

# The Effect of Internal Factor and External Factor towards Beta and Stocks Returns in the Real Estate Company in Indonesia Stock Exchange

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**Abstract**— This research was done with the aim to test and analyze internal and external factors regarding beta and return stock. The internal factors are Dividend Payout Ratio, Asset Growth, Debt to Equity Ratio, Current Asset, Asset Size, Price Earnings Ratio and Return on Asset. Whereas the external factors are inflation, interest rate and exchange rate. Statistic tool which was used to support the calculation is Amos, namely using SEM (Structural Equation Model). The samples used were 21 real estate companies, while samples selection used purposive sampling method. The research was carried out with 105 data from 2008 to 2012. The result of the research showed that internal factors are directly and significantly influence beta stocks, external factors are neither directly nor significantly influence beta stock, internal factors are neither directly nor significantly influence return stocks, external factors are neither directly nor significantly influence return stock, beta stock are directly and significantly influence return stocks, internal factors are not affect directly to stock return through beta stock and external factors are neither directly nor significantly influence stock return through beta stock.

**Keywords**— beta, stock return, financial performance, inflation, exchange rates, interest rates

## I. INTRODUCTION

Minimizing risk can be done, but not by avoiding it as described by [5]. Investment in property and real estate is one of long-term investment. One indicator of the growth of a healthy economy is marked by growth in property and real estate.

TABLE 1  
GROWTH OF REAL ESTATE STOCK PRICE INDEX 2008-2012

No	Year	Stock Price Index
1	2008	11.06%
2	2009	2.78%
3	2010	6.96%
4	2011	3.79%
5	2012	4.30%

Source: [www.bps.go.id](http://www.bps.go.id)

Table 1 shows the growth of real estate stock price index from 2008-2012. In 2008 saw a significant decline due to the economic conditions of Indonesia hit by the economic crisis. Along with the better economic growth, there is an increase in stock price index starting to 2009 until 2012.

The portfolio is a collection of many securities traded on the stock exchange [25]. Beta is a measure of the volatility of return, whereas volatility itself is the fluctuation of the returns of a securities or portfolio within a certain period of time. [14]

Table II shows the average inflation rate from 2008 to 2012. It appears that inflation is very high there in 2008 of 11.06%, finally declining and staying at 4.30% until 2012. The inflation spikes in 2008 because of the monetary crisis that hit Indonesia to catapult prices of goods and services. It consequently will reduce purchasing power and indirectly affect the capital market.

TABLE II  
AVERAGE INFLATION RATE FROM 2008 TO 2012

Year	Average Inflation
2008	11.06
2009	2.78
2010	6.96
2011	3.79
2012	4.30

Source: <http://www.bps.id>

It is important to involve external factors in order to make a more accurate analysis. External factors can include inflation rate, gross domestic product, interest rate and exchange rate.

### A. Problem Issue

The importance of estimating the stock beta by using fundamental factors that the results will better illustrate from the stock returns, and then based on the background that has been put forward can be formulated problems as follows:

- Do the internal factors have direct and significant effect on Beta Shares in Real Estate companies in Indonesia Stock Exchange?
- Do the external factors have a direct and significant effect on Beta Shares in Real Estate companies in Indonesia Stock Exchange?
- Do internal factors have a direct and significant effect on Stock Return on Real Estate companies in Indonesia Stock Exchange?
- Do external factors have a direct and significant effect on Stock Returns on Real Estate companies in Indonesia Stock Exchange?
- Do Beta Shares have a direct and significant effect on Stock Return on Real Estate companies in Indonesia Stock Exchange?
- Do internal factors indirectly affect Stock Return through Beta Shares in Real Estate companies in Indonesia Stock Exchange?
- Are external factors indirectly affecting Stock Return through Beta Shares in Real Estate companies in Indonesia Stock Exchange?

## II. GRAND THEORY

### B. Theoretical Basis

#### 2.1.1. Shares

Shares are basically proof of ownership of capital invested in a company. According to [7] shares that are proof of membership of capital ownership will provide profits in the form of dividends or losses.

Stocks that we know there are 2 kinds, namely shares circulating in the stock market [32]:

1. Common stocks
2. Preferred stocks (preferred shares).

#### 2.1.2. Risk

Investments made by investors in finance are essentially divided into two, namely direct investment and indirect investment. Investments in

shares are included in the category of direct investment. [25] divides risks in 2 types:

1. Systematic risk or called systematic risk.
2. Unsystematic risk

#### 2.1.3. Beta

Horne and Wachowiz, Jr. defined risk as a variability of actual return to expected returns [29]. [4] said that volatility is the phase where the ups and downs of prices and price movements. The price here could be the price of everything, but the volatility here is the volatility of the price discussed on the stock market. Generally, price volatility is shaped by factors of production affecting demand and supply.

[4] described historical volatility or also called volatility based on past data. As the name implies, the historical volatility is stock data 12 months ago. If stock prices fluctuate very sharply in the last 12 months, then this stock will enter the category of risk stock. Unfortunately, high volatility stocks can be profitable if investors choose to hold stocks before stock prices reach out a price that can afford them.

[14] said beta is the slope of the slope on the characteristic line, so the beta coefficient can be said to indicate certain characteristics of a security. If Beta ( $\beta$ ) is equal to one then beta equals market, for Beta ( $\beta$ ) > 1 including aggressive, and Beta ( $\beta$ ) < 1 including defensive. A beta of 1 indicates that the stock price will move in the market. Beta greater than 1 indicates that stock price volatility exceeds the market. A beta value of less than 1 indicates that the risk is greater than market price volatility.

#### 2.1.4. Stock Return

According [14] for short-term investment, accounting beta can be used to predict the risks faced by investors, because the data of past financial performance can give an idea of the return of an investment. In long-term investments, accounting beta does not provide a relevant picture of the returns to be earned. Short-term investments can benefit from following the trend over the previous few years to predict stock volatility a few months later.

Meanwhile, according to [8] in bearish market condition (downtrend), market return tends to be negative so that bigger beta will result in bigger stock return. In bearish market conditions the resulting market return tends to be positive. As a result, the resulting stock return will be even greater if the stock market beta gets bigger. In this research is suggested when the market conditions are bearish, investing in stocks with lower beta value is preferred. Conversely, in bullish market conditions (uptrend), investors should prefer to invest in stocks with high beta because the resulting return is greater.

#### 2.1.5. Internal Factors

These fundamental variables are the variables studied by Beaver, Kettler and Scholes. These variables are accounting variables that are generally related to the beta. The seven variables are as follows:

1. Dividend Payout
2. Asset Growth
3. Leverage
4. Liquidity
5. Asset Size
6. Earning Variability
7. Accounting Beta

#### 2.1.6. External Factors

Systematic risk is a systemized risk so it cannot be changed because the systematic risk is influenced by fluctuating economic movement of macro factors. Systematic risks can include inflation, exchange rate fluctuations, interest rate fluctuations, fiscal policy and other policies governing the activity of an investment. This has been revealed by [11] in the February 2011 MRA journal.

1. Inflation
2. Exchange Rate
3. Interest Rate

#### 2.2. Research Framework

The framework research is shown as below.

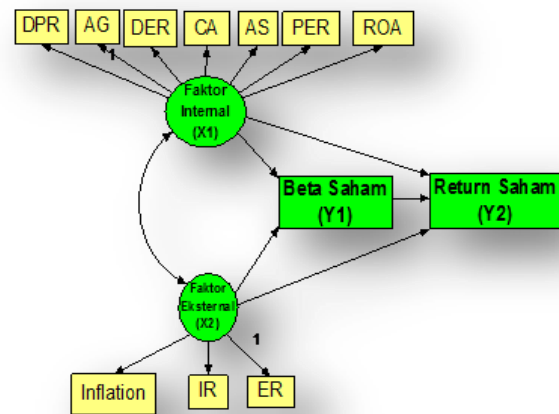


Figure 2.1  
Research Framework

Annotation:

Internal Factors ( $X_1$ ):

- (1) Dividend Payout Ratio (DPR)
- (2) Asset Growth (AG)
- (3) Debt to Equity Ratio (DER)
- (4) Current Asset (CA)
- (5) Asset Size (AS)
- (6) Price Earnings Ratio (PER)
- (7) Return on Asset (ROA)

External Factor ( $X_2$ ):

- (1) Inflation
- (2) Interest Rate
- (3) Exchange Rate

#### 2.3. Correlation among Research Variable

##### 2.3.1. Internal Factors towards Beta Stocks

According to [34], the analysis of financial ratios is an instrument of company achievement analysis that explains the relationship and financial indicators, to indicate changes in financial condition or achievement in the past, and helps illustrate the trend pattern change, to then show the risks and opportunities attached to company and stock of the company concerned. This shows the effect that arises from the analysis of financial ratios on the risk of shares of the traded company.

##### 2.3.2. External Factor towards Beta Stocks

According to [30] resulted in research that macroeconomic factors are external factors

including inflation, interest rates and exchange rates do not affect the beta stock either simultaneously or partially. These factors are concerned with the selection of external factors to be examined by the author, although research conducted by [30] only examines the macroeconomic factors that affect the beta.

### 2.3.3. Internal Factors towards Return Stocks

Not all financial ratios of each company in the Indonesia Stock Exchange can be a good parameter to predict the change in return of the company. This can be based on research conducted by [8] which resulted in the conclusion that ROA and PER ratios can be used to explain the stock return of manufacturing companies so that this ratio needs to be considered for investors in analyzing company performance, which influence the increase of stock return.

### 2.3.4. External Factors towards Return Stocks

The interest rate affects the stock price at which the rising stock price will affect the stock return. If interest rates rise, then the impact on the increase in interest rates on loans that will lead to interest rates on credit that will burden corporate profits can even lose. Companies experiencing a definite interest rate risk share price of the company will decline as investors judge the company has no good prospects. High interest rates are a negative signal to stock prices [15]

### 2.3.5. Beta Stocks towards Returns Stocks

The fundamental reason for the beta effect of stocks on stock returns is because systematic risk cannot be eliminated by forming a portfolio in an investment. Therefore, for an investor the risk becomes more relevant to be considered in choosing a combination of shares in the portfolio it creates. This is in accordance with the concept of Markowitz who said that any risk will affect the stock return so that companies need to make a portfolio of shares by minimizing risk and maximizing profit [37].

## 2.4. Hypothesis

Based on theoretical studies and empirical studies and conceptual frameworks that have been

put forward before, it can be arranged research hypothesis as follows:

1. Internal factors are directly and significantly influence beta stocks in Real Estate companies in Indonesia Stock Exchange.
2. External factors are directly and significantly influence beta stocks in Real Estate companies in Indonesia Stock Exchange.
3. Internal factors are directly and significantly influence returns of stocks in Real Estate companies in Indonesia Stock Exchange.
4. External factors are directly and significantly influence return of stock in Real Estate companies in Indonesia Stock Exchange.
5. Beta stocks are directly and significantly influence return of stocks Real Estate companies in Indonesia Stock Exchange.
6. Internal factors are directly and significantly influence return of stocks through Beta Stock in Real Estate companies in Indonesia Stock Exchange.
7. External factors are directly and significantly influence return of stocks through Beta stocks in Real Estate companies in Indonesia Stock Exchange.

## III. RESEARCH METHOD

### 3.1. Research Plan

The research design is to test and analyze X1 (internal factors) that have seven indicators, they are:

1. Dividend Payout Ratio ( $X_{11}$ )
2. Asset Growth ( $X_{12}$ )
3. Debt to Equity Ratio ( $X_{13}$ )
4. Current Asset ( $X_{14}$ )
5. Asset Size ( $X_{15}$ )
6. Price Earnings Ratio ( $X_{16}$ )
7. Return on Asset ( $X_{17}$ )

In addition to internal factors, the authors add external factors. External factors are represented by X2. External factors involve:

1. Inflation rate ( $X_{21}$ )
2. Interest rate ( $X_{22}$ )
3. Interest rate ( $X_{23}$ )

### 3.2. Operational Definition

Table 3.1

### Operational Definition

No	Variable	Operational Definition	Measurement
1	Dividend Payout	Dividend payout ratio is a measure of dividend per shares divided by earning per shares	$\frac{\text{Dividend per shares}}{\text{Earning per shares}}$
2	Asset growth	Asset growth is a ratios to scale the ability of company to gain profit	$\frac{\text{Assets}_{it} - \text{Assets}_{it-1}}{\text{Assets}_{it-1}}$
3	Leverage	Measured by debt to equity ratio	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$
4	Liquidity	Liquidity is measured from current asset	$\frac{\text{Current asset}}{\text{Current Liabilities}}$
5	Asset size	Measured by asset size	Total Asset
6	Earning variability	Measured from PER	$\frac{\text{Stock Price}}{\text{EPS}}$
7	Accounting beta	The sensitivity of ROA	$\frac{\text{Net Income}}{\text{Total Asset}}$
8	Beta Stocks	Volatility measurement	$\frac{\text{Cov (Ri, Rm)}}{\text{Var (Rm)}}$
9	Return Stocks	The measure used in is capital gain/loss	$\frac{\text{Pt} - (\text{Pt} - 1)}{(\text{Pt} - 1)}$
10	Inflation	The annual inflation rate issued by BI	-
11	Interest Rate	Average annual SBI	-
12	Exchange Rate	Middle rate of exchange rate at BI	-

Source: Researcher

### 3.3. Population and Sample

The population of this research is Property & Real Estate company listed in Indonesia Stock Exchange with sample selection using purposive sampling method, with the following criteria:

1. Shares of listed real estate companies listed on the Indonesia Stock Exchange (BEI) for five years from 2008 to 2012.
2. Listed Real Estate Companies issuing financial statements for the period 2008 to 2012 and posted in ICMD (Indonesia Capital Market Directory) and published.
3. Real Estate Companies that do not delist and liquidate during 2008 to 2102.
4. Data is available for analysis.

### 3.4. Data Source

The available data is sorted according to the research needs. The data is in the form of financial statements of Real Estate companies or property areas where there are limits to the data used. Sources of other supporting data, obtained from Yahoo! Finance and websites that support this research. The data used during the period of 5 (five) years, example from 2008 to 2012. Data from ICMD and other supporting data can be used as benchmark data for other researchers in accordance with each of the variables studied, as well as from IDX (Indonesia Stock Exchange).

### 3.5. Data Analysis

The statistical calculations that can be used in this study are as follows:

#### 3.7.1. SEM Assumption

In this research the processing is done with AMOS. With the number of samples in this study > 100 then the selected analytical technique is Structural Equation Model (SEM). [17] quotes Ghazali said there are some requirements or assumptions that must be met by research data prior to processing with SEM, among others:

1. Test the sample size  
The sample size that must be met in this model is a minimum of 100 and above (>100)
2. Data Normality Test  
The data distribution is said to be normal at a 0.01 significance level if the Critical Ratio (CR), skeweness, or CR kurtosis (tapers) are no more than  $\pm 2.58$ .
3. Test Outliers  
Outliers are observations that appear with extreme values because of the combination of unique characteristics it possesses that look very much different from other observations.
4. Multicollinearity Test  
If the correlation between exogenous constructs <0.85 means no multicollinearity occurs.

Basically SEM is a combination of factor analysis, multiple regression analysis, and correlation. Some Goodness-of-Fit Indexes and cut-off values can be used to test the feasibility of a model in Table 3.2 below:



TABLE III  
GOODNESS OF FIT CRITERIA

Criteria Index Size	Reverence Value
Kai Kuadrat ( $X^2$ )	Smallest
p-value	$\geq 0,05$
CMIN/df	$\leq 2,00$
RMSEA	$\leq 0,08$
GFI	Approaches 1
AGFI	Approaches 1
TLI	Approaches 1
CFI	Approaches 1

Source: Statistical Guidance for SEM & PLS with SPSS AMOS

The basic considerations of using SEM are:

1. Variable  $X_1$  is internal factor which is consisting of 7 variables
2. Variable  $X_2$  is External factors
3. Variable of  $Y_1$  is beta stocks and variable from  $Y_2$  is return stocks
4. The amount of data generated from  $X_1$ ,  $X_2$ ,  $Y_1$  and  $Y_2$  with the number of sample of 21 companies for 5 years all amounted to 105 data, where one of the requirements of SEM usage is with the data amounted to  $<100$ .

Structure Equation Model (SEM) in the research is used to know the direct influence and indirect influence between the variables studied. The Structure Equation Model (SEM) scheme in this research is shown in Figure 3.1 below:

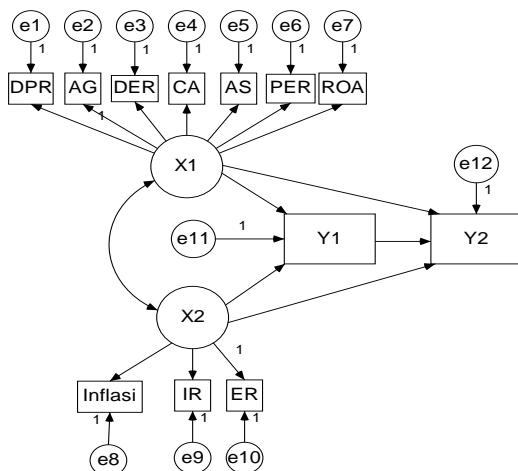


Figure 3.1.  
Framework Concept

Variables as show bellow:

DPR	: Dividend Payout
AG	: Asset Growth
DER	: Debt to Equity Ratio
CA	: Current Asset
AS	: Asset Size
PER	: Price Earnings Ratio
ROA	: Return on Asset
Inflation	: Inflation
IR	: Interest Rate
ER	: Exchange Rate

#### IV. RESEARCH OBJECT DESCRIPTION

##### A. Research Object

The companies studied are presented in Table 4.1 along with the Initial Public Offering (IPO) time.

TABLE IV  
RESEARCH OBJECTS

No	Code	Company Name	Initial Public Offering (IPO)
1	BIPP	Bhuwanatala Indah Permai Tbk.	23 October 1995
2	CTRA	Ciputra Development Tbk.	28 May 1994
3	CTRS	Ciputra Surya Tbk.	15 January 1999
4	DART	Duta Anggada Realty Tbk.	8 May 1990
5	DILD	Intiland Development Tbk.	4 September 1991
6	DUTI	Duta Pertiwi Tbk.	2 November 1994
7	ELTY	Bakrieland Development	30 October 1995
8	GMTD	Gowa Makassar Tourism Development Tbk.	11 December 2000
9	JIHD	Jakarta International Hotel & Dev. Tbk.	29 February 1984
10	KIJA	Kawasan Industri Jababeka	10 January 1995

TABLE IV, CONT.

1	1	KPIG	Global Land Development Tbk.	30 March 2000
2	1	LPCK	Lippo Cikarang Tbk.	24 July 1997
3	1	MDLN	Modernland Realty Tbk.	18 January 1993
4	1	MTSM	Metro Realty Tbk.	8 November 1992
5	1	OMRE	Indonesia Prima Property Tbk.	22 August 1994
6	1	RBMS	Ristia Bintang Mahkotasejati Tbk.	19 December 1997
7	1	RDTX	Roda Vivatex Tbk.	14 May 1990
8	1	SMDM	Suryamas Dutamakmur Tbk.	12 October 1995
9	1	SMRA	Summarecon Agung Tbk.	7 May 1990
0	2	ADHI	Adhi Karya (Persero) Tbk.	18 March 2004
1	2	SSIA	Suya Semesta Internusa Tbk.	27 March 1997

Source: www.idx.co.id

## V. ANALYSIS AND DISCUSSION

### A. Analysis

Based on data that has been recorded in the research, then the next step is analyzing data with AMOS package program as follows:

TABLE V  
RECAP CALCULATION

	C.R.	P	Influence	Outcome
ZBS	3.668	***	0.553	Significant
ZBS	-			Not Significant
ZBS	0.174	0.862	-0.012	Not Significant
ZDPR			0.371	
ZAG	2.34	0.019	0.251	Significant
ZDER	3.101	0.002	0.386	Significant
ZCA	4.131	***	1.041	Significant
ZAS	4.137	***	0.838	Significant
ZPER	0.901	0.367	0.085	Not Significant
ZROA	1.291	0.197	0.125	Not Significant
ZER			0.416	
ZIR	4.598	***	0.639	Significant
Z-Inflation	3.197	0.001	1.123	Significant

TABLE V, CONT.

ZRS	14.86	***	0.910	Significant
ZRS	-			Not Significant
ZRS	1.917	0.055	-0.124	Not Significant
ZRS	1.601	0.109	0.075	Not Significant

Source: AMOS Output

So it can be inferred from the hypothesis that:

1. Internal factors have a direct and significant effect on Beta Share.
2. External factors have no direct and insignificant effect on Stock Beta.
3. Internal factors have no direct and insignificant effect on Stock Return.
4. External factors have no direct and insignificant effect on Stock Return.
5. Beta Shares have a direct and significant effect on Stock Return.
6. Internal factors indirectly have no effect on Stock Return through Beta Share.
7. External Factors indirectly affect and not significant to the Stock Return through Beta Shares.

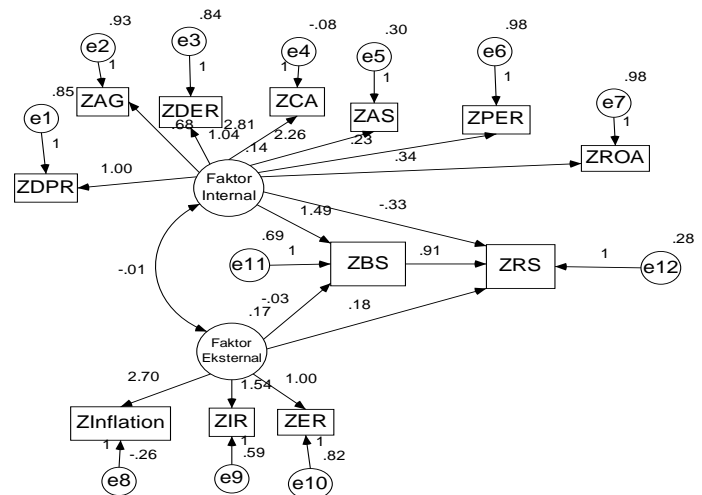


Figure 5.1  
SEM's Output

### B. Discussion

#### 5.4.1. Hypothesis Test for Internal Factor towards Beta Stocks

The variable X1 which is the internal variable as a whole has a significant effect. The most significant influence among the seven variables studied from X1 is the ZCA variable and the ZAS variable whose P value is represented by an asterisk

means that the relationship is very strong to close to 100% or more.

The results of the previous discussion show that hypothesis 1 which identifying that internal factors have a direct and significant effect on the beta stocks on real estate company in Indonesia Stock Exchange is acceptable.

#### 5.4.2. Hypothesis Test for External Factors towards Beta Stocks

Overall, external factors are not significant effect on the stock beta. Beta stock is an unavoidable risk, while external factors from this research are one factor of risk that can be avoided, so this can theoretically be accepted. If the risk can be avoided, then the hypothesis of no significance of influence between external factors and stock beta could happen. This is in line with research conducted by [4] that produces a negative influence of inflation.

The influence of external factors is significant and the most significant variables are inflation and interest rate. High inflation boosted prices of goods and services that resulted in influencing government policies to raise interest rates.

The results of the previous discussion show that hypothesis 2 that sounded external factors have a direct and significant effect on the stock beta on real estate companies is unacceptable.

#### 5.4.3. Hypothesis Test for Internal Factors Towards Returns Stocks

The results of previous discussion show that hypothesis 3 which reads internal factors have a direct and significant effect on stock returns on real estate companies is unacceptable.

#### 5.4.4. Hypothesis Test for External Factors towards Return Stocks

Based on the previous discussion, it shows hypothesis 4 which reads external factor has a direct and significant effect to stock return on real estate company in Indonesia Stock Exchange is unacceptable.

#### 5.4.5. Hypothesis Test for Beta Stocks towards Return Stocks

The results of previous discussion show that hypothesis 5 which reads beta share have direct and

significant effect to stock return on real estate company in Indonesia Stock Exchange is acceptable.

#### 5.4.6. Hypothesis Test for Internal Factors Indirectly through Return Stocks towards Beta Stocks

The results of previous discussion show that hypothesis 6 which reads internal factors have an indirect and significant effect on stock return through beta shares in real estate company in Indonesian Stock Exchange can be accepted.

#### 5.4.7. Hypothesis Test for External Factor Indirectly through Returns Stocks towards Beta Stocks

The results of previous discussion show that hypothesis 7 that reads external factors have an indirect and significant effect on stock return through beta shares in real estate company in Indonesia Stock Exchange is unacceptable.

## VI. CONCLUSION

### A. Conclusion

The conclusions are as follows:

1. Internal factors have a direct and significant effect on Beta Share. Among the internal variables, the most significant are ZDPR, ZCA and ZAS. Internal factors are fundamental factors that are closely related to the financial performance of real estate companies.
2. External factors directly have no effect and not significant on Beta Shares with the value  $P = 0.862$  where the requirement is significant if the value of  $P < 5\%$ . It means that external factors in the form of inflation, interest rates and exchange rates directly have no effect.
3. Internal factors directly have no effect and not significant on the Return of Shares with the value  $P > 0.05$ . Internal factors are not significant effect on stock returns.
4. External factors directly have no effect and not significant on the Return of Shares with the value  $P > 0.05$ .
5. Beta Shares directly affect and significant to Return Shares with significant probability in all Level Of Confident.



6. Internal factors indirectly affect the Stock Return through Beta Shares with a value of 0.50, 0.503 or 50.3%.
7. External Factors indirectly does not affect the Stock Return through Beta Shares with the value obtained -0.11.

#### B. Advises

Suggestions given based on the previous conclusions, including:

1. Improving financial performance so that the calculation of financial ratios as a measure of performance increased
2. Taking into account external factors that are not significant to the stock beta, because the change of this factor is unpredictable, so it could be in the following year those factors affect the beta.
3. With internal factors that do not affect the stock return, internal factors should not necessarily be ignored because only a small part of the financial ratios used in research.
4. With respect to external factors that do not affect the stock return, it is necessary to add other external factors such as economic growth, capital flows, central bank independence and political risks.

The indirect relationship between internal factors to stock return through stock beta gives a significant picture between beta and stock return so it is necessary to do indirect research.

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