The International Conference on Islamic Community Studies 2023

Theme: Comparative Analysis of The Accuracy of *The Capital Asset Pricing Model* (CAPM) and *Arbitrage Pricing Theory* (APT) In Predicting Stock Returns In Bank Persero (BUMN) In Indonesia

Comparative Analysis of The Accuracy of *The Capital Asset Pricing Model* (CAPM) and *Arbitrage Pricing Theory* (APT) In Predicting Stock Returns In Bank Persero (BUMN) In Indonesia

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ABSTRACT

This study aims to predict stock returns. This research takes time series data from 2018 to 2022. The sample used throughout Bank Limited (SOE). This study uses a VAR approach by comparing the CAPM with APT. The results showed that the estimated using Autoregression Vector (VAR), variables other than the variable itself most have the greatest contribution to the BETA is EXCHANGE. The variable that contributed most to the INF is RS. The variables that contributed most to the JUB JUB other than itself is RF. The variable that has the largest contribution towards EXCHANGE RATE besides itself was JUB. The variables that contributed most to the RF is EXCHANGE. The variable that contributed most to the RS is JUB. Impulse response function test results are known that the stability of all the variables that are in the period to 20 or the medium term, which creates a sense

that although there is a variable that does not affect the short-term but in the medium and long term it will affect each other. Variance Decomposition test results in the short term method of CAPM (Capital Asset Pricing Model) via RF (Risk-Free Asset Return) are more accurate in predicting stock returns of the method APT (Arbitrage Pricing Theory). In medium terms the method CAPM (Capital Asset Pricing Model) via RF (Risk-Free Asset Return) is more accurate in predicting stock returns of the method APT (Arbitrage Pricing Theory). In the long term method of CAPM (Capital Asset Pricing Model) also via RF (Risk-Free Asset Return) is more accurate in predicting stock returns of the method APT (Arbitrage Pricing Theory). In the long term method of CAPM (Capital Asset Pricing Model) also via RF (Risk-Free Asset Return) is more accurate in predicting stock returns of the method APT (Arbitrage Pricing Theory). Specification models created using the Roots of Characteristic Polynomial and Inverse Characteristic Roots of AR polynomial obtained stable results, it can be shown that all units are in the loop picture roots Roots Inverse Characteristic of AR polynomial.

Keywords : CAPM, APT and approach VAR

Introduction

Ethnic group The monthly SBI interest used For count *returns* asset free risk . From calculations asset *return* free the average risk (R $_{\rm f}$) that will accepted by investors is as big as 0.06758 or 6.758% per month which includes ethnic group minimum interest of 0.05750 or 5.75% and interest flower maximum of 0.07750 or 7.75%. Many *asset pricing models*, results desired ending _ achieved

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is certainty from recent stock *returns* _ predicted previously . According to RJ Shook, *return* is profit investment , fine through flower or dividends . Stock *returns* This use fluctuation from price share closing every end month (*monthly closing price*) on a number of company public . Seen that the 4 BUMN Bank shares show positive $E(R_i)$ value . The value of $E(R_i)$ is positive indicated increase price more shares _ big from its decline so that will benefit investors, and vice versa . Stock *returns* value highest shown on BBNI (Bank Negara Indonesia Tbk .) of 0.012815 and value stock *returns* on the 4 stocks is of 0.01328.

Beta (β) of stock, is size influencing market risks price something share. Beta measures until as far as price share up and down at the same time with down rising market price. Beta value of share obtained from results covariance between returns securities with market returns are shared with variant market returns. Seen that all over share has positive beta, This show increase market returns will result increase stock returns the . The highest beta from to 4 shares is BBRI of 1.78203 . Overall beta average amounting to 1.64846. The exchange rate of the rupiah against the United States dollar is experiencing decline . Decline This because decreasing investment fixed and consumed public . This matter resulting in fatigue opening field work, and has the effect of weakening it exchange rate Because request to Rupiah also comes decrease . Temporary exchange rate Alone is one of indicator For see what are the economic fundamentals a strong country or No. According to study Previously , (Kristin Laia and Ivonne Saerang, 2015) stated that Exchange rate significant in predict expected return . is known that movement mark exchange the rupiah against the United States dollar No stable . In 2018 the value exchange the rupiah against the dollar for IDR 9,068 per 1 US\$ and in 2015 it reached IDR 13,795 per 1 US\$. This matter No regardless from system the Indonesian exchange rate is still use system floating. Every the year mark exchange the rupiah against the United States dollar Keep going experience decline especially in September 2018 values exchange the rupiah against the United States dollar penetrate IDR 14,657 per 1 US\$. Decline mark exchange these rupiah can impact bad on global financial markets are experiencing crisis so that influence variable macro economy like inflation and SBI rate. According to Kristin Laia and Ivonne Saerang (2015) stated that inflation and SBI are significant in predict expected return.

The known along with increase inflation is creeping to a higher range high in 2020 ie _ of 8.38 and in 2021, namely of 8.36. Meanwhile, in 2022 it will experience decline drastic that is of 3.35. Ascension inflation will causing Bank Indonesia to tend For lower level ethnic group flower The Bank Indonesia (SBI) certificate will push growth money in circulation in society, p That followed by _ weakening mark exchange rupiah, then price goods will also experience increase, because Not yet Can free from inflation and crisis economy still _ happen . Seen that amount Money circulating in Indonesia from 2018 that is as big as 722,991 (billion Rp) until with 2022 that is amounting to 1,055,440 (billion Rp) continues experience enhancement. This matter means with increasing amount Money circulating influential positive to growth economy . If happen excess amount Money outstanding, Bank Indonesia will take policy (lowering) level ethnic group flowers to condition This encourage investors to do investment.

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Methods

Type research conducted _ is quantitative with *Vector Autoregression* model support (VAR), which is used as tool analysis predictions . According to Sims (in Russiandi , 2014) says VAR is testing connection simultaneous and degree integration between internal variables period long . Material study This will compare level accuracy of CAPM and APT models in determine *expected return* To use taking decision investment . Study carried out in Indonesia at Bank Persero (BUMN) with location research at www.bi.go.id. _ Type approach For support completeness discussion this , then study using secondary data with sequence time (*time series*). Testing carried out using the Vector Autoregression (VAR) test, *Impulse Response Function test* (IRF), *Forecast Error Variance Desomposition* (FEVD) and assumption tests .

Method	Variable	Short	Intermediate	Long	Return Share
САРМ	BETA	6,508	7,353	7,322	-
	RF	35.80	29,22	29.10	✓
APT	INF	3,938	11.49	11.46	-
	JUB	0.025	5,444	5.83	-
	EXCHANGE RATE	12.94	18.22	18.14	-

Variance Decomposition Results

Results and Discussion

Source : Data processed author , 2023

Based on explanation Table on results *variance decomposition* is known that in period short CAPM (*Capital Asset Pricing Model*) method via RF (Asset *Return* Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method. In period intermediate CAPM (*Capital Asset Pricing Model*) method via RF (Asset *Return* Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method. In period long CAPM (*Capital Asset Pricing Model*) method as well as RF (*Return* on Assets). Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method.

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Conclusion

Based on the results of the analysis and discussion that has been carried out, the following conclusions can be drawn:

- 1. The estimation results using *Vector Autoregression* (VAR) show that there is a relationship between BETA, INF, JUB, KURS, RF and RS with lag 1. It can be concluded that by observing the t-statistics of each coefficient, there is a reciprocal relationship between The variables Beta, Inflation, Money Supply, Exchange Rate, Free Asset *Return* and Stock *Return* are statistically significant. Another variable besides the variable itself that has the largest contribution to BETA is the EXCHANGE. The variable that has the largest contribution to JUB apart from JUB itself is RF. The variable that has the largest contribution to the KURS apart from the KURS itself is JUB.
- 2. Based on the results of *the Impulse response function* It is known that the stability of all variables is in the 20th period or medium term, this gives rise to the meaning that although there are variables that have no effect in the short term, in the medium and long term they will influence each other.
- 3. Results of V *ariance D ecomposition* Analysis in period short CAPM (*Capital Asset Pricing Model*) method via RF (Asset *Return* Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method . In period intermediate CAPM (*Capital Asset Pricing Model*) method via RF (Asset *Return* Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method . In period long CAPM (*Capital Asset Pricing Model*) method as well as RF (*Return* on Assets) . Free Risk) more accurate in predict *returns* share rather than the APT (*Arbitrage Pricing Theory*) method .
- 4. Specifications of the model formed with use *Roots of Characteristic Polynomial* and *Inverse Roots of AR Characteristic Polynomial* obtained results stable, This can showed that all *roots unit* is at in circle picture *Inverse Roots of AR Characteristic Polynomials*.

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