and income (Sandy, 2020). Changes in sampling from primary to secondary data can help Bank Indonesia make policies faster, more efficiently, and more easily.

Durable goods purchase data can be proxied with foreign exchange rate data because most durable goods are imported goods that are strongly influenced by the foreign exchange rate. Employment availability data can be proxied with unemployment rate data. Income data is proxied by the inflation rate, as income is related to people's purchasing power, which is affected by the inflation rate.

From these studies, it appears that there are new variables that can be included as independent variables, like those related to the news. Nowadays, with the spread of internet networks, people can access news faster and easier. It is assumed that several types of news greatly influence people's confidence in the direction of economic development. Li, Xiao, & Gong (2015) concluded that anti-corruption efforts carried out by the government greatly influences people's assessments of economic welfare. This includes news related to politics, crime rates, unemployment rates, and corruption eradication rates. However, Klašnja & Tucker (2013) concluded that the level of public responsiveness to corruption news depends on the environment in which they live. Sihombing (2018) concluded that the younger generation lacks an understanding of the meaning of integrity. Prabowo & Cooper (2016) concluded that the Indonesian public sector's corruption networks are difficult to eradicate. Due to the seriousness of the corruption problem in Indonesia Prabowo & Cooper (2016) which concerns the lives of the younger generation (Sihombing, 2018) and the assumption that the level of responsiveness of the Indonesian people to news of corruption can be different due to different environments Klašnja & Tucker (2013) a question arises of whether or not corruption control also has a significant effect on the consumer confidence index in Indonesian society.

To test whether the aforementioned factors affect the consumer confidence index in Indonesia, the following hypotheses are formed:

Ha1: There is a simultaneous influence between the foreign exchange rate, the unemployment rate, the corruption control index, and the inflation rate on the consumer confidence index.

Ha2: The foreign exchange rate has a significant effect on the consumer confidence index.

Ha3: The unemployment rate has a significant effect on the consumer confidence index.

Ha4: The corruption control index has a significant effect on the consumer confidence index.

Ha5: The inflation rate has a significant effect on the consumer confidence index.

RESEARCH METHOD

The method used in this study is historical research. This study aims to explore the variables affecting the consumer confidence index. This study was conducted in Indonesia as a developing country. The data used in this study are secondary data sourced from the official website of the central bank, research institutes, and statistical data centers in Indonesia, which were obtained through www.bi.go.id, www.bbvaresearch.com, and www.bps.go.id. The data used are monthly data from January 2015 to December 2019, consisting of 1) Corruption control index data, sourced from www.bbvaresearch.com; 2) Unemployment rate data obtained from www.bps.go.id; 3) Inflation rate, consumer confidence index, and exchange rate data obtained from www.bi.go.id.

The independent variables in this study consist of the inflation rate, unemployment rate, exchange rate, and corruption control, while the consumer confidence index is the dependent variable. The analytical method used in this study is the Multivariate regression model and t-test with a significance level of 5%.

Table 1
Sources of Variable

No	Variable	Type of Data	Period	Source of Data
1	CCI	Ratio	Monthly	www.bi.go.id
2	FX	Ratio	Monthly	www.bi.go.id
3	UNEM	Ratio	Monthly	www.bps.go.id
4	CC	Ratio	Monthly	www.bbvaresearch.com
5	INF	Ratio	Monthly	www.bi.go.id

The following is a research equation model used in the study:

$$\mathbf{CCI_{it} = \beta_0 + \beta_1.FX_{it} + \beta_2.UNEM_{it} + \beta_3.CC_{it} + \beta_4.INF_{it} + \mu_{it}}$$

Notes:

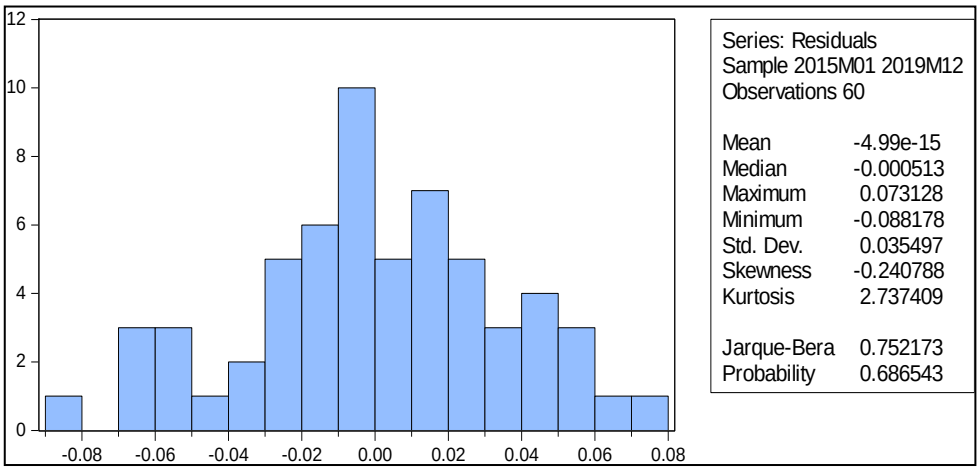
CCI	: consumer confidence index
FX	: foreign exchange rate
UNEM	: unemployment rate
CC	: corruption control index
INF	: inflation rate
β_0	: constant
β_1, β_2, β_3, β_4	: coefficients of FX, UNEM, CC, and INF
μ	: error term
i	: cross section data
t	: time series data

RESULTS

Assumptions of Classical Model Tests

Before estimating the model, the author first employed assumptions of classical model tests to meet the criteria of the Best Linear Unisex Estimator. The tests consist of the Normality test, Multicollinearity Test, Heteroscedasticity Test, and Autocorrelation Test, with the following results:

Figure 1.
Normality Test



Source: Authors' Calculation

Table 2.
Multicollinearity Test

Variable	Coefficient Variance	Centered VIF
C	25.30138	NA
FX	0.030084	1.908649
UNEM	0.099189	3.760184
CC	0.000719	2.507228
INF	0.001171	4.440187

Source: Authors' Calculation

Table 3.
Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.962496	Prob. F(4,55)	0.0275
Obs*R-squared	10.63574	Prob. Chi-Square(4)	0.1006

Source: Authors' Calculation

Table 4.
Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.155782	Prob. F(2,51)	0.3229
Obs*R-squared	2.558212	Prob. Chi-Square(2)	0.2783

Source: Authors' Calculation

Table 5.
Multivariable Regression Test

Dependent Variable: CCI
Method: Least Squares
Sample: 2015M01 2019M12
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	24.68595	5.030048	4.907697	0	
FX	-0.612173	0.173448	-3.529424	0.0009	***
UNEM	-0.893986	0.314942	-2.838572	0.0063	***
CC	-0.196844	0.026805	-7.343461	0	***
INF	0.039652	0.034214	1.158931	0.2515	
R-squared	0.687068	F-statistic		30.18926	
Adjusted R-squared	0.664309	Prob(F-statistic)		0	***

Notes: *** significance level at 1%

Source: Authors' Calculation

Based on Figure 1, the normality test results show a probability value of >0.1. It can be concluded that the error term is normally distributed. Meanwhile, based on Table 2, it can be concluded that there is no multicollinearity problem, as seen from the VIF number <10.

Table 3 shows no heteroscedasticity problem in the model, indicated by the Chi-Square probability number (4) >0.01. Meanwhile, Table 4 shows no autocorrelation problem in the model, indicated by the Chi-Square (2) probability number >0.01.

Multivariable Regression Test

The probability value (F-Statistic) of 0.00, which is smaller than the alpha value of 0.01, indicates it is simultaneously proven that the variables FX, UNEM, CC, and INF have a significant effect on CCI, meaning changes in the foreign exchange rate, unemployment rate, corruption control index, and inflation rate together have a significant effect on changes in the consumer confidence index.

Partially, the FX variable that represents the foreign exchange rate has a significant effect on the CCI variable that represents the consumer confidence index. The coefficient value of -0.612173 indicates that a 1% decrease in the foreign exchange rate will increase the consumer confidence index by 0.61% and vice versa. This study uses an indirect quote so the foreign exchange rate reduction means the strengthening of the local currency exchange rate against foreign currencies. This strengthening of the local currency exchange rate will increase consumers' purchasing power for durable goods that still use imported components. An increase in the ability to buy durable goods has a significant impact on increasing public confidence, which in this study is measured in the Consumer Confidence Index. This result is consistent with Ramalho et al. (2011) findings in Portugal and Çelik & Deniz (2017) in several countries.

Partially, the UNEM variable that represents unemployment has a significant effect on CCI. The coefficient value of -0.893986 indicates that a decrease in unemployment by 1% will increase the

consumer confidence index by 0.89% and vice versa. The industry absorbs many workers which causes a decrease in the number of unemployment. This has proven to have a significant impact on increasing public confidence, which in this study is measured in the Consumer Confidence Index. This result is consistent with the findings of Ramalho et al. (2011) in Portugal, Raaij (2012) in Russia, and Ghosh (2020) in Brazil.

Partially, the CC variable that represents the corruption control index has a significant effect on CCI. The corruption control index created by www.bbvaresearch.com means that the more negative the index number is, the better the level of corruption control in a country is. Meanwhile, the more positive the corruption control index is, the worse the corruption control in a country is. The coefficient value of -0.196844 indicates that a 1% decrease in the corruption control index will increase the consumer confidence index by 0.19%. Because Indonesia has a positive corruption control index, the decrease in the corruption control index means there is an improvement in the corruption control in Indonesia. The decrease in the corruption control index, which means an increase in the supervision of corruption, has proven to have a significant impact on increasing public confidence, which in this study is measured in the consumer confidence index.

Partially, the INF variable that represents the inflation rate has no significant effect on CCI. In Indonesia, workers with fixed incomes prefer a decrease in the inflation rate. However, on the other hand, employers prefer a stable, rising inflation rate because it will attract more investment. The different perceptions of these two groups will result in a different direction of consumer confidence when there is a change in the inflation rate. Therefore, in Indonesia, changes in the INF variable do not have a significant effect on CCI.

The adjusted R-squared value of 0.664309 indicates that the independent variable in this study can explain the dependent variable's variance by 66.43%, and there are still about 33% other effects that have not been depicted in the equation.

From Table 5, the following equation can be formed:

$$\mathbf{CCI_{it} = 24.68595 - 0.612173.FX_{it} - 0.893986.UNEM_{it} - 0.196844.CC_{it} + 0.039652.INF_{it}}$$

0.0009*** 0.0063*** 0.00***

Prob (F-stat) = 0.00*** Adjusted R-squared = 0.664309

CONCLUSIONS

From the results, it can be concluded that the public has a high level of confidence due to the inflation rate, the unemployment rate, the exchange rate, and the corruption control conditions that they have experienced. This experience forms a perception of future conditions, which will then affect the people's confidence level. The people's level of confidence is reflected in the consumer confidence index, which will then influence interest in consumption and investment in the future. Therefore, managing consumer confidence is a continuous process. Maintaining macroeconomic factors and corruption control are considered important by the people so that public optimism about future economic conditions remains high.

This study also provides an alternative way for Bank Indonesia to evaluate the consumer confidence index, which previously used the face to face interview method, showing that phone surveys can be used as secondary data sources. The use of secondary data for statistically tested multivariate regression models can accelerate policy making and is more efficient when it comes

to costs. The addition of corruption control as a new variable has significantly affected the consumer confidence index in Indonesia. The multivariate regression model generated from this study is a novelty in terms of research on the consumer confidence index.

REFERENCES

Alberto, C., María, C.-H., & Hernández-Montes, A. (2019). Understanding the Consumer Confidence Index in Colombia: A structural FAVAR analysis. Borradores de Economía, (1063).

Barsky, R. B., & Sims, E. R. (2012, June). Information, animal spirits, and the meaning of innovations in consumer confidence. American Economic Review, Vol. 102, pp. 1343-1377. https://doi.org/10.1257/aer.102.4.1343

Bruestle, S., & Crain, W. M. (2015). A mean-variance approach to forecasting with the consumer confidence index. Applied Economics, 47(23), 2430-2444. https://doi.org/10.1080/00036846.2015.1008763

Casey, G. P., & Owen, A. L. (2013). Good News, Bad News, and Consumer Confidence. Social Science Quarterly, 94(1), 292-315. https://doi.org/10.1111/j.1540-6237.2012.00900.x

Çelik, S., & Deniz, P. (2017). Globalization of consumer confidence. Panoeconomicus, 64(3), 337-352. https://doi.org/10.2298/PAN150128001C

Chen, S. S. (2011). Lack of consumer confidence and stock returns. Journal of Empirical Finance, 18(2), 225-236. https://doi.org/10.1016/j.jempfin.2010.12.004

Dees, S., & Soares Brinca, P. (2013). Consumer confidence as a predictor of consumption spending: Evidence for the United States and the Euro area. International Economics, 134, 1-14. https://doi.org/10.1016/j.inteco.2013.05.001

Ghosh, S. (2020). Consumer Confidence and Consumer Spending in Brazil: A Nonlinear Autoregressive Distributed Lag Model Analysis. Arthaniti: Journal of Economic Theory and Practice, 097674791989890. https://doi.org/10.1177/0976747919898906

Higgs, H., & Worthington, A. C. (2014). Price and income elasticity of Australian retail finance: An autoregressive distributed lag (ARDL) approach. Australasian Accounting, Business and Finance Journal, 8(1), 114-126. https://doi.org/10.14453/aabfj.v8i1.7

Hollanders, D., & Vliegenthart, R. (2011). The influence of negative newspaper coverage on consumer confidence: The Dutch case. Journal of Economic Psychology, 32(3), 367-373. https://doi.org/10.1016/j.joep.2011.01.003

Juhro, S. M., & Iyke, B. N. (2020). Consumer confidence and consumption expenditure in Indonesia. Economic Modelling, 89, 367-377. https://doi.org/10.1016/j.econmod.2019.11.001

Klašnja, M., & Tucker, J. A. (2013). The economy, corruption, and the vote: Evidence from experiments in Sweden and Moldova. Electoral Studies, 32(3), 536-543. https://doi.org/10.1016/j.electstud.2013.05.007

Kuzmanovic, M., & Sanfey, P. (2013). Can consumer confidence data predict real variables? Evidence from Croatia. Croatian Economic Survey, 15(1), 5-24. Retrieved from https://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=147821

Li, H., Xiao, H., & Gong, T. (2015). The impact of economic well-being on perceptions of anti-corruption performance: Evidence from China. Policy and Society, 34(2), 97-109. https://doi.org/10.1016/j.polsoc.2015.05.001

Møller, S. V., Nørholm, H., & Rangvid, J. (2014). Consumer confidence or the business cycle: What matters more for European expected returns? Journal of Empirical Finance, 28, 230-248. https://doi.org/10.1016/j.jempfin.2014.07.004

Narjess, T. (2012). How the Consumer Confidence Index could Increase Air Travel Demand Forecast Accuracy?

Oduh, M. O., Ekeocha, M. O., & Chukwuemeka, P. (2012). The Impact of Consumer Confidence and Expectation on Consumption in Nigeria : Evidence from Panel Data. European Journal of Business and Management Www.Iiste.Org ISSN, 1905(9), 86-101. Retrieved from http://www.researchgate.net/publication/264047307

Paradiso, A., Kumar, S., & Margani, P. (2014). Are Italian consumer confidence adjustments asymmetric? A macroeconomic and psychological motives approach. Journal of Economic Psychology, 43, 48-63. https://doi.org/10.1016/j.joep.2014.04.006

Prabowo, H. Y., & Cooper, K. (2016). Re-understanding corruption in the Indonesian public sector through three behavioral lenses. Journal of Financial Crime, 23(4), 1028-1062. https://doi.org/10.1108/JFC-08-2015-0039

Raaij, W. F. van. (2012). Consumer Confidence and Trust in the Economy. Economic Psychology in Modern World: Collected Papers. Moscow: Ekon-Inform, 377-395.

Ramalho, E. A., Caleiro, A., & Dionfsio, A. (2011). Explaining consumer confidence in Portugal. Journal of Economic Psychology, 32(1), 25-32. https://doi.org/10.1016/j.joep.2010.10.004

Sandy, K. F. (2020). Bank Indonesia: Keyakinan Konsumen Agustus Mulai Membaik. Inews.Id. Retrieved from https://www.inews.id/finance/makro/bank-indonesia-keyakinan-konsumen-agustus-mulai-membaik Accessed on 1 October 2020

Shayaa, S., Ainin, S., Jaafar, N. I., Zakaria, S. B., Phoong, S. W., Yeong, W. C., … Zahid Piprani, A. (2018). Linking consumer confidence index and social media sentiment analysis. Cogent Business and Management, 5(1), 1-12. https://doi.org/10.1080/23311975.2018.1509424

Sihombing, S. O. (2018). Youth perceptions toward corruption and integrity: Indonesian context. Kasetsart Journal of Social Sciences, 39(2), 299-304. https://doi.org/10.1016/j.kjss.2018.03.004

Sum, V. (2013). Stock Market Risk Premiums, Business Confidence and Consumer Confidence: Dynamic Effects and Variance Decomposition. International Journal of Economics and Finance, 5(9). https://doi.org/10.5539/ijef.v5n9p45

Utaka, A. (2014). Consumer Confidence and the Japanese Economy-Comparison of Pre-and Post-Bubble Period. Economics Bulletin, 32(2), 1165-1173. Retrieved from https://repository.kulib.kyoto-u.ac.jp/dspace/bitstream/2433/189089/1/Econo.Bulletin_34%282%291165.pdf

Zhang, Y., Jia, Q., & Chen, C. (2020). Risk attitude, financial literacy and household consumption: Evidence from stock market crash in China. Economic Modelling. https://doi.org/10.1016/j.econmod.2020.02.040

www.bbvaresearch.com

www.bi.go.id

www.bps.go.id