

Bank Health and Market Discipline Linkage (Study on National Private Commercial Banks in IDX for the 2014-2017 Period)

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Abstract— The aims of this study to examine the effect of bank health on market discipline on the National Private Bank. The independent variable used in this study is Bank Health which consists of Bank Risk, Earning and, Capital. Bank risk consists of two sides, namely credit risk and liquidity risk. Credit risk is measured by non-performing loans and liquidity risk as measured by loan to debt ratio. Earnings are measured using Return On Assets (ROA) and Capital is measured by using Capital Adequacy Ratio (CAR). The dependent variable is used market discipline by measuring deposit growth. The sample of this research is a Private-Owned Commercial Bank (BUSN) listed on the Indonesia Stock Exchange in the 2014-2017 period. The results showed that credit risk had a negative effect on market discipline and liquidity risk had a positive effect on market discipline. Then, Earning has a positive effect on market discipline and Capital has no effect on market discipline.

Index Terms— Bank Health, Market Discipline, and Capital.

I. INTRODUCTION

Bank health is one of the most important aspects of the sustainability of banking. Bank health assessments are based on several aspects including banking risk, banking governance, banking earnings and banking capital adequacy. In carrying out its business, banking has many risks that can occur. Banking risk arises as a form of various decisions made in various fields, such as decisions on lending, receipt of funds, foreign exchange, collections, and various other forms of financial decisions that can cause losses for banks. The banking desire to get high profits from collecting large amounts of funds or channeling as much credit as possible, but the higher the ratio of funds and the higher the credit can also increase the risk that will be faced. The high risk will affect the soundness of the bank. The fact, in minimizing losses caused by these risks, Bank Indonesia adopted RGEC, which began in 2004.

The banking business contains a lot of risks that might occur quickly. Banking risk is the risk that arises as a form of various decisions made in various fields, such as decisions on lending, receipt of funds, foreign exchange, collections, and various other forms of financial decisions that can cause losses for banks. On the other hand, the bank wants to raise as many funds as possible so that it can be channeled into profitable loans, but the greater the funds received and disbursed, the greater the risk.

The rapid development of banking and the complexity of the problems faced, it's difficult for banking supervisory institutions to detect quickly and directly. The active role of depositors who hold funds in the bank is required, namely large depositors, subordinated loan holders, minority shareholders (public) and rating companies to actively participate in supervising banks and take action if the bank increases its risk by withdrawing funds deposited in the bank. As known as market discipline. Market discipline can run effectively if banks provide transparently and always reports updating. Transparent reports include risk management practices, forms of risk, and risk management performance so that depositors get accurate and complete information. This transparency is also beneficial for investors who will enter because they can assess the health of the bank's condition.

The risk is the uncertainty resulting from decisions and current conditions. The companies decisions, especially in the banking sector, are made by all levels of management from superiors to employees, the taking risks can arise in all levels of management. This must be followed by increasing transparency of information about risk management practices, forms of risk, and risk management performance to make transparent reporting can create market discipline. Transparency is also beneficial for investors because when investors have access to information and know the condition of the company, investors are more interested in investing in the company than other companies that don't provide access to information. The next aspect of measuring bank health is earnings or bank profitability. If the profitability of the company is high, the depositor will be interested in investing in the bank. The third aspect, namely capital adequacy is measuring the adequacy of capital that contains or generates risk, for example loans granted. Capital adequacy is an important factor for banks so that banks do not only rely on third-party funds, sufficient capital can also reduce credit interest rates on customers. The higher the bank's capital, the stronger the bank's ability to assume the risk of any credit or productive assets. All aspects of bank health assessment affect market discipline. If the bank is declared healthy, the depositor will trust the funds to be deposited in the bank.

Information's transparency that is constantly updated and accurate will be beneficial for supervisors and consumers to make a better assessment of how banks to maintain their soundness and sharpen the early warning system (early warning system) so that the negative impact of the delay of the supervisory agency conducting supervision can be effectively assisted market control. Through market discipline, customers can assess, monitor and participate in controlling banks through their decision to banks which are considered relatively safe and profitable. This market discipline can be performed by depositors, debt-holders, and equity-holders. Stephanou (2010) defines market discipline as a mechanism

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whereby market participants monitor and discipline excessive risk-taking behavior by banks.

Previous research on market discipline was carried out by researchers including Mertinez and Schmukler (2001) who researched on market discipline and bank risk-taking found the conclusion that the depositor will provide penalties for banks that take an excessive risk either by withdrawing funds from the bank or asking for an increased deposit interest rate. Dinger and Hagen (2007) who examined whether banks borrowing from other banks have a low risk, they found that interbank loans are associated with lower risk-taking by borrowing banks. This means that banks that which provide loans will discipline for banks that have high risk. Distinguin (2013) examined the disciplinary role of interbank deposits in banks in 10 European countries, the finding showed that interbank deposits play an important role in holding banks back from taking excessive risks.

Taswan and Riandika (2013) tested the market discipline based on CAR, LDR, ROA and NPL ratios found that CAR and LDR had a positive effect on market discipline while ROA and NPL had a negative effect on market discipline. Wulandary and Rohin (2012) examined the effect of deposit guarantors, CAR and NPL on deposit rates, moral hazard risk and NIM found that deposit guarantors negatively remained insignificant on commercial bank deposit rates while CAR and NPL had negative and significant effects. There are differences in the results of research on market discipline and based on the above background, researchers are interested in examining the effect of bank health on market discipline in the national private bank in the 2014-2017 period.

II. LITERATURE REVIEW

Based on PBI No. 13/1 / PBI / 2011 on 5 January 2011, the bank health is defined as the result of a qualitative assessment of various aspects that affect the condition or performance of a bank through quantitative and qualitative assessments of risk profile factors, GCG, profitability, and capital. The regulation replaces the previous valuation method which is based on Capital, Asset, Management, Earning, Liquidity and Sensitivity to market risk or known as CAMELS. The RGEC method uses an assessment of four factors based on BI Circular Letter No 13/24 / DPNP, namely Risk Profile, Good Corporate Governance, Earning, and Capital. The Risk Profile factor uses the calculation of credit risk, market risk, and liquidity risk. The GCG factor takes into account the evaluation of the application of self assessment. Earning or profitability factors are measured by the profit before tax indicator of total assets (ROA), net interest income to total assets (NIM). Capital factor is measured by the CAR ratio. Therefore, the health banks influences market discipline.

Market discipline can be realized in the context of the principal-agent general problem context. The depositing customer (as the principal) wants to ensure the bank (as the agent) safeguards its assets, namely its deposits. According to Levy (2004), depositing customers will supervise and respond to an increase in bank risk. The response to this increased risk is taken through the price approach (by increasing deposit interest) and the quantity approach (by attracting funds). Lane (1993) defines market discipline as financial markets which providing signals that direct borrowers to behave consistently with their solvency conditions.

According to Greenspan (2001) market discipline in the banking sector can be defined as supervision carried out by market participants or related parties whose supervision can usually be in the form of "Direct Market Discipline" or "Indirect Market Discipline" (Federal Reserve 2000). Direct Market Discipline is a discipline that is carried out through interest rates, in this case the interest rate is considered to reflect the level of risk of a bank. The higher the risk level of a bank, the higher the interest rate requested by investors. Market discipline can be measured by quantity using growth or changes in the amount of deposit (deposit growth). If a bank experiences increased risk or has a higher risk than other banks this will encourage depositors to withdraw funds from the bank.

The Effects of Risk Assessment on Market Discipline

An aspect in measuring the soundness of a bank is the risk aspect. According to government regulations on assessing the soundness of banks, one of the seek to assess the soundness of banks is the risk profile. Risk profile consists of eight aspects, namely, credit risk, market risk, liquidity risk, operational risk, compliance risk, strategic risk, legal risk, and reputation risk. Risk is the uncertainty of a decision in carrying out a company's operational activities, especially in the banking sector. Risk is one aspect of assessing the soundness of a bank. When a bank can minimize risk, it will have an impact on the health of the bank. Risks taken by banks have an impact on the formation of market discipline. Market discipline by depositors is characterized by the reaction of depositors to the risk taken by the bank.

Market discipline can be measured by quantity using growth or changes in the amount of deposit (deposit growth). If a bank experiences increased risk or has a higher risk than other banks this will encourage depositors to withdraw funds from the bank. Withdrawal of these funds means a decrease in deposits or a negative growth in deposits. This is a reaction from depositors to the high risks faced by banks and is carried out by depositors as a form of disciplining mechanism for bank management.

The focus of this study, only on aspects of credit risk and liquidity risk. Credit risk is measured using a non-performing loan (NPL) while liquidity risk is measured using a loan to deposit ratio (LDR). The LDR ratio is used to measure the ability of the bank to be able to repay its debts and repay to its depositors, and to be able to meet the credit requests submitted. High LDR is the risk of banks being unable to pay debts in the short term or the banks concerned are not liquid. If the depositor assesses that the bank is illiquid, the depositor will withdraw funds deposited to the bank concerned because they are considered unsafe. LDR reflects the risk of bank liquidity, the higher LDR reflects high liquidity risk. The higher the liquidity risk, the depositors will attract funds so that it can be concluded that the higher the liquidity risk, the lower the level of market discipline.

The results of the study are consistent with the opinions of Taswan (2012) and Barajas (2000) who obtain results under the LDR having a negative influence on market discipline. This means that the higher the LDR, the lower the ability of bank liquidity to make depositors hesitate to place their funds at the bank. Banks with high NPLs indicate the bank is facing high bad credit, conversely a low NPL shows that the bank is facing bad credit low. NPL has an influence on fund raising in

banks, because depositors respond negatively if the NPL ratio is high.

Depositors think that if the risk of bad loans is high then the bank concerned is not healthy in banking activities. So the higher the NPL reflects the smaller the ability to pay customers so that credit risk is high. when credit risk increases the depositor will withdraw funds at the troubled bank. It can be concluded that NPL has a negative effect on market discipline. This is consistent with the results of research conducted by Taswan (2000) and Skully (2012) who found that the value of the NPL ratio had a negative effect on deposit growth. This shows that the large non-performing loan ratio affected the growth of bank deposits due to the high NPL value which caused the response to be negative by depositors to deposit funds in banks. This research is in accordance with Signaling Theory.

Previous research that examined the relationship between market discipline and risk was carried out by Mertinez-Peria and Schmukler (2001) who conducted research on market discipline and bank risk-taking found that depositors will penalize banks that take excessive risk either by withdrawing funds from the bank or asking for an increase in deposit rates. Nier and Bauman (2006) who examined the effectiveness of market discipline in limiting excessive risk taking by banks, found the results that market discipline played an important role in reducing bankruptcy risk.

Park and Peristiani (2007) found that market discipline can be seen from the deposits growth, where the depositor will withdraw deposits from banks that have excess risk and demand for an increase in deposit rates. Dinger and Hagen (2007) examine whether banks that take loans from other banks have a low risk to provide results that banks that provide loans will discipline banks with high risk. Angkinand and Wihlborg (2010) found evidence that excessive risk taking by banks is due to weak market discipline, where risk taking depends on the coverage of the given deposit guarantee. Hasan (2011) found that assessing bank soundness reflects bank financial risk using the CAMEL method. Signals of bank financial performance, are expected to be responded by depositors. The lower the bank's financial performance, which means the higher the risk of the bank is expected to be responded by depositors by withdrawing funds.

Taswan et. al. (2012) who examined the effect of market discipline on bank risk, found the result that the depositor would ask for high interest rates or withdraw deposits from banks with high risk. It can be concluded that there is a significant negative relationship between bank risk and market discipline as measured by the growth of interbank deposits and loans. Then the hypothesis proposed is as follows:

H1a: Loan to Deposit Ration (LDR) has a negative effect on market discipline

H1b: Non Performing Loans (NPL) have a negative effect on market discipline

The Effect of Earning on Market Discipline

According to Kasmir (2012) means that profitability is an aspect that is used to measure the ability of banks to increase profits. This ability is carried out in a period. Profitability is also to measure the level of business efficiency and profitability achieved by the bank concerned. A healthy bank is a bank that is measured in profitability that continues to increase above the standard set. Banks that always suffer losses in their operations, of course over time will reduce their

capital. Banks that are in this condition certainly cannot be said to be healthy. Profitability in this study was measured using return on assets (ROA).

High earnings indicate that banks can operate their funds well so that depositors are interested in depositing and financing the bank. Depositors trust banks that are healthy because they feel safe than they are stored in banks that are not healthy. Conversely, if the bank earning is lower, the depositor will assume that the funds are not safe so that the amount of funds available is less. This is in line with research conducted by Taswan and Riandika (2013) found that return on assets (ROA) has a positive effect on market discipline. Based on the explanation above, the hypothesis proposed is as follows:

H2: ROA has a positive effect on market discipline

The Effect of Capital on Market Discipline

The capital aspect or capital of a bank is the capital owned by a bank based on the Capital Adequacy Ratio (CAR) determined by Bank Indonesia. The ratio is the ratio between the amount of capital and risk-weighted assets (RWA). In accordance with Bank Indonesia regulations, a bank at least has a CAR of 8%. CAR ratio in accordance with the provisions can be said that the bank is healthy and indicates that the bank complies with regulations. Bank compliance with regulations indicates that the bank is healthy.

CAR ratio in accordance with regulations is a positive signal for depositors. Depositors will trust funds in banks that meet regulatory compliance so they can form market discipline. This is in line with research conducted by Taswan and Riandika (2013) found that Capital Adequacy Ratio (CAR) has a positive effect on market discipline. Based on the explanation above, the hypothesis proposed as follows.

H3: CAR has a positive effect on market discipline

III. METHOD

The population of this study is the banking sector which is listed on the Indonesia Stock Exchange (IDX) for the 2014-2017 period. Based on the population, the sample will be determined as the object of this study. The sampling technique in this study by using purposive sampling, which is a sample collection technique with certain criteria. The sample criteria to be taken as follows: 1). The banking sector which publishes and publishes financial statements consistently during the 2014-2017 period; 2). Banking company financial statements for the 2014-2017 period; 3). Have information about company share ownership; 4). The banking sector, including national private banks.

This study uses an independent variable namely bank health with the RGEC method and the market discipline, the dependent variable which is formulated as follows.

Table 1. The Proxy of Variable

Variables	Proxy
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Credit Risk	$NPL = \frac{\text{credit problem}}{\text{total credit}} \times 100\% = \text{credit problem} / \text{Total credit} \times 100\%$
Liquidity Risk	$LDR = \frac{\text{Amount of credit}}{\text{Third-party fund}} = \text{Amount of credit} / \text{Third-party fund}$
Earning	$ROA = \frac{\text{Earning before tax}}{\text{Total Assets}} \times 100\% = \text{Earning before tax} / \text{Total Assets} \times 100\%$
Capital	$CAR = \frac{\text{Bank capital}}{\text{Total ATMR}} \times 100\% = \text{Bank capital} / \text{Total ATMR} \times 100\%$
Market Discipline	$\Delta \text{deposit} = \frac{\text{Deposit Amount } t - \text{Deposit Amount } t-1}{\text{Deposit Amount } t-1} \times 100\%$

This research was analyzed by using multiple regression analysis with several test models as follows:
 $Dep_Growth = \beta_0 + \beta_1 NPL + \beta_2 LDR + \beta_3 ROA + \beta_4 CAR + e$
 Dep_Growth : *Deposit Growth*
 NPL : *Non Performing Loan*
 LDR : *Loan to Deposit Ratio*
 ROA : *Return on Asset*
 CAR : *Capital Adequacy Ratio*

IV. RESULT AND DISCUSSION

This study uses the banking sector listed on the Indonesia Stock Exchange in the period 2014-2017, namely the banking sector included in the Private-Owned Commercial Bank (BUSN). Based on the sample selection criteria obtained a sample size of 48 data. The results of descriptive statistical data are as follows.

Table 2. The Result of Statistics Descriptive

Variable	Sample Size	Mean	Median	Max	Min	Standard Deviation
Independent Variable						
Dep_Growth	48	4,434	1,445	51,580	-17,330	12,486
Dependent Variable						
LDR	48	86.316	89,025	98,050	55,350	10,063
NPL	48	1,542	1,405	6,370	0,220	1,140
ROA	48	1,951	1,705	12,180	-4,890	2,061
CAR	48	21,182	18,170	82,990	10,520	13,679
SIZE	48	8,005	8,155	8,870	5,870	0,530

Table 2, the results of statistical tests during the 2014-2017 showed that the independent variables of market discipline were measured using a maximum deposit growth value of 51.58 at PT. Bank Mayapada, Tbk. The minimum value of -17,330 at PT. Bank Permata, Tbk. The average value of 4.434 with a standard deviation of 12.486. The Bank health are calculated by using credit risk a Loan to Deposit Ratio (LDR) and Non Performing Loan (NPL) proxy. The maximum value of the LDR of 98,050 at PT. NISP, Tbk and the minimum value of 55.350, namely at PT. Bank Mega, Tbk. The average value of 86.316 with a standard deviation of 10.063. The maximum value of the NPL of 6.370 at PT. Bank Bukopin, Tbk and the minimum value of 0.220, at PT. Bank Central Asia, Tbk. The average value of 1.542 with a standard deviation of 1.140. Earning is measured using Return on Assets (ROA) with a maximum value of 12,180 at PT. Maybank, Tbk and the minimum value of -4,890 PT. Permata Bank, Tbk. The average value of 1.951 with a standard deviation of 2.061. Capital is measured using Capital Adequacy Ratio (CAR) with a maximum value of 82.990 at PT. Bank Mayapada, Tbk and a minimum value of 10,520 at PT. Bank Bukopin, Tbk. The average value is 21,182 and the standard deviation is 13,679. The control variable uses a SIZE proxy with a maximum value of 8.870 at PT Bank Central Asia, Tbk and a minimum value of 5.870 at PT. Bank Mayapada, Tbk. The average value of 8.005 with a standard deviation of 0.530.

The first hypothesis testing is the effect of bank risk on market discipline. The hypothesis is divided into two part, the first hypothesis states that the Non Performing Loan (NPL) has a negative effect on market discipline and the second hypothesis states that the Loan to Deposit Ratio (LDR) has a

negative effect on market discipline. The second hypothesis tests the effect of Earning on market discipline as measured by Return On Assets (ROA) and the third hypothesis is to test the effect of capital on market discipline is measured by using Capital Adequacy Ratio (CAR). The regression results for the 1, 2, and 3 hypotheses are as follows.

Table 3. Result of Regression

Independent Variable	Dependent Variable
	<i>Deposit growth (Dep_growth)</i>
	Model 1
Constant	-2,3489 (-0,0578)
LDR	-1,0218*** (-3,2733)
NPL	2,9519** (2,1118)
ROA	4,0477*** (7,1524)
CAR	-0,1130 (-1,0823)
SIZE	12,8225*** (4,1153)
R Square	0,8149

The results of bank health regression and market discipline are shown in Table 3 with a Loan to deposit Ratio (LDR) and non-performing loan (NPL) as a proxy for measuring bank risk. Earning is measured using a Return on Asset (ROA) proxy and capital is measured using a capital adequacy ratio (CAR) proxy. The regression coefficient of LDR is -1,0218. This shows that bank risk which is measured by LDR has a negative effect on market discipline. The regression coefficient of NPL is 2.9519, this shows that the risk of banks

which are proxied by NPLs has a positive effect on market discipline.

The regression coefficient ROA is 4.0477, this shows that earnings that are proxied by return on assets (ROA) have a positive effect on market discipline. The regression coefficient of capital adequacy ratio (CAR) is -0.1130, it is not significant, this shows that capital has no effect on market discipline. The R Square value is 0.8149, it's means that the independent variable can explain the dependent variable as much 81.49%. Based on the explanation above, it can be concluded that the 1 and 2 hypothesis is supported, while the 3 hypothesis is not supported.

The Effect of Risk Assessment on Market Discipline

Bank risk measured using a loan to deposit ratio (LDR) and non-performing loan (NPL) has a negative effect on market discipline as measured by deposit growth. Liquidity risk which is proxied by a loan to deposit ratio (LDR) is used to measure the ability of banks to pay their debts including debts to depositors. The results of the analysis of negative relationship show that the higher the risk of liquidity, the market discipline will decrease. The increasing of bank's LDR shows that the bank's liquidity ability to return depositors funds is lower, so it can make the depositor make a decision to withdraw funds from the bank because there is a concern that the bank is too aggressive in channeling credit and endangering depositors' funds.

Credit risk which is proxied by non-performing loans (NPLs) shows significant positive results, the higher the credit risk, the more market discipline. A bank with a high NPL position indicates that the bank is facing high non-performing loans, whereas a low NPL indicates that the bank is facing low non-performing loans. If the risk of bad loans is high is one indication that the bank concerned is not healthy in carrying out banking activities. When credit risk is high, the customer will think for withdrawing funds in the bank. But this is not in line with the results of research that shows the positive influence of NPL on deposit growth. This shows that depositors choose banks with high risk because the higher risk of banks the possibility of higher interest rates is also higher.

Based on the explanation above, it can be concluded that bank risk has a negative effect on market discipline is measured by a loan to deposit ratio (LDR) in line with research conducted by Park and Peristiani (2017), found that deposits will attract deposits from banks that have excess risk and increase deposit interest rate. Taswan (2012) and Barajas (2000) that LDR has a negative effect on market discipline. In reality, the higher of the LDR, the lower the bank's liquidity ability, making depositors hesitate to place their funds in the bank. Whereas the banks risk proxied by non-performing loans (NPLs) has a significant positive effect on growth deposit.

It is possible that depositors do not feel that banks with high NPLs have a great risk, so depositors tend to ignore the ratio. In addition, banks that have high NPLs also need additional funds to increase the amount of credit so that the NPL ratio can be suppressed, banks will make many offers such as interest that will attract depositors to deposit their funds in banks. The results of this study do not support signaling theory and do not support the results of previous studies conducted by Taswan (2000) and Skully (2012) who found that the value of the NPL ratio had a negative effect on deposit growth. the high NPL value makes it negatively responded by depositors to deposit their funds in banks.

The Effect of Earning on Market Discipline

The earning measured using return on assets (ROA) had a positive effect on market discipline. This shows that the higher earning generated by banks, the higher the depositor's growth. Banks that have high earnings indicate that the bank can operate the funds owned properly so that depositors are interested in depositing funds in the bank.

High earnings indicate that banks are in a healthy condition so depositors feel safer to deposit their funds in the bank. The results of this study are in line with research conducted by Taswan and Riandika (2013), who found that return on assets (ROA) has a positive effect on market discipline and research conducted by Adolfo Barajas and Roberto Steiner (2000) that depositors prefer banks with strong fundamentals.

The Effect of Capital on Market Discipline

Capital measured using a capital adequacy ratio (CAR) showed that it had no effect on market discipline. Capital adequacy ratio (CAR) is a comparison between the amount of capital with risk-weighted assets (ATMR). Central Bank of Indonesia sets a bank to have a minimum CAR of 8%. CAR ratios in accordance with Central Bank of Indonesia regulations indicate that banks are in good health.

The results indicate that bank capital adequacy does not affect on deposit growth. Capital adequacy is not a consideration of depositors in saving funds in the bank. The third hypothesis in this study which states that the capital adequacy ratio (CAR) has a positive effect on unsupported market discipline. The results of the study do not support previous research conducted by Taswan and Riandika (2013), found that Capital Adequacy Ratio (CAR) has a positive effect on market discipline. The majority of banks, both government and private banks on average already have a large enough capital. Depositors tend to save funds to large banks with the consideration of capital is already strong. Depositors also consider that ownership of these banks is sufficiently convincing for depositors to save their funds and tends to pay less attention to their CAR ratios.

V. CONCLUSION

Bank risk as measured by a Loan to deposit ratio (LDR) has a negative effect on market discipline as proxied by deposit growth. This shows that the higher the liquidity risk as measured by a loan to deposit ratio (LDR), the lower the deposit growth because depositors will attract funds in the bank. Bank risk measured by non-performing loans (NPLs) has a positive effect on market discipline as proxied by deposit growth. The higher the credit risk measured using non-performing loans (NPL), the higher the deposit growth because depositors are interested in depositing funds in banks that have high credit risk.

Earning as measured by return on assets (ROA) has a positive effect on market discipline as proxied by deposit growth. This shows that the higher profit generated by banks, the higher the growth of deposits due to high profits indicating that the bank is in a healthy condition so that depositors will be interested in saving their funds. Capital as measured by the capital adequacy ratio (CAR) has no effect on market discipline as proxied by deposit growth. This shows that the depositor did not pay attention to the adequacy of bank capital in deciding to save funds in the bank.

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