

Audit Risk, Business Risk, and Auditors' Efforts in Korea

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Abstract

Audit risk and business risk have been shown to affect audit fees and hours which are used to represent auditors' efforts in previous studies. However, most previous studies consider only one of these types of risk, or focus on audit risk rather than business risk to estimate auditor efforts. This study investigates the simultaneous effects of audit risk and business risk on auditor efforts. The data of Korean listed firm is used and business risk is measured by the degree of market competition. This study verifies that when audit risk and business risk are considered simultaneously, the effect of audit risk on audit fees and hours diminishes with lower business risk. Auditors are less concerned about audit risk in less competitive markets than in highly competitive markets because auditor is less exposed to litigation risk due to the nature of less competition. In addition, this study investigates the unilateral effect of fluctuations in business risk on auditor efforts. As a result, the study provides evidence that market competition is significantly associated with auditor efforts in terms of audit fees and hours.

Keywords: audit fees, audit hours, audit risk, business risk, market competition

1. Introduction

Auditors' efforts vary depending on audit risk, increasing the possibility of material misstatements on clients' financial statements (Joyce, 1976; Gaumnitz, Nunamaker, Surdick, & Thomas, 1982; Kaplan, 1985; Libby, Artman, & Willingham, 1985; O'Keefe, Simunic, & Stein, 1994). Audit fees and hours are used to represent auditors' efforts in previous studies that provide evidence that when auditors recognize high audit risk, they spend more time auditing and charge higher audit fees to minimize audit failure. When audit risk is high, the risk of audit failure and litigation exposure is also high. Therefore, when auditors recognize high audit risk, they charge higher audit fees as a risk premium and spend more time completing the audit in order to minimize audit failure and increase audit quality, thereby reducing audit risk (Simunic, 1980; Francis, 1984; Palmrose, 1989; Choi & Paek, 1998; Kwon & Kim, 2001).

In addition, auditors must have sufficient knowledge of the business and collect relevant information about the industry in order to measure business risk of their client accurately and adjust their efforts accordingly. Research has provided evidence that auditors consider the business risk of their clients and change their efforts (Pratt & Stice, 1994; Walo, 1995). Bell, Landsman, and Shackelford (2001) provide analytic evidence that high business risk increases the number of audit hours and fees. This finding implies that auditors perceive firm-level differences in business risk.

In previous studies, audit risk and business risk have been shown to affect auditor efforts. However, most previous studies consider only one of these types of risk, or focus on audit risk rather than business risk to estimate auditor efforts. We believe that a more accurate picture can be obtained by considering audit risk and business risk simultaneously. Therefore, in this study, we investigate the simultaneous effects of audit risk and business risk on auditor efforts. In this study, the degree of market competition is used as a proxy for business risk. Since market competition is a crucial factor in deciding profitability in industries (Porter, 1994), this factor can be successfully used as a measure of business risk. Firms in highly competitive markets contend with more liquidity, greater opportunities for financial distress, and higher risk of financial failure than firms in non-competitive markets (Schmidt, 1997). This translates into high business risk for firms in highly competitive markets. In general, auditors believe that the acceptable level of audit risk should be lower for clients with high business risk (Arenas & Loebbecke, 1997). Thus, auditors adjust their efforts in response to audit risk depending on the level of business risk. Therefore, this study examines the responses of auditors to audit risk depending on the business risk of their clients.

In this study, 6550 firms listed on the Korean stock market for the period from 2005 to 2010 were included. To ensure data comparability, firms in the financial industry and non-calendar year-end firms were excluded from the final sample. First, this study finds that with an increase in the levels of audit risk and business risk, auditors increase audit fees and audit hours. These results are consistent with those of previous studies. However, when audit risk and business risk are considered simultaneously, we see that audit risk is dominated by business risk. When client firms are operating in markets with low competition, earnings management, which implies material misstatement on clients' financial statements and increased audit risk, is less likely to affect auditor efforts. By contrast, when client firms operate in highly competitive markets, in which levels of earnings management are high, auditors charge higher audit fees as a risk premium and spend more time at their work in order to minimize the audit risk than they would with firms in less competitive markets.

The study makes several contributions. First, this study considers audit risk and business risk at the same time in order to investigate their simultaneous effects on auditor decision-making and planning. Second, this study provides evidence that the effect of audit risk on auditor efforts depends on client business risk. The major finding of this study is that when firms operate in more monopolistic industries, auditors are less likely to be concerned about audit risk. Finally, we verify the fact that auditors' efforts to avoid audit risk depend on their clients' business risk.

The remainder of the paper is organized as follows. Section 2 introduces extant research regarding market competition, audit risk, and earnings management and develops the hypothesis. Section 3 describes the variables used in this study and the sample selection procedure. Section 4 presents the descriptive statistics and empirical results. Section 5 concludes.

2. Literature Review and Hypothesis Development

When auditors determine audit fees and audit hours, they consider their clients' characteristics and their effect on audit risk. These characteristics include firm size, complexity of operations, financial performance, accounts receivable ratios, and inventory (Simunic, 1980; Simon, 1988; Francis & Stokes, 1986; Palmrose, 1986). These characteristics are related to earnings management, which affects audit risk. High degree of earnings management is an indicator of low-quality financial reporting earnings, so that this leads to an upward revision of audit risk (Bradshaw, Richardson, & Sloan, 2001; Gul, Chen, & Tsui, 2003). With high degree of earnings management, auditors judge that audit risk of client is high (Choi & Back 1998; Kwon, Shin, & Jeong, 2006; Caramanis & Lennox 2008). According to previous studies, earnings management is measured by discretionary accruals (Dechow, Sloan, & Sweeney, 1995). It is believed that an increase in the absolute value of discretionary accruals is a good indicator of earnings management, which means higher audit risk (Gul & Tsui, 1998), thus, this study uses the absolute value of discretionary accruals as a proxy for audit risk.

Auditors consider their clients' business risk when they determine the amount of time and fees required to complete the audit. Business risk is regarded as an uncontrollable risk that auditors encounter whether or not an auditor failure occurs according to the regulations (Bell et al., 2001; Morgan & Stocken, 1998). O'Malley (1993) finds that even when auditors provided reasonable assurance regarding their performance following implementation of the GAAP, they suffered financial damages due to litigation. Auditors therefore cannot be completely free from business risk and risk of loss or injury in their relationships with clients. Therefore it is understandable that auditors spend more audit time and charge higher fees as a risk premium for clients with higher business risk (Palmrose, 1997; Pratt & Stice, 1994; Walo, 1995; Morgan & Stocken, 1998; Bell et al., 2001). Bell et al. (2001) also provide analytic evidence that high business risk increases the number of audit hours and fees. This result implies that auditors perceive firm-level differences in business risk.

In the above-mentioned studies, auditors consider both business risk and audit risk when they determine the amount of time and fees required to complete an audit. Some auditors believe that acceptable audit risk should be lower for clients with high business risk (Arens & Loebbecke, 1997). Even if levels of earnings management between clients are similar, depending on the level of business risk, auditors may behave differently in order to reduce the audit risk. In other words, because business risk cannot be controlled by auditors, when their clients' business risk is high, they try to reduce audit risk in order to minimize the litigation risk that can arise from high business risk. The effect of audit risk on the level of auditors' efforts can vary with business risk of client firm. However, though business risk and audit risk affect auditors' behavior simultaneously, previous studies have not considered these factors in auditors' efforts at the same time. This study therefore considers both factors simultaneously, investigating their effect on auditors' efforts.

We use market competition as a proxy for business risk. Firms in competitive markets face more liquidity risk, distress risk, and liquidation risk. Schmidt (1997) shows that competition increases the probability of liquidation.

Firms in competitive industries are confronted by more liquidity risk than firms in non-competitive industries due to threats from potential rivals that attempt to enter these industries. Liquidity problems are also associated with the financial failure of many firms (Seetharaman, Gul, & Lynn, 2002). For these reasons, competition increases business risk. In summary, firms in highly competitive markets are at greater business risk than those in less competitive markets.

Also, audit fees and hours are used to represent auditors' efforts to improve audit quality in previous studies. Niemi (2002) posits that audit hours directly reflects auditors' efforts. Caramanis and Lennox (2008) provide evidence that when auditors spend more time auditing, audit quality improves. Also, auditors charge higher audit fees in order to provide higher audit quality by spending more audit time (Simunic, 1980; Francis, 1984; Palmrose, 1989; Choi & Paek, 1998; Kwon & Kim, 2001). Therefore, this study uses audit fees and hours enabling us to observe auditor's efforts.

This study is based on the assumption that depending on their clients' business risk, auditors may respond differently to audit risk. In other words, when a client firm is in a highly competitive market, auditors may adjust their efforts to reduce audit risk because of the greater business risk. Therefore, they will charge higher audit fees and spend more time completing the audit. By contrast, when a client firm is in a less competitive market, implying low business risk, auditors have less incentive to audit strictly than they do for clients in a highly competitive market because the audit risk is at a more acceptable level. To investigate this assumption, we state the following hypothesis:

Hypothesis 1: Auditors' efforts toward audit risk differs depending on the client's business risk.

3. Empirical Tests

3.1 Measurement of Market Competition

The main explanatory variable in this study is the magnitude of market competition, which is measured using the Herfindahl-Hirschman Index (hereafter, HHI). HHI is defined as the sum of the square of the market share (Grullon & Michaely, 2007; Giroud & Mueller, 2011). In Equation (1), firm i 's sales are s_i and S represents the total sales in the industry.

$$HHI_{jt} = \sum_{i=1}^N \left(\frac{s_{it}}{S_t} \right)^2 \quad (1)$$

Industries are classified using the three-digit codes from the Korean Standard Industrial Classification system. The total number of industries, j , is 208. The HHI score represents the degree of competition in the market. Higher HHI scores indicate less competition. That is, the highest HHI score means that the firm operates in the least competitive markets. By contrast, the lowest HHI score indicates that the firm operates in the most competitive markets.

3.2 Earnings Management

Earnings management is defined as the absolute value of discretionary accruals. To measure the absolute value of discretionary accruals, we utilize the performance-augmented discretionary accruals model of Kothari, Leone, and Wasley (2005). Total accruals for firm i in year t are measured as:

$$TA_{i,t} = (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t} - DEPN_{i,t}) / Assets_{i,t-1} \quad (2)$$

where:

$\Delta CA_{i,t}$ = change in current assets for firm i from year $t-1$ to year t ;

$\Delta CL_{i,t}$ = change in current liabilities for firm i from year $t-1$ to year t ;

$\Delta Cash_{i,t}$ = change in cash flow for firm i from year $t-1$ to year t ;

$\Delta STDEBT_{i,t}$ = change in debt in current liabilities for firm i from year $t-1$ to year t ;

$DEPN_{i,t}$ = depreciation and amortization expenses for firm i in year t ; and

$Assets_{i,t-1}$ = the book value of assets for firm i in year $t-1$.

The value for discretionary accruals for firm i in year t is the residual $\epsilon_{i,t}$ from the following regression:

$$TA_{i,t} = \beta_{0i} \left(\frac{1}{ASSETS_{i,t-1}} \right) + \beta_{1i} (\Delta REV_{i,t} - \Delta AR_{i,t}) + \beta_{2i} PPE_{i,t} + \beta_{3i} ROA_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

where:

$\Delta REV_{i,t}$ = change in revenues scaled by lagged total assets ($ASSETS_{i,t-1}$);

$\Delta AR_{i,t}$ = change in accounts receivable scaled by $ASSETS_{i,t-1}$;

$PPE_{i,t}$ = net property, plant, and equipment scaled by $ASSETS_{i,t-1}$; and

$ROA_{i,t-1}$ = return on assets for firm i.

3.3 Model Specifications

To test the hypothesis, following model is used:

$$\begin{aligned} LFEE_{i,j,t}(LHOUR_{i,j,t}) = & \alpha_0 + \alpha_1 HHI_{j,t} + \alpha_2 DA_{i,j,t} + \alpha_3 HHI_{j,t} \times DA_{i,j,t} + \alpha_4 MS_{i,j,t} + \alpha_5 SIZE_{i,j,t} \\ & + \alpha_6 INVREC_{i,j,t} + \alpha_7 LEV_{i,j,t} + \alpha_8 LIQ_{i,j,t} + \alpha_9 LOSS_{i,j,t} + \alpha_{10} MTB_{i,j,t} \\ & + \alpha_{11} MARKET_{i,j,t} + \alpha_{12} BIG4_{i,j,t} + \alpha_{13} \sum YR + \varepsilon_{i,j,t} \end{aligned} \quad (4)$$

where:

i represents firm, j represents industry, and t represent year;

LFEE: natural log of audit fees;

LHOUR: natural log of audit hours;

HHI: Herfindahl-Hirschman Index score;

DA: absolute value of discretionary accruals;

MS: sales scaled by total sales in industry;

SIZE: natural log of total assets;

INVREC: total inventories and accounts receivable scaled by total assets;

LEV: total liabilities scaled by total assets;

LIQ: current assets scaled by current liabilities;

LOSS: an indicator variable that equals 1 if a firm reports negative earnings and 0 otherwise;

MTB: market to book ratio;

MARKET: an indicator variable that equals 1 if a firm is listed on the KOSDAQ and 0 otherwise;

BIG4: an indicator variable that equals 1 when an audit firm is a Big 4 auditor and 0 otherwise; and

YR: year indicators.

The variables of interest in this study are *HHI* and *DA*. The main model includes the control variables that have been shown in prior studies to affect audit fees and audit hours. The market share of the firm (*MS*) is controlled because market share influences the profitability and complexity of firm operations, which are determinants of audit fees and audit hours (Simunic, 1980; Francis, 1984; Craswell, Francis, & Taylor, 1995). The size of the client firm (*SIZE*) is controlled because larger firms carry larger potential litigation risk, so audit fees and audit hours naturally increase (Reynolds & Francis, 2004; Kwon & Kim 2001; Park & Park, 2007). The ratios of inventory and accounts receivable (*INVREC*) increase the difficulty of the audit, leading to higher audit fees and audit hours (Simunic, 1980). Firm leverage, profitability, and growth opportunities affect audit fees and hours, as shown in previous studies. Therefore, the current liquidity ratio (*LIQ*), profitability of the firm (*LOSS*), and market to book ratio (*MTB*) are controlled. In general, Big 4 auditors charge higher audit fees and input more audit time. Therefore, *BIG4* is controlled as a proxy for audit firms' characteristics. The classification of stock market (*MARKET*) is controlled because prior studies show that whether the firms is listed in KOSPI or KOSDAQ affects the audit hours. Finally, year (*YR*) variable is controlled.

3.4 Sample Selection

Our sample includes firms listed on the Korean stock market for the period from 2005 to 2010. The financial data are collected from the KIS-VALUE database. We exclude firms in financial industries and those with non-calendar year-end to increase comparability. Our final sample consists of 6550 firm-years. To reduce the

effects of outliers, each of the continuous variables (not the natural log variable) is winsorized at the top and bottom 1 percent.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics of the variables used in the tests. The mean of the natural log of audit fees (*LFEE*) is 17.993, implying that on average, audit fees are approximately 65 million Korean won. The mean of the natural log of audit hours (*LHOUR*) is 6.588, which means that for the firms in the sample, auditors spend approximately 730 hours per client. The mean of the Herfindahl-Hirschman index (*HHI*) score is 0.249. The mean (median) of market share (*MS*) in our sample is 10.7% (2.0%). The mean (median) of the natural log of firm size (*SIZE*) is 25.657 (25.351). The mean (median) values of *LEV* and *LIQ* are 0.417 (0.417) and 0.861 (0.661), respectively. In total, 24.2% of firms in our sample reported negative earnings in the study period.

Table 1. Descriptive statistics

Variable	Mean	Q1	Median	Q3	Std. Dev.
LFEE	17.993	17.553	17.876	18.258	0.667
LHOUR	6.588	6.148	6.477	6.910	0.723
HHI	0.249	0.119	0.201	0.316	0.205
DA	0.072	0.022	0.048	0.094	0.124
MS	0.107	0.005	0.020	0.084	0.213
SIZE	25.657	24.710	25.351	26.302	1.445
INVREC	0.271	0.149	0.258	0.377	0.159
LEV	0.417	0.258	0.417	0.560	0.205
LIQ	0.861	0.391	0.661	0.980	2.209
LOSS	0.242	0.000	0.000	0.000	0.429
MTB	1.210	0.781	0.978	1.326	1.029
MARKET	0.530	0.000	1.000	1.000	0.499
BIG4	0.554	0.000	1.000	1.000	0.497

LFEE: natural log of audit fees;

LHOUR: natural log of audit hours;

HHI: Herfindahl- Hirschman Index;

DA: absolute value of abnormal accruals;

MS: sales scaled by total sales in industry;

SIZE: natural log of total assets;

INVREC: total inventories and accounting receivables scaled by total assets;

LEV: total liabilities scaled by total assets;

LIQ: current assets scaled by current liabilities;

LOSS: an indicator variable that equal 1 if a firm reports negative earnings and 0 otherwise;

MTB: book to market ratio;

MARKET: an indicator variable that equal 1 if a firm is listed KOSDAQ and 0 otherwise; and

BIG4: an indicator variable that equals 1 when audit firm is Big 4 auditor and 0 otherwise.

4.2 Main Results

Table 2 shows the results of hypothesis testing. The purpose of the testing is to identify differences in auditor efforts in terms of earnings management depending on market competition. In Column (1), the dependent variable is the natural log of audit fees (*LFEE*). The coefficient of *HHI* is -0.141 ($t = -4.50$), which is significant at the 1% level. The coefficient of *DA* is 0.197 ($t = 2.35$), which is significant at the 5% level. In Column (2), the dependent variable is audit hours (*LHOUR*). The coefficient of *HHI* is -0.064 ($t = -1.67$), which is significant at the 10% level. The coefficient of *DA* is 0.336 ($t = 3.28$), which is significant at the 1% level. These results are consistent with those of previous studies. According to previous literature, auditors charge lower fees and spend less time auditing when clients are in less competitive markets because firms in such markets have lower

liquidity risk and distress risk (Wang, 2010; Sohn, Shin, & Lee, 2015). Also, for firms with high absolute values of discretionary accruals, auditors recognize high audit risk and charge higher audit fees as a risk premium. They also spend more time auditing in order to reduce audit risk.

$HHI*DA$ is our variable of interest. In Columns (1) and (2), the coefficients of $HHI*DA$ are -0.316 ($t = -3.07$) and -0.064 ($t = -1.67$), which are significant at the 1% level. These results mean that even if DA is positively associated with audit fees and hours, when client firms are in less competitive industries (closer to a monopoly), the effect of audit risk(DA) on audit fees and hours diminishes with lower business risk. In other words, the business risk of the client prevails over the audit risk when both risks are considered at the same time. Auditors are less concerned about audit risk in less competitive markets than in highly competitive markets because auditor is less exposed to litigation risk due to the nature of less competition. However, when client firms are in highly competitive markets, this moderating effect of audit risk is weakened. Even if the magnitude of audit risk (DA) is identical at a low level, auditors cannot avoid or control the risk of litigation originated from high competition in industry. For this reason, auditors charge higher audit fees to the client in high market competition as a risk premium and spend more time auditing to reduce their total risk from providing auditing services compared to in low competition.

Table 2. The effect of earnings management on the association between market competition and auditors' efforts

	Hypothesis 1	
	LFEE	LHOUR
Intercept	7.913(63.49)***	-2.930(-19.25)***
HHI	-0.141(-4.50)***	-0.064(-1.67)*
DA	0.197(2.35)**	0.336(3.28)***
HHI×DA	-0.316(-3.07)***	-0.480(-3.83)***
MS	0.300(9.18)***	0.211(5.28)***
SIZE	0.383(81.89)***	0.362(63.42)***
INVREC	-0.025(-0.78)	-0.139(-3.47)***
LEV	0.199(7.60)***	0.032(1.00)
LIQ	-0.003(-1.44)	-0.003(-1.27)
LOSS	0.106(8.65)***	0.118(7.93)***
MTB	0.068(14.04)***	0.052(8.79)***
MARKET	0.026(2.18)**	-0.011(-0.75)
BIG4	0.091(8.67)***	0.26(20.01)***
YR	included	Included
Adj R ²	0.692	0.608
F-Value	865.81	598.63
N	6,550	6,550

1) Variable definitions refer to Table 1

2) *, **, and *** present statistical significance at the 10%, 5%, and 1% level, respectively, for a two-tailed test.

4.3 Additional Tests

In the previous section, we provided evidence that auditor efforts with respect to audit risk vary depending on the clients' business risk. According to our results, audit risk is diminished by business risk. Thus, business risk is a very important factor in determining auditor's efforts. Therefore, in this section, we investigate the effect of fluctuations in business risk on auditor's efforts. To test this effect, following model is used:

$$\begin{aligned} \Delta LFEE_{i,j,t}(\Delta LHOUR_{i,j,t}) = & \alpha_0 + \alpha_1 \Delta HHI_{i,j,t} + \alpha_2 \Delta MS_{i,j,t} + \alpha_3 \Delta SIZE_{i,j,t} + \alpha_4 \Delta INVREC_{i,j,t} \\ & + \alpha_5 \Delta LEV_{i,j,t} + \alpha_6 \Delta LIQ_{i,j,t} + \alpha_7 \Delta LOSS_{i,j,t} + \alpha_8 \Delta MTB_{i,j,t} \\ & + \alpha_9 \Delta MARKET_{i,j,t} + \alpha_{10} \Delta BIG4_{i,j,t} + \alpha_{11} \sum YR + \epsilon_{i,j,t} \end{aligned} \quad (5)$$

Table 3 presents the results of testing of the relationship between HHI and auditor behavior. We used changes in values of all variables for these elaborate tests. In Column (1), the independent variable is changes in the value of HHI and the dependent variable is changes in the value of audit fees. The coefficient of ΔHHI is -0.180 ($t = -4.54$), which is significant at the 1% level. This means that higher HHI scores are associated with lower audit fees. In other words, for less competitive firms, audit fees are lower. In Column (2), the dependent variable is changes in the number of audit hours. The coefficient of $\Delta LHOUR$ is -0.138 ($t = -2.87$), which is significant at

the 1% level. When continuous variables are used, the results are consistent with the results presented in Table 3. When the HHI score increases, auditors charge less and spend less time. This means that for less competitive firms, fewer audit hours are required to complete the audit. In sum, for less competitive firms, auditors charge lower fees and spend less time auditing because less competition means lower liquidity risk and distress risk. Through these results, we provide evidence that market competition is significantly associated with auditor's efforts in terms of audit fees and hours.

Table 3. The effect of market competition on auditors' efforts

	Additional test	
	Δ LFEE	Δ LHOUR
Intercept	0.0316(0.60)	-0.005(-0.08)
Δ HHI	-0.180(-4.54)***	-0.138(-2.87)***
Δ MS	0.381(8.87)***	0.357(6.84)***
Δ SIZE	0.366(64.55)***	0.342(49074)***
Δ INVREC	0.068(1.80)*	-0.083(-1.80)
Δ LEV	0.059(2.08)**	-0.009(-0.28)
Δ LIQ	-0.006(-3.32)***	-0.007(-3.10)***
Δ LOSS	0.064(6.82)***	0.050(4.39)***
Δ MTB	0.048(11.78)***	0.032(6.39)***
MARKET	-0.007(-0.74)	-0.013(-1.11)
Δ BIG4	0.101(8.74)***	0.198(14.14)***
YR	included	Included
Adj R ²	0.552	0.448
F-Value	230.33	152.17
N	5216	5216

1) Variable definitions refer to Table 1

2) *, **, and *** present statistical significance at the 10%, 5%, and 1% level, respectively, for a two-tailed test.

5. Conclusion

In this study, we investigate changes in auditor efforts depending on the degree of audit risk and the level of market competition. This study provides evidence of the effect of audit risk in combination with business risk on audit fees and audit hours due to intense market competition. According to the level of competition in industry, the positive relation between earnings management and audit fees (hours), previously proved in the literature, becomes weaker. This means that the auditor is less likely to care about earnings management when the level of industrial competition is low (closer to monopoly).

These results have implications for managers and auditors. Specifically, managers need to be aware of the impact of market competition on their budget for audit fees. Also, auditors should focus on managers' motivation for misreporting earnings because the latter's intentions can be hidden by high profitability and profit stability for firms in less competitive industries.

The limitation in this study is possible measurement error of the variables of interest, that is, the Herfindahl-Hirschman index and discretionary accruals. Therefore, we recommend that future studies be conducted to correct this limitation.

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