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Exchange Rate Effectiveness in Five ASEAN Countries: Indonesia, Malaysia, Singapore, Thailand and the Philippines

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Abstract *Exchange rate is defined as the currency that can be exchanged per unit to another currency, or the price of one currency to another currency. The purpose of this study is to determine the effect of inflation, interest rates and investment on exchange rates in five ASEAN countries, namely Indonesia, Malaysia, Singapore, Thailand, and the Philippines. The variables used in this study are exchange rates, inflation, interest rates and investment as moderating variables. Data sources come from World Development Indicators and Investing.com. The analysis used is multiple linear analysis with the help of SPSS 22 software. The results of this study indicate that inflation and interest rates have no effect on investment. In addition, inflation, interest rates and investment have no effect on exchange rates in five ASEAN countries. Then, the effect of inflation and interest rates on exchange rates through investment also does not have a significant effect.*

Keywords: *Exchange Rate; Inflation; Interest Rate; Investment*

1. INTRODUCTION

All countries, both developed and developing, strive to maintain their exchange rates to remain stable. Exchange rates can be used as a tool to measure the economic conditions of a country. When the growth of a country's currency is stable, it shows that the country has a stable economic condition (Salvator, 2014). With the exchange rate, a country can transact with other countries conducively. However, the obstacle faced in this currency value is that not every country has the same currency value. An exchange rate crisis can have a negative impact on a country's economy. An exchange rate crisis not only causes prices to soar, but also causes a fairly deep economic contraction.(Fauji, 2016). Exchange rate is one of the financial assets that can be a source of government revenue, because the exchange rate has a crucial role in trade activities between countries where the majority of countries in the world participate in a free market economy including ASEAN countries.

Table 1

Exchange Rate Development 2008-2022

Negara	Nilai Kurs														
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Indonesia	10900	9425	9010	9067	9637	12170	12385	13787	13472	13567	14380	13882	14040	14250	15565
Malaysia	3.4525	3.4240	3.0835	3.1700	3.0580	3.2785	3.4965	4.2935	4.4860	4.0470	4.1325	4.0905	4.0200	4.1640	4.4000
Singapura	1.4312	1.4048	1.2829	1.2966	1.2212	1.2632	1.3256	1.4178	1.4483	1.3375	1.3630	1.3444	1.3209	1.3490	1.3398
Thailand	35.100	33.330	30.055	31.480	30.600	32.700	32.910	36.030	35.850	32.560	32.340	29.760	30.040	33.230	34.610
Filipina	47.470	46.500	43.645	43.840	41.060	44.390	44.790	46.925	49.599	50.014	52.500	50.650	48.010	50.990	55.670

Source: World Development Indicators

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The table above shows the development of the exchange rate of five ASEAN countries against the US dollar from 2008-2022 which fluctuates. Fluctuating exchange rate movements affect the mechanisms and strength of the international market. In addition, a country's exchange rate can change at any time due to the law of supply and demand. If the value of the national currency is lower than a foreign currency, it is called depreciation, and vice versa if the national exchange rate is higher than a foreign currency, it is called appreciation. Changes in this exchange rate cause exchange rate risks which will directly affect the development of prices of goods and services domestically or abroad. In the foreign exchange market, the exchange rate in each country experiences uncertainty. This can be seen in the table above regarding the exchange rate in the period 2008-2022 which shows that the purchase exchange rate will experience an unpredictable decrease and increase. Exchange rate instability in a country causes high inflation, increasing unemployment, increasing interest rates, depleting foreign exchange reserves, and decreasing economic activity. According to the World Bank, the ASEAN country with a low exchange rate is Indonesia. Bank Indonesia revealed that the main cause of the weakening of the rupiah exchange rate against the dollar was due to the dollar index or DXY which was still strong and followed by an increase in the price of basic necessities which was not balanced by an increase in government wages. Many factors influence changes in the exchange rate. According to Pure (2006) Prices will change if there is inflation, changes in interest rates and investment returns.

According to Şen et al., (2020) states that inflation is a tool to determine the state of the economy. Inflation can also affect other economic activities, such as high inflation or hyperinflation which has a negative impact on the national economy, so that inflation has a significant impact on the exchange rate. According to Samsudin et al., (2023) Inflation is an increase in the price of goods due to an imbalance between the flow of money and goods. The increase in the price of domestic goods causes demand for domestic goods to decrease. People choose imported goods that are cheaper as a replacement or substitute. The shift in people's choice to imported goods causes the need for foreign currency to increase. The increase in the need for foreign currency causes the exchange rate of the domestic currency against foreign currencies to weaken or depreciate.

Another factor that can affect the movement of exchange rates is interest rates. Interest rate movements also affect a country's exchange rate, because the higher the interest rate in the currency value, the smaller the demand for the country's currency. Interest rates are the amount of annual interest that must be paid on a loan as a form divided by the amount of the loan (Samsudin et al., 2023).

In addition, a large investment can affect the stability of a country's economy from external aspects and exchange rate fluctuations. The supply of capital will increase foreign exchange which then increases the currency that receives the capital. However, this can suddenly change into an outflow of capital, so that the exchange rate is under quite heavy pressure. Thus, with the economic development of a country, the exchange rate of a country is also influenced by capital flows between countries and one of them is the flow of foreign investment capital.

2. THEORETICAL REVIEW

Exchange rate

An exchange rate is the price of one unit of currency in terms of another currency. Exchange rates are determined in the foreign exchange market, which is the market where different currencies are traded (Samuelson & Nordhaus, 2004). Meanwhile, according to Salvatore (2016), the exchange rate is defined as the price of a foreign currency in terms of the domestic currency. The exchange rate plays an important role in international trade because it is used to compare the prices of goods and services in different countries. Changes in the exchange rate are called depreciation and appreciation. The exchange rate is said to depreciate if the domestic currency weakens against a foreign currency, while the exchange rate is said to appreciate if the domestic currency strengthens against a foreign currency. The theory of determining the exchange rate is the purchasing power parity theory, this theory states that each unit of currency should be able to buy the same amount of goods in all countries. The theory of purchasing power parity is based on a principle of purchasing power called the law of one price. This law states that a good must be sold at the same price everywhere, otherwise there will be an opportunity to seek greater profits.

Inflation

Inflation is a tendency for prices to rise. The general price of goods is not temporary. Inflation is a general and continuous increase in the price of goods (Rahardja & Manurung, 2008). Quantity theory is the oldest theory and the theory that approaches inflation from a demand perspective. Keynesian theory and cost-push theory say that inflation occurs because a group of people wants to live beyond their economic means. So the inflation process is a process of tug-of-war between groups of people to obtain a larger share of society than society can provide, this kind of phenomenon results in increased costs.

Interest rate

Interest rate is the price of a loan. Interest rate is expressed as a percentage of principal per unit. According to Miskhin (2008) interest rate stability is highly expected, because interest rate stability also encourages financial market stability so that the ability of the financial market to channel funds from people who have productive investment opportunities can run smoothly and economic activities also remain stable. According to Keynes, the interest rate is a monetary phenomenon, meaning that the interest rate is determined by the supply and demand for money. Money will affect economic activities as long as it affects the interest rate. Keynes outlined his views on how the interest rate is determined in the short term. This explanation is called the liquidity preference theory, where this theory states that the interest rate is determined by the balance of supply and demand for money.

Investment

Jogiyanto (2008), defines investment as the postponement of current consumption to be used in efficient production over a certain period of time. According to (Tandelilin, 2010) investment is a commitment to a certain amount of funds or other resources made at this time, with the aim of obtaining a certain amount of profit in the future. Neo-classical theory emphasizes the importance of Savings as a source of investment. Investment is seen as one of the main drivers of economic growth and Development. The faster the development of investment, the faster the development of the volume of capital stock. Harrod-Domar theory views the ability of an economy to produce goods and services, as well as expenditure that will increase the effective demand of the entire Community.

The Effect of Inflation on Investment

According to Weston & Tjomas (1995) higher inflation means the cost of obtaining funds for the government, businesses, and individuals will increase. This shows that high inflation will reduce the amount of income a country earns. Based on research conducted Messakh et al., (2019) states that the impact of high inflation will cause a reduction in assets, because high inflation will cause people's purchasing power. If inflation increases, investors usually demand additional inflation premiums to compensate for the decline in purchasing power they experience. Many studies with different sample backgrounds have proven that inflation does not affect investment such as research conducted by Yusmarti & Amar (2020) And The Last Supper (2016) which states that there is no partial or simultaneous influence between the inflation variable and investment. And there is a negative relationship between inflation and investment, as stated by Marcella (2014). Based on the research results above, the hypothesis is:

H1: Inflation does not have a direct effect on investment.

The Effect of Inflation on the Exchange Rate

According to the Central Statistics Agency (BPS), inflation is a tendency for the prices of goods and services to increase in general which occurs continuously. If inflation increases, the prices of goods and services cause the value of the currency to fall. The definition of inflation put forward by Bodie Kane Marcus (2014) is the general rate of price increases. High inflation rates are often associated with an "overheated" economy, namely an economy where demand for goods and services is higher than production capacity, resulting in an increase in prices. According to Samsudin et al., (2023) instability in exchange rates and high inflation rates can create uncertainty in financial markets and the economy as a whole. This can hinder investment and long-term economic growth. Investors tend to start situations and make decisions based on their perception of the situation and what is predicted to be affected by inflation. Research et al., (2019) And Fauji (2016) states that inflation does not have a significant effect on the exchange rate. Based on the results of the study above, the hypothesis is:

H2: Inflation does not have a direct effect on the exchange rate.

The Effect of Interest Rates on Investment

Classical theory states that interest is the price of loanable funds (investment funds) so that interest is the price that occurs in the market and investment. Increasing interest rates will result in higher borrowing costs, which makes investment projects more expensive for investors. This can reduce the incentive to make new investments, thereby reducing investment activity in the economy. In other words, increasing interest rates will reduce investment. According to classical economic theory, if the interest rate increases, it will reduce investor interest in making investments, this is because investors must increase spending to finance their investment funds so that in general the profits obtained will decrease. Research conducted by Yusmarti & Amar (2020) And Marcella (2014) states that the interest rate has no effect on investment. Based on the results of the study above, the hypothesis is:

H3: Interest rates do not have a direct effect on investment.

The Effect of Interest Rates on Exchange Rates

According to Keynes' theory, the interest rate is a monetary phenomenon. This means that the interest rate is not determined by the supply and demand for money determined in the money market. The role of the economy distinguishes interest rates into nominal interest rates and real interest rates. Nominal interest rates are rates that occur in the market while real interest rates are a concept that measures the rate of return after being reduced by inflation.

According to Agustin & Anis (2021) Monetary variable shocks of interest rates to the exchange rate occur when there is a change in the interest rate of a currency, which causes a change in the demand for money, both from domestic investors and foreign investors. When there is a decrease in the interest rate of the domestic currency, capital will leave the country and result in a weakening of the domestic currency or depreciation. Research Nuru & Gidey (2022) explains that interest rates have a negative impact on the exchange rate in Turkey. In addition, there is no causal relationship between interest rates and exchange rates. Based on the results of the study above, the hypothesis is:

H4: Interest rates do not have a direct effect on exchange rates.

The Impact of Investment on Exchange Rates

According to Mankiw there is a relationship between investment and exchange rates. In an open economy, it is stated that an increase in investment demand causes the domestic foreign exchange rate against foreign currencies to appreciate. Increasing the level of investment will increase the level of the domestic economy. This is because more and more foreign capital from outside enters the country so that state revenues increase. Increasing state revenues thus strengthen the value of the country's currency (Jaya & Asnawi, 2018). Therefore, the value of the rupiah will appreciate in accordance with the increase in foreign investment. Research conducted by Istiqomah (2016) And Wulandari & Karonesia (2019) states that foreign investment has an effect on the exchange rate. Based on the results of the research above, the hypothesis is:

H5: Investment has a direct effect on the exchange rate.

The Effect of Inflation on Exchange Rates Through Investment

High inflation can cause real income of the community to continue to fall, so that the standard of living of the community will also fall. With prices continuing to rise, economic actors will find it difficult to determine decisions to improve their standard of living (Siregar, 2016). Thus, unstable inflation will also complicate people's decisions in making investments which will ultimately lower the exchange rate. When high inflation occurs, it will cause an increase in the price of the same commodity in other countries (Dewi Sartika et al., 2019). Based on the research results above, the hypothesis is:

H6: Inflation does not directly affect the exchange rate through investment.

The Influence of Interest Rates on Exchange Rates Through Investment

An important factor in making a decision to invest in the future is the interest rate (PK Dewi & Triaryati, 2015). According to Anna & Karambakuwa (2012) Interest rate is the rate paid or the burden on the use of funds or in other words the cost of borrowing. Interest rates

decrease then investment will increase due to a decrease in investment costs, but conversely if interest rates increase it occurs due to a decrease in investment (E. Dewi et al., 2013). Investment needs to consider the interest rate because when the withdrawal rate is smaller than the interest rate, the investment does not provide profit, so the planned investment is canceled which ultimately has an impact on the weakening exchange rate. The exchange rate will affect investment activities because of exchange rate fluctuations that make investors tend to be careful in making their investments in other countries. Based on the results of the study above, the hypothesis is:

H7: Interest rates do not directly affect exchange rates through investment.

3. RESEARCH METHOD

The type of research used in this study is a type of research with a descriptive approach, namely describing or depicting data that has been collected systematically, factually and accurately on an activity in a particular country, meaning that the quantitative method aims to explain something and describe the results of the analysis that has been calculated. The location of this research was carried out in five ASEAN countries, namely Indonesia, Malaysia, the Philippines, Singapore and Thailand. This research was conducted from 2008-2022 which was obtained from the world bank - world development indicators and investing.com. The type of data analyzed in this study is secondary data in the form of panel data using a period of 15 years and cross sections in 5 ASEAN countries so that a total of 75 observations. The data analysis model used to discuss the problems in this study is panel data regression analysis using SPSS 22 software and the sobel test is used to see the indirect effect.

Based on the results of the reduced form above, it can be seen that the coefficients of direct and indirect influences from both exogenous and endogenous variables on the exchange rate can be identified. So to test the level of significance of each regression coefficient of the independent variable on the dependent variable, the coefficient of determination (R2) is used to measure how far the model's ability to explain the variation of the dependent variable. The value of the coefficient of determination is 0 and 1. A value close to 1 means that the independent variables provide almost all the information needed. Furthermore, the F statistical test is used to determine whether there is an influence between the independent variables on the dependent variable. If the probability < 0.05, then H0 is rejected and H1 is accepted. However, if the probability > 0.05, then H0 is accepted and H1 is rejected. Then, the T test is used to make a decision whether the hypothesis is proven or not, with the level of significance (α= 0.05). Where if t count > t table, then H1 is accepted and if t count < t table, then H0 is

accepted. Furthermore, the Sobel test is carried out with a test tool, namely using the calculation for the sobel test available on the webhttps://www.danielsoper.com/statcalc/calculator.aspx?id=31and information is needed by entering the original sample and standard error of each independent variable to the dependent variable if there is a mediator and without a mediator. If the Sobel statistical test > t table with a significance of 5%, then the variable can be said to be able to mediate between the independent variable and the dependent variable.

4. ANALYSIS AND DISCUSSION

Table 2. Results of Data Processing X1, X2 and Z

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7,822	2.487		3.145	.002
	Inflation	-.268	.347	-.116	-.771	.443
	Interest rate	-.222	.403	-.083	-.551	.583

a. Dependent Variable: Investment

Table 3.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.091a	.008	-.019	8.59794

a. Predictors: (Constant), Interest Rate, Inflation

The results of data processing in table 2 show that inflation is not significant to investment. This can be seen from the coefficient of -0.168, t-statistic of -0.553 and probability of 0.583 is greater than the specified significance level (α) of 5%, meaning H1 is accepted. Then, the results of the interest rate study are not significant to investment. This is indicated by the coefficient of 0.046, t-statistic of 0.107 and probability of 0.915 is greater than the significance level (α) of 5%, meaning H2 is accepted. In table 3, the Adjusted R Square coefficient value is 0.023 or equal to 2.3%, meaning that investment can be explained by inflation and interest rates by 2.3%. While the rest can be explained by other factors. Furthermore, the results of data processing from the relationship between inflation, interest rates and investment to the exchange rate are as follows:

Table 4. Results of Data Processing X1, X2, Z, and Y

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.414	.057		165,436	.000
	Inflation	-.006	.007	-.120	-.791	.431
	Interest rate	.000	.009	-.005	-.030	.976
	Investment	.002	.003	.094	.802	.425

a. Dependent Variable: Exchange Rate

The results of data processing in table 4 show that inflation is not significant to the exchange rate. This can be seen from the coefficient of -0.037, t-statistic of -1.134 and probability of 0.261 greater than the specified significance level (α) of 5%, meaning H3 is accepted. Then, the results of the interest rate study are not significant to the exchange rate. This is indicated by the coefficient of -0.066, t-statistic of -1.1418 and probability of 0.161 greater than the significance level (α) of 5%, meaning H4 is accepted. Furthermore, the results of the investment study are significant to the exchange rate. This is indicated by the coefficient of -0.166, t-statistic of -9.131 and probability of 0.000 smaller than the significance level (α) of 5%, meaning H5 is rejected. In table 4, the Adjusted R Square coefficient value is 0.528 or equal to 52.8%, meaning that the exchange rate can be explained by inflation, interest rates and investment by 52.8%. While the rest can be explained by other factors.

Table 5. Sobel Test Results

	X1-ZY	X2-ZY
A	0.046	0.168
B	0.116	0.116
SEA	0.431	0.304
SEB	0.013	0.013
T-statistic	0.106	0.551
P-value	0.915	0.581

The results of data analysis in table 5 show that the indirect effect of inflation on the exchange rate through investment has no significant effect. This can be seen based on the Sobel test, the t-statistic value of 0.1067 is smaller than the t-table of 1.993 with a p-value of 0.9150 greater than 0.05. So it can be concluded that investment cannot mediate the effect of inflation on the exchange rate in 5 ASEAN countries. Furthermore, the effect on the exchange rate through investment has no significant effect. This can be seen based on the Sobel test, the t-

statistic value of 0.551 is smaller than the t-table of 1.993 with a p-value of 0.581 greater than 0.05. So it can be concluded that investment cannot mediate the effect of interest rates on the exchange rate.

Based on the estimation results, it was found that inflation has no effect on investment in five ASEAN countries. The results of this study support the first hypothesis, namely that inflation has no effect on investment in five ASEAN countries. The results of this study are in line with The Last Supper (2016) which states that when there is an increase in the inflation rate, it will cause a reduction in the amount of output produced by producers. Therefore, investors will also reduce the amount of their investment, because in this situation it is not possible for investors to obtain a return on capital as planned. In this situation, investors prefer to invest in non-productive investments, such as land, houses, and so on. However, this study is not in line with previous research conducted by Nabila et al., (2023) which states that the inflation variable has a significant influence on investment.

High inflation will not encourage economic development in ASEAN. When prices are uncertain, capital owners tend to invest their capital in the form of purchasing land, houses and buildings. This kind of investment diversion will cause productive investment to decrease and economic activity to decline (Asfia, 2009). In addition, the increase in inflation will affect interest rates which will ultimately cause a decrease in the amount of investment. Research from Samsudin et al., (2023), Yusmarti & Amar (2020) And Marcella (2014) found results that support this research that inflation has no relationship to investment.

The results of this study also show that interest rates do not have a significant effect on investment in five ASEAN countries. This means that the second hypothesis stating that interest rates do not affect investment can be accepted. The high interest rates in each country will make investors reluctant to invest their capital or in other words, investment will decrease (Sari, 2018). If seen in table shows that the country with the highest interest rate is the Philippines. This is because the occurrence of a narrowing interest rate gap has weakened the peso and increased the cost of fuel and other imported goods, this condition makes the Philippines take a policy to raise its interest rates.

This finding is in line with classical economic theory which states that if the interest rate increases it will reduce investor enthusiasm for making investments. This is because investors must increase spending to finance their investments so that the profits obtained will be reduced. Such conditions explain that when interest rates increase or decrease by one

percent, it does not determine the increase or decrease in investment in the five ASEAN countries. Research Marcella (2014) in accordance with this study where there is no influence of interest rates on investment. Investment considerations are not only related to capital interest rates and future results but are also influenced by non-economic variables such as legal, political and cultural support (Amar, 2012).

Investor interest is not entirely influenced by interest rates when deciding to invest domestically, because most investors make investments that will be used to carry out business activities aimed at making a profit. As for non-economic factors that affect investment activities include instability in political and security conditions and inefficient bureaucracy, because according to investors, the existence of uncertainty factors will strengthen the risk in influencing economic conditions in the future so that it can harm investment. Investors will have difficulty in estimating expenses or costs incurred for investment, this happens because of the many burdens or expenses that must be paid by the company outside of the existing official levies.

The influence of the inflation variable in this study has no significant influence on the exchange rate, this can be seen from the probability value of inflation greater than the significance level of 5%. Excessive inflation rates or what is called hyperinflation can have a negative impact on the country's economy, so that the inflation that occurs greatly affects the exchange rate. The existence of these problems affects the high price of domestic goods compared to the price of goods abroad, which causes a tendency to import goods, and automatically the demand for foreign currency is much higher than the country's currency and the price of the country itself.

This finding is in line with Paul (2018) which explains that with the increase in inflation in a country, it will cause a country to tend to reduce the amount of money in circulation, so that it will cause a decrease in public consumption of goods and of course will have a negative impact on the running of the wheels of the economy. This finding is also supported by Alawiyah et al., (2019), Fauji (2016) And Agustin & Anis (2021)which states that inflation does not affect the exchange rate.

The results of the interest rate variable in this study are that there is no significant effect on the exchange rate in five ASEAN countries. This result supports the fifth hypothesis which states that interest rates do not have a significant effect on the exchange rate. Monetary variable shocks of interest rates to exchange rates occur due to changes in the interest rate of a currency which causes changes in the demand for that money, both from domestic investors

and investors from abroad (Agustin & Anis, 2021). When there is a decrease in the domestic currency interest rate, capital will leave the country and result in a weakening of the domestic currency or depreciation. This finding is supported by Agustin & Anis (2021) which states that interest rates do not affect exchange rates in the short term.

This finding also shows that inflation and interest rates do not have a significant effect on the exchange rate through investment in five ASEAN countries. This means that the sixth and seventh hypotheses stating that inflation and interest rates do not affect the exchange rate through investment can be accepted. Fluctuating inflation in each country and accompanied by unstable investment in each country makes investors not interested in investing in the country. This condition will complicate people's decisions in making investments which will ultimately lower the exchange rate. The results of this study are supported by Zalogo (2017) And Istiqomah (2016) which states that inflation does not affect the exchange rate through investment. Interest rates decrease, then investment will increase due to a decrease in investment costs, but conversely if interest rates increase, this occurs due to a decrease in investment (E. Dewi et al., 2013). Investment needs to consider the interest rate because when the withdrawal rate is smaller than the interest rate, the investment does not provide profit, so the planned investment is canceled which ultimately has an impact on the weakening exchange rate. The exchange rate will affect investment activities because of exchange rate fluctuations that make investors tend to be careful in making their investments in other countries.

5. CONCLUSION AND SUGGESTION

This study identifies the relationship between inflation, interest rates and investment directly and indirectly to the exchange rate. The independent variables in this study are inflation and interest rates, the dependent variable is the exchange rate, and investment as a moderating variable. From the results of the study above, it can be concluded that inflation and interest rates do not affect investment. Furthermore, inflation and interest rates do not have a significant effect on the exchange rate. Meanwhile, investment has a significant effect on the exchange rate. Then, the indirect relationship of inflation and interest rates to the exchange rate through investment shows an insignificant effect. However, this study also has several limitations, namely the lack of detailed results from each country because it uses SPSS 22 software. And this study only focuses on inflation, interest rates and investment. In fact, there are still many other factors that can affect the exchange rate. For further research, it is suggested to deepen

the factors that can influence the exchange rate considering that the factors used in this study only use inflation, interest rates and investment and it is hoped that the scope of the research will be further developed because this study does not fully describe the development of the exchange rate of each country.

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