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Re-examining Capital Structure of State and Non-State Owned Enterprises in selected G-20 Countries: Developed Markets vs Emerging Markets

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ABSTRACT

Purpose: In this article we explore how decisions on capital structure of enterprises are affected by ownership in selected G20 countries. This effect is also investigated across the level of economic development in selected countries.

Design and Methodology: Data on SOE and non-SOEs in these countries were selected from 2011 to 2015.This study employs ordinary least square and random effect methods, to investigate the effect of ownership on capital structure decisions in selected G20 countries and across the level economic development.

Findings: We determine that decisions on capital structure of an enterprise are effected significantly by its ownership structure and level of economic development. We find that in developed economies, state-owned enterprises are highly levered than non-state-owned peers, while the opposite is true in emerging economies. When the interaction between ownership structure and level of development is considered, state-owned enterprises in emerging economies have less leverage than their counterparts in developed countries.

Implications: We believe that our findings will benefit corporate management, financial regulators, and financial researchers. Furthermore, the capital structure decisions of SOEs and non-SOEs require investigation at different industrial levels, specifically in emerging markets.

Keywords: capital structure, ordinary least square, state-owned enterprises, emerging economies.

I. Introduction

Over the last few decades, scholars have focused on the assumption that disparities exists between publicly and privately owned firms in terms of profitability, efficiency, and debt. According to the two prominent studies of La Porta et al. (1998); Rajan and Zingales (1995) there is a link between institutional differences and capital structure decisions. Subsequent to these studies, researchers have provided empirical evidence over the years, that firms having political

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links and controlled by government have easier access to debt (Dinc 2004;Johnson and Mitton 2003; Khwaja and Mian 2005), government funding (Faccio, Masulis, and McConnel 2006) and projects (Goldman et al., 2010) then private firms having no political link and government shares.

This research is inspired by a fundamental paper Amin et al., published in 2019, in which the ownership structure's impact is investigated on debt financing in some G-20 countries keeping in view their income levels. In this study the same data set is used; however the specified G-20 countries, are grouped this time keeping in view their economic development level based on the categorization of International Monetary Fund (IMF). Also the model used in this study is different and unique in a way that the entire dummies with respect to ownership and countries level of development are incorporated in one model to reinvestigate the result provided in Amin etal 2019.

According to Brounen, Jong, and Koedijk (2005) in corporate policy the capital structure is very important which shows the use of equity, debt or some other security for financing a particular business activity.

Modigliani and Miller's capital structure irrelevance theory, credited with laying the groundwork for opting to modern financing methods, which later on expanded with a more relevant set of hypothesis, and as a result stronger theories were developed such as Trade-off theory. And similar were the findings of (Jensen and Meckling 1976; Miller 1977; Modigliani and Miller 1963) and the pecking order theory by (Myers & Majluf; 1984). Researchers around the globe have examined the role of the decisions of the capital structure in emerging and developed economies (Bancel and Mittoo 2004; Bauer 2004; Brounen, Jong, and Koedijk 2005; Rajan and Zingales 1995; Pacheco and Tavares 2016). The above researches presentmixed empirical evidence for supporting trade-off and pecking order bot theories. While, Jensen and Meckling (1976) indicates structure of ownership and agency costs affect imperatively decisions of firm's capital structure. According to Booth et al. (2001); Faccio, Masulis and McConnel (2006) Theories of corporate financial decisions, have been tested by multiple researchers in which cross-country comparison is used by only few of them, particularly institutional differences like ownership. Moreover, for investigating the relevance of capital structure theory further studies needs to be conducted in terms of ownership, in different countries having different levels of economic development primarily for SOEs and non-SOEs., and particularly for countries undergoing transformation i.e. emerging economies. As a result, the subject of how business ownership influences corporate decision in emerging nations in comparison to developed needs additional investigation. Hence, this study estimates the impact of business ownership on the capital structures in specified G-20 countries featuring equally emerging and developed economies and in relation to their different stages of economic development.

In the context of selected G-20 economies, in the International Monitory Fund (IMF) categorization emerging economies are of Argentina, Brazil, Peoples republic of China, India, Indonesia, Russia, kingdom of Saudi Arabia, and Turkey while France, Germany, Italy, and

Republic of Korea are categorized as developed economies. This study adopts the IMF classifications while testing and associating that how capital structure is affected by structure of ownership across selected economies.

In this study we focus on three issues: First, we analyze the impact of firms' ownership structures (SOE vs. non-SOEs) on corporate finance decisions in selected developed and emerging countries. We want to understand how the level of leverage is affected with respect to different ownership structures across countries. Booth et al. (2001) argue that knowing institutional factors such as ownership structure helps in forecasting the financial structure of a firm more accurately. Second, we empirically explore the effect of firm ownership on the structure of capital in terms of the level of economic development. We argue that this is important specifically because SOEs' and non-SOEs' access to finance may differ in developed economies relative to emerging-developing economies. The efficiency and the level of the development of financial markets can affect the capital structures of firms. Moreover, Arellano, Bai, and Zhang (2012) find that a firm's leverage ratio tends to be higher in countries with developed financial markets. Third, we perform country-specific analyses to more thoroughly understand how ownership affects capital structure decisions. These analyses also provide a new, vertical dimension to the analysis of the study. It is also expected to be a robust for the previous estimates of the study.

This research adds to the existing literature in a variety of ways. The effects of ownership structure on capital structure are explored for SOEs and non-SOEs operating in various economies, and additionally to certain common factors of capital structure, such as profitability, size, tangibility, and growth. As a result, we report empirical data from a cross-economies study in a field that has gotten little attention. Furthermore, the impact on capital structure decisions by ownership are calculated for emerging and developed countries based on their economic development levels. In this regard, this study looks into the disparities in capital structure decision-making across countries at various stages of development.

2. Literature Review

2.1 Capital Structure and a Firm's Nexuses

Studies of Modigliani and Miller (1958) of irrelevance theorem initiates the debate on a capital structure's independence from firm value. Which assume an ideal capital market, lack of taxes, no risk of bankruptcy and no costs of liquidation. Moreover, Modigliani and Miller (1963) revisit and revise their previous studies with incorporation of market friction, i.e. corporate tax, into their model, then concludes that a firm value increases by reducing firm's payables corporate taxes by deducting interest from corporate profit. Consequently, that capital structure does affects a firm's value (Modigliani & Miller, 1963). Miller (1977) added to the Modigliani and Miller (1963) model and introduced personal income tax. The resultant extensive model proposes that

debt are issued by firms until its benefits (marginal or tax shield benefit) at corporate level reaches to larger values than the marginal costs at personal level or it obtains equilibrium

Moreover, this theory was extended by Myers (1984) by including bankruptcy cost in the model. Furthermore, results of his studies concludes that a firm's optimum capital structure occurs at the point where tax shield benefit offset the bankruptcy cost related to debt financing. And is called "trade-off hypothesis". Debt financing as explained by Jensen (1986), play a vital role in organization efficiency and growth, as it reduces the free cash flow and the management cannot involve in various corporate perks. Also, the risk of bankruptcy motivates the shareholders and management to participate in organization affairs. The argument of Jensen's can be linked with SOE's, as the management of SOE's have political ties and can engage in various perks on the cost of shareholders. Agency costs should also be considered during selection of optimum capital structure (Jensen &Meckling, 1976).Which raises generally due to conflict among equity holders and debt investors. In a highly levered firm, gain of shareholders occurs at the cost of debt investors, while debt investors ensures their interest by closely monitoring the firm's managers which leads to greater agency costs.

For finding optimum capital structure, researchers on the assumption of information asymmetry between managers and shareholders base their theory (pecking order theory. As managers of the firm have more information i.e. insider information in addition to the public information about value of the firm and stock prices, and these manager stake decisions including capital structure, for maximizing the value of shares and raising equity only when the stock is overvalued. Myers and Majluf (1984) maintain that investors recognize management objectives and prefer that management meet internal financing first, followed by debt issuance and finally equity issuance.

2.2 Firm specific Variable

Tangibility

According to the definition of Rajan and Zingales(1995) for this study, tangibility is taken equal to the ratio of the fixed asset to total assets. Tangibility plays an important role when it comes to debt financing because tangible asset can be used as collateral against debt financing. According to trade-off theory the association between tangibility and leverage is positive, as firms having tangible assets can be pledged against the debt instrument which in result reduces the cost of debt. The positive relation between tenability and leverage is acknowledged by majority of the scholars Bevan and Danbolt (2004) and others. Pecking order theory, opposing, trade off theory, suggest a negative relationship between tangibility and leverage. This negative association can be explained as firms having less tangible asset will opt for more debt to avoid information

asymmetry (Booth etal., 2001; Amin et al., 2019). In respect to trade-off theory a positive association is expected between tangibility and leverage with respect to.

Size

For this study variable size is taken equal to logarithm of firm's total asset. Leverage is positively affected by size with respect to trade off theory and it predicts a positive relation because larger firms are less riskier as they can take more debt, their cash flow are stable and have a tendency to be more diversified compared to smaller firms (Rajan and Zingles, 1995). The positive relation of firm's size on firm's leverage is documented by many authors Rajan and Zingles, (1995), Amin & Haq, (2021) and others. While, pecking order theory is contrary to this and suggest a negative relationship of size and leverage. From pecking order theory perspective larger firm are much stable and generate more cash flow therefore such firm prefers internal financial over debt or equity financing. Also larger firm can use size as a proxy for information asymmetric, which in turns reduces the cost of adverse selection while going public. This study also expects a positive relationship between firm's size and firms leverage with respect to trade off theory

Profitability

This study uses the ratio of earnings before interest and taxes to net income as proxy for profitability. According to trade off theory, firms which are more profitable can acquire more debt as compared to less profitable firms and therefore suggesting a constructive relationship between profitability and leverage. Also, profitable firms can easily pay out their debt due to which such firm's faces low bankruptcy cost (Amin et al., 2019). Jensen (1986) argued that profitable firms can face agency problem due to free cash flow as management can engage in empire building on the cost of shareholders. Therefor to avoid such problem profitable firms should use leverage to control their managers. Pecking order theory contradicts with the above theory and suggests that firm which are more profitable relay more on internal financing as compared to debt and equity financing; as such firs generate higher cash flows. The finding of negative relationship was confirm by the following studies (Amin and Haq (2021), Chang et al. (2014), Amin et al. (2019). With respect to pecking order theory a negative relationship between profitability and leverage is also hypothesized in this study.

Growth

This study uses growth as proxy for investment and growth opportunity and is measured as Tobin's Q. we can find theoretical disagreement between the relationship of growth and leverage from previous literature. According to trade off theory firms having higher investment and growth opportunities tend to have less free cash flow and high financial cost due to which such firms have lower debt level. With respect to pecking order theory leverage and growth of firm are positively associated. Frank and Goyal, (2009) suggests that for rapidly growing firms internal fund will be insufficient to finance their new projects and eventually they would finance it through more borrowing. With respect to trade off theory this studies presume adverse relationship between firms growth and debt financing.

3. Methodology

3.1 Model

Our basic model is based on a panel data method that combines cross-sectional regression of leverage against the enterprise's size, profitability, tangibility, Tobin's Q, and ownership structure in a time series. The following estimation equation extends the model used in previous studies by including ownership structure as a dummy and level of economic development (Booth et al. 2001; Faccio 2006; Rajan and Zingales 1995).For empirical investigation of the impact of ownership on capital structure of enterprises across different levels of economic development by including the interaction term. The empirical model is given as follows:

$$Lev_{icsy} = \alpha_{icsy} + \gamma_4 Tan_{icsy} + \gamma_1 \mathrm{l}Ass_{icsy} + \gamma_2 roa_{icsy} + \gamma_3 tq_{icsy} + +\gamma_5 OD_{ics} + \sigma_c + \sigma_y + \sigma_s + \epsilon_{icsy} \quad (1)$$

In equation one Leverage (Lev) is our dependent variable and variation in leverage is explained by tangibility (Tan_{icsy}), size ($\mathrm{l}Ass_{icsy}$), profitability(roa_{icsy}), and growth (tq_{icsy}) of firm i in country c of industry*'s* in year y. Aim of this study is to test the effect of business ownership on capital structure decision. In order to capture this effect a dummy variable DO_{ics}, is included in our model.

Country, industry and year fixed effect are characterize by$\sigma_c, \sigma_s,$ and σ_y. Country fixed effect is used to capture systematic differences in financial environment across countries while industry fixed effect control for systematic differences in risk and performance across sector types. L is natural logarithm, and ϵ_{icsy}shows the error term. The effect of ownership on capital structure is represented byγ_5, and it is an intercept shifter for SOE with respect to its base case non-SOEs. The main model for this study is Equation-1 and the significance of $\gamma_5$shows that capital structure differences lie between SOE and non-SOEs in selected countries. To address the second question of this study (How does the effect of enterprise ownership on capital structure change in countries

with different levels of economic development?), following steps are incorporates. Dummy variables are created that represents different country classifications, including emerging-developing (EMG) and developed (DEV). Finally, OD_{ics} is interacted with these dummies to represent SOEs and non-SOEs in these economies:

$$SOEEMG = OD_{ics} * EMG \quad (2)$$

$$SOEDEV = OD_{ics} * DEV \quad (3)$$

As a result, two new dummy variables are created SOEEMG and SOEDEV, Where SOEEMG represents state owned enterprises in emerging countries and SOE represents state owned enterprises in developed countries. In the next step all these dummy variables OD, SOEEMG and SOEDEV are incorporated in above equation to answer our other questions.

We select number of explanatory variables for observed leverage that are used in previous studies, such as size, tangibility, profitability and Tobin's Q ((Rajan and Zingales 1995; Booth, et al. 2001: Amin & Haq 2021)Size is measured as natural log of total assets; tangibility is measured as the ratio of net tangible assets to total assets; profitability is equal to the ratio of earnings before interest and taxes to total assets and lastly Tobin's Q is equal to the ratio of market capitalization to total assets. In addition to these variables we use a time variant dummy (DO) that is equal to unity if a firm is ultimately controlled by the state; and 0, otherwise.

3.2 Data

This study utilizes the data of SOE's and non-SOE's from Amin etal., 2019 and includes the following countries Argentina, Brazil, China, France, Germany, Italy, India, Indonesia, Russia, Republic of Korea, Saudi Arabia, and Turkey from G-20. Data on SOE and non-SoEs in these countries were selected from 211 to 2015, based on the most recent accessible updated data. We excluded all the financial enterprises such as banks, mutual funds and insurance companies and utilities providing firms from our sample because Zhengwei (2013) suggests that their debt levels are driven by regulation. As a result the debt-like liabilities of such firms are not comparable to the debt issued by non-financial firms.Sample of the study has total number of observations are 1,260 for state owned while observations having numbered32,515 for non-SOEs.

The selected countries were further classified into two groups emerging-developing countries Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia, and Turkey, whilein developed countries France, Germany, and Italy selected, according to IMF classifications. This grouping enables us to observe and to analyze the impact of ownership in economies at different stages of development.

Data are presented in Table 1 according to IMF classification. In developed economies, SOEs have about twice as much leverage as their non-SOE peers (73.6% vs. 49.5%), but in emerging and developing countries, SOEs have much less leverage (55.2% vs. 47.8%). Despite having a much bigger size in emerging and developing economies, SOEs provide fewer

investment opportunities (growth). Compared to their non-SOE rivals, SOEs in developed economies are both much larger in size and marginally less lucrative. We hypothesise that SOEs in both economies have high average leverage because of formal government backing. We also deduce that formal government support for SOE funding in developed economies is significantly larger than in other economies (73.6% vs. 55.2%).

Table 1: Statistical descriptions based on IMF classification.

Emerging and developing countries						
Variables	OS	NO	Mean	Median	SD	T-stat
Leverage	SOE	1200	0.552	0.567	0.218	10.791***
	NSOE	21585	0.478	0.494	0.232	
Tangibility	SOE	1200	0.953	0.979	0.089	-0.555
	NSOE	21585	0.954	0.992	0.094	
Size	SOE	1200	14.674	14.570	1.750	43.433***
	NSOE	21585	11.846	12.144	2.217	
Profitability	SOE	1200	0.050	0.043	0.088	1.588
	NSOE	21585	0.046	0.036	0.095	
Tobin's Q	SOE	1200	0.837	0.466	1.043	-4.550***
	NSOE	21585	1.176	0.570	2.568	
Developed economies countries						
Variables	OS	NO	Mean	Median	SD	T-stat
Leverage	SOE	60	0.736	0.782	0.214	8.985***
	NSOE	10930	0.495	0.512	0.207	
Tangibility	SOE	60	0.957	0.990	0.067	3.147**
	NSOE	10930	0.896	0.966	0.149	
Size	SOE	60	13.877	14.100	1.990	5.953***
	NSOE	10930	12.372	12.071	1.952	
Profitability	SOE	60	-0.001	0.030	0.107	-2.306**
	NSOE	10930	0.029	0.037	0.103	
Tobin's Q	SOE	60	0.364	0.171	0.373	-2.822**
	NSOE	10930	0.844	0.532	1.318	

Table 2 demonstrates the correlation matrix with respect to development level of selected countries. Results shows that in emerging and developing economies, tangibility is positively connected with leverage, while in developed economies, it is adversely correlated with leverage.

Table 2: IMF classification-based correlation matrixes.

Emerging and developing economies					
Variables	Leverage	Tangibility	Size	Profitability	Tobin's Q
Leverage	1				
Tangibility	0.026***	1			
Size	0.265***	-0.202***	1		
Profitability	-0.237***	0.015**	0.115***	1	
Tobin's Q	-0.176***	-0.054***	-0.039***	0.145***	1
Developed economies					
Variables	Leverage	Tangibility	Size	Profitability	Tobin's Q
Leverage	1				
Tangibility	-0.117***	1			
Size	0.323***	-0.149***	1		
Profitability	-0.213***	0.053***	0.154***	1	
Tobin's Q	-0.278***	-0.059***	-0.166***	0.077***	1

4. Results and Discussion

4.1 Regression Results

To investigate the relationship between ownership and leverage, we initially categorize the whole sample by including a dummy variable for ownership structure (SOE and non-SOEs); next we categorize our data according to IMF classification (developed and emerging-economic development). We use an interaction term to capture the effect of level of economic development on the leverage of SOEs and non-SOEs, where the effect of level of economic development on leverage is dependent on the ownership structure dummy.

Table 3: The impact of ownership on leverage across countries with different level of economic development.

	OLS		Random effect	
Variables	Model-1	Model-2	Model-3	Model-4

Tangibility	0.087***	0.018*	0.008	-0.012
	(7.600)	(1.720)	(0.360)	(-0.560)
Size	0.044***	0.031***	0.050***	0.040***
	(66.200)	(54.120)	(24.800)	(22.940)
Profitability	-0.617***	-0.568***	-0.320***	-0.312***
	(-38.940)	(-35.930)	(-23.330)	(-22.720)
Tobin's Q	-0.010***	-0.013***	-0.002**	-0.002**
	(-6.500)	(-6.570)	(-2.930)	(-3.060)
SOE	0.013**	0.182***	0.007	0.183***
	(2.270)	(7.540)	(0.600)	(3.560)
EMG		0.007**		0.005
		(3.100)		(1.090)
SOEEMG		-0.192***		-0.213***
		(-7.760)		(-4.040)
Constant	0.062**	0.157***	0.019	0.0704*
	(2.780)	(9.550)	(0.410)	(1.950)
Year dummy	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Country dummy	Yes	Yes	Yes	Yes
Number of observation	33775	33775	33775	33775
F-Statistics	213.500***	175.200***	1949.300***	1568.800***
R-sq	0.241	0.185	0.211	0.151
Adjusted R-square	0.240	0.184		
RMSE	0.196	0.203	0.079	0.079
R-squared within model	-	-	0.096	0.092
R-squared between model	-	-	0.225	0.158
SIGMA_U	-	-	0.177	0.184
SIGMA_E	-	-	0.078	0.078

Table 3 shows the OLS regression estimates. Both industry fixed effect and country fixed effect are used in the estimation methods to control for average industry and average country factors affecting the capital structure decisions (Rajan and Zingales 1998; Amin & Haq 2021).We also use random effect to ensure robustness of the OLS estimation. Model 1 represents the relationship between ownership and debt financing in all selected G-20 countries. The coefficient

of our dummy variable indicates that SOEs have significantly higher leverage than their non-SOEs counterparts in selected G-20 countries; the answer to our first research question, therefore, is "ownership structure does matter in these economies." Results for the determinants are quite similar to those in the study of Rajan and Zingales (1995),in which tangibility and size are positively significant, while profitably and Tobin's' Q are negatively significant. The regression model 1 shows a good model fit with significant F statistics and R squared and adjusted R squared.

Model 2 in Table 3 presents the relationship between leverage and ownership with respect to level of economic development. The coefficient of SOE (0.182) in model 2 predicts that, on average, SOEs are significantly more highly levered than non-state owned enterprises in developed economies. Starting with the constant (representing leverage of non-state owned enterprises in developed economies) and adding it to the value of the SOE coefficient (0.157+0.182), we obtain the mean leverage of SOEs in developed economies (0.339).

The coefficient (0.007) is positively significant and shows that non-SOEs in emerging-developing economies, on average, carry 0.007 more leverage than non-SOEs in developed economies. By adding the coefficients of constant and EMG (0.157+0.007), we obtain the mean leverage of non-SOEs in emerging-developing economies (0.164). The coefficient of the interaction term SOEEMG (-0.192) is the change in leverage of SOEs when the level of economic development changes to an emerging-developing economy. This indicates that SOEs in emerging-developing economies are significantly less levered in comparison with those operating in developed economies. This empirically proves that the capital and ownership structures of enterprises are differently when operating at different levels of economic development. By adding the coefficients of the constant, SOE, EMG, and SOEEMG (0.157+0.182+0.007–0.192), we capture the mean leverage for SOEs in emerging-developing economies (0.154). This, in total, indicates that SOEs in emerging-developing economies have significantly less leverage than non-SOEs (0.164). Notice that the difference in leverage between non-SOEs in developed and emerging-developing economies is -0.007 (0.157–0.164) less, and the difference in leverage between SOEs operating in developed and emerging-developing economies is -0.185 (0.154–0.339) greater. The difference in those differences is -0.192 (-0.007–0.185), which is exactly the same as the coefficient of our interaction.

In light of the above explanation for our second research question, the capital structure decision in terms of ownership and level of economic development varies. We conclude that SOEs are more highly levered than their non-SOE counterparts in developed economies and SOEs in emerging and developing economies, while non-SOEs carry more leverage than SOEs in emerging-developing economies.

4.2 Robustness Test

We employ panel random effect methods to empirically reinvestigate the effects of company ownership on capital structure in the selected countries and in terms of level of economic development to test the robustness of our findings. (Table 3). The results of model 3 are quite similar to those of model 1; however, the results for tangibility and for the dummy (SOE) are not as significant as before. The results of model 4,in which we use the interaction terms, appear to be consistent with those of model 2 (Table 3).These results indicate that capital structure decisions in terms of ownership vary as we introduce the interaction term reflecting level of economic development. The sign for tangibility in model 4 is negative but is not significant.

5. Conclusion

The relationship between ownership and debt financing is investigated in this study. We further categorize these countries into developed and emerging-developing countries according to IMF classifications. Annual financial and accounting data of 252 SOEs and 6,503 non-SOEs from the period 2011–2015 are compiled from Orbis. Both panel ordinary least square and panel random effects methods were used to investigate this relationship. Our results indicate that capital structure decisions in terms of ownership and level of economic development do vary. We find that SOEs are more highly levered than their non-SOEs counter parts in developed economies and SOEs in emerging and developing economies. In emerging-developing economies, non-SOEs carry more leverage than SOEs. Our results also indicate that non-SOEs have higher financial fractions in emerging-developing economies in comparison with non-SOEs in developed countries. These Results are in line with the earlier finding (Amin & Haq 2021) and our country-level analyses are also consistent with the above results.

In this article, we discuss how ownership affects the capital structure decisions of SOEs and non-SOEs in developed and emerging-developing economies. This study differs from previous research in that we provide evidence with regard to the level of economic development (developed and emerging-developing in general as well as country-specific) with the most recently available sample (2010–2015), while previous studies on SOEs and non-SOEs are country-specific. We believe that our findings will benefit corporate management, financial regulators, and financial researchers. Furthermore, the capital structure decisions of SOEs and non-SOEs require further research at different industrial levels, specifically in emerging markets within specific countries.

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