Research.

EFFECT OF INFLATION, INTEREST RATE / BI RATE, AND RUPIAH EXCHANGE RATE ON INDONESIAN COMPOSITE INDEX (IDX) AT INDONESIAN STOCK EXCHANGE (ISE)

Resista Vikaliana
Lecturer at STIE Dewantara, Bogor

Abstract. Capital market has a strategic role for strengthening the economic resilience of the country and as an alternative for profitable investment. Capital market has an important role in economics of the country due to the dual functions, economics function and finance. Capital market is a national driving force through its role as a source of financing for the company and alternative for investor to invest. In capital market, Indonesia important role as this index can be used as barometer on the economic health of the country. Macroeconomics factor is high inflation, interest rate, and depreciation of rupiah to dollar, could lower the stock price. The aim of this research is to study the effect of macro economy e.g. inflation, rupiah exchange rate, and interest rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE).

Method of analysis is carried out using linear regression model equation. Data used in this study is secondary monthly data during the period of 2013-2016. Total number of 36 samples is used. The effect of inflation, interest rate / BI Rate and exchange rate to ISE on model equation is 41.61%. Correlation between variable inflation and interest rate / BI rate is 0.490 quite strong at the same direction. Correlation between inflation and exchange rate is -0.349 which is quite strong but not at the same direction. Correlation between interest rate and exchange rate is 1 which is very strong and at the same direction. From the calculation, calculated $F < F_{table}$ (1.825 < 8.92), which can be concluded that there is no linear correlation between inflation, interest rate / BI Rate and exchange rate to ISE. Structural equation is $Y= -0.088 X_1 -0.300 X_2 + 0.165 X_3 + \epsilon$.

Keywords: Inflation, currency, interest rate, ISE

INTRODUCTION

Capital market not only has a strategic role to strengthen economic resilience of a country but also as profitable alternative investment. Capital market has important role in economics of a country. This due to the two functions of capital market e.g. economic function and financial function. In economic function, capital market providing facility as a melting pot of the two interest namely investor who own more capital and party who need capital who create the effect or emitter.

Capital market is one of the alternatives of investment which could provide level of optimal profit. Capital market is one of the alternatives investments which provide optimal profit for the investor. Capital market play an important role in mobilizing capital from the public who have an interest in investing their capital at market. Investment may be defined as an activity to put capital on one or more asset (s) for certain period with the hope to gain income and or to increase the investment value (Husnan, 2004).

Investment as stock may considered as having high risk compare to the other type of investment e.g obligation, deposit, and saving. Every investor in stock market need very much relevant information with the development of transaction at stock exchange.
This is very important as material to be consider in formulating strategy and decision in investing at stock exchange. Investor can use stock exchange as vehicle for dispensing an idle capital or investing for gaining profit or return to increase the capital (capital gain) and profit as divider for investment.

Go public stock of the company or stock which already been registered at stock exchange, is the investment which can be categorize as high risk investment. This due to it characteristic which very much influenced by changes internally (fundamental information) or externally (technical information). Fundamental information is performance and internal condition of the company with the tendency of being controlled while technical information is the information on macro condition e.g. changes of interest rate, exchange rate, inflation, stock index at global market, security condition, and politics. Technical information can be used as a basis for analyzing capital market. This change can have a positive and negative impact on the value of stocks at stock market.

Unstable monetary condition indicated by IRD currency to US $, BI interest rate, and inflation which influence economic development movement. This condition can be an indication that there is an influence of macroeconomics on stock market. In stock market, IDX play an important role as this index can used as barometer if the economics of the country is healthy. High inflation, interest rate and depreciation of IRD to dollar could cause the stock price down. When the condition or future macroeconomics predicted as bad, most likely, there is reflection that the price of stock price index decreases and vice versa (Ang dalam Thobarry, 2009).

In this study, macroeconomics indicator used is inflation, Bank interest rate/BI Rate and exchange rate which can influence IDX / IHSG. This statement will be the aim of this study.

LITERATURE REVIEW

Stock Index Price

According to Alwi (2003), there are several factors that influence the movement of stock price or stock price index. Several factor that influence the movements of stock price, among other are:

1. Internal factor (micro environment)
   Internal factors (micro environment) among other are:
   b. Financing announcements e.g. announcement on equity and debt.
   c. Management-board of director announcements like the change and replacement of director, management and organizational structure.
   d. Announcement on diversification of acquisition e.g. merger report, investment equity, take over report by acquirer and acquired, divestment report and others.
   e. Investment announcements e.g. carrying out of factory investment, development or research and closing of the company and others.
   f. Labour announcement e.g. new negociation, strike etc.
   g. Announcement on financial report of the company e.g. profit forecast before the end of fiscal year and after the fiscal year, earning per share (EPS) and dividen per share (DPS), price earning ratio, net profit margin, return on assets (ROA) and others.

2. External Factor (Macro environment)
   External factors (macro environment) among other are:
   a. Announcement from the government e.g. change of interest rate of saving and deposit, currency exchange rate, inflation and various economic regulation and deregulation.
b. Legal announcements e.g. employee demand from the company or from their manager and demand of the company to the manager.

c. Securities announcements e.g. annual meeting report, insider trading, volume or stock price trading, limitation / trade delay.

d. Political turmoil (in state) and fluctuation of exchange rate is also a factor which influence significantly on the movement of stock price at stock exchange of the country.

e. Other issues both from in and out of the state.

According to Wira (2014), there are two analytical techniques which can be used by the investor to know stock feasibility which is bought in certain time. The two analytical techniques are:

1. Fundamental Analysis
   Fundamental analysis calculating various factors e.g. company performance, business competition analysis, industrial analysis, economics analysis, and macro-micro market. From this calculation, the condition, whether the company is healthy or not will be recognized.

2. Technical Analysis
   Technical analysis is a technique to analyze the fluctuation of stock price in certain time period. From this movement, certain trend will be seen and can be used as basis for purchasing or selling. Basically, this analysis is used to determine stock if it is already saturated to be purchased or sold.

Interest Rate
The meaning of interest rate is the price of utilization of money for certain period of time or price of the utilization of money used currently and will be returned in the future (Herman, 2003). Interest rate can be distinguished into two namely:

1. Nominal interest rate which is interest rate in money value. This interest rate is the value which can be read generally. This interest rate is an indication of invested interest rate.

2. Real interest rate is interest rate which undergone correction due to the inflation and defined as nominal interest rate deducted by inflation.

On the other words, interest rate is the price that have to be paid on the basis of capital loaned, and dividend and capital profit which is derived from the capital equity (Brigham dan Houston, 2001).

The function of interest rate in economic. According to Sunariyah (2006), interest rate level has several functions, among others:

1. As attractant for individual saver or institution which have an excess of capital to be invested.

2. Interest rate level can be used as a government tool on direct investment capital at economic sectors.

3. Interest rate level can be used as monetary tool in controlling offer and demand of money circulated at an economy.

4. Government can manipulate level of interest to increase production, as consequences of the level of interest which can be used to control inflation rate.

Factors which influence the common interest rate level beside prediction of inflation, required active liquidity and the condition of demand and offer are:

1. Central Bank Policy
2. Budget deficit and income of the country
3. Foreign trade balance
4. Level of business activity

Interest rate applied in Indonesia is an interest rate of Bank Indonesia (SBI) or BiRate. High level of interest rate is a negative sign to the stock price. The increase of interest rate will increase the burden to the credit interest and lowered to net profit.
High interest rate is a negative signal on the price of stock. Increase of interest rate level will increase credit interest load and lowering net profit. When net profit down, each individual stock profit will also down and so the price of stock in the market. This would be one factor causing investors withdrawing their investment from the stock and move the investment to saving or deposit.

Contrary, when interest rate level down, stock price in the market increase and which also true for net profit and price of stock going up. This condition will trigger the investor to move their investment from Bank to stock exchange. Investor will buy the stock in bulk which eventually will push demand for stock is increased (Samsul, 2006). According to this theory, correlation between interest rate and the stock price is in negative manner.

Exchange Rate

Exchange rate is the price of the currency of a country stated in foreign currency (Sukirno, 2004). In this study, exchange rate of rupiah (IDR) to $ US is used. When the amount of IDR issued to gain $US is less compare to the amount of IDR in the previous period this mean that IDR exchange rate going up (appreciation) to the US $. Contrary, when the amount of IDR issued at the previous period to buy US $ is more than the amount of IDR issued in the previous period, IDR exchange rate weaken (depreciation) to the US $ exchange rate. Exchange rate of US $ to IDR increase sharply and give a negative effect to the emitter which owe an obligation in US $ while emitter product is sold locally. Meanwhile, emitter with the orientation on accepting positive effect from the increase of US $ exchange rate, their stock price is going down at stock exchange and the emitter which is affected by positive effect, their stock price is increase (Samsul, 2006).

Correlation between Exchange Rate and Inflation

According to Sukirno (2004), the change in demand and offer on a currency could due to many factors as following:

1. Price increase (Inflation).
   Inflation in a country will have a significant effect on their currency exchange rate. Inflation generally tent to lower the price foreign currency. This tendency caused by inflation will caused that the price of domestic product is higher than that of import product. Import goods will increase while export decrease due to the increase of price.

2. Change of price of the export and import products is an important factor which determines if a product should be imported or exported. Domestic products which can be sold in relatively low price will increase export and if the price higher, the export will be down. Reduction of price of imported product will increase import and contrary, the increase of imported product will reduce import.

3. Change in public taste influence consumption pattern. This will change the consumption pattern toward domestic and imported product. Improvement of the domestic product quality will lowered the desire to import the product and could increase export. Improvement of quality of imported product will increase the desire of the public toward the imported product increase and import will also increase. These changes will affect demand and offer of the foreign currency.

4. Change in interest rate and level of investment return.
   Interest rate and level of investment return are very important in affecting capital flow. When interest rate and level of return of investment low, domestic capital will flow to foreign country, and in contrast, when interest rate and level of investment return is high, foreign capital will follow to the country. When more capital flow to the country, demand on its currency increase and the currency value will also more.

5. Economic Growth
   Economic growth of a country depends on the advancement of economy of the country itself. When the advancement of economy is due to the development of...
export, the demand on the currency will be increased which lead to the increased of the price of stock. Contrary, if the advancement of the economy causing the development of import, the increase of import will be faster than the export, the demand on its currency is down and this will influence on the price of stock.

Correlation between Interest Rate and Stock Price

Theoretically, investor is willing to invest in order to get a profit or add capital without risk. The change of Bank interest rate can influence stock price in three ways:
1. Change of interest rate, generally, affecting condition of the company and its profitability which is dividend and common stock price.
2. Change of interest rate influence correlation between gain from obligation and dividend gain from various stocks which it is therefore there is similar attraction between stock and obligation.
3. Change of interest rate influence the psychology of the investor due to the wealth investment so that affecting the stock price (Sunariyah, 2000).

RESEARCH METHOD

Type of research is associative where it has aim to know correlation between 2 variables or more with quantitative approach. Research variables include dependent and independent variables.

1. Dependent variable (Y) is variable which is influenced by independent variable. In this study, dependent variable is the price of composite stock exchange / IHSG at stock exchange/BEI, Jakarta.

2. Independent Variable (X) is variable which is not depending on other variables. In this study, independent variables include:
   a. Inflation (X1)
      Inflation is a level of inflation which is happening at an annual closing. Inflation data is the data from Statistical Bureau (BPS) or from Bank Indonesia (BI).
      Inflation (X1) is a tendency of occurrence of increase of total product price. Inflation data is used in this study is an annual data.
   b. BI Rate (X2)
      BI Rate level is interest rate policy highlighting the monetary policy issued by Bank Indonesia and announced to the public as short measured debt acknowledgement. Measurement used is a percentage and data taken is level of interest rate / annual BI Rate.
   c. IDR exchange rate value (X3)
      IDR exchange rate to $ US indicating the value of $ US currency translated to IDR.

Research is conducted at Indonesian Stock Exchange / BEI through www.bi.go.id and www.idx.co.id during the month of March, 2017. In this study, data collected by two techniques namely:

1. Documentation study
   Documentation study is a technique for collecting data indirectly aiming to the research subject. Document categorized as primary document (a document written by the person who directly experiencing the event) and secondary data (when the event is reported bymengkapalami suatu peristiwa), dan dokumen sekunder (when the event is reported by other person which than written by this person). When this method is used to collect data, researcher can use this data with only making copy and duplicating the data.

2. Library Research
   This method is conducted by collecting materials or data related to the object of research. This method can be carried out through the analysis, review, study
various references, book, journal, newspaper and other written sources related to the object of study.

Type of data used in this research is secondary which mean that the data which is not found during the course of observation or research directly on the research object. Source of data used in this research is obtained from official website of Indonesian Stock Exchange (BEI) which is www.idx.co.id, BPS which is www.bps.go.id, and Bank Indonesia which is www.bi.go.id.

Population in this research is inflation data, interest rate /BI Rate, and exchange rate of IRD. Sample in this research is inflation data, interest rate/ BI Rate, and IRD exchange rate from 2014 to 2016.

Data Analysis Technique

Data analysis technique is using Path Analysis linear regression model. Analysis is also conducted using computer programming tool SPSS 23 for Windows.

![Diagram analysis model](image)

This Table is recapitulation of data used in this research

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Resista Vikaliana: Effect of Inflation, Interest Rate / BI Rate, and Rupiah Exchange Rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE)
Resista Vikaliana: Effect of Inflation, Interest Rate / BI Rate, and Rupiah Exchange Rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE)

<table>
<thead>
<tr>
<th>No</th>
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<th>Exchange rate</th>
<th>IHSG</th>
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Source: www.bi.go.id and www.idx.go.id, 2017

Table 2 Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tr>
<td>1</td>
<td>.382*</td>
<td>.416</td>
<td>.066</td>
<td>323845.53490</td>
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</table>

a. Predictors: (Constant), Exchange Rate, BI Rate, Inflation

Source: calculated data by SPSS 24, 2017

R square (r²) on Table Model Summary above is 0.146. Effect of inflation, interest rate / BI Rate, and IDR Exchange rate to IHSG is

KD = r² x 100%
KD = 0.416 x 100%
KD = 41.61%

From this calculation, it shows that the effect of inflation, interest rate / BI Rate and IDR exchange rate is 41.61%, while the rest is 58.39% (100% - 41.61%) due to the other variables outside this model.
Table 3 ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<td>1</td>
<td>Regression</td>
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<td>3</td>
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<td>32</td>
<td>104875930472,681</td>
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<td>Total</td>
<td>393018990318,4,556</td>
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</table>

a. Dependent Variable: IHSG
b. Predictors: (Constant), Exchange rate, BI Rate, Inflation

Source: calculated data using SPSS 24, 2017

Based on Table 3, the hypothesis test is carried out. The hypothesis test on the effect of three independent variables simultaneously using F value depicted on Table 3 above provides the following hypothesis:

H₀ : There is no linear correlation between inflation, exchange rate/BI Rate and exchange rate to the IHSG exchange
H₁ : There is linear correlation between inflation, exchange rate/BI Rate and exchange rate to the IHSG exchange

F value in Table 3 is 1,825, which then called as calculated F. Calculated F is then compared to the F table, with degree of significance of 0.05 and degree of numerator independent = N (Number of variable) - 1. Degree of numerator independent is 4-1= 3. Degree of denominator independent is calculated from the number of cases/number of data - 4 or 36 – 4 = 32. From those two degree of independent, F table is found to be 8,920.

Value of F table then compared with the value of t table. Hypothesis criteria is:
1. When the calculated F > F table, H₀ rejected and H₁ accepted
2. When calculated F < F table, H₀ accepted and H₁ rejected

From the calculation of calculated F < F table (1,825 < 8,92), H₀ is accepted. On the other word, there is no linear correlation between inflation, interest rate/BI Rate and exchange rate to IHSG.

Partial linear correlation in each variables X₁, X₂ dan X₃ to Y, F to t, while to see the size of influence, the value of Beta or standardized coefficient is used as followed

Table 4 Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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<th>Sig.</th>
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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
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<td>(Constant)</td>
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<td>Nilai Tukar</td>
<td>24,091</td>
<td>27,664</td>
<td>.165</td>
</tr>
</tbody>
</table>

a. Dependent Variable: IHSG

Source: calculated data using SPSS 24, 2017

Correlation between inflation and IHSG
Hypothesis correlation between inflation and IHSG is:
H₀ : There is no linear correlation between and IHSG

Resista Vikaliana: Effect of Inflation, Interest Rate / BI Rate, and Rupiah Exchange Rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE)
H₂ : There is linear correlation between inflation and IHSG

Criteria of hypothesis test is as follows:
1. When calculated t > t table, then H₀ is rejected and H₂ is accepted
2. When calculated t < t table, then H₀ is accepted and H₂ is rejected

In Table 4 it is shown that calculated t value is -0.410. Significance in this study is 0.05, then the degree of freedom is N-2 or 36-2=34, resulted of the value of t table is 1.690.

From the calculation, calculated value of t is -0.410 and t table is 1.690. Based on hypothesis, when calculated t < from t table, then H₀ is accepted. Statement is that H₀ has no linear correlation with the inflation and IHSG.

Correlation between interest rate / BI Rate and IHSG

Hypothesis correlation between interest rate / BI Rate and IHSG is:
H₀ : There is no linear correlation between interest rate / BI Rate and IHSG
H₃ : There is linear correlation between interest rate / BI Rate and IHSG

Criteria of hypothesis test is as follows:
1. When calculated t > t table, then H₀ rejected and H₃ accepted
2. When calculated t < t table, then H₀ is accepted and H₃ rejected

In Table 4 shows that the calculated t is -1.469. Significance of research is 0.05, then degree of freedom N-2 or 36-2=34, obtained from the value of t table 1.690.

From calculation the value of calculated t is -1.469 and t table is 1.690. Based on hypothesis, when calculated t < from t table, then H₀ is accepted. Statement that H₀ has no linear correlation between exchange rate / BI Rate and IHSG.

Correlation between exchange rate and IHSG

Hypothesis correlation between exchange rate and IHSG is:
H₀ : There is no correlation between exchange rate between inflation and IHSG
H₄ : There is linear correlation between exchange rate and IHSG

Test criteria for the hypothesis is:
1. When calculated t > t table, then H₀ is rejected and H₄ accepted
2. When calculated t < t table, then H₀ is accepted and H₄ rejected

In Table 4, show that calculated t is -1.469. Significance level in this research is 0.05, then degree of freedom N-2 or 36-2=34, obtained from the value of t table 1.690.

From the calculated t of -1.469 and t table of 1.690. Based on hypothesis, when calculated t < t table, then H₀ is accepted. Statement of H₀ is that there is no linear correlation between interest rate / BI Rate and IHSG

Table 5 Correlations

<table>
<thead>
<tr>
<th></th>
<th>Inflasi Pearson Correlation</th>
<th>Bi Rate Pearson Correlation</th>
<th>Nilai Tukar Pearson Correlation</th>
<th>IHSG Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation</td>
<td>1,490</td>
<td>-349</td>
<td>-293</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0,002</td>
<td>0,037</td>
<td>0,083</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Bi Rate</td>
<td>-349</td>
<td>1</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0,037</td>
<td>0,373</td>
<td>0,381</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Exchange rate</td>
<td>-318</td>
<td>1</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0,373</td>
<td>0,381</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>IHSG</td>
<td>-293</td>
<td>-318</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0,059</td>
<td>0,381</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Source: Calculation of data by SPSS 24, 2017

Resista Vikaliana: Effect of Inflation, Interest Rate / BI Rate, and Rupiah Exchange Rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE)
Interpretation of the value of correlation using the following criteria
0-0.25 : Very weak correlation (it can be ignore)
0.25-0.5 : Correlation is quite strong
0.5-0.75 : Strong correlation
0.75-1 : Very strong correlation

From this interpretation, it can be known that:
1. Correlation between inflation and interest rate / BI Rate is 0.490 quite strong in the same direction.
2. Correlation between inflation and exchange rate -0.349 quite strong but not in the same direction.
3. Correlation between interest rate / BI Rate and exchange rate is very strong in the same direction.

Structural linear equation is

\[ Y = -0.088X_1 - 0.300X_2 + 0.165X_3 + \varepsilon \]

This equation shows that correlation between \( X_1 \) (inflation) on IHSG is negative in nature, correlation between \( X_2 \) (interest rate / BI Rate) to IHSG is negative and correlation between \( X_3 \) (exchange rate) and IHSG is positive.

CONCLUSION

1. Effect of inflation, interest rate / BI Rate and exchange rate to IHSG on linear regression model is 41.61%.
2. Correlation between inflation and interest rate / BI Rate is 0.490 which is quite strong and in the same direction.
3. Correlation between inflation and exchange rate is quite strong but not in the same direction.
4. Correlation between interest rate and exchange rate is 1 which is very strong and in the same direction.
5. From the calculation, calculated \( F < F \) table (1.825 < 8.92), which can be concluded that there is no linear correlation between inflation, interest rate / BI Rate and exchange rate on IHSG.
6. Structural linear equation from this study is:

\[ Y = -0.088X_1 - 0.300X_2 + 0.165X_3 + \varepsilon \]

REFERENCES


Resista Vikaliana: Effect of Inflation, Interest Rate / BI Rate, and Rupiah Exchange Rate on Indonesian Composite Index (IDX) at Indonesian Stock Exchange (ISE)


Internet Sources:

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www.idx.go.id diunduh 28 Februari 2017

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