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***Worsening of the Asian Financial Crisis:  
Who is to Blame?***

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# **Worsening of the Asian Financial Crisis: Who is to Blame?**

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## **Abstract**

Some observers have argued that the IMF's focus on the institutional weaknesses of the Asian crisis countries that are inherently difficult to remedy and not necessarily relevant for the crisis, and that their inclusion in IMF programs exacerbated the crisis. This paper argues that besides IMF actions, it is important to consider other factors such as governments' own policy actions and the degree of socio-political instability in affected countries to better assess the factors that might have exacerbated the crisis. Using Indonesia as a case study, we show that political turmoil and government policy actions taken independent of IMF programs lowered the dollar-denominated stock market returns, while IMF-related news did not have any significant effect on the returns. However, the negative impact of independent government policy announcements on investor wealth was larger than that of political instability.

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## I. Introduction

The International Monetary Fund (IMF) was heavily criticized during the recent Asian crisis. Some observers have argued that the IMF's focus on the institutional weaknesses of the countries that are inherently difficult to remedy and not necessarily relevant for the crisis, and that their inclusion in IMF programs exacerbated the crisis by causing investor panic (Feldstein, 1997; Radelet and Sachs, 1998; and Sachs, 1999).<sup>1</sup>

Another potential factor for the worsening of the crisis, which has been largely ignored in the literature, is policy actions taken against the crisis by the governments, either independent of IMF programs or in conflict with the IMF's position, such as the introduction of a currency board. Such government actions might have contributed to the crisis to the extent that investors perceived the actions not credible because of the special relationship between the government and corporate sector. Berg (1999), for example, argued that the close relationship between government officials and the banking system as well as certain private sector participants, especially in Korea and Indonesia, brought about weaknesses in corporate governance and, among others, augmented the crisis in important ways.

A significant level of political violence was also observed in Indonesia, especially during the crisis. The violence included ethnic and religious violence in general, and the regional violence in East Timor, Aceh, and Irian Jaya, in particular. Besides such violence, political demonstrations, riots, and chaos took place almost on a daily basis and climaxed in the wake of the resignation of President Suharto.

This paper empirically investigates the relative contribution of IMF actions to the recent Indonesian financial crisis, as compared to two other relevant factors, namely, the government's own actions independent of the IMF and the degree of political instability. We focus on the Indonesian economy for it suffered the most from the crisis in the region (Cerra and Saxena, 2000). Estimates indicate that in 1998 real GDP of Indonesian economy declined by 13.7 percent, but the decline was 5.8 percent in Korea and about 9.0 percent in Thailand (Berg, 1999). In addition, the Indonesian government signed several agreements with the IMF at the beginning

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<sup>1</sup> Available empirical evidence does not appear to support the view that that IMF actions tend to cause creditor panic, however. Hayo and Kutan (2003) provide evidence from a panel of emerging stock markets and conclude that IMF actions do not have notable effects on the volatility of the markets arising from creditor panic. In examining the impact in Argentina of an IMF agreement announcement during the Tequila crisis, Ganapolsky and Schmukler (2001) also report that the announcement had a positive impact on stock and bond returns and played an instrumental role in reverting the dynamics of the crisis.

of the crisis, and IMF advice continued after the first agreement signed on October 31, 1997 (Hill, 2000). We focus on both stock and foreign exchange market and assess the relative significance of the aforementioned factors in exacerbating to the crisis. In this paper, changes in stock and foreign exchange market returns are used as a proxy to measure the reaction of the financial markets to the above three events during the crisis.

In the next section, we outline the estimation methodology, while the third section presents the empirical results. The last section concludes the study.

## II. Methodological Issues

Ganapolsky and Schmukler (2001) investigated the effects in Argentina of IMF agreement announcements during the Tequila crisis on asset returns. They model the behavior of the variance of financial returns as time varying, using the so-called generalized autoregressive conditional heteroskedasticity (GARCH) models. Besides their well-known econometric advantages over constant variance models, the GARCH models are particularly appropriate for the purpose of this study. Such models allow us to test whether IMF actions, the government's own policy actions, and political instability were able to roil financial markets by lowering the returns based on a maximum likelihood model that allows time varying volatility of asset returns. In this paper, we use the following GARCH(1,1) model.

$$R_t = \beta_0 + \varepsilon_t \quad (1)$$

$$\sigma_t^2 = \beta_1 + \beta_2 \varepsilon_{t-1}^2 + \beta_3 \sigma_{t-1}^2 \quad (2)$$

where R indicates asset returns, namely stock returns in the Jakarta market, or foreign exchange market returns. Equation (1) is the mean equation for returns, while the conditional variance of the returns is given by equation (2). The mean equation in equation (1) is written as a function of some constant with an error term, which has a time-varying volatility,  $\sigma_t^2$ . The conditional variance at time t is predicted based on the persistence in last period's asset market shocks ( $\varepsilon_{t-1}^2$ ) and last period's conditional variance ( $\sigma_{t-1}^2$ ).

The next step is to include socio-political events, independent government economic policies, and IMF-driven economic policies into the model. These three variables are inserted into the mean equation as follows:

$$R_t = \beta_0 + \beta_1 AR(1) + \beta_3 * \text{government actions} + \beta_4 * \text{IMF actions} + \beta_5 * \text{Political Turmoil} + \varepsilon_t \quad (3)$$

$$\sigma^2_t = \beta_6 + \beta_7 \varepsilon^2_{t-1} + \beta_8 \sigma^2_{t-1} \quad (4)$$

Our hypothesis is that social and political events as well as own policy actions by the government *lower* asset returns, while IMF-driven actions *increase* market returns. This is because news about social and political events, most of them about social disorders and chaos, are likely to negatively affect investors' confidence. The government's own economic policies, most of which were in opposition to the programs suggested by the IMF, might have also affected the confidence of market participants negatively, which could be reflected in lower asset returns. On the other hand, IMF programs come with austerity measures that promote transparency and better accountability in the financial markets, which may have a positive effect on investors' confidence. It is thus hypothesized that IMF news has a positive impact on the stock and foreign exchange market returns. These variables are constructed as follows:

01. *Economic policies announced by the government independent of the IMF*, which covers policy actions and statements by the Indonesian government, parliament, and the central bank.
02. *IMF-driven economic actions*, those actions induced by the signed IMF programs
03. *Political turmoil*, which include demonstrations, political riots, protests, street battles between students or opposition members against the police and the military, statements and actions by the opposition parties and organizations, ethnic and religious violence, regional violence in East Timor, Aceh, and Irian Jaya, and election-related violence.

This set of news is calculated in the respective (0,1) dummy variables, which takes a value of 1 when a particular type of news occurs a given day and zero otherwise.

### III. Time series model estimation

Stock and foreign exchange returns are computed as the percentage change in the stock price index and exchange rate, respectively, multiplied by 100. The stock returns are expressed in both the rupiahs and the U.S. dollars. The latter is important to view the issue from the perspective of foreign investors by taking into account the impact of exchange rate movements. A decline in financial returns following some government actions and/or political unrest would suggest that local investors do not welcome such actions. Therefore, a significant drop in asset returns following an announcement is assumed to worsen the crisis.

### ***Sample period and data***

The sample period is daily and spans from July 9, 1997 to August 4, 1999. This sample period is interesting because it covers the period under the Suharto regime and the period under president Habibie, who took over the presidency on May 21, 1998. But, more importantly, it covers the period from the beginning of the crisis up to the recent past.<sup>2</sup> Before the crisis, there was a boom in the stock market just before the crisis started in July 1997. Stock price index peaked above 700 points before falling rapidly in July - August of 1997 (Figure 1). The downtrend continued, despite occasional attempts to recover, until the end of 1997. This sharp downturn was accompanied by the government's reluctance to accept IMF terms. The index then started a rapid recovery followed by a one time sharp decrease and somewhat recovered and stabilized over several months. Further decline was experienced in May of 1998. After that however, the index recovered slowly and started to stabilize at the end of 1998 before making a rapid increase in the price index until June 1999. This is the recovery period. After that it declined somewhat toward the end of the sample period.

IMF-related and government action news are obtained from the IMF's website as well as the major media sources, such as the CNN and BBC. Political risk data are taken from a recent data set constructed based on Indonesian news sources.<sup>3</sup> In all estimations, the event dates are used. If an announcement is made after business hours, it is included in the next day.

The data for the stock price composite index in the Jakarta Stock Exchange (JSX) was obtained through the JSX-endorsed *Indonesia Interactive* web page. As the stock market experienced irregularities in the days of its operation (due to public holidays or riots and demonstrations in Jakarta), it was necessary, for modeling purposes, to bridge the missing days by deleting the days when the stock exchange was closed. The data for the exchange rate of the Indonesian currency, the rupiah, was gathered through the private consultant Olsen and Associates and expressed in terms of the units of the rupiah per one US dollar. Hence, an increase in the exchange rate means a depreciation of the rupiah relative to the US dollar.

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<sup>2</sup> Some may argue that the crisis was settling down at the end of 1998. However, considering the high degree of ongoing political turmoil in Indonesia, any event today may cause further deterioration in the confidence of financial market participants and therefore, it is unclear if the country is out of the woods yet. A recent example is the East Timor affair. Both the rupiah and the Jakarta Stock Exchange Index declined by 5.2% and 3.5%, respectively, after the independence vote in East Timor on August 30. Therefore, our sample span covers the post-1998 period as well.

<sup>3</sup> *Database on Social Violence in Indonesia, 1990-2001*. United Nations Support Facility for Indonesian Recovery, Jakarta, April 2002.

### ***Descriptive Statistics***

Table 1 shows the descriptive statistics for the stock returns, both in rupiahs and in U.S. dollars, as well as foreign exchange returns. The stock returns in domestic currency and foreign exchange market returns are calculated by log-differencing stock price index and the exchange rate, respectively, multiplied by 100. The dollar-denominated stock returns are obtained by converting the domestic stock returns into to the U.S. dollar, using the dollar/rupiah exchange rate. Figures 2 and 3 provide a plot the rupiah- and dollar-denominated stock market returns, respectively.

The descriptive statistics for mean returns indicate that the foreign exchange rate returns declined more than stock returns in domestic currency. In addition, the higher value for the standard deviation of foreign exchange rate returns suggests that this market was more volatile than the stock market. The figure for the skewness and kurtosis indicate non-normality. To deal with this problem, we use the Bollerslev-Woldridge robust standard errors in the GARCH estimations.

### ***Empirical Findings***

Table 2 reports the results for stock returns, both in the rupiahs and the U.S. dollars, and foreign exchange rate returns. P-values are reported in parentheses. All equations include an autoregressive term, AR(1), to remove serial correlation in returns. They are all significant, indicating significant persistency in returns.

Looking at the results for stock returns in domestic currency first, we observe no significant effects of any events at the 10 percent significance level or better. Overall, the results suggest that movements in stock returns in domestic currency are not much sensitive to IMF news, government actions, or political turmoil. Political turmoil has the smallest p-value (.16), indicating that domestic stock market returns are most sensitive, if any, to political news

When we look at the findings for the foreign exchange returns, the results change dramatically. The impact of political turmoil becomes relatively insignificant, while the effects of IMF and government actions dominate the changes in the foreign exchange market prices. Recall that an increase in the exchange rate indicates a depreciation of the rupiah relative to the US dollar. The estimated coefficient for the IMF actions variable is negative, indicating that the

rupiah appreciated in response to IMF news. On the other hand, the sign of the coefficient for government actions is positive, suggesting a depreciation of the rupiah. IMF-related actions appreciate the rupiah by 3.77 percent, while government actions bring about a depreciating of the rupiah by 0.64 percent. Note that the IMF actions variable has a much larger statistical significance level (4 percent) as well than that of the government actions variable (13 percent), suggesting that IMF-related news has the strongest impact on foreign exchange returns during the sample period.

Turning to the findings for the stock returns in the U.S. dollars, we observe that both political turmoil and government actions now have a significant impact on the dollar-denominated returns, while IMF-related news is not significant. Both political turmoil and government actions reduce the dollar-denominated stock returns. The impact of the latter is more significant economically than that of political unrest. Combining these finding with those of the foreign exchange rate returns above suggests that investors on the foreign exchange market paid more attention to IMF actions, while foreign investors operating in the Jakarta stock market closely watched government policy actions. These findings are interesting and investor behavior during this sample period needs more investigation, which is beyond the scope of this paper.

Overall, the results indicate government policy announcements taken independent of IMF programs and political and social unrest worsened the crisis in the sense of causing lower stock market returns for investors, rather than IMF actions. Note that the descriptive statistics data reported in Table 1 indicate that the estimated changes in the dollar-denominated returns reported in Table 2 were much higher than the average change in the returns, .000029, during the sample period, indicating abnormal returns. This is especially true for government policy actions, rather than political turmoil. This indicates that it was government policy stance, rather than IMF actions, that really had a significant and abnormal negative impact on asset market returns during the sample period.

#### **IV. Conclusions**

This paper has attempted to account for the impact of political risk and government policy actions in the Jakarta stock and foreign exchange markets during the two-year crisis period and compared them with the effects of IMF actions. The results have indicated that IMF-related actions appreciated the rupiah, whereas government policy actions taken independent of IMF



programs lowered the dollar-denominated stock market returns. Political turbulence, which took place in Indonesia more than in any other Asian crisis economies, especially during the Asian crisis, also hurt the returns. However, the negative impact of independent government policy announcements on the returns was much larger than that of political instability.

Overall, the results suggest that policy changes announced by the government and, to a some extent, the degree of political unrest exacerbated the crisis. Empirical evidence does not support the claim that the IMF's focus on the institutional weaknesses of the countries during the crisis and that their inclusion in signed IMF programs worsened the crisis by bringing about lower asset returns. Rather, IMF-related news appeared to have restored the confidence in the market, especially in the foreign exchange market. In that regard, our results are in line with Ganapolsky and Schmukler (2001) who found that IMF actions tend to have a positive impact on stock and bond returns and may play an instrumental role in reverting the dynamics of a financial crisis.

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**Table 1:  
Descriptive Statistics for Daily Returns**

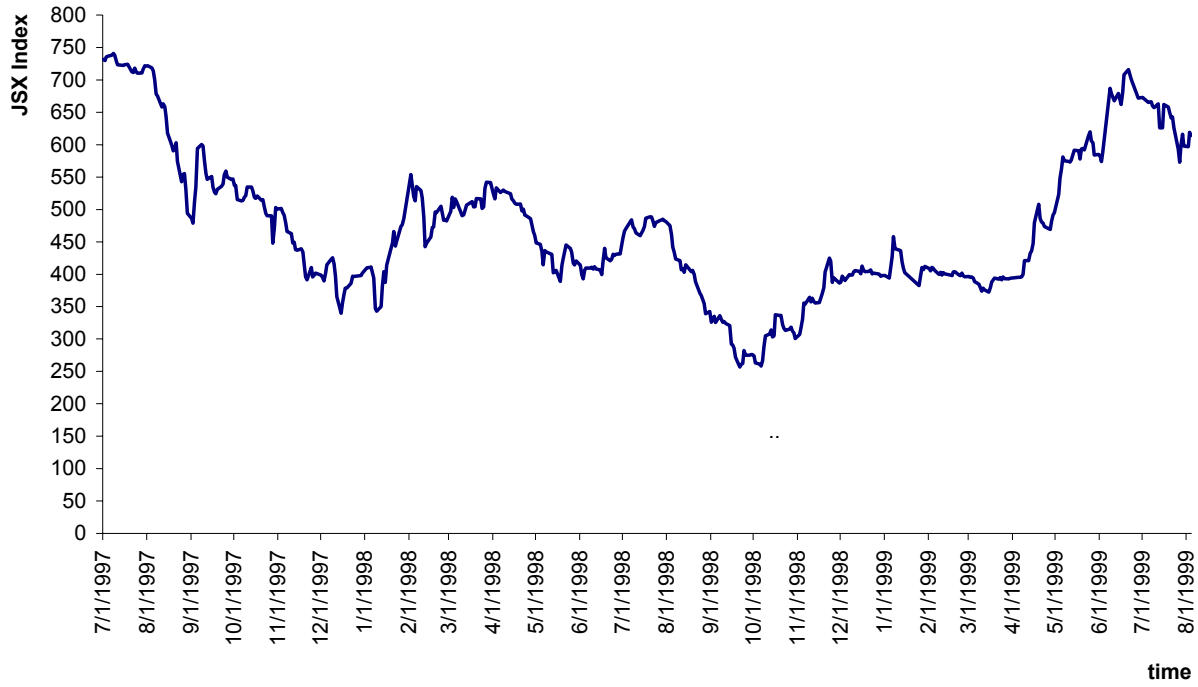
	Stock returns in Rupiah	Exchange rate returns	Stock returns in US Dollars
Mean	-0.034308	0.208054	-0.000029
Maximum	15.56073	17.06010	0.003600
Minimum	-12.73181	-26.82640	-0.002473
Std. Dev.	2.938181	3.790560	0.000508
Skewness	0.484351	-0.396588	0.256957
Kurtosis	6.663705	14.23073	12.07578
Jarque-Bera	299.7883	2646.081	1724.981
Probability	0.000000	0.000000	0.000000
Observations	501	501	501

**Table 2:**  
**Impact of Political Turmoil, IMF-Driven Policies, and Independent Government Actions**

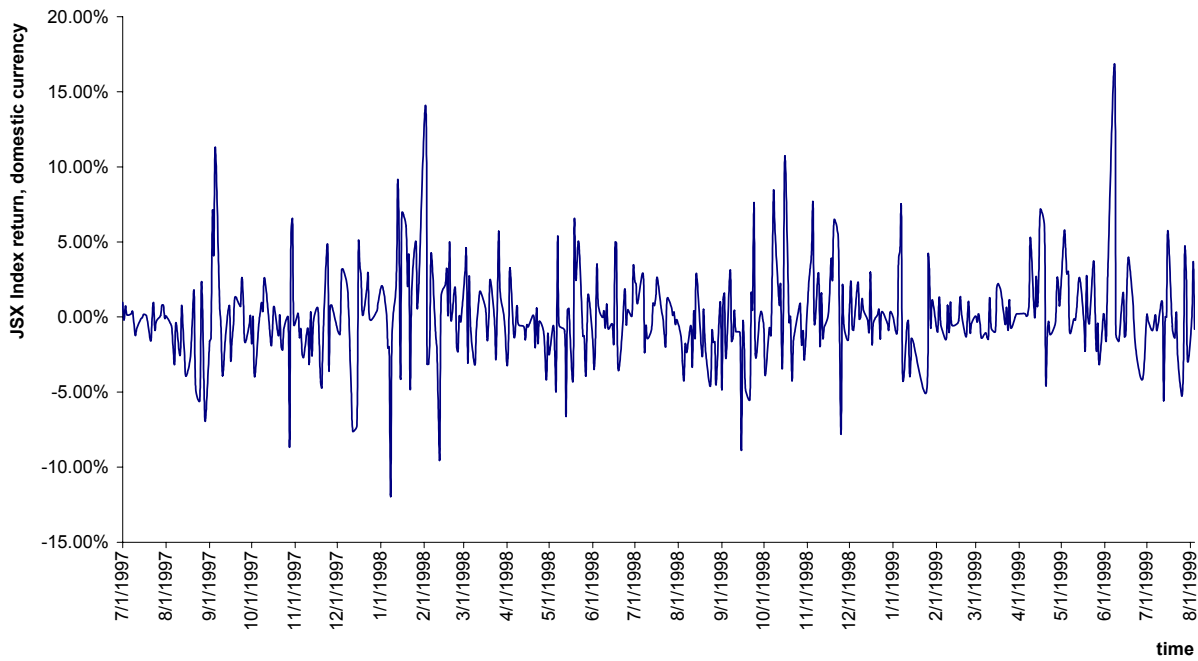
Variable	Stock returns in Rupiah	Exchange rate returns	Stock returns in US dollars
Mean equation			
Constant	0.015023 (0.92)	0.152373 (0.33)	0.000019 (0.30)
Political turmoil	-0.360383 (0.16)	-0.238296 (0.33)	-0.000058 (0.09)
IMF-related actions	-0.210830 (0.65)	-3.767176 (0.04)	-0.000008 (0.87)
Government actions	-0.525477 (0.45)	0.645846 (0.13)	-0.000182 (0.07)
AR(1)	0.254015 (0.00)	0.307429 (0.00)	0.267621 (0.00)
Variance equation			
Constant	0.432719 (0.02)	0.585170 (0.04)	0.000000 (0.55)
ARCH(1)	0.108908 (0.00)	0.434547 (0.00)	0.156136 (0.00)
GARCH(1)	0.849456 (0.00)	0.609317 (0.00)	0.858320 (0.00)
Diagnostic tests			
Log-likelihood	-1216.327	-1194.497	3227.047
Q(10) serial correlation	5.6511 (0.77)	8.4153 (0.49)	5.73 (0.77)
Q <sup>2</sup> (10) ARCH effects	2.2856 (0.99)	2.2569 (0.98)	2.93 (0.98)

**Note: p-values are in parentheses.**

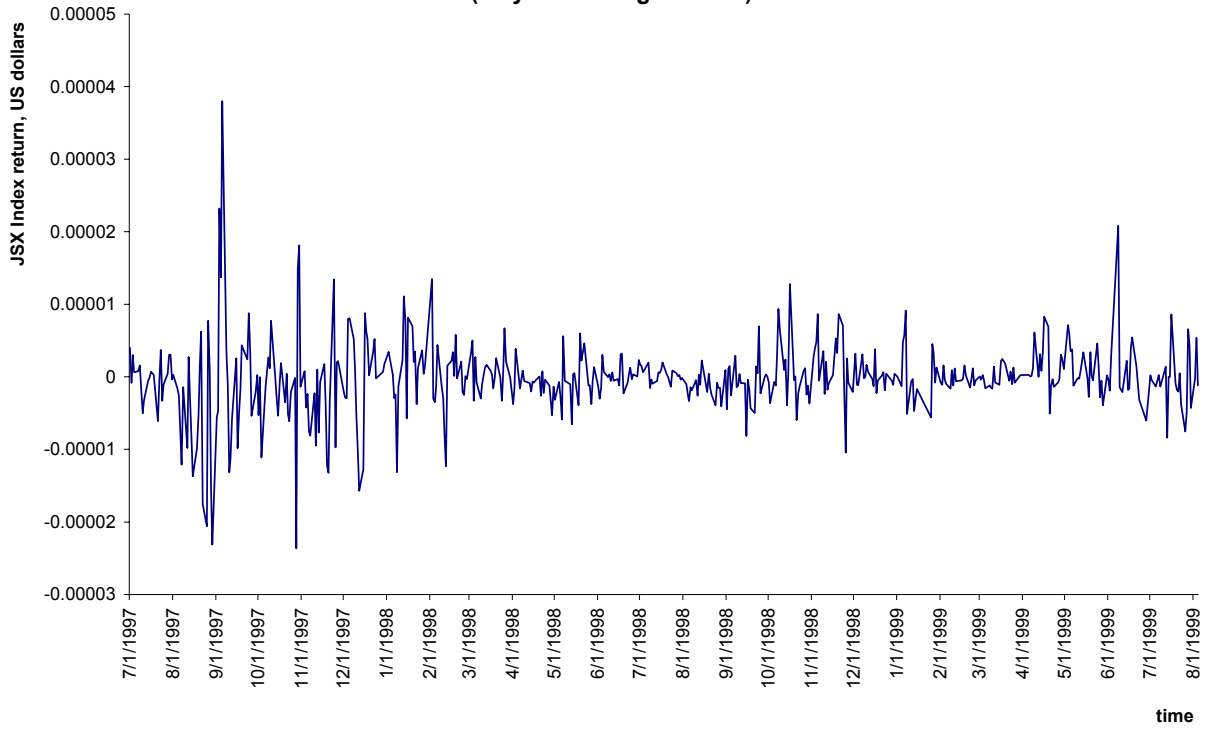
**Figure 1:**  
**Jakarta Stock Exchange Index (July 1997-August 1999)**



**Figure 2:**  
**Jakarta Stock Exchange Index Return, domestic currency (July 1997 - August 1999)**



**Figure 3:**  
**Jakarta Stock Exchange Index Return, US dollars**  
**(July 1997 - August 1999)**



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